UNDERSTANDING ACCOUNTANTS' PARTICIPATION IN ACCOUNTING INFORMATION SYSTEMS IMPLEMENTATION: MALAYSIAN EVIDENCE

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Thesis Summary

This research is intended to identify the extent and consequences of accountants' participation in AIS implementation in Malaysia. The study is a two-part study starting with a nation-wide survey in the private sector. The hypotheses derived from the Western literature were not significantly supported when the results were analyzed. It seems that the existing literature related to the phenomenon under investigation is mainly Anglo-Saxon culture oriented which is different from the Malaysian culture where the study was conducted. However, access barriers to private sector organizations shifted the focus of the research to the second part of the study that examined the issues in detail in four public sector organizations currently implementing accounting information systems - two hospitals and two universities.

In the second part of the main study, the researcher developed formal and substantive propositions from the qualitative interviews which were substantiated using a cross-case analysis; as a result, a model for accountants' participation in AIS implementation is proposed. The research shows that the process of influencing accountants to participate in AIS implementation is more complex than the literature suggests. There were many issues that surfaced during the case studies, such as conflict and empowerment which set a foundation for further research about how participation can be secured to help make the implementation of AIS part of an organizational agenda success.

Key words: participation implementation, accountants, Malaysia, public sector, private sector.

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CHAPTER 1
INTRODUCTION

Public sector organizations are facing the challenge to implement technology-driven information systems in order to remain competitive, meet demands of the customers, partners, suppliers and employees. People are 'sucked in' to the accounting system, either in the more conventional manner, because they are constrained to use the numbers the system reports, or more surreptitiously, because their own actions and activities contribute data to the system. However, the extent to which computerized accounting systems actually impact on behaviour in public sector organizations has received relatively scant attention. This research aims to explore this phenomenon. To put this epistemological deficiency in perspective, Section 1.2 introduces the research problem and contribution of this research to the literature. Section 1.3 briefly describes methodology and Section 1.4 illustrates the research design. Section 1.5 outlines the thesis structure and Section 1.6 provides the limitations and key assumptions. Section 1.7 concludes.

1.1 Research Problem

The rapid pace of technological progress and the spectacular advances in computerized systems are transforming the work of management accountants (Quattrone and Hopper, 2001; Granlund and Malmi, 2002; Westrup, 2000; Maccarrone, 2000) and a need for active participation by management accountants in Accounting Information Systems (AIS) implementation is being stressed. Management accounting research has largely overlooked the dynamic working environment of management accountants with the exception of a few studies (e.g. Brignall, et al., 1999; Chenhall and Langfield-Smith, 1998; Coad, 1999; Cooper 1996a, b; Friedman and Lyne, 1997; Granlund and Lukka, 1998; Granlund and Malmi, 2002; Johnston et al., 2002; Kaplan, 1995; Silince and Sykes, 1995). In AIS literature, involvement and participation are the most cited factors to secure users' acceptance and thus, to overcome resistance. However, relatively little research has studied these social dynamics (Howcroft and Wilson, 2003a; Lau and Herbert, 2001; Robey and Farrow, 1982).

People and organizational issues are claimed to be equally if not more important than technology itself in implementing of an information system (Lau and Herbert, 2001; Lorenzi, et al., 1997). As such, successful implementation requires active user involvement, attention to workflow and professional relations and anticipating or managing behavioural and organizational changes. The implementation of information system is not always a success or failure story. There are many reasons amongst other contributing to system failures such as running over budget and less than expected performance (McFarlan, 1981) and resistance from the organizational members. The latter factor has been suggested on the premise that an organization is not a combination of objectively determined characteristics but a social reality enacted by its various members, so failure to consider human reactions and behaviours in a field study prevents the researcher from fully reaping all the benefits that it can offer. According to Lau and Herbert (2001), system implementation is as much a process of social change as it is a technology development endeavour within an organization (p.21).

In innovation literature, previous research on innovation within organizations has given relatively little attention to individual variables during implementation (exception: Beyer and Trice, 1978; Butler and Fitzgerald, 2001; Leonard-Barton and Decamps, 1988). According to Lau and Herbert (2001) and Ferreira and Merchant (1992), ignoring people-related factors is common in many field studies as the researchers consider the accounting (and other) issues at a purely technical level (e.g. Adams, et al., 2004; Foster and Gupta, 1990; Harrison, et al., 1990; Karmarkar, et al., 1990; Patell, 1987a, 1987b). User involvement literature is largely silent on the issue of "why" individual users participate (Doll and Torkzadeh, 1989) and how individual differences might affect their motivation to participate. Anderson (1997) has stressed that information system affects the distribution of resources and power as well as interdepartmental relations. It is also claimed that integrated AIS implementation has to a certain extent sacrificed some controls that accountants have often enjoyed previously.

This research seeks to explain the accountants' participation in the implementation of AIS. This study proposes that if accountants actively participate in AIS implementation, they can consequently develop their expertise and control using the Technology/Power Loop concept (Figure 1) below.

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Figure 1: Technology/Power Loop (after Scarbrough and Corbett, 1992)

If accountants are actively participating in the design of accounting information systems they are actually developing the technology. Being part of the team shapes their control over the technology. In addition, the introduction of integrated AIS is unlikely to be just a one-off event, so the introduction of subsequent versions leads to a redefinition of accountants' skills and thus, their expertise. This procedure proposes that management accountants should use their expertise to influence the design of the system. The resulting design will then enhance their control over the system and it is suggested that this process should continue in an endless loop. By participating in AIS implementation, the accountants can redefine their skills, influence the design and develop their control over the technology rather than losing the control they previously enjoyed over it (see Scarborough and Corbett, 1992).

1.2 Research Methodology

This research answers the call to highlight the importance of accountants' participation in AIS implementation as part of an organizational change agenda. To the best of the researcher's knowledge, there has not been much research that investigates innovation activities and innovation users in Malaysia, especially concerning accountants, therefore, this study can be regarded as an exploratory study. The broad objective of this research is to examine whether factors influencing users to participate in the implementation process indicated in the literature are similar in Malaysia, and to examine the impact of these factors on the extent of accountants' participation. By using both quantitative and qualitative methodology, this research combines a quantitative study and qualitative study and synthesizes accounting, innovation and organizational change literatures to frame accountants' participation in AIS implementation. There is hardly any research in both fields and in Malaysian context in a two-part study.

1.3 Research Design

The researcher started with an exploratory study in April 2002 following the identification of key issues from the literature. Questionnaires were then designed and piloted in companies implementing information systems in Malaysia. After the results were analyzed, the questionnaires were then refined and applied. The new versions of the questionnaires were distributed to Malaysian accountants and the results were analyzed in the first part of the main study. Access barriers in private sector organizations shifted the focus of the second part of the study that examined the issues in detail in four public sector organizations currently implementing new AIS. This second study was intended to better understand the phenomenon of accountants' participation in AIS implementation within its specific context in Malaysia. All of these organizations were implementing their new AIS in the finance department, supervised by their accountant(s).

In the second part of the main study, the researcher developed formal and substantive propositions from the qualitative interviews which were substantiated using a cross-case analysis; as a result, a model for accountants' participation in AIS implementation is proposed. This model draws intuitively from the Innes and Mitchell (1990) "motivators, catalysts and facilitator" change model, and in a broader sense provides empirical content to Llewellyn (1993) solicitation for more research into the process of accounting change as a social accomplishment through human agency that has remained unexplained. The research design can be seen in simplified form in Figure 2 below.

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┌─────────────────────────────────────────────────────────────────────────┐
│ EXPLORATORY                                                               │
│                         IDENTIFICATION OF RESEARCH TOPIC                  │
│    STUDY                                                                  │
│                                          │                                │
│ (April 2002)                             ▼                                │
│                                  LITERATURE REVIEW                        │
│                                          │                                │
│                                          ▼                                │
│                              IDENTIFICATION OF KEY ISSUES                 │
│                                          │                                │
│                                          ▼                                │
│                                    INITIAL MODEL                          │
│                                          │                                │
│                                          ▼                                │
│                                ESTABLISH PROPOSITIONS                     │
│                                          │                                │
│                                          ▼                                │
│                               QUALITATIVE INTERVIEWS                      │
│                                          │                                │
│                                          ▼                                │
│  DESIGN and PILOTING          SURVEY DESIGN; PILOTING; REFINEMENT         │
│                                                                           │
│  OF STUDY                                                                 │
│                                          │                                │
│ (September 2002)                         ▼                                │
│                                                                           │
│ MAIN STUDY (PART 1)           POSTAL SURVEY AND ANALYSIS                  │
│ (June 2003)                              │                                │
│                                          ▼                                │
│                              IDENTIFY POTENTIAL ORGANIZATIONS             │
│                               FOR OBSERVATIONS and IN-DEPTH               │
│                                       INTERVIEWS                          │
│                                          │                                │
│ MAIN STUDY (PART 2)                      ▼                                │
│ (July 2003)                   CASE STUDIES AND ANALYSIS                   │
│ FOLLOW UP STUDY                          │                                │
│ (April 2005)                             ▼                                │
│                                                                           │
│                              REFINE PROPOSITIONS AND FRAME MODEL          │
│                                                                           │
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Figure 2: Research Design (Source: The Author)

1.4 Delimitations of scope and key assumptions

1.4.1   The survey (main study part 1) and case studies (main study part 2) were conducted in Klang Valley, which comprises the Malaysian capital, Kuala Lumpur, and its

suburbs. The Klang Valley was chosen because the majority of companies listed on the Kuala Lumpur Stock Exchange (KLSE) are located in this area (Mukti, 2000). The survey was targeted at accountants working in public listed companies.

1.4.2 The external environmental factors taken into consideration are the rules and regulations of the government, professional and regulatory bodies of the accountants.

1.4.3 The internal environmental factors - organizational factors are the board of directors' (BOD) involvement, management competence, management operational experience, management stability, organizational culture, organizational flexibility, organizational philosophies and values and organizational structure.

1.4.4 The departmental factors are the role of the finance function in the organization, the finance department's structure and orientation, the technology investment strategy, the finance department's mode of operation and control, and accounting staff.

1.4.5 The unit of analysis for both the survey (main study part 1) and the case studies (main study part 2) are accountants working in Malaysia.

1.4.6 The case- organizations chosen were public sector organizations going through various stages of AIS implementation: two were government-funded hospitals and two were government-funded universities.

1.4.7 The focus of the research is on accountants' participation in AIS implementation. Participation and involvement are not taken as different constructs, as suggested in Barki and Hartwick (1989). Participation refers to the implementation efforts of the accountants.

1.4.8 The methodology is a combination of quantitative and qualitative approaches for at least three reasons, as stated by Hammersley (1996): "Triangulation"; "Facilitation" and "Complementarity". Such a multi-strategy approach encourages the maximum utilisation of the data at one's disposal by producing greater density of coverage of the data and allows the researcher using them to see empirical reality in slightly different ways (Layder, 1993).

1.5 Thesis Structure

The thesis is divided into ten chapters. Chapter 1 introduces the topic and briefly describes the methodology, limitations and contributions of this research. Chapter 2 outlines the research methodology and research methods used in the research. Chapter 3 reviews the literature from accounting, information system implementation, innovation and organizational change. Chapter 4 reports the analysis of the survey conducted with Malaysian accountants on the factors influencing their participation in AIS implementation. Chapter 5 describes the issues of power in the public sector and Chapter 6 describes the coding and analysis procedures for the case studies. Chapters 7 and 8 covers the case studies conducted in four public sector organizations and Chapter 9 reports the findings from the cross-case analysis. Chapter 10 concludes and lists propositions for future research.

