

Combining Grounded Theory and Case Study Methods in IT Outsourcing Study

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Abstract— Most early studies in information technology or system (IT/IS) predominantly apply quantitative techniques. However, application of qualitative methods is increasing in IT/IS researches and become a new trend among the researchers in the past twenty years. Using case studies are the most common methods to explore the research subjects. Recently, grounded theory method is becoming popular among doctoral candidates in their theses and also by researchers in reputable journals. In this research, the authors applied Simon's model to investigate IT outsourcing case studies using both grounded theory and case study researches approaches. The authors, then, describe and discuss on grounded theory and case study methods and how they can be combined in an IT/IS study. The accounts of IT outsourcing study in Malaysia public healthcare agencies are chosen as an example. The study shows that application of both methods adds to rigorous, novelty and reliable theory building approach. Grounded theory and case study research did provide synergies in IS research particularly in providing rigorous and reliable iterative data collection and analysis to generate themes and an emerging theory. Moreover, there is a synergistically combination between case study research and grounded theory, demonstrating that qualitative approach is vibrant and flexible. We recommend future doctoral candidates to apply these two qualitative methods hand in hand.

Keywords – information system; grounded theory; case study; information technology outsourcing; Malaysia

1. INTRODUCTION

Information technology (IT) and system (IS) researches have been predominantly adopted quantitative approaches. Nonetheless, a new emerging trend on the applicability of qualitative methods in IT/IS researches has been encouraging and attracted increasing interest, particularly, for studies involving human, processes and procedures and their relationships with technology and system. Corbin and Strauss [6] examine three methodological questions that are generally applicable to all qualitative methods. These three questions relate to (i) How should the usual scientific canons be reinterpreted for qualitative research? (ii) How should researchers report the procedures and canons used in their research? and (iii) What evaluative criteria should be used in judging the research products? Glaser and Strauss [13] provide original idea for interpretive grounded theory approach which Corbin and Strauss [6] later extended its use in a positivist approach. In line with the above, this paper aims to answer two specific research questions: 1) How can case study and grounded theory be combined to induce interpretive meanings from the study results? and 2) How can these two complementing methods generate robust, valid and generalisable findings?

This paper is structured as follows. Section one introduces the paper. Section two reviews relevant literature. Section three discusses on the research design for the study. Section four proceeds with data analysis and discusses the findings. The paper ends with a conclusion section to summarise the paper and recommend for future researches.

2. LITERATURE REVIEW

Qualitative research has been the dominant method before scientific enquiries emerge. Qualitative research refers to a study process that investigates a social human problem where the researchers conduct their studies in a natural setting and build a whole and complex representation by a rich description and explanation and a careful examination of informants' words and views [7; 16]. Consequently, "qualitative research may or may not be interpretive depending upon the philosophical assumptions of the researcher" [15, p. 69]. Qualitative research in IS are categorized into three types: positivist, interpretive and constructive [17].

2.1. Information Technology and System (IT/IS) Research Design

Research designs are procedures for collecting, analysing, interpreting and reporting data [18]. They represent different models for doing research and these models have distinct names and procedures associated with them. Rigorous research designs are important because they guide the method decisions that researchers must make during their studies and set the logic by which they make interpretations at the end of studies [8]. Creswell and Plano Clark [8] recommend that once a researcher has selected either a quantitative, qualitative or a mixed method approach for a study, the next step is to decide on the specific design that best addresses the research problem.

There are two main issues in research design including unit of analysis and data analysis. First, a critical issue in research design is determining the unit(s) of analysis or the unit about which statements are being made. It may be an individual, group, department or organisation. Alternatively, it may be an application, system, or application portfolio or it may be a development project or a phase of a development project. The point is that the unit of analysis can be anything the researchers decide as long as the chosen unit relates to the research questions and hypotheses [8]. Second, another issue is a design for data analysis. Creswell and Plano Clark [8] advise that when exploration or description is the aim of survey research, analysis frequently involves no more than developing the marginal and cross-tabulations for the variables and using simple descriptive statistics such as means and medians. Thus, there is no design issue here. However, when explanation is the aim, a researcher must employ a full logic of survey analysis. This logic is demonstrated by testing hypotheses with cross-sectional data. The logic of survey analysis is based on the assumption that the time order of data can be established or reasonably inferred. Likewise, for qualitative approach, 'thick description' is sufficient for exploratory but cross-case analysis or grounded theory is required for explanatory research.