1.6 Conclusion

This chapter provides the context of the research and also a brief synopsis of chosen research methodology. The limitations and the assumptions of the research are also highlighted to delineate the scope of the research. The next chapter describes in detail the research methodology adopted to explore the phenomenon of the accountants' participation in the implementation of the AIS.

CHAPTER 2
RESEARCH METHODOLOGY AND METHOD

The aim of this chapter is to provide detail of the research methodology that has been used to explore the phenomenon of accountants' participation in AIS implementation. This chapter is divided into three sections. Section 2.2 briefly describes the dominant research paradigms underpinning the accounting research. Section 2.3 justifies the research methodology approach chosen for the present study. Section 2.4 illustrates the sequence of the two-part study methodology. Section 2.5 describes the quantitative study approach and Section 2.6 explains the qualitative approach used in the study. Section 2.7 concludes.

2.1 Research Paradigms

The researcher's methodology and beliefs are closely related as her ontological and epistemological assumptions direct and guide her methodology. According to Burrell and Morgan (1979), ontological assumptions decide the form and nature of reality and come before the epistemological assumptions. Epistemology is the researcher's beliefs on the nature of knowledge for any phenomenon under investigation. Burrell and Morgan (1979) classified social science and society into four paradigms, each of which has its specific characteristics. These paradigms results from the interaction of the assumption that a researcher holds about society and nature of social science (see Figure 3).

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Figure 3 : Research Paradigms (Source: Burrell and Morgan, 1979)

The researcher's assumptions about society are: whether it was in need of radical change or it was basically acceptable but needed regulation to maintain the status quo. On the other hand, the researcher's assumptions about the nature of social science and the world it attempts to explore. Do organizations have a concrete real existence separate from their observers (i.e. objective) or is the real world socially constructed and capable of as many

interpretations as there are observers (subjective). These four paradigms are argued to be mutually exclusive, in the sense that one cannot operate in more than one paradigm at any given point of time, since in accepting the assumptions of one we defy the assumptions of all the others (Burrell and Morgan, 1979). On the other hand, there are alternatives, in the sense that one can operate in different paradigms over time.

Burrell and Morgan (1979) claimed that in order to set out a perspective or paradigm, a researcher needs to be fully aware of three underlying assumptions upon which his or her own perspective is based. First, there are assumptions of an ontological nature, which concern the very essence of the phenomena under investigation. Associated with the ontological issue, is an assumption of an epistemological nature: about how knowledge is obtained and how one can sort out what is to be regarded as "true" from what is to be regarded as "false". A third set of assumptions concerns human nature and, in particular, the relationship between human beings and their environment. These three sets of assumptions have direct implications of a methodological nature and determine the type of approach to be adopted for the intended study.

2.2   *Accounting Research Paradigms*

The paradigms underlying the accounting research over the last thirty years or so are inspired by the work of Burrell and Morgan (1979). Hopper and Powell (1985) provide an overview of various paradigms and related accounting studies. They divided studies involving the organizational and social aspects of accounting into three main categories – functional, interpretive and radical, the last category combine two categories of Burrell and Morgan (1979). Later, MacIntosh (1994) further extended the paradigms to include "post-modernism" in his discussion of organizational and sociological approaches to management accounting and control systems. The other four are the "structural functionalist", the "interpretivist", the "radical structuralist", and the "radical humanist", are described below.

2.2.1 The "structural functionalist"

The *structural functionalist* remains the dominant paradigm for most management accounting and control systems research. It assumes that an organization's social system consists of concrete, empirical phenomena, which exist independently of the managers and employees who work there. So functionalists apply the methodologies used in the natural sciences to analyze the way organizational control systems work and how these systems can be improved to operate more effectively. In other words, the underlying economic rationale of the research has been the cost and benefit analysis of cost systems.

2.2.2 The "interpretivist"

The *interpretivist* paradigm not only covers the functional perspective i.e. how to run systems more smoothly, but also facilitates uncovering richer and deeper understandings of how managers and employees in organizations understand, think about, interact with and use management accounting and control systems. This paradigm relies on personal reflections and interactions, as managers and employees socially construct and transform the meaning of accounting and control systems as they go along, always paying close attention to how others see them and the situation at hand.

2.2.3 The "radical structuralist"

The *radical structuralist* paradigm assumes that social systems have a concrete and real ontological existence. Radical structuralists pay particular attention to the way those with power hold the rest in check by means of their control over and use of power resources, including management accounting and control systems. Using this paradigm, a researcher try to uncover the role that management accounting and control systems play in supporting and maintaining a mode of organization whereby a small minority of executives and managers rule and exploit the rest of the employees scattered across the organizational landscape.

The radical structuralist aims to develop the possibilities for affecting a radical overhaul of any such coercive status quo. These dynamics are more readily discerned in crisis situations than during periods of surface stability when underlying structural contradictions and tensions are camouflaged.

2.2.4 The "radical humanist"

The *radical humanist* paradigm assumes a subjective social world but, in contrast to the interpretive position, adopts a radical change position. Radical humanists aim for a people-oriented vision of management accounting and control systems practises, whereby, humanist ideals and values come before organizational purpose. They contend that managers and employees socially construct organizational control structures and processes, but later, through a process of reification, come to experience them as outside forces rather than as extensions of themselves.

2.2.5 The "postmodernist"

The postmodernist approach is relatively new to accounting but has been influential on methods and theories elsewhere. It suggests the world has emerged from the modern epoch (1659-1970) into the post-modern epoch, which is another novel, but not final, major era in the history of mankind.

2.3   *Justification for the Research Methodology*

As stated by Kuhn (1970),

> *"The pull towards a single methodological perspective, with its clearly defined tools, needs to be resisted because this single perspective designed for research in 'normal science', overlooks the anomalous quality of human experience. The difficulty for human science arises not from the need to change from one paradigm to another but the need to resist settling down into any single paradigm."*

Many researchers argue that multiple methods should be used regardless of which particular phenomenon is being investigated or which particular theory is being tested, as this approach will advance the discipline in a sounder manner and at a faster rate than relying solely on any single empirical research method (Birnberg et al., 1990; Kaplan, 1986; Merchant and Simons, 1986). Most research projects and researchers place their emphasis on one form or another, partly out of conviction, but also because of their training and the nature of the problems studied (Strauss and Corbin, 1998). Since each research approach focuses on different aspects of reality therefore, it is best to combine

several together in a single piece of research in order to gain the richest appreciation of the situation (Lee 1991, 1999; Mingers, 1996, 2001). Generally, a combination of quantitative and qualitative research can be adopted for at least three reasons, as stated in Hammersley (1996). Firstly as a "Triangulation": the findings obtained from quantitative and qualitative techniques are used to check each other on the basis that they are likely to involve different sorts of threat to validity. Secondly, as a "Facilitation", where one approach acts as a source of propositions for the other to test or as the basis for the development of research strategies in the other. In this study, the researcher started with qualitative pilot study as a preliminary to survey research. This exploratory qualitative research acted as a source of hunches or propositions and facilitated the construction of survey instrument to be tested formally using quantitative survey approach.

And thirdly, as a "Complementarity" the two approaches provide different sorts of information that complement one another. Qualitative research is sometimes regarded as being better able to produce information about interaction processes and participants' perspectives, whereas quantitative research is presumed to be better at documenting frequencies and causal patterns. The multi-strategy approach encourages the maximum utilization of the data at one's disposal by producing greater density of coverage of the data and allows a researcher using them to see empirical reality in slightly different ways (Layder, 1993).

2.4   Two-Part Study Approach

The methodology used is a two-part study combining the private and public sectors of a developing country – Malaysia. This approach is in line with previous studies such as Khalfan & Gough (2002), who explored the IS/IT outsourcing phenomenon in the public and private sectors in Kuwait using case studies and survey methods. Using survey, Bretschneider (1990) studied the differences in information systems management between public and private organisations, in particular the governmental purchasing decision. Other researchers have also examined the differences between public and private information management practices using survey and case studies within the same research project, such as Caudle, Gor & Newcomer (1991), Aggarwal & Mirani (1999), Elliot & Tevabichulada (1999) and Metzgar & Miranda (2001). Some researchers would still refer to this approach as a mixed methodology because it combines the qualitative and quantitative methods in the same research project (Lee, 1991, 1999). These research methods are viewed as

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competing views about how social reality might be studied as they are from different epistemological assumptions. Epistemological differences between the two approaches mean that they operate with divergent principles regarding what knowledge about the social world is and how it can legitimately be produced. The figure below illustrates the epistemological journey of an inquirer using a combination of quantitative and qualitative research.

Figure 4 : Epistemological Journey of a Mindful Inquirer (Möbius, 2002, p.253)

Qualitative research is any kind of research, procedures and findings not arrived at by means of statistical procedures or other means of quantification (Strauss and Corbin, 1998). According to Denzin and Lincoln (2000), qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is being studied and the situational constraints that shape inquiry. In contrast, quantitative research emphasizes the measurement and analysis of causal relationships between variables, not processes. It is frequently recommended that social survey and case study techniques be combined in such a way that the former provides generalizability while the latter offers detail and accuracy (Hammersley, 1996). However, Möbius (2002) highlighted that a mixed methodology approach requires the intuition and creativity of an artful researcher therefore the researcher must be sufficiently self-reflective during the research

process. He said that quantitative and qualitative analyses were not futile and they increase the credibility both of the researcher and the narrative.

2.5   *Quantitative Approach: Survey*

Quantitative research is often depicted as a positivist understanding of how knowledge about the social world should be generated. It normally represents the issues that the researcher wanted to investigate. According to Gallier (1985), surveys enable a researcher to obtain "snapshots" of practises, situations and views at a particular point of time via questionnaires and/or interviews from which inferences may be made via quantitative techniques regarding the relationships of variables in the past, present and/or the future. The strengths of this method are that greater numbers of variables may be studied and real-world situations can be described. By conducting a survey using questionnaires as the instrument, the researcher was able to gather a lot of data to be analyzed statistically.

The researcher adopted a quantitative survey approach to examine whether the factors claimed in the literature as the influencing determinants of accountants' participation can be extended to a Malaysian environment. The questionnaire was designed using the literature on the accountants' participation and information technology. This questionnaire was then piloted in Malaysia in September to December 2002. The researcher refined the questionnaire based on the feedback of the respondents on the questionnaire evaluation feedback form (Appendix I). The modified questionnaire was then sent to the accountants in April to June 2003, who were the members of Malaysian Institute of Accountants (MIA).

The survey method is not without its problems. First, a major disadvantage of a survey is that little insight is usually obtained regarding the causes or the processes behind the phenomena being studied. Second, survey investigations are primarily geared to the establishment of simple associations and correlations among variables. Bryman (1992) claims that correlations cannot imply causation, unless they fulfil three conditions:

- it has to be established that there is a relationship among the variables concerned, that is, they are not independent of each other;
- the relationship must be non-spurious. It is necessary to establish that an apparent relationship between two variables, x and y, is not being produced by the presence of a third variable which is antecedent and related to x and y;

- most controversially, the data analyst must establish a temporal order to the assembly of variables in question. Since research designs such as a cross-sectional survey entail the collection of data at a single point in time, this temporal order has to be imputed.