IS literature shows that most IT outsourcing (ITO) studies are empirical and very few are theoretical in nature. Empirical approaches are utilised in a variety of established disciplines such as medicine and social science. IS has also adopted an empirical approach to research and its use is growing [1; 3; 17]. Empirical research may be defined as that based upon some type of empirical data, in its broadest sense (that is data emanating from one or more of the five human senses). It is the process of generating knowledge through various types of sensory perceptions of observed events. Typically, empirical research involves at least one of the following three types of research methods: i) Survey, ii) Case Study, and iii) Action Research [1; 3; 10; 17]. Gonzalez et al. [14] reveal that more IS researches are empirical in nature and the trend is between case studies and survey approaches. Generally, there are eight major research strategies currently available in the IS field, including: i) Action research, ii) Simulation, iii) Phenomenological studies, iv) Forecasting, v) Surveys, vi) Case studies, vii) Laboratory experiment, and viii) Field experiment [3; 18].

2.2. Grounded theory and case study research

Grounded theory and case study research partly overlap. However, grounded theory is not considered as a sub-area of case study research. Not all case studies create grounded theory [18] as case studies can be written for purely descriptive or theory-testing purposes [for example, 11; 20]. Case studies also serve as illustrative tools in teaching. Similarly, not all grounded theory studies need to employ case studies as data. Other data such as large-scale statistical data can be used to conduct grounded theory investigations [3]. An important implication of taking this view lies in the use of the case study with a grounded approach [3]. Here, case studies research is mainly used as a research design (based on Yin's [20; 21] and Eisenhardt's [11] recommendations) while a grounded theory is used both as a research design and data-analysis. In this sense, case studies may be conceptualised as a choice of 'object of study', which is common in research which adopts a grounded theory methodology. Mäkelä [as cited in 3] refers to this approach as grounded case research.

3. RESEARCH DESIGN

This study adopts an empirical qualitative research approach. Based on Yin [20], Eisenhardt [11] and Glaser and Strauss [13], the overall research strategy combines interpretive grounded theory and case study research methods. The under-researched and lack of systematic research into ITO phenomenon in Malaysia public healthcare sector agencies' context justifies the use of both approaches for explanatory and theory building [11; 13]. Yin [20] recommends research protocol to be developed when using case study methodology. The research protocol gives a clear and complete outline of the methods and procedures used. In the case study research and grounded theory literature, Eisenhardt [11] and Strauss and Corbin [19] also suggest that a protocol for theory building process. Since ITO relationship in ITO projects in Malaysian public healthcare agencies is less researched and understood, the design, thus, involves an exploratory-descriptive and explanatory study to obtain pragmatic and under explored views on the subjects. This provides subjective and interpretive understanding of the phenomenon [Lee, 1991 as cited in 12]. Yin [20] advocates the use of case study research to answer

“why” and “how” questions. This approach also necessitates theory building [11; 13]. To substantiate the descriptive-explanatory phase of study this study employs multiple case studies replicated from the exploratory pilot case study [12].

The case study research design includes a single, exploratory, in-depth pilot case study followed by a more explanatory, cross-case analysis of four firms. Problems, issues and evidence identified in the exploratory pilot case study and literature provide important variables for further investigation. The subsequent multiple case studies, though exploratory, has the objective of testing a tentative pattern of important variables identified from the pilot case and the literature. Thus, it can be stated that the study was preceded by an exploratory, observational single pilot case study and an exploratory/explanatory, observational multiple case study of four projects. Table 1 indicates the number of cases, unit of analysis, major objectives, dependent variable, and primary method of analysis for the pilot case study and the subsequent multiple case study [12].

TABLE 1: Characteristics of the Pilot and Multiple Case Studies. Source: [12]

	Pilot	Multiple
Number of cases	One	Four
Unit of analysis	ITO relationship process	ITO relationship process
Study objectives	Exploration/Description	Exploration/Description/Explanation
Dependent Variable	n/a	ITO relationship efficacy
Main Method of Analysis	Description	Pattern Analysis

Case studies differ fundamentally from surveys, laboratory experiments, field experiments and studies because the researchers generally have less presumptive knowledge of the variables of interest and how they will be measured. Though the primary unit of analysis of the reference study was identified in advance of the pilot case, the pilot case study, being exploratory and descriptive, did not specify a priori dependent variable. The multiple case studies, on the other hand, had the objective of explaining as far as possible, the relationships between the key variables. The dependent variable in the multiple case studies was "ITO relationship efficacy" and the independent variables of interest were those critical factors identified from the pilot case study and the literature that are posited to have a major influence on the level of ITO relationship efficacy.