2.6   Qualitative Approach: Case Studies

When the propositions adopted from the Western literature were not supported in the survey, the researcher adopted a qualitative approach to find other explanatory factors that might help explain the phenomena. It seems that the existing literature related to the phenomenon under investigation is mainly Anglo-Saxon culture oriented, which is completely different from the Malaysian culture where the study was conducted. This is further emphasized by Strauss and Corbin (1998, p.287), who suggest that:

> *"However, if a foreign student is studying here but wishes to collect data in his or her own country, then most certainly he or she can use this method or other qualitative methods. It is important that other countries not borrow theories but instead develop their own ones that reflect their societies' or citizens' cultures and behaviours."*

Thus, researcher proceeded with the qualitative approach in exploring factors specific to the Malaysian environment which might be absent from the Western literature. Getting access to private sector organization was not possible and because of lack of access to the private sector organizations shifted the direction of this research towards the public sector organizations. The researcher contacted the Secretary General of the Health Ministry to get access to public sector hospitals, which were currently in the stage of implementing AIS [Appendix II].

As a result of this decision, this study moved towards the subjective end of the Burrell and Morgan paradigm classifications. Accordingly, this study can only be located either in the radical humanist paradigm or in the interpretive paradigm. In order to choose one of these two paradigms, the objectives of the research and the nature of the research need to be clearly identified. The researcher's main objective is to understand and explore the phenomena under investigation without any intention of creating changes in the phenomena being studied. Such beliefs simply eliminate the radical humanist paradigm and, accordingly, this research project is located mainly in the interpretive paradigm.

The interpretive paradigm is distinguished by an interest in understanding the world of lived experience from the point of view of those who live it. The focus is on particular situated actors who compose meaning out of events and phenomena through long processes of interaction that involve history, language and action. Consequently, the focus of this research is, what events and objects mean to people, on how they perceive what happens to them and around them and on how they adapt their behaviour in the light of these meanings and perspectives. In order to interpret, researchers must first participate in the social world in order to better understand it before they compose and offer their construction of the meaning systems of the social actors they study. To achieve this end, the methodology chosen should be capable of studying the organizations overall in terms of their culture, environment, regulatory authorities, formal and informal structures, social relationships, information systems and many other aspects that may affect the phenomena under investigation. There is a need for in-depth knowledge about the actual practises and interactions between organizational processes in order to produce an effective and informative study. The methods like participant observation and ethnographic interviewing can be used to elicit organizational members' perspectives on the social worlds they live in, their work, and the events they have observed or were party to.

Chua (1986) argues that "mainstream accounting research is hampered by a rarefied, asocial, image of theorising which is rooted in an implausible notion of scientific rationality". For this reason, exploratory studies need to examine interrelationships with their environment, culture and other influential factors, which could be achieved through the adoption of the interpretive paradigm (p.585)." Previous survey findings and limited empirical work about AIS implementation in public sector organizations in Malaysia requires an in-depth study to provide sufficient and effective understanding of this area of research. The researcher argues that interpretive paradigm can provide such important specifications by giving a better understanding of the phenomena under investigation. Furthermore, the interpretive paradigm has the ability to allow "research questions to emerge from the research process, rather than being predetermined at its outset, so it is hoped that they will be more pertinent to the problems of the subjects" (Hopper and Powell, 1985, p.447).

In sum, this study fits into the interpretive paradigm for the following three reasons. Firstly, implementing AIS in the public sector in Malaysia is relatively new and not well researched. The literature has revealed that implementation of AIS in the public sector still

needs in-depth investigation. Secondly, Kaplan (1983) and Otley and Berry (1994) suggest that the stage of theory development that relates to the phenomena of interest has the ability to influence the selection of a paradigm and a methodology. Since the theory of AIS implementation in the public sector is relatively immature and not well developed, the researcher has selected the interpretive paradigm and its related qualitative approach. Lastly, qualitative data are more suited because they are a source of well-grounded explanation of processes occurring in their local context and thus they hopefully help evaluate local causality and develop new explanations (Miles and Huberman, 1984, 1994).

Having chosen the interpretive paradigm, the researcher used multiple case-study method. This approach is employed as the evidence is often considered more compelling and the overall study is therefore regarded as being more robust. Each case must be carefully selected so that it either (a) predicts similar results (a literal replication) or (b) produces contrasting results but for predictable reasons (a theoretical replication) (Yin, 1994, p.46). The cases should serve in a manner similar to multiple experiments, with similar results (a literal replication) or contrasting results (a theoretical replication) predicted explicitly at the outset of the investigation (Yin, 1994).

For a multiple case study design, four cases were selected in which new AIS had been implemented, or/and was still running, in order to determine how the accountants help to manage the implementation. Each individual case study consists of a "whole" study, in which convergent evidence was sought regarding the facts and conclusions for the case; each case's conclusions were then considered for replication by other individual cases (Yin, 1994). For each individual case, the report should indicate the extent of the replication logic and why certain cases were predicted to have certain results, whereas other cases - if any - were predicted to have contrasting results.

2.7 Conclusion

This chapter has proposed a two-part study approach to examine the phenomenon of interest, AIS implementation. This approach consists of a two stage research process starting with a quantitative survey approach examining the factors influencing accountants' participation in the Malaysian private sector, and then using a qualitative research approach to examine in detail the factors influencing accountants' participation in AIS implementation in the public sector.

CHAPTER 3

LITERATURE REVIEW OF PRIVATE SECTOR: ACCOUNTANTS' PARTICIPATION IN AIS IMPLEMENTATION

"Neither a wise man nor a brave man lies down on the tracks of history to wait for the train of the future to run over him."

-Dwight D. Eisenhower

3.1 Introduction

The organizational innovation literature has under-rated the contributions of professional organizational sub-units (such as accountants) to the overall innovation process (Swanson, 1994 p.1088). As noted by Doll (1985, p.17), "Information systems are just too important to leave development in the hands of technicians" and indeed Rockart (1988, p.59) also pointed out that "the deployment of information technology is far too important to be left to information technologists". There has been call for managers' involvement in all phases of a system's design and implementation (Whetherbe et al., 1988) as there are high chances that technicians do not understand how the new AIS may affect a department's staff and operations. De Thomas et al. (1994) claimed that the problem of inappropriate, inaccurate, or unavailable information is traced most often to deficiencies in the company's AIS (p.25). Thus, it is very critical for accountants to actively participate in AIS implementation in their organizations. There have been similar calls in Malaysia (see for example, Asohan, 2002; Kandiah, 2003) but no research on the issues has been conducted in the country.

3.2 Literature Referred to for the Quantitative Study

The main aim of the research is to examine the phenomenon of accountants' participation in AIS implementation, therefore, the literature relevant to study this phenomenon encompasses organization development, information system and innovation literatures. These rationalize and link the introduction and implementation of the accounting information system (AIS) to organizational reform and improvement agendas and the participation of organizational units in AIS implementation to embrace change. These three areas have not been integrated from the perspective of accountants. Previous research in *accounting* and *organizational change* has not considered accountants' participation in AIS implementation, and research in *innovation* and *IS implementation*

has never focused solely on the accountants as important users of AIS. Thus, this study contributes to the recent literature on change and innovation in accounting information systems and related behavioural accounting issues. The researcher puts forward testable hypotheses after a critical review of these literatures. These hypotheses were tested on data collected in the first part of the main study (quantitative survey). The researcher considers that the results derived from the survey would be interesting when compared with earlier studies, as there is no such study in Malaysia. The review of identified literatures is presented in the following sections in order to locate this study within the literature and to show how it contributes to, and extends, that literature.

3.3   The Importance of Accountants' Participation

The terms "user participation" and "user involvement" have been commonly used interchangeably in the management information systems (MIS). Simply fulfilling a role in a company does not make an employee an active and involved member of that company (Sandelands, 1994, p.19). Sandelands added that a common mistake by employers is to think of employee activity as "involvement" in the company.

Participation is a process in which influence is shared among individuals who are otherwise hierarchically unequal (Locke and Schweiger, 1979; Wagner, 1994). Robey et al. (1989, p.1174) define participation as the extent to which members of an organization are engaged in activities related to system development. The importance of user participation in the systems development process has been widely recognized in the literature (Spathis, 2006; Butler and Fitzgerald, 2001; Guimaraes et al., 2003, p.40). However, in organizational change and AIS implementation literature, previous research focuses on end-users rather than accountants, as change agents. Accountants should participate in the early phases of AIS implementation, especially at the definition stage, so that they can form realistic expectations about the implementation (Lau and Herbert, 2001; Ginzberg, 1981). De Thomas et al. (1994) go on to suggest that management accountants should do more than generate information. Cable & Healey (1996) argued that controllers (accountants) must help design information systems to capture data about the quality of products, services and processes (p.143). De Thomas et al. (1994) suggest that the combination of appropriate data and the joint efforts of the management accountants and a knowledgeable management ensure that warning signals will be heard (p.25).

Participation is a critical element for successful AIS implementation, provided that it is accepted by the targeted end-users (Bassellier et al., 2003; Leonard-Barton and Deschamps, 1988, p.1252; Lin and Shao, 2000; Tait and Vessey, 1988), in this case the accountants and their subordinates. Though difficult, it is also critical to secure the commitment of the accountants and their subordinates to the AIS to be implemented in addition to fostering involvement, appreciation and mutual understanding (Swanson, 1974). There are also many other reasons why accountants should participate in AIS implementation. Earlier studies have shown that investments in IT have resulted in a reduction in the number of middle managers employed (for example, Burns and Scapens, 2000a; Pinsonneault, 1993) and recently Chapman and Chua (2000, p.204) claimed that ERP-type technology dramatically reduces the need to employ management accountants to collect information, prepare reports, and police adherence to agreed standards and operational procedures (see also Morgan, 2001). Furthermore, Scapens and Jazayeri (2003) showed that the continuing penetration and enhanced use of ERP is leading to more management accounting but fewer management accountants. Similarly, Newman and Westrup (2000) reported the implications for management accountants in the UK following the introduction of ERP systems: fewer management accountants needing different skills; different training requirements; more efficient management accounting being conducted in conditions of greater risk; and increased pressure to retain control of the design and implementation of systems.

Bicos (1990) highlighted that some major issues have to be addressed before an employee involvement policy is initiated, these are education of the executives in the pros and cons of employee participation; gaining the visible and sincere support of top management; investing time and money for training; reviewing administrative policies and reward systems to complement participative management; changing recruiting and orientation practices to support the new organizational culture; communicating successes widely; encouraging major profit centres to champion participative management and getting involved in the workplace. Bicos concluded that if a company is serious about participative management, there is no quick and painless way to bring it about (p.92).

Organization innovativeness research suggests that there is a theoretical relationship between role involvement and the innovativeness of accountants (Emsley, 2005). The next section covers the literature on *innovativeness of the accountants, innovativeness of the host organisations, pre-requisites* (Johnston et al., 2002) and *type of role* performed during

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the implementation. The study will also examine whether the accountants' innovativeness factor has changed the traditional role of the accountants.

3.4   *Innovativeness – Accountants and Host Organizations*

Most of academic literature is critical of management accountants for their failure to initiate change and their inability to promote changed accounting information systems and performance measurement. This lack of innovation on the part of accountants was described by Kaplan (1986) as 'accounting lag' that needs to be minimized in order to keep management accounting relevant to the changing information needs of managers. Kaplan (1986) pointed out that when manufacturing operations change, the last and most difficult component to change is the accounting system. Studies on innovations such as ABC and the balanced score card (e.g. Gosselin, 1997, Malmi, 1999) have illustrated the diffusion of changes in accounting information system. For example, Malmi (1999) focused on resistance to ABC and explored the diverse interests of organizational stakeholders and the role of existing control and information systems in ABC implementation. The findings indicated that factors that contributed to the ABC failure are linked with organizational power, politics and culture. By looking at a different innovation which reflects a quality focus; Gurd *et al.* (2002) examined the responses of accounting systems to TQM (Total Quality Management) implementations in the spirit of Kaplan (1986) and Dunk (1989). They find that industry sector, management commitment, organizational structure, participation and financial performance are all influential in the diffusion process but in an inconsistent manner. It can be argued that these studies of management accounting focused on a single innovation such as ABC as the unit of analysis. Lukka and Granlund (2002) indicate that ABC is the single most studied innovation. Innovativeness has been largely overlooked even though the interaction between "innovation" and "innovators" has been central to some of the recent research literature on management accounting innovation (Smith, 2000, p.41). The underlying assumption is that all potential adopters of a new product do not adopt the new product at the same time (Mahajan et al., 1990, p.37) and on the basis of the degree to which an individual is relatively earlier or later in adopting the new product, adopters can be classified into various adopter categories (Rogers, 1983) representing different degrees of "innovativeness".