3.2 Thematic Analysis

An important point to consider during analysis is the unit of analysis. In this research, each of the cases selected forms the unit of analysis. According to De Vaus [9] a case is the ‘object’ of study. Thus, the object of study here is the ITO project relationship in the agencies which the research aims to understand as a whole. This follows Yin [21] who urges researchers to investigate the holistic aspects of a case. The ITO project relationship in the agencies is unit of cases in the current research can be viewed as essentially comprise of a variety of components and processes. Therefore, a better way to construct a broad view of the case is by collecting information from a wide range of elements. The interview data is digitally recorded and eventually transcribed to increase accuracy and avoid note taking while interviewing. Based on the interviews and notes gathered from the pilot study, the preliminary mapping of issues is constructed. The initial themes that emerge from this preliminary mapping are analysed along the theoretical issues developed earlier. The approach used in the preliminary mapping of issues is based on thematic analysis by developing themes and codes from sentence-to-sentence in all the transcripts [4; 11; 13; 16]. Any new themes or categories are added to a list of initial codes and categories. This process is known as constant comparative analysis. During this analysis, codes may be developed based on either one of the two approaches residing on the opposite ends of a continuum. At one extreme is the theory-driven approach and at the other is the data-driven approach. Theory-driven approach develops themes and codes that are consistent with a set of concepts or theories that have been developed earlier. In contrast, data-driven approach constructs themes and codes inductively from the raw information obtained from the field.

The thematic analysis used in the current research stands in the middle of the continuum. Themes and codes are developed based on the theoretical issues and from the inductive process of primary data. According to Miles and Huberman [16], the process of coding is in itself an analysis. Moreover, the data collected from more rigorous actual fieldwork will be iteratively codified and analysed using grounded theory coding techniques. Next, the result of thematic

coding is transformed into narrative description which is then combined with interview quotations, evidence from documents and field notes that would coherently reflect a categorisation and narration of the particular themes [Abdul-Rahim, 1999 as cited in 1]. Subsequent analysis involves analysing specific category of themes based upon the grounded theory methodology developed by Strauss and Corbin [19] combined with case-oriented strategy developed by Yin [20; 21]. According to Miles and Huberman [16], this strategy enables a use of theoretical framework to study the anchor case in greater depth. In this study, the case with most detailed information collected was selected as the anchor case. Successive and other cases are examined to see whether the pattern matched that in the anchor and previous cases. From the grounded theory analysis, emergent concepts and variables were identified and subsequently relationship between the concepts and variables were identified. Consequently, an integrated ITO relationship process model was developed. In addition, Braun & Clarke [4] provide an outline guide through the six phases of analysis. It is, however, important to recognize that qualitative analysis guidelines are exactly that - they are not rules, and, following the basic precepts, will need to be applied flexibly to fit the research questions and data [Patton, 1990 as cited in 1]. Moreover, analysis is not a linear process of simply moving from one phase to the next. Instead, it is more recursive process, where movement is back and forth as needed, throughout the phases. It is also a process that develops over time and should not be rushed.

3.3 Coding in Grounded Theory

In line with thematic analysis, data interpretation and analysis in the grounded theory analysis involve making sense out of what people have said, looking for patterns, putting together what is said in one place with what is said in another place, and integrating what different people have said. However, analysis is the phase of grounded theory research where researchers can utilize grounded theory-specific methods. In essence, analysis is done by conceptualizing, reducing, elaborating and then relating data and themes to integrate them as an emergent model or a theory. Coding is central to the grounded theory research process. Three distinct phases of coding generally employed by grounded theorists include open coding, axial coding and selective coding [19].

3.4 Propositions and model building

Once the core theme is found, major themes need to be related to it by propositions. This process of integrating propositions and higher-level themes (i.e. theory) develops into emergent model. Once the emergent model is outlined, researchers refine it by removing superfluous matter and supplementing poorly developed themes, amplifying them by means of further theoretical sampling if necessary [11]. Propositions generated in this process are validated by comparing them with raw data. More iterative coding is needed if the propositions do not fit the data. Replication can be claimed if there is a theoretical reason to believe that different results were arrived at due to an intervening external factor. This kind of replication is called theoretical replication or replication logic as opposed to literal replication [11; 13; 20]. Propositions are developed from the empirical results and presented in the form of explicit sentences extracted from the transcripts. Explicit presentation helps readers to grasp the entirety of the model presented based on the propositions. It also enables them to discern the structure of the results and the contributions to knowledge. The literature is used in to the discussion when developing propositions [11].

3.5 Case Studies Data Collection Sources

Yin [20] presents a thorough description of potential sources of evidence in a case study that applies well to preliminary qualitative framework or theory-building case study research which includes documents, archival records, interviews, direct observation, participant observation and physical artifacts. As such, this research collects empirical materials through primary and secondary sources. Knowledge of conducting interviews in qualitative research is also derived from Eisenhardt [11] and Ahlan [1]. Following Ahlan's [1] advice, the authors chose to be 'opportunistic' as possible during fieldwork, whereby techniques and others approaches that suit respondents' busy schedules and organisations' policies were employed with the respondents' consents.

3.6 Case Study Selection and Demographic Profiles

The selection of cases is a very important aspect in case study research. While the cases may be chosen randomly, random selection is neither necessary nor preferable. Given the limited number of cases, replication logic is applied in this study and it is also suggested that researchers choose cases such as extreme situations and polar types in which the process of interest is transparently observable [11]. Data collection and sampling continue until such a time as additional data yield no incremental insight and "theoretical saturation" [13] is reached. In the beginning, the authors sent a request letter to undertake case study research in the organisation. Upon approval the authors met and discussed with the top management

from IT division about the study purpose and was briefed on ITO projects in the Ministry. The management recommended eleven successful cases. Subsequently, the researchers were introduced to the IT division's projects' persons-in-charge. Developing from these ice-breaking sessions, the researchers developed a research plan for the pilot study and forwarded to the person-in-charge.

The different styles of management and operational exist in these agencies and projects were likely to influence different viewpoints on ITO decisions and implementations, specifically ITO relationship. These cases, however, resemble paradigms of other agencies in other ministries since public sector has similar structured organisations and most of the respondents have previously worked in other agencies under different ministries. Despite that, the specific context projects types and arrangements provide good within and cross-case comparisons for theory building and generalisation to Malaysia public sector. The researchers continuously assured respondents that the study followed all policies and procedures in the organisation. Total interviewees were twenty three (23) covering management, middle and operational levels of both teams who were directly involved technical and non-technical team members. Four respondents handled two simultaneous projects under study. At least two interviewees were interviewed for each case including both service receiver and service provider teams. The researchers were unable service provider respondents from three position levels. Only four respondents agreed for the interviews. Thus, the findings are based more on service receiver respondents' perspectives while service provider responses enriched evidences for triangulation and cross-checking.

3.8 Scope and Unit of Analysis

The unit of analysis for this study focused on the ITO projects in the Ministry agencies. The interviewees were grouped into three levels, which were higher management, middle management and middle-level support or executive staff in service providers and receivers who were directly involved in the project teams. The higher management was expected to provide current IT in healthcare developments and ITO initiatives, policies and strategies, decisions about ITO and criteria used in the considerations. In addition, the higher and middle management were interviewed to provide information about the ITO decisions and implementations including practices used and problems relating to the decisions and implementations. Finally, the middle-level support and executive staffs such as assistant project managers, team leaders and programmers specified their current activities and operations regarding ITO implementations and technical and operational problems and challenges. Fieldwork and data collection for phase I and 2 started from February 2009 until October 2009. The researchers also had a chance to listen to one user acceptance testing session in one project whereby the project chairperson delivered her aspiration and experience from recent visit to a neighbouring country's meeting for food safety. Then, the interactions between service provider's team and service receiver's users and project team took place. The researchers visited all the agencies and service providers' organisations in Klang Valley, Putrajaya and Selangor areas. In short, the researchers observed the locations of the systems, infrastructure, training and meeting places and working places.