The most widely accepted method for the categorization of adopters (individual or organizational) has been proposed by Rogers (1983). Rogers, in a pioneering work in the area, classifies adopters according to time of adoption as innovators, early adopters, early

majority, late majority and laggards. This categorization can be extended to different types of innovation including new products or services, production process technologies, new structures or administrative systems and new programs relating to organizational members (Emsley, 2005). The categorization scheme proposed by Rogers offers several advantages, as indicated by Mahajan et al., (1990, p.37): it is easy to use and offers mutually exclusive and exhaustive standardized categories. More importantly, results can be compared, replicated and generalized across studies using this approach, which assumes that the underlying diffusion curve is normal.

Emsley (2005) and Mahajan et al. (1990) argue that the classification is not without its drawbacks. For instance, Mahajan et al. (p.37) noted that the potential limitations are: in spite of its theoretical appeal, the assumption that all new products follow a normal distribution pattern is questionable and, in spite of the method's simplicity, Rogers provides no empirical or analytical justification of why the adopter categories should be the same for all new products.

Burkhadt and Brass (1990) go further than mere classification and indicate various elements or characteristics differentiating early adopters (innovators) from the late adopters. Early adopters are those who become early, frequent and effective users of the new technology (p.107); are the first in the organization to cope with the uncertainty created by the change; are likely to be identified as experts and be sought out by others within the organization; and increase their power by being able to reduce technological uncertainty for others (p.108). They predict that individual characteristics will be related to early adoption of the new computer system such as: age; education level; previous computer training; attitudes towards computers; and feelings of efficacy regarding computer use.

Doll and Torkzadeh (1989) classify the end-users into two categories – "early adopters" and "reluctant users" (p.1153). "Early adopters" are users who quickly adopt end-user tools and easily develop considerable skill in the use of these tools. "Reluctant users" are individuals who lack motivation for involvement and have considerable difficulty learning to use computer systems. Especially among those "reluctant users", end-user computing skill levels tend to asymptote at relatively mediocre levels (p.1153). Furthermore, among these "reluctant users", involvement is less likely to lead to improvements in end-user

expertise that enhances the effectiveness of subsequent involvement. In some cases, they have been unwilling to learn how to use the new AIS and have continued to use the former AIS. Adams et al. (2004) find that lack of confidence is the main cause for resistance. Sometimes, even if the users are given the opportunity to participate, they may have concerns regarding the attitude of the AIS project teams and will not feel positive about their level of involvement (Amoako-Gyampah and White, 1993).

3.4.1 Accountants - Innovator and Adopter

Individual differences between users may affect the level of user involvement and the resulting benefits such as innovativeness (Doll and Torkzadeh, 1989). People differ widely in their reaction to computers. Some enjoy getting involved while others, concerned about the complexity of the technology, suffer from computer anxiety (p.1153). Not all accountants resist change and most of them welcome change. It provides them with hope for adjustment in existing work situations, alterations in relationships that exist among their associates, and opportunities to become more successful in line with their personal aspirations. In fact, users may be the sources of certain IS innovations (Swanson, 1994, p.1072). Because the ability to render advice is based on knowledge and experience, earlier adopters of personal computers can be expected to be more involved in the evaluation process and in the purchase decision (Mahajan, et al., 1990, p.45).

On the other hand, there are probably more people who resist change for one reason or another, such as unfamiliarity with the new system (Baronas and Louis, 1988, p.112). Evidence has shown that many users have resisted the introduction of computer technology and the implementation of different systems (Baronas and Louis, 1988, p.112). They are unwilling to learn how to use the new system and continue to use the former system. In some cases, they have attempted to block implementation through sabotage (Dickson and Simmons, 1970). The major reasons were that they have been competent in using the old system, and Maccarrone (2000) noticed that some financial controllers feared a "loss of power and control". Controllers were worried by the possible "short circuit" between providers of technological solutions (IT experts) and final users (managers), which would lead to a loss of their relevance inside the organization. Some further reasons for resistance are:

- Resistance to change. People resist change because it upsets their established patterns of behaviour. They often see it as a threat to their security.

- Economic fear. The fear of becoming temporarily displaced or unemployed.

- Emotional barriers. If people do not understand new equipment and new methods and have heard from others how they have worked, or not worked, apprehension may develop.

- Cultural barriers. These are the limitations and hang-ups that individuals have as a product of their culture.

- Perceptual barriers. The individual may also fear that the need for either mental or physical skills involved in the job will be diminished by the substitution of systems and hardware.

Therefore, the first hypothesis is:

H_1 : *Innovator accountants will participate more actively in AIS implementation than the adopters*

In order to distinguish innovator accountants from the adopter accountants, the researcher developed a new measure (score) for accountants' innovativeness as follows. The respondents were asked to indicate their response on a number of statements (see Table 1 below which refers to Section C, Questions 1 to 10, Questionnaire 1, Appendix III) which described the characteristics of an innovative accountant.

Table 1 : Characteristics of an Innovative Accountant

Statements	Previous Studies
Thought on the systems the accountant is using;	Burkhadt and Brass (1990)
Frequency of using computers in a week;	Burkhadt and Brass (1990)
Expertise in using computers;	Dickerson and Gentry (1983)
Thought on the computers the accountant is using;	Burkhadt and Brass (1990)
Number of computer magazines read in the last 6 months;	Rogers 1983
Number of business magazines read in the last 6 months;	Rogers 1983
Extent of reading or examining a PC-related advertisement;	Rogers 1983
Income per annum (in RM'000);	Dickerson and Gentry (1983)
Highest level of education;	Dickerson and Gentry (1983)
Age (in years).	Dickerson and Gentry (1983)

The variables such as age, income, and education have been used in previous studies (Dickerson and Gentry; 1983, Mahajan et al. 1990; Rogers, 1983; Burkhadt and Brass, 1990). For instance, Dickerson and Gentry (1983) and Burkhadt and Brass (1990) report that individual characteristics will be related to early adoption of the new computer system such as age; education level; previous computer training; attitudes towards computers and feelings of efficacy regarding computer use. The adopters of personal computers (in comparison with non-adopters) tend to be older; have higher income; have more education; have higher status (professional, technical, and managerial) occupations and have greater experience with other technical products. New product innovators are likely to be the heavy users of other products within the product category and therefore should have greater expertise in the use of personal computers; have greater propensity to use information from mass media than to use interpersonal advice and can be expected to use a greater number of publications as information sources and have been found to have higher levels of opinion leadership (Rogers, 1983). Burkhadt and Brass (1990) listed various elements of early adopters (innovator) as compared to later adopters. Early adopters are those who become early, frequent and effective users of the new technology (p.107); are the first in the organisation to cope with the uncertainty created by the change; are likely to be identified as experts and be sought out by others within the organisation and increase their power by being able to reduce technological uncertainty for others (p.108).

In order to develop innovativeness score for an accountant, the researcher used Questions 1 to 10 in Section C of Questionnaire 1. In Question 1, the respondents were asked to score on a scale of 1 to 10 for nine statements (see Questionnaire 1 Section C). For instance, in the first statement the score 1 refers to "very important" and 10 refers to "very unimportant" indicating accountants' thought on the system they are using. For Question 2, the responses vary from "less than 5 hours" to "more than 30 hours" on usage of computer. The researcher assigned these responses a score from 1 to 4. Similarly for Question 3, the responses vary on expertise in computers from "novice" to "expert" and they were assigned a score from 1 to 4. In Question 4, the respondents were asked to score on a scale of 1 to 7 for five statements. For instance, for the second statement the score 1 refers to "easy to use" and 7 refers to "difficult to use" indicating accountants' thought on the computer they are using. For Questions 5 and 6, the respondents were asked to indicate the number of computer and business magazines that they read in the last 6 months in the box provided. In Question 7, the respondents were asked to indicate how closely they read or examine PC-related advertising in the business and computer magazines as listed in

Question 5 and 6. The score 1 refers to "not at all" and 5 refers to "very closely". Questions 8 to 10 asked the respondents to indicate their highest level of education, their income and their age respectively. In Question 8, the responses vary from "STPM or lower" (a Malaysian high school qualification) to "PhD". The researcher assigned these responses a score from 1 to 6. Similarly for Question 9, the responses vary from "RM15, 000 per annum" (equivalent to two thousand pounds per annum) to "RM150, 000 per annum" (equivalent to twenty thousand pounds per annum), on their income per annum and they were assigned score from 1 to 8. In the last question, the respondents were asked to indicate their age. The responses vary from "less than 25" to "more than 55" and were assigned scores from 1 to 5.

Thus, accountants with total scores ranging from 27 to 84 will be categorised as adopters and those with scores of more than 84 will be classified as innovators. This approach is in line with the Burkhadt and Brass (1990), Dickerson and Gentry (1983) and Emsley (2005) approaches to determine innovativeness of users and management accountants.

3.4.2 Host organizations' adoption patterns

Innovators may be distinguished from later adopters based on internal organizational characteristics, such as size (Swanson, 1994; Zaltman, et al., 1973 in Frambach, 1993, p.25). Larger organizations may have a greater necessity to adopt some innovations than smaller ones and tend to be more functionally differentiated, with a greater variety of specialized tasks. Smith (2000) goes on to suggest that host organizations would be influenced by organizational structure (centralization; vertical differentiation; formalization; complexity; size and type); organizational culture (leadership; a learning organization; empowered employees; participation); organizational strategy (propensity to innovate; implementation capability; entrepreneurial; flexible); industry and *innovativeness.*

Size and diversity are important in that they provide more opportunities for the organization to come into contact with an innovation conceived externally and known within the IS professional and host business environments. For that matter, larger organizations tend to have more individual "spanners", individuals who interact with the environment in more specialised roles, attending professional meetings, for example, providing alternative "gateways" for an innovation's diffusion (Swanson, 1994, p. 1981). The participation of members of an organization in an informal network of relations

facilitates the spread of information on a certain innovation and, therefore, may have a positive influence on its rate of adoption (interaction effects) (Zaltman, 1973). Diversity is also known to be important to innovative activity (Swanson, 1994). A diverse organization normally has functional differentiation with a greater variety of specialised tasks. This internal diversity provides incentives for each organization member to define the scope and content of his or her own job and for each group of collaborating members to define and pursue its task in support of its own collective interest.

Organization structure also influences the innovativeness of an organization. A higher level of complexity of an organization being a function of the number of specialists in the organization and their professionalism, may facilitate adoption of an innovation. The diversity in background of the members of the organization may enlarge the number of information sources by means of which an organization may become aware of the existence of an innovation (Zaltman, 1973). The same arguments hold for the degree of specialization in an organization, which refers to the degree of division of labour (Moch and Morse, 1977). Other variables, such as the degree of formalization (the emphasis placed within the organization on following rules and procedures in performing one's job) and centralization of an organization (the degree to which power and control in a system are concentrated in the hands of relatively few individuals) have been found to be negatively related to its degree of innovativeness (Zaltman, 1973).