4. DATA ANALYSIS

This study applied thematic analysis and grounded theory techniques. Hermeneutics were used to the extent to understand textual meanings from transcriptions, notes and other documents obtained. Modes of analysis consisted of examining, categorising, tabulating, or otherwise recombining the evidence to address the initial propositions of a study [11; 16; 20]. Data interpretation and analysis using thematic analysis and grounded theory involved making sense out of what people have said, looking for patterns, putting together what was said in one place with what was said in another place, and integrating what different people had said. In essence, the analysis was done by conceptualizing, reducing, elaborating and then relating data and themes to integrate them as an emergent model or a theory. Coding is central to the case study research process [11]. In addition to thematic hermeneutics analysis, three distinct phases of coding generally employed by grounded theory were described [19].

4.1 Coding techniques

Thematic analysis is the basic technique which is used in advanced qualitative analyses such as hermeneutics or grounded theory. In addition, grounded theory specifies its own three coding steps, namely, open coding, axial coding and selective coding. These steps were integrated with thematic analysis in the study.

4.2 Strategy for Selecting Constructs for the IT Outsourcing Relationship Model

The purpose of thematic analysis and grounded theory coding were to generate themes so that a set of patterns, variables and constructs can be classified and a model can be developed. Once the core themes emerged, major themes needed to be linked by propositions. This process of integrating propositions and higher-level themes develops into emergent model. This

theory should be outlined as an emergent model. Once the emergent model has been outlined, researchers should refine it by removing superfluous matter and supplementing poorly developed themes, amplifying them by means of further theoretical sampling if necessary [11]. Propositions generated in this process were validated by comparing them with raw data. More iterative coding was needed if the propositions do not fit the data. Replication could be claimed if there was a theoretical reason to believe that different results were arrived at due to an intervening external factor. This kind of replication has been labeled theoretical replication or replication logic as opposed to literal replication [11; 20]. Propositions were developed from the empirical results and presented in the form of explicit sentences extracted from the transcripts. Explicit presentation makes it easier for readers to grasp the entirety of the model presented, based on the propositions. It also enables them to discern the structure of the results and the contributions to knowledge. The literature is referred to in the discussion when developing propositions. All these processes were done in the analysis phase.

4.3 Generation of IT Outsourcing Relationship Model and Propositions

Using grounded theory and thematic analysis, themes were grounded in data to generate emergent themes and categories. An iterative manual approach similar to NVivo software was used. Eventually, themes or categories were converted into variables or constructs which were carried forward to the discussion section for model development. Model development applied all these three criteria to ensure an integrated ITO relationship model is developed. Each construct was carefully matched along the following three criteria:

Criterion 1: A construct that was identified by the iterative data reduction processes.

Criterion 2: A construct that was identified in ITO relationship literature.

Criterion 3: Constructs that were identified by criterion 1 and criterion 2 were merged together so that high-level abstractions of ITO relationship model can be developed.

4.4 Bringing in the Literature

Extant literature is again used in the analysis and discussion sections. It is to compare the propositions and themes that have emerged with the existing literature to evaluate overlaps and differences. Eisenhardt [11] claims that tying the emergent results to existing literature enhances the internal validity, generalizability and theoretical level of the study. The emergent results often rest on a very limited number of cases and comparing them with the literature enhances the overall quality and contribution of the study. However, substantiating the contribution to the body of knowledge by distinguishing one's results from those already achieved by others is challenging. Contrasting literature can even be helpful in producing new insights into factors such as new dimensions or constructs. On the other hand, contrasting literature may also merely reduce confidence in the validity of the results [11].

5. CONCEPTUAL FRAMEWORK FOR IT OUTSOURCING DECISIONS AND IMPLEMENTATIONS ANALYSES IN A PILOT CASE - XEN

This section delves on the actual analysis and hence conceptual framework or model development for the study. Besides the core themes development processes, the analysis also aims to provide ITO decisions and implementations taxonomy of experiences from the case agencies. The researchers reviewed and synthesised all available documents to extract relevant information to answer all the ITO application stages. Simon's 1960 Decision Making Model [10] was applied as a framework of inquiry and analysis to obtain the summary analysis of ITO decisions and implementations and grounding in multiples sources for subjective and interpretative understanding [Lee, 1991 as cited in 12]. In addition, interview transcripts also bring more evidences for the researchers to verify and support the evidences in documents and vice versa. The interview protocols were developed and adapted from literatures. The questions mainly centered on ITO practices, rationales and implementation especially on resources competences, capabilities, relationship building, managing and sustaining and critical factors influencing ITO relationship efficacy. Difficulties and challenges and how to manage effective ITO relationship were also investigated. The interview protocols highlight issues on: Phase 1: Why, What and Which and Phase 2: How and Outcome as depicted in the ITO Stages in Dibbern et al's [10] diagram. This comprehensive decision and implementation framework is a useful tool to understand the ITO phenomena in Malaysia public healthcare sector.

5.1 Applying Thematic and Grounded Theory Analysis for Themes Development

The main analysis techniques used for the qualitative study are thematic and grounded theory analysis [1; 2; 4; 11; 13; 16] to generate meaningful themes from data sets. It is important to reiterate that the aim of the current research is to understand the organisational process that affects the ITO decisions and implementations particularly ITO relationship efficacy in Malaysian public healthcare sector agencies. The pilot data analysis provided an insight into the possible emerging themes. The thematic analysis began to strengthen the shape of the themes proposed at the pilot stage. The study

adopted the thematic analysis technique suggested by Miles and Huberman [16] which is known as Data Reduction Process. According to Miles and Huberman, Data Reduction Process is the process of selecting, focusing, simplifying, abstracting, and transforming terms that appear in interview transcripts and written up field notes. This stage is important to produce a list of intelligible terms of issues in a manageable form that could be analysed in addressing the research questions. This is done by analysing the primary set of data along with all other relevant data sources in meticulous detail with the aim to produce a categorisation of themes.

In addition, the researchers had tried to fulfill all the 15-point checklist of criteria for good thematic analysis [4] as best as possible. Tables 2 and 3 show examples of data reduction process for the study. Section 5.2 shows an example of data reduction process using thematic analysis for case Xen. The codes or emergent themes will be used together with other data sources to describe, corroborate and develop a relationship model. Specifically for the pilot site case Xen, the iterative approach of data collection, coding, and analysis was more open-ended and generative than in other four sites, focusing on the development of concepts, properties, and relations, and following the descriptions of how to generate grounded theory set out by Glaser and Strauss [13] and Eisenhardt [11]. The detailed write-up of the site and all the data generated by interviews, observations, and documentation were examined and coded by focusing on the ITO relationship, decisions and implementations experiences associated with the ITO arrangements. This technique uses a form of content analysis where the data are read and categorised into concepts that are suggested by the data rather than imposed from outside. This is known as open coding [19] and it relies on an analytic technique of identifying possible categories and their properties and dimensions. After examining all data, the concepts were organised by recurring themes. These themes became prime candidates for a set of stable and common categories which linked a number of associated concepts. This is known as axial coding [19] and it relies on a synthetic technique of making connections between subcategories to construct a more comprehensive scheme. The Case Xen data were then re-examined and re-coded using this proposed scheme, the goal being to determine set of categories and concepts that covered most of the data. These iterative examinations yield a set of broad categories and associated concepts that describe the salient conditions, events, experiences and consequences associated with the ITO decisions, implementations and relationship efficacy in Case Xen.

These initial concepts guide the other four field studies, allowing the process of data collection, coding and analysis to be more targeted. Following the constant comparative analysis method [11; 13], the four cases' experiences were systematically compared and contrasted with those of case Xen and each other. This analysis also used Miles and Huberman's [16] technique for across-site pattern comparison and clustering that involves matrix displays to compare key events, triggers, and outcomes. Data from the other four sites were first sorted into the initial concepts generated by Case Xen's data. It soon became clear, however, that the initial concepts generated by the first site did not accommodate some of the findings emerging from the second site. Accommodating the four sites' experiences, led to some important elaborations and clarifications in the emerging theoretical framework, and forced a reconsideration of some of Case Xen's experiences. It is important to note here that the five cases were 'replicated logically' to enable cross-case analysis to identify their similarities and differences in terms of nature of organisation, types of ITO procurement, types of ITO functions and services outsourced, contract period, service provider's and receiver's competences and capabilities, problems and challenges and others.

Redefining the initial concepts to incorporate considerations of Case Xen's experiences required returning to the Case Xen data and re-sorting and re-analysing them to take account of the richer concepts and more complex relations now constituting the framework. This ability to incorporate unique insights during the course of the study is one of the benefits of a case study research and grounded theory approach, an example of what Eisenhardt [11] labels "controlled opportunism," where "researchers take advantage of the uniqueness of a specific case and the emergence of new themes to improve resultant theory" [11, p. 539]. The iteration between data and concepts ended when enough categories and associated concepts had been defined to explain what had been observed at five sites, and no additional data were being collected at Case Xen or found at other four sites to develop or add to the set of concepts and categories, a situation Glaser and Strauss [13] refer to as "theoretical saturation." Table 3 shows the categorisation of codes, categories or emergent themes into relevant constructs. The resultant framework is empirically valid as it can account for the unique data of each site, and generalise patterns across the sites [11]. The concepts and categories thus developed are used to develop final categorisation of codes, categories or emergent themes into specific constructs.