An innovator host organization is able to provide infrastructures for technology, data and support services to facilitate the effective involvement of end-users during the IS implementation. According to Zmud and Cox (1979), the key considerations for the implementation include the necessity of:
- the user assuming overall responsibility for implementation;
- the active involvement of all affected organizational members;
- a thorough and continuing education programme and
- establishing mutual trust among participants so that a free exchange of ideas is possible.

Despite having a significant impact on innovation, there are only a few studies that have examined the relationship between organizational characteristics and innovation (Quattrone and Hopper, 2001) as compared to technology characteristics (Maccarrone, 2000) or task characteristics (Granlund and Malmi, 2002; Westrup, 2000). Other studies concentrated on the evaluation of innovation (Kennerly and Neely, 2001) and adoption motives and inhibitors (Kremers and Van Dissel, 2000).

An innovator organization normally exhibits appreciation of the project and establishes an environment that encourages involvement by and interaction among participants (see Henderson and Treacy, 1986). On the other hand, if the host organization is an adopter, rather than an innovator, this will somewhat moderate the accountants' involvement in the implementation process even though he or she is an innovator her- or himself. The reason is that personnel tend to accept such change only if they perceive their superiors to be supportive of the change, understand what is about to happen and themselves contribute to what will transpire (Caruth, 1974). The members of an organization can also sense the overall attitude of top management toward the system and the extent to which it has top-level backing or support. These characteristics would be less predictive in those host organizations which are adopters. Thus, the second hypothesis is,

H2: Innovator host organizations will influence accountants to be more actively involved in AIS implementation than adopter host organizations

Using the earlier approach to enumerate the innovativeness of individual accountants, the researcher developed an organization's innovativeness measure as follows. First, the respondents were asked to describe the characteristics of their organizations, such as number of employees to determine the size of organization, percentage of employees holding masters degree and above to determine the characteristic of the employees and number of sites involved in the system's implementation. Second, the respondents were asked to indicate organization diversity and management philosophy (refer to Section C, Questions 1 to 5, Questionnaire 2, Appendix IV) in relation to channels of communication; conformation to accepted standards and specifications; emphasis on risky activities; response to changes in business conditions; emphasis on formally laid down procedures; sophistication of control and information systems; and emphasis on adherence to formal job descriptions.

The organization innovativeness score was then obtained by adding the scores of Questions 1 to 5 in Section C of Questionnaire 2. For Question 1, the responses vary from "Less than 1,000" to "50,000 or more" on number of employees in the company. The researcher assigned these responses a score from 1 to 6. Similarly for Question 2, the responses vary from "Less than 5%" to "45% or more", on the percentage of the organization's employees holding master's degree and above. The responses were assigned a score from 1 to 6. The respondents were asked to indicate the number of sites involved in the system's implementation in Question 3. In Question 4, the respondents were asked to rate the diversity of their organizations. Score 1 refers to "not diversified" and score 5 refers to "very diversified". The last question asked the respondents to indicate on a scale of 1 to 7 for seven statements indicating the management philosophy that was actually being practiced in their organizations. For instance, in the last statement the score 1 refers to "Strong emphasis on getting line and staff personnel to adhere closely to formal job descriptions" and 7 refers to "Strong tendency to let requirements of the situation and the individual's personality define proper on-job behaviour".

In order to distinguish between an innovator and an adopter host organization, a total score of the responses was computed. The score of less than or equal to 38 will be used to categorise an organization as an adopter and a score of more than 38 will be classified as an innovator. These variables such as size (number of employees) have been tested in previous studies. Frambach (1993, p.25) concludes that the probability of an organisation adopting an innovation (sooner) increases with its size and diversity measured by level of complexity, degree of specialisation, and/or members participating in informal networks on a more extensive basis. This is further enhanced by Daft (1978), who concludes that "it seems likely that low formalisation, decentralisation and high complexity (professionalism) are suited to both initiation and adoption of innovations within the technical core. The opposite structural conditions facilitate innovation in the administrative core (p. 207-8)".

3.5   Pre-requisites to Accountants' participation

The accountant's involvement and participation in organizational change requires skills, for example, communication skills, the ability to work in a team, analytical skills, a solid understanding both of accounting and how a business functions (Burns, 2000; Siegel and Sorensen, 1999, p.13) – skills and knowledge beyond the normal functional boundaries of management accounting (Coad, 1999, p.113). While some are quite uncertain about the accountants' ability to fill new roles, others are very positive. Cross (2001, p.49), for

example, claims that financial management professionals can be the catalyst in ensuring that their organization implements technology solutions that support its overall strategy.

In their new strategic roles, accounting and finance professionals will be expected to provide big-picture thinking and an understanding of how financial data impact on every aspect of a business. Accountants are expected to play a greater role in technology and information systems initiatives and the extent of intervention will also vary from "limited only to accounting issues" to an "important role in the system selection". A survey by Burns and Yazdifar (2001) claims that managerial teams are increasingly expected to demand dynamic, forward-thinking business analysts, who add value to the business process, not just highlight whether targets have been met. Earlier, Camagazine (1999) stated that for accountants to be successful in this new environment communication and interpersonal skills are important and they must also learn to think strategically and understand a firm's business objectives and overall operations. In a survey of Chief Financial Officers (CFOs) by Robert Half International Inc. (RHI, 2001), it was found that issues and responsibilities outside traditional accounting functions would occupy 37% of a senior accountant's time.

According to Tyson (1987, p.41), certain conditions have been suggested to provide an environment conducive to the involvement of controller departments (accountants), for example, in quality cost measurement (Cable & Healey, 1996, p.141). Johnston et al. (2002) have identified six pre-requisites, which appear to be important to enable the key roles of management accountants to be fulfilled in the organizational change agenda (see also Brignall et al., 1999):

- *Team player*: Management accountants must be members of the senior management team and members of cross-functional improvement teams.

- *Sound and established accounting systems*: Reliable, efficient and automatic systems create the time needed to fulfil their new roles.

- *Business and process knowledge*: Extensive understanding of the business and often many of its operations and processes, as accounting information is seen as being owned by the business not the accounting function.

- *Flexibility*: Flexible job boundaries, a flexible approach to decisions and the role of accounting information.

- *Interpersonal and communication skills*: It is important for accountants to be able to work with their internal customers, managers and other staff, to understand their needs and be the conduit for information flows.

- *Challenge and change*: Challenge and change to the business culture, to question and develop the role of management accountants.

Accordingly, the third hypothesis is,

H₃: Six pre-requisites will influence accountants to participate more actively in AIS implementation.

In Questionnaire 1 (Section B, Question 8), the accountants were asked to score on a scale of 1 to 5 (where 1 means strongly agree and 5 means strongly disagree) their agreement with a number of statements which described the pre-requisites (Johnston et al., 2002) listed above. This would enable the researcher to identify which one of the pre-requisites most influences accountants to actively participate in AIS implementation.

3.6   Nature of Accountants' participation (Type of role performed)

According to Barki and Hartwick (1989) participation can take a variety of *forms* and can also vary in *scope*, occurring during one or several stages of the problem-solving process. User participation involves activities that are both: formal and informal, direct and indirect, active and passive, performed alone or with others, and that occur both in, and at specific stages of, the systems development process (p.61). Consequently, the accountant's participation can be classified into two categories: *nature* of participation (*form*) and *extent* of participation (*scope*). Mumford (1997) introduced three categories of the *nature* of participation - consultative, representative and consensus. The *consultative* participation occurs where design decisions are made by the systems group, but the objectives and form of the system are influenced by the needs, especially job satisfaction needs, of the user department. *Representative* participation is where all levels and functions of the affected user group are represented in the system design team. *Consensus* is where an attempt is made to involve all workers in the user department, at least through communication and consultation, throughout the system design process. Thus, the fourth hypothesis is

H4: The type of role performed during the implementation will significantly explain the variance in an accountant's participation.

In Questionnaire 1 (Section B, Question 11), the accountants were asked to score on a scale of 1 to 5 (where 1 means almost never true and 5 means almost always true) their agreement with a number of statements which described the pre-requisites (Johnston et al., 2002) listed above.

3.7   Extent of Accountants' participation

There are various stages involved before an AIS can be fully implemented in an organization. Different researchers propose different activities are involved in each stage of implementation. Daft (1978, p.195), for example, described the process of innovation as consisting of conception of an idea, adoption of idea, and finally the implementation. On the other hand, Zmud and Cox (1979) proposed that initiation; strategic design; technical design; development; conversion and evaluation are the main activities.

In another study, Nolan (1979) proposed that IS evolution stages can be grouped together into two broad categories: prior and posterior stages. In the prior stage, Nolan mentioned that organisational slack in IS activities should be permitted for the adoption and expansion of IS. Sufficient funding support, tight control, early training, education and documentation are necessary for learning and knowledge acquisition in the early stage of IS development. In the posterior stage, the roles of steering committees, independence of the IS department and user involvement are more critical for the successful implementation of IS.

Kwon and Zmud (1987) proposed a stage model of IT implementation activities based on Lewin's (1952) change model, based on the organisational change, innovation, and technological diffusion literature (Table 2). The stage model is then extended to include descriptions of the products and processes involved in each stage. Most of the researchers seem to agree that initiation is associated with Lewin's unfreezing stage; adoption and adaptation are associated with Lewin's change stage; and acceptance, routinisation and infusion are associated with Lewin's refreezing stage. This is similar to Thompson (1965) suggestion of initiation stage, adoption stage and implementation stage (see also Henderson and Treacy, 1986; Nilakanta and Scamell, 1990; Swanson, 1994). This study used these categories to classify the extent of accountants' participation (refer Table 3).

Table 2 : IT Implementation Activities

Aston University

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[Source: Kwon and Zmud (1987)]

Since AIS implementation stages vary according to its progress thus, it can be assumed that the extent of accountants' participation may also vary according to the implementation stages. Therefore, in this study, the *extent* of participation encompasses the intervention (activities) of the accountants at initiation, adoption and implementation stages. From a methodological perspective, Ives and Olson (1984) point out that one important methodological weakness of participation measures used in earlier research is that researchers ask respondents for their general opinions concerning the level or extent of their participation, which can lead to bias – this is also evidenced in most research in management accounting change. Therefore, Barki and Hartwick (1994) recommend that the measures should assess a wide variety of specific behaviours, activities, and assignments and should not assess general opinions.

ERPFANS (2002) has proposed four stages in implementing ERP systems: detailed discussions stage, design and customization stages, Implementation/Prepare to go Live stage and Production/Go Live Stage. ERPFANS (2002) has also proposed 14 activities for each of the stages (refer to the middle column of Table 3). In this study, the researcher proposes a new measure and associated ERPFAN (2002) stages in implementing an ERP system to initiation, adoption and implementation stages following previous studies (Thompson, 1965; Henderson and Treacy, 1986; Nilakanta and Scamell, 1990; Swanson, 1994). Firstly, the stages listed by ERPFANS (2002) are absorbed into the three sequence

stages as proposed by Thompson (1965) for the purpose of analysing the field data, as illustrated in Table 3 below.

Table 3 : ERP Diffusion Stages (A synthesis of Thompson (1965), Nilakanta and Scamell (1990), Henderson and Treacy (1986) and ERPFANS(2002)

ERPFANS(2002)'s stages in implementing ERP systems	Activities proposed by ERPFANS (2002) for each stage of an ERP system's implementation	Thompson (1965), Nilakanta and Scamell (1990) and Henderson and Treacy (1986)
Detailed Discussions	1. Project initialization 2. Evaluation of current processes, business, practises, requirements 3. Set-up project organization	Initiation
Design and customization	1. Map organization 2. Map Business Processes 3. Define Functions and Processes 4. ERP software configuration 5. Build ERP System Modification	Adoption
Implementation/Prepare to go Live Production/Go Live	1. Create Go-Live plan and documentation 2. Integrate applications 3. Test the ERP customization 4. Train Users 5. Run Trial Production 6. Maintain Systems	Implementation

In Questionnaire 1 (Section B, Question 6), the accountants were asked to indicate their extent of participation on a Likert-scale of 1 to 5 (where a score of 1 means "not involved at all" and a score of 5 means "highly involved", see below Table 4) for each of the 14 statements which described the stages/phases generally involved in AIS implementation (ERPFANS (2002).

Table 4 : Extent of Participation

TASK	Not Involved At All	Moderate			Highly Involved
	1	2	3	4	5

The total scores for each respondent are computed for all the stages described and range from 14 to 70. Respondents with scores of 14 to 32 are considered as passive in their extent of participation; scores of 33 to 51 as moderate participation and scores of 52 to 70 as active participation (refer to Section 4.5.7, Figure 6, p.65).

3.8　Extent of Accountants' involvement

The benefit of user involvement during computer information system development has been well argued in the literature (Robey and Farrow, 1982). It has been stressed that involving users during system development is thought to lead to greater user commitment to, acceptance, usage of, and satisfaction with the system (Baroudi et al, 1986). In information systems literature, user involvement generally refers to contribution to the system development process by a potential user or their representatives. Alternative definitions of a user involvement construct derived from marketing, psychology and marketing literatures, suggest instead viewing involvement as a set of operations or activities performed by the users. Involvement refers to a subjective psychological state of a user (here an accountant), reflecting the importance and personal relevance of the system to a user (Barki and Hartwick, 1989, p.53). This refers to the degree to which an accountant considers the AIS agenda is important to his or her organization and differs from manager's involvement as inquiry-based.

Franz and Robey (1986) conceptualized the involvement process as consisting of influences during the system development, and these influences are characterized as – explaining and clarifying information needs, detailing input and output requirements, stating system needs and providing answers. Similarly, Wolfe (1994), reviewing the innovation diffusion literature, identifies common stages in the process: *awareness* of an innovation's existence; the *matching* of a problem or opportunity to the innovation; *appraisal* of the costs and benefits associated with implementation; seeking support to *influence* the implementation decision; the adopt/reject decision for the innovation; *implementation* for a trial period; *confirmation*; or otherwise, as a result of a review of the implementation; acceptance of the innovation as a *routine*, and finally *infusion* throughout the organization with adoption to the fullest extent possible in the organization.

Participation and involvement have often been articulated as the "silver bullet" that will provide employees who are motivated and trained to initiate their own decisions (Strauss, 1998) but in many cases, managers are quite sceptical about such participation. The managers perceive that accountants' participation does not necessarily contribute to an improved process change, as they are expected to bring their overly financial view into the process (Chenhall and Langfield-Smith, 1998), causing conflict rather than cooperation. As a result Brignall et al. (1999) argue that management accountants in many of the

organizations they studied were relatively uninvolved in change programmes and were little used to drive or even support most of the process improvements.

In their review of the participative decision making literature, Dachler and Wilpert (1978) identify individual differences as the most important set of conditions affecting the outcomes of participative efforts. In MIS literature, differences among individuals are, perhaps, the most important determinants of user involvement and subsequent outcomes (Doll and Torkzadeh, 1989, p.1153) but there has been no focus on individual differences between users as a determinant of the level or efficacy of user involvement (Zmud, 1979). IS managers and developers were eager to secure the most knowledgeable and proficient user project managers and representatives in order to make their "lives that much easier" in arriving at a full set of user requirements and in converting these requirements into a system that would be accepted by the business constituency (Butler and Fitzgerald, 2003, p.21).

To gauge user involvement in AIS design and implementation, previous studies have used mostly questions that required respondents to indicate how frequently they have performed each activity in IS implementation to gauge their level of involvement. Doll and Torkzadeh (1989) have advanced the construct of user involvement congruence, which refers to the degree to which an individual's actual involvement in system development activities matches his/her perceived level of involvement in system development activities. Some researchers have gone further to advance the construct that there are several levels of involvement such as organizational involvement, end user involvement and cross-functional team involvement. In practice, innovation may not be such a simple linear cycle (Gurd, et al., 2002, p208) as it can be a complex iterative process with many feedback and feedforward cycles (Tornatzky and Fleischer, 1990) and so the degree of influences should vary across the design/ planning and implementation stages (Franz and Robey, 1986).

Franz and Robey (1986) argue that behavioural measurement of user involvement such as asking questions might also suffer a retrospective reporting bias and therefore causal inference has to be interpreted with this caveat, as Franz and Robey (1986, p.77) stated:

> "… the respondents answered questions retrospectively about their involvement in three phases of system development: *initiation, design* and *implementation.* Systems were selected for study that had been implemented for no more than two

years, thus calling for fairly recent recollection by respondents. In all cases, of course, the data reflect perceived involvement rather than actual involvement."

It is possible that the extent of accountants' participation will not necessarily reflect an accountant's involvement - his or her psychological view of an object or activity. Therefore, the perceptions of the IT department head will be sought to gauge the level of an accountant's involvement in AIS implementation. Thus, instead of asking respondents directly about their level of involvement in AIS, the researcher designed a separate questionnaire, Questionnaire 2 (Appendix IV), targeted at IT professionals in the same organization to which the respondents belong. This approach is similar to Javenpaa and Ives (1991). IT professionals were asked to indicate their response on a number of statements on a scale which described their perceptions of accountants' involvement in AIS initiatives in their organizations (refer to Section A, Question 6) i.e.

- Accountant's personal involvement in firm's use of IT
- Accountant's role in corporate IT steering committee
- Accountant's informal contact with IT management
- Accountant's knowledge of IT opportunities in the firm
- Accountant's knowledge of competitors' use of IT
- Number of levels between IT Head and CEO
- Number of levels between Accountant and CEO
- Accountant's prevailing thinking about IT spending
- Accountant's perception of IT's importance to the firm
- Accountant's vision for IT

The total scores for each IT respondent were computed for all the statements and the scores range from 10 to 50 in relation to their perception on the level of accountant's involvement in AIS initiatives. The scores of 10 to 23 indicate passive involvement of the accountants compared to scores of 24 to 37 which means moderate involvement and lastly, scores of 38 to 50 indicate active involvement of the accountants in AIS implementation.

3.9   *Changing role of Accountants*

Johnston, et al (2002) list three main activities undertaken by the accounting and finance function in most organizations:

(1) day-to-day recording of financial transactions and their periodic reporting to external parties, principally shareholders;

(2) financial management, including decisions on the mix of finance and dividend policy;

(3) management accounting.

However, recent studies show that there have been serious concerns regarding the need for changing roles for accountants within the business environment (for example, Spathis, 2006). Accountants have been traditionally viewed as the "scorekeeper", an essentially passive role (King et al., 1994), and information provider. Brecht & Martin (1996, p.16) urge accountants to adapt to computers as a new economic reality, to an increased ability to leverage transaction data for business advantage, and to vastly more complex information needs. They suggest that accountants who understand and influence the development of information systems have significant expertise to offer managers seeking reliable decision support, thus, the accountants need to expand their current role in information systems development (p.17). Brecht & Martin (1996) mention that accountants must expand their involvement with information systems, beyond the traditional AIS, emphasis on the flow, timing and control of financial transactions (p.21).

In an AIS context, the integration and centralization of systems can cause loss of control over the delivery of management accounting information and thus reduce reliance on accountants for information that they previously supplied. The need for a change in their job description and the transformation of management accountants from scorekeepers to business partners have been documented (see Siegel and Sorensen, 1999). The need for change is even clearer when management accounting tools are not operated within an Enterprise Resource Planning (ERP) systems and, therefore, accountants might be needed in the design and implementation of new system interfaces. Historically, ERP systems evolved from MRP II systems, which are designed to manage a production facility's orders, production plans, and inventories. ERP systems integrate inventory data with financial, sales, and human resources data, allowing organisations to price their products, produce financial statements, and manage the resources of people, materials and money (Markus, et.al.2000). The aim of ERP systems is to integrate all the information related to a firm's business in a unique system and this should lead to an impressive improvement both in operational, day-by-day activities, and in strategic decision-making.

Accountants must contend with new responsibilities in system conversions and business process enhancement (Camagazine, 1999). They might be needed as well to discuss technical issues because, in some cases, some of the implementation problems are accumulated and realized only when they reach the accounting department (e.g. Granlund

and Malmi, 2002). Spathis (2006) claim that accountants, nowadays, need to posses good IT skills in order to retain their role within a constantly evolving IT-led work environment.

While some are quite uncertain about accountants' ability to fill the new roles, others are very positive. Cross (2001, p.49), for example, claims that financial management professionals can be the catalyst in ensuring that their organization implements technology solutions that support its overall strategy. As accountants are often directly involved in the design and maintenance of information systems, Burns and Scapens (2000a) claim that this highlights the emergence of "hybrid accountants'- who have both accounting knowledge and in-depth understanding of the operating functions or commercial processes of the business.

The changes in the role of management accountants have brought about a distinct change in their image, from "bean counters" to "new management accountants' (Friedman and Lyne, 1997). These "new management accountants' were in many respects quite opposite to the bean counters. Friedman and Lyne claim that in some companies, "new management accountants' had been the instigators of activity-based techniques as part of their agenda for changing the bean counter image. In an ERP context, Granlund and Malmi (2002, p.311) report that the role of management accountants ranges from that of "bean counters" to more business-oriented roles that expand the book-keeper and watchdog roles. Lord (1996) argues that many accountants are seeing their traditional roles and status being eroded and are therefore trying to expand their sphere of influence by getting involved with organizational change and other management activities.

According to Brecht & Martin (1996), accountants can expand their participation in systems technology by helping determine (1) what information is distributed or reported, (2) system delivery methods and timing, (3) the impact of technology on decisions and the decision making process, (4) database designs, and (5) systems analysis capabilities. This can improve the timing, flexibility and relevance of information produced for managerial decision making. In cases where the accountants were involved in change activities, five key roles undertaken by them have been identified (Brignall et al., 1999; see also Chenhall and Langfield-Smith, 1998):

- *The generalist*: where the accountants have a clear understanding of the nature of their businesses and usually have developed management accounting systems in the different business units to provide more "local" support.

- *The non-traditional accountant*: they are clearly in close touch with the business, with business processes, the operations and often the operators themselves. They try to educate themselves about how the various parts of the organization use data and what their information needs are.

- *The linchpin*: they appear to link the business up, down and across the hierarchy using financial and non-financial information as the "glue". They tend to have clear commercial ownership of the change activities. They are also members of cross-functional change teams and share responsibility for success and failure.

- *The facilitator*: they are not only responsible for the collection and dissemination of information but also for encouraging a flexible focus on relevant information and;

- *The interpreter*: they see their roles as making sense of information for the other functions and not just data provision.