Nonetheless, precautions were taken to corroborate the interpretations made [16; 20]. Emerging concepts were checked again for representativeness by examining them iteratively across informants and with multiple methods. For example, minutes of meetings, contract documents, tender specifications, user/system requirement studies, system specifications, other project deliverable documents, internal circulars, directives or guidelines and others. Triangulation across data sources and across data collection methods further served to strengthen the emerging concepts. The constant comparative method

also requires the searching out and checking of contrasts and negative evidence, hence forcing the confrontation of emerging explanations with possible alternative ones [11]. Finally, the findings were forwarded to the service receivers' top management.

5.2 Data Reduction Process – Case XEN

In order to illustrate the coding process and generating themes from qualitative transcripts, iterative data reduction technique is employed which can be seen in Tables 3 and 4 as examples. Data that provides meanings are extracted from the transcripts and interpreted by the researchers with minimum meaning changes. Then, these data extracts and interpretations were coded accordingly and carefully in order to generate emergent themes or categories. Tables 3 and 4 illustrate the early procedure of how data reduction process was performed. The aim of data reduction process is basically for the analysts to selectively singling out data for description to arrive at an initial categorisation which may be shaped by pre-established study questions. However, while performing this activity, the analyst should remain open to inducing new meanings from the data available. Further iterative coding processes are found in the following sections. Based on the illustrations, the subject of data analysis is primarily obtained from in depth interviews which essentially provide explanation to some of the emerging issues. While other sources such as project reports and presentation materials provides essential information such as specific names and features of the functions, services and technologies outsourced. Sections 5.2-5.3 present an example on the Data Reduction Process for Case Xen based on the ITO decisions and implementations projects that were undertaken. Other cases follow the same procedures.

TABLE 2: An example of Case Xen data reduction process¹

Data extract	Authors' interpretation	Emergent themes
20 years ago not satisfactory. IT is necessity and not a luxury. IT usage in this division is not encouraging. IT needs give impact to the staff and organisations. IT laboratory not enough. Computers are not up-to-date. We are moving towards that.	Twenty years ago, IT is considered a luxury but now it is a necessity. This division is lacking in IT infrastructure and usage. We need to upgrade and computerise the division and its branches.	Computerisation, IT infrastructure, IT usage, up-to-date technology, rationale, resources, necessity, luxury, competence, capability
We have developed similar system previously but not suitable. So, we buy this one and use it.	The reason for this project is due to failure of previous systems which is not fulfilling the division's needs.	Rationale, fulfil needs, failure

5.3 Generation of Codes, Categories or Emergent Themes

Sections 5.3.1 and 5.3.2 below shows how the process of generating codes, categories or emergent themes is done based on data reduction processes in Section 5.2.

5.3.1. Start list of codes, categories or emergent themes

Table 3 below collects all the codes, categories or emergent themes from Case Xen. Consensus and important or emergent themes are highlighted for further iterative data reduction process in order to generate a relationship model for the study. Table 3 below lists all the highlighted codes, categories or emergent themes in Table 2 above in order to easily compare between cases. These codes will be further codified into categories in order to shape and sharpen the constructs.

5.3.2. Categorisation of codes, categories or emergent themes into constructs

Table 3 lists excerpt codes, categories or emergent themes analysed from interview transcriptions from Case Xen. Relevant themes are highlighted to be used further to generate and shape variables and constructs in the study for theory building and relationship model development. These highlighted codes, categories or emergent themes are then matched to the broad and specific constructs found in literature. The summary final variables or constructs is mentioned in Section 5.4.

¹ The coding follows an example of Data extract, with codes applied from Clarke et al., (2006) in Braun & Clarke, 2006 and Ahlan, 2005.