The researcher used these five key roles as the new roles performed by the accountants during and subsequent to the AIS implementation. The accountants were asked to indicate whether their participation in the implementation changed their traditional roles. Thus, the fifth hypothesis is:

H5: Innovator accountants are more likely to change their traditional roles than adopters

In Questionnaire 1 (Appendix III), the respondents were asked to indicate whether their participation in AIS implementation has changed their traditional role (refer to Section B, Question 9). The responses are then traced back to the innovativeness characteristics of the accountants when they answered Section C Questions 1 to 10. This allow for an inference to be made on the impact of the innovativeness characteristics of the accountants on their new roles. They were also asked to describe their own definition of traditional roles and how their participation in AIS implementation has changed this traditional role. The descriptions of the traditional roles are analysed using a Content analysis method and the results can be found on page 62 of Chapter 4.

3.10 Conclusion

This chapter has provided a critical review of literature related to IS implementation and the effect of organizational and individual factors on the participation of the accountants in AIS implementation. The hypotheses developed from the literature contribute to, and extends the organization innovation and information system development literature. The relationship between previous studies, the research hypotheses, the independent and dependent variables and the respective questions in the questionnaires are summarized below in Table 5.

Table 5: Theoretical Links between Hypotheses and Variables

	Previous studies	Testable Hypotheses	Independent Variables	Dependent variable
1	Rogers (1983) Mahajan, et al. (1990)	Innovator accountants will participate more actively in AIS implementation than adopters	Innovator/ adopter categories	Extent Of Participation ERPFANS (2002)
			Related Questions in Questionnaire 1 Section C Questions 1-10	Related Questions in Questionnaire 1 Section B Question 6
			Measurement scale: total scores	Measurement scales 5-likert scales: Not involved at all - Highly involved
			Measures Total score = 27-84 (adopter) Total score of >84 (innovator)	Measures Passive participation (score 14-32) Moderate participation (score 33-51) Active participation (score 52-70)
2	Johnston et al. (2002) Brignall et al. (1999)	The presence of six pre-requisites will influence accountants to participate more actively in AIS implementation.	Six pre-requisites: Team player; Sound and established accounting systems: Business and process knowledge: Flexibility: Interpersonal and communication skills: Challenge and change:	Extent Of Participation ERPFANS (2002)
			Related Questions in Questionnaire 1 Section B Question 8	Related Questions in Questionnaire 1 Section B Question 6 Measurement scales 5-likert scales: Not involved at all - Highly involved
				Measures Passive participation (score 14-32)

	Previous studies	Testable Hypotheses	Independent Variables	Dependent variable
				Moderate participation (score 33-51) Active participation (score 52-70)
3	Mumford (1997) Lin & Shao (2000)	Type of role performed during the implementation will significantly explain the variance in an accountant's participation	Type of role performed: Consultative; representative; consensus Related Questions in Questionnaire 1 Section B Question 11	Extent Of Participation ERPFANS (2002) Related Questions in Questionnaire 1 Section B Question 6 Measurement scales 5-likert scales: Not involved at all - Highly involved Measures Passive participation (score 14-32) Moderate participation (score 33-51) Active participation (score 52-70)
4	Swanson (1994)	Innovator host organizations will influence accountants to be more actively involved in AIS implementation than adopter host organizations	Innovator/ adopter categories Related Questions in Questionnaire 2 Section C Questions 1 – 5 Measurement scale: total scores Measures Total score <= 38 (adopter) Total score of >38 (innovator)	Perception on accountant's level of Involvement in AIS initiatives Related Questions in Questionnaire 1 Section A Question 6 Measurement scales Various degree of Likert scales depending on question Measures Passive involvement (score 10-23) Moderate involvement (score 24-37) Active involvement (score 37-50)

	Previous studies	Testable Hypotheses	Independent Variables	Dependent variable
5	Rogers (1983) Mahajan, et al. (1990)	Innovator accountants are more likely to change their traditional roles than adopters	Innovator/ adopter <u>categories</u>	Change/Not Change Traditional Role
			<u>Related Questions in Questionnaire 1</u> Section C Questions 1-10	<u>Related Questions in Questionnaire 1</u> Section B Question 9
			<u>Measurement scale:</u> total scores	<u>Measurement scale:</u> Yes/No answer
			<u>Measures</u> Total score = 27-84 (adopter) Total score of >84 (innovator)	<u>Measures</u> "Yes" indicates change in traditional role "No" indicates no change in traditional role

Source: the author

CHAPTER 4

RESEARCH FINDINGS: PART 1 OF THE MAIN STUDY
THE SURVEY OF ACCOUNTANTS AND IT
PROFESSIONALS

This chapter describes the quantitative approach of the thesis, highlighting the research population, sampling and data collection procedures. The data analysis and hypothesis results are reported using SPSS (version 11.0).

4.1   *Research Population*

The research population consisted of the accountants of the large listed companies on the Main Board or the Second Board of the Kuala Lumpur Stock Exchange (KLSE). A total of 846 companies were listed on KLSE as at 31 May 2003.The research population was narrowed down to include only those accountants who have been employed for more than 6 months in large listed companies, because these companies might have better facilities and opportunities to invest in information technology (IT). The extent of involvement and participation in AIS implementation, which is vital for this research, may be better known to accountants who have been in jobs more than six months as accountants with less than 6 months of employment in a listed company may lack knowledge and experience of working in the department and also the opportunity to be involved and participate in IS implementation. More specifically, small and medium-sized industries (SMI) were excluded from the sampling frame. This sampling focus helped to avoid questionnaires being discarded or completed by unintended recipients. The researcher also surveyed the IT professionals using a separate questionnaire to assess the involvement of the accountants in IS implementation (psychological aspects/perception), following Jarvenpaa and Ives (1991), to minimise bias from the accountants.

4.2   *Sample Selection*

The researcher used a systematic sampling technique (a random sampling technique) which involves selecting respondents at regular intervals from the sampling frame. According to this technique, the research population is divided by the required sample size (n) and the sample chosen by taking every "nth" subject (Hussey and Hussey, 1997, p.146). In this study, the sample was chosen as below:

Population (total number of listed firms on KLSE)   = 846

Required sample size = 33% i.e. 282 listed companies (Saunders et al., 2003 suggested 30% for postal questionnaires)

The population is divided by the required sample size: 846/282 = 3.00

The researcher selected randomly a number between 1 and 3, in this case, 2. Then, the researcher chose the third company after 2nd company, i.e., 5th company, and then 8th, 11th …until 282 listed companies were selected.

The required sample size of 282 listed companies is justifiable because Saunders et al. (2003, p.284) argue that a 30% response rate in a postal questionnaire is reasonable, although examination of response rates to recent business surveys reveals that response rates as low as 10 - 20% for postal surveys were considered to be acceptable (p.159). In addition, Oppenheim (1996) hinted that a sample's accuracy is more important than its size (p.43). In sum, the final sample size was a compromise between theoretical sampling requirements and limitations such as location of the researcher in the UK and the respondents in Malaysia; time, e.g., it could take a week or more for a questionnaire to reach a respondent, and the cost to mail questionnaires to a large sample of respondents was very high.

To improve the survey response rate, the survey was extended to include 200 members of the Malaysian Institute of Accountants (MIA) working in Klang Valley, Malaysia. This place was selected because the majority of listed companies were located in this area. A letter of invitation from the executive director of the institute was enclosed with the questionnaire to encourage members' participation in the survey. The researcher was aware of duplication in the sample; therefore, appropriate measures were taken to avoid duplication by cross-checking the details obtained from the respondents' firms and the MIA, such as the name of the accountant and the firm's name. The final sample consisted of 482 accountants using both sources and the sample was further divided into two sub-samples of accountants in public listed companies (PL) and accountants who were members of the Malaysian Institute of Accountants (MIA).

4.3 Data Collection

The study was conducted in Malaysia in three phases: an exploratory study, a pilot study and the questionnaire survey. Preliminary interviews with six accountants alongside an extensive literature review were conducted to provide direction as to what factors motivated accountants to actively participate in AIS implementation. This was conducted

during the exploratory study in April 2002. These contributed to the design of the proposed research model as exhibited in Figure 2 in page 5. Subsequently, a survey instrument with questions was developed and then a pilot study was conducted to capture the information reflecting the issues on how and why accountants participated in AIS implementation. The feedback from the respondents was very helpful in refining the survey instrument before distributing them to the targeted respondents.

4.3.1 Initial Exploratory study

Before the data collection for the first part of the main study, an exploratory study was carried out during April 2002 in Malaysia. Following Brignall et al. (2002), the research design for this initial exploratory study was a multiple-case design with the primary focus on exploring and explaining accountants' involvement in ERP. Since the main reason was to identify the existence of the phenomenon in Malaysia rather than to generalize, the choice of case studies was made using convenience sampling. A snow-balling method was employed for the selection of companies. In the snow-balling method, a sample size is not pre-decided but is done until the saturation of information. The first case was selected through contact with an accountant working in the construction industry. He helped in gaining access to the second case and the accountant in the second case helped the researcher getting access to the third case. This process continued till the sixth case, when the information obtained reached its saturation level (similar answers and no new findings). These companies were from the private and public sectors, operating in the manufacturing and services sectors such as banking, aviation, education, local authority, health services provision and a government accounting division.

Structured interviews were used as the main data collection tool. The interviews lasted from one to two hours, which were tape recorded and later transcribed. Based on the information obtained, issues were identified, refined and literature was revisited. The findings of the exploratory study revealed that even though most, if not all, pre-requisites as identified in Brignall et al. (2002) existed in all the case study companies, not all accountants were involved directly or indirectly in implementing AIS in their departments. The innovativeness of the organizations and individual accountants were also found to be significant factors in determining the extent of the accountants' involvement. This indicated other variables that needed to be investigated further as factors influencing the accountants to get involved. The researcher developed a framework from the findings of

this exploratory study and proposed a typology of innovativeness of accountants and host organizations for research (see Figure 5).

	Accountant	
Host organization	Innovator	Adopter
Innovator	Active involvement	Moderate involvement
Adopter	Moderate involvement	Passive involvement

Figure 5 : Typology of accountants and host organizations' innovativeness and the extent of accountants' involvement in AIS implementation

The results of this exploratory study led the researcher to revisit the literature to identify the variables tested in previous studies and then developed the hypotheses to be tested in the first part of the main study. The exploratory stage had given the researcher a "feel" for the problem investigated (Oppenheim, 1996, p.52) and to assess logical inconsistencies, ease of understanding, and sequence of questions in the questionnaire to ensure that respondents clearly understood all the questions and terms used. Further modifications were made to the original questionnaire to clarify the meaning of particular questions, based on the feedback of the exploratory study.

4.3.2. Designing of Questionnaires

The designing of questionnaire was a crucial part of data collection. It involves selecting the questions, their wording, the reliability and validity of the responses (Hussey and Hussey, 1997, p.162). The researcher designed two questionnaires, one for accountants (hereafter referred to as Questionnaire 1) and one for IT professionals (hereafter referred to as Questionnaire 2). Questionnaire 1 had three sections labelled A, B and C. In Section A the accountants were asked to describe the type of information systems in their departments. Section B inquired their participation and role that they performed in AIS implementation and Section C asked their demographic details to categorise them into innovator/adopter classification. Questionnaire 2 for IT respondents had four sections labelled A, B, C and D. Section A asked the IT respondents to describe the system characteristics including the vendor, major benefits and major problems of the system's implementation. The section also inquired the respondents' perception on the level of

accountants' involvement in AIS initiatives in their organizations. In Section C, the respondents were asked to indicate the characteristics of their organizations. In the last section, Section D the IT respondents were asked to give details about themselves.

Each section had a mix of close-ended and open-ended questions in both questionnaires. For example, the researcher asked open-ended questions to elicit accountants' opinions about their traditional role; change in their roles; and reasons for not participating in the implementation stages of the AIS in their organization (see section B in questionnaire 1). The last section labelled D in each questionnaire consisted of classification questions which asked about respondent's age, education etc. Overall, the percentage of closed-ended questions (i.e., respondents had to select the answer from a number of predetermined alternatives) was relatively higher than open-ended questions in both questionnaires. This was due to the fact that multiple choice and Likert Scale's type closed-ended questions are easy to code, record and analyze.

The researcher distributed both questionnaires using the postal method which is a commonly used and reasonably inexpensive method, and can reach widely dispersed respondents (Dillman, 2000; Gilbert, 2001; Hussey and Hussey, 1997; Saunders et al., 2003; Oppenheim, 1996). The questionnaire in the initial mailing was accompanied by a covering letter to the departmental heads of accountants and the IT professionals and pre-paid self-addressed envelopes for returning completed questionnaires. In the follow-up mailing, covering letters with blank copies of the questionnaires and pre-paid return self-addressed envelopes were sent to non-respondents from the initial mailing. Following De Vaus (1996) suggestion, a unique identification number was placed on each questionnaire, which corresponded to the number of the respondent on the lists of respondents (accountants and IT professionals). The purpose was to make it easy to check and follow-up non-respondents.

4.3.3 Pre-testing and Piloting of Questionnaire

Pre-testing of the questionnaires was conducted for two different purposes, i.e., to evaluate the design and content of the questionnaire at two different stages. It was particularly important to get feedback from people with diverse expertise and knowledge which were then reconciled to draft a better questionnaire. The pre-test can be viewed as an evaluation of procedures where some questionnaires are sent to a small sample of the respondent population to see whether any problems arise. Other reasons for pre-testing are that it is a way to find out printing mistakes by having the target respondents fill out the questionnaire

and a way to assess the level of understanding of the respondents on all the items included in the questionnaire. Most importantly, pre-testing consists of all these things and more, with each actively providing feedback that is not likely to come from other methods in a timely way (Dillman, 2000, p.140).

The first stage of the pre-testing of questionnaire was carried out at the International Doctoral Colloquium in Business and Management Studies, on 19th March 2003 at Reading University, UK. The main purpose was to get feedback from the participants of the colloquium on the design features, which are intended to motivate people to respond and make the questionnaire appear more interesting and important (Dillman, 2000, p.81). As a result of this pre-testing a few changes were made and a booklet format was adopted as suggested by Dillman (2000), because a booklet format is handled more or less automatically and usually without error (p.82). The second pre-testing was focused on the content of the questionnaire. This was carried out by having in-depth discussions with two accountants and three IT managers. At this stage they were consulted to determine the likelihood that each question could or would be answered and to get an understanding of how each question was being interpreted and whether the intent of each question was being realized. Necessary amendments were made and the substantive content of the questionnaire was finalized so a pilot testing could be undertaken.

This final questionnaire was then piloted in 16 listed companies which were from the plastic, automotive, food, transportation, motorcycle, medical disposal, electrical automotive, hardware and machinery, manufacturing, healthcare, paper, electronic and telecommunication industries. For this pilot study, the respondents received a mailing package, just as they would have in real survey. The main reason was to emulate procedures proposed for the study. The aims of the pilot survey were to:

(a) test a proposition in Enterprise Resource Planning (ERP) literature suggesting that implementation of ERP systems can change the traditional role of the accountants;

(b) test a proposition in innovation literature suggesting that innovative users and organizations can influence the extent of involvement and participation of the user (accountancy profession) in systems implementation;

(c) propose "involvement and participation" as indicators or mechanisms for the traditional role to change;

At this stage, the researcher was not concerned with generalizing from a sample to the population and therefore, representativeness of the sample was less important. According to Oppenheim (1996, p.47), piloting can help us not only with the wording of questions but also with procedural matters such as the design of a letter of introduction, the ordering of question sequences and the reduction of non-response rates. The pilot study is an intellectual challenge in conceptualizing and re-conceptualizing the key aims of the study and in making preparations for the field work and analysis so that not too much will go wrong and nothing will have been left out (Oppenheim, 1996, p.64). For example, there would be no problems in answering the questions and in recording the data.

The pilot test response rate was 62.5% (10 out of 16 companies). The respondents were also asked for an evaluation of the questionnaire on a separate sheet attached to the questionnaire. This procedure also provided feedback from the respondents into how well the mailing package and covering letter connect to the questionnaire.

A final step of pre-testing is to ask a few people who have had nothing to do with the development or revision of the questionnaire and related materials (Dillman, 2000, p.147). The main reason is that people who have worked on one revision after another soon lose their ability to detect obvious problems. In this study four first-year PhD students were asked to assume the role of accountants and IT professionals and fill up the questionnaire within the stipulated time.

The questionnaire did not require substantial revision on its format based on the feedback obtained in the previous pre-testing, except that the focus would no longer be the ERP system but AIS due to a lower percentage of respondents that were actually using ERP in their organizations. A covering letter and a pre-paid self-addressed envelope were attached to the questionnaires and posted to the respondents to improve response among respondents and so reduce non-response error. The covering letter described what the survey was about and why it was important to respond. The return envelope contributed to the convenience of sampling (Dillman, 2000, p.18) as this avoids additional effort to locate and address an envelope. Personalization of correspondence and stamped return envelopes have been shown to have modest effects on response rates in most survey situations and are usually important for maximizing survey response (Dillman, 2000).

4.3.4 Initial mailing and response rate

The initial mailing took place in the first week of June 2003. The questionnaires with covering letter and pre-paid self-addressed envelopes were distributed to 482 accountants and 282 IT department heads representing the IT professionals. The questionnaires were expected to reach Malaysia from the United Kingdom in two weeks time and another two weeks were given for the respondents to reply and thus, responses from the initial mailing came back in the fifth week of distributing the questionnaires. According to Saunders et al. (2000, p.284) the time taken to complete collection can range from four to eight weeks from posting. Active response rates were calculated using Saunders et al. (2003, p. 157) as follows:

$$\text{Active response rate} = \frac{\text{Total number of responses}}{[\text{Total number in sample} - (\text{total of ineligible} + \text{unreachable})]}$$

The ineligibles were those respondents who did not meet the research population requirements (see Section 4.1) and so could not be included in the analysis. The unreachable respondents were those who could not be located by the post office due to non-location or non-contact after several attempts had been made. The Malaysian post office stamped the reason of non-delivery such as unknown, refused, deceased, insufficient address, no such name, no such road, and no such number. The most frequent reason for the mail being not delivered was relocation of the business.

The total number of questionnaires returned in the case for accountants in the sub-sample PL was 88, out of which 11 were classified as ineligible and 8 were classified as unreachable. Thus, the response rate was 33.4%. In the sub-sample of accountant belonging to MIA, out of a total of 18 returned questionnaires, 10 were classified as ineligible and none was classified as unreachable. Thus the response rate was 9.5% for the sample of accountants. And finally, out of a total of 30 returned questionnaires for the sample of IT professionals, none was ineligible but 5 were unreachable leading to a response rate of 10.8%.

4.3.5 The follow up and response rate

Following the initial mailing, a follow up mailing took place in the second week of July 2003. A follow up is important as some people might not recall receiving questionnaires,

or others might recall receiving but did not open it and there might be a possibility that some might have opened it but did not start to fill out the questionnaire.

A follow-up mailing included a questionnaire, pre-paid self-addressed enveloped together with a follow up letter to all non-respondents in the second week of July 2003. The first follow-up letter was mailed two weeks from the date that it was expected to receive responses from the respondents together with a replacement questionnaire. The letter reinforced messages that the respondent was important to the success of the survey (Appendix V & VI). Responses from the follow-up lasted until the seventh week from the day of initial mailing in June 2003. The final response rates in the third week of July were as follows:

In the case of the accountant sub-sample (PL), the total number of usable questionnaires was 106, out of which 21 were classified as ineligible and 8 were classified as unreachable. The overall percentage of usable questionnaires was 23.4%. In the case of IT professionals, there was no change in the response rate of 10.8% because there was no additional return after the follow up.

4.3.6 Evaluation of non-response bias

A potential problem associated with postal questionnaires is non-response bias. Two main types of non-response are identified in the literature: questionnaire non-response occurs if the questionnaires are not returned, and item non-response occurs if one or more questions of the questionnaire have not been answered (Dillman, 2000; Hussey and Hussey, 1997).

Non-response can be problematic in a questionnaire survey if the research design depends on generalizing from the sample to the population. However, the issue is not so much the number or proportion of non-respondents, but the possibility of bias (Oppenheim, 1996, p.106). If enough responses have not been collected from all the members of the sample, the data may be biased and thus not representative of the population (Hussey and Hussey, 1997).

The literature suggests (Dillman, 2000; Hussey and Hussey, 1997) three methods to determine whether questionnaire non-response bias exists:

- analyze and compare responses by date of reply;
- compare the profile of respondents against known characteristics of a sampled population (e.g. sex, occupation);

- compare the characteristics (in terms of geographical location, date of birth, sex, type of qualification) of respondents with non-respondents from the sample.

The researcher made two comparisons – for each sub-sample of accountants and one sample of IT professionals to test for non-response bias:
1. comparison between respondents and non-respondents
2. comparison between early and late respondents

These two comparisons were undertaken in relation to a known characteristic of samples, i.e., geographical location in the case of the sub-sample accountants (PL) and the IT professional, and by gender in the case of sub-sample MIA accountants. Geographic location was classified into Klang Valley and Other Than Klang Valley categories and gender into male and female categories.

In selecting the appropriate statistical test of significant difference, the researcher selected the non-parametric Mann-Whitney test, as being more efficient and appropriate compared to parametric t (and F) tests for this type of investigation (Wallace and Mellor, 1988). This appropriateness emerges from the fact that "the t (and F) tests are parametric tests which require that the scores under analysis result from measurements in the strength of at least an interval scale". Pallant (2001) suggests that the Mann-Whitney U test is a useful alternative to the parametric t test when the t test's assumptions need to be avoided, or when the measurement in the research is weaker than interval scaling.

The Mann-Whitney U test actually compares medians to test whether two independent groups have been drawn from the same population. It converts the scores on the continuous variable to rank across the two groups (Pallant, 2001). It then evaluates whether the ranks for the two groups differ significantly. If the probability value (p) is not less than or equal to 0.05, the result is not significant. The researcher compared the respondents with non-respondents or early responses with late responses, under a null hypothesis of no significant difference between the two samples. Accepting the null hypothesis means that most probably the two samples represent the same population and therefore the existence of non-respondents is not likely to be a problem in analysis.

4.3.7 Comparison between respondents and non-respondents
In this study, the response rate of 23.4% for accountants was higher than 10.8% for the IT professionals. This might have introduced sample bias and therefore the sample may not be

representative of the population. Therefore, a comparison was made between respondents and non-respondents to test whether there was any significant difference between respondents and non-respondents for both samples. The primary purpose was to compare known characteristics of the sample against the characteristics of the population. Any differences indicate the areas of bias and the extent of the differences indicates the degree of bias (De Vaus, 1986, p.66).

The null hypotheses to test for non-response bias for the two sub samples of accountants i.e., accountants in the publicly listed companies (PL) and accountants members of MIA are:

Ho: There is no significant difference between respondents and non-respondents in their geographical location.

Ho: There is no significant difference between respondents and non-respondents according to classification by gender.

The Mann-Whitney test was used to test whether two independent groups had been drawn from the same population. The results of applying the Mann-Whitney U test for accountants (sub-sample PL and MIA) and IT Professional samples are presented in Table 6.

Table 6 : Mann-Whitney U test for Accountants (sub-sample