TABLE 3: Start list of codes, categories or emergent themes

Case Xen
Computerisation, IT infrastructure, IT usage, up-to-date technology, rationale, resources, necessity, luxury, competence, capability, Rationale, fulfil needs, failure, IT usage, disparity, follow trend, efficiency, efficacy, competence, capability, Planning, requirements study, meeting, Structured process, guidelines, policies and procedures, team set up , Competence, capability, reference, communication , structured representations, experience , Competence, capability, technical skills, management skills , Reason, focus on core business, SR technical competence , capability...

5.4 Summary of the Data Reduction Process

The data reduction process performed on each case study helps to select and reduce the scope of broad issues raised. These emerging issues were then interpreted and categorised into themes that the study proposed. The excerpts of data reduction process for all cases were gathered. This is to illustrate how the researchers attempts to identify or generate codes and patterns for emergent themes for theory building and relationship model. Section 5.3 is based on the data reduction processes which gather initial lists of codes, categories or emergent themes for all cases for cross-case patterns analysis. The interviewees represent different level of positions, job experience and background in the selected organisations. Thus, thematic and grounded theory analyses are appropriate to analyse an under-researched sector and subjects in more detailed and deep into the contexts. Finally, the final constructs generated from the iterative data reduction process exercises in Section 5.3 were summarised. These final specific constructs were used in discussions of findings and model development.

Based on the analysis of in depth interview transcripts, other relevant documents and guiding framework from the literature, a few major themes were identified which may affect ITO decisions and implementations in Malaysian public healthcare sector agencies. Research findings suggest that these major themes did affect ITO relationship efficacy in each agency. The proposed major themes are: Service provider (SP) Competences and Capabilities; Service receiver (SR) Competences and Capabilities; Governance; Intent; Structure; Interaction; Inter-organisational; Behaviour; Process; Working relationship management; Psychology; Attributes; Culture; Stakeholders; Outsourcing strategy; Due diligence; Contract; Performance management and Knowledge management. These can be further grouped into 1) Organisational strategy; 2) Resources competences and capabilities; 3) Organisational Characteristics; 4) Governance; 5) Contracts/SLA; 6) Due Diligence and 7) Working Context.

5.5 Cross-Case Patterns from Multiple Case Studies

From the grounded theory analysis, the researchers revisited case study technique on cross-case patterns proposed by Eisenhardt [11] who advises that the key to good cross-case comparison is counteracting the tendencies for information-processing biases by looking at the data in many divergent ways. The important factors to consider to improve ITO relationship efficacy both in strategic and operational aspects in all five cases were acknowledged. The cross case analysis was conducted to identify different triggers of ITO relationship efficacy. In addition, similarities and differences of ITO decisions, implementation and organisational issues within scope of resources competences and capabilities and relationship efficacy aspect particularly and their influences on the various degree of ITO relationship outcome within the five case studies were obtained and discussed among the research team-members. The main problems and challenges for not achieving the desired relationship outcomes or efficacy indicated by case study agencies were identified ~~also~~ and, subsequently, core areas and main critical factors for ITO relationship efficacy improvement were identified and summarised. The authors followed all the steps proposed by Eisenhardt [11].

6. CONCLUSION

The objectives of this paper is twofold. First is to describe and tabulate the research findings for the study. Second is to illustrate the qualitative data collection, analysis and findings from the study using both grounded theory and case study researches approaches. The qualitative within-case findings were grounded in multiple sources such as documents and interviews. The within-case analysis aims to provide descriptive and explanatory insights on the phenomena. As a result, the grounded theory and thematic analysis generates emergent themes which are categorised as (a) ITO Strategy; (b) Due Diligence; (c) Organisational structure; (d) Stakeholders; (e) Contracts/Service Level Agreements (SLAs); (f) Governance; (g) SP competences and capabilities; (h) Service receiver competences and capabilities; (i) Working relationship context; (j) Project management; and (k) Knowledge management. The study shows how a study can apply and combine both grounded theory and case study in one study. This method of data collection and analysis yields robust, vibrant, rigorous, valid and 'generalizable' findings. Hence, both research questions were answered in the research design and analysis sections above.

Finally, the researchers strongly recommend future researchers to apply the two methods together in any IT or IS studies. In the study, we can see how the rigorous steps and procedures applied in both grounded theory and case study researches add strengths to ensure reliability, validity and generalizability are achieved in qualitative studies. Every researcher who intends to apply both methods in a single study can formulate their research design creatively and innovatively to ensure their research questions are answered and research objectives are met. In essence, every research method has strength and weakness but it is how the researchers apply each method well that can yield significant results and outcomes from each study.

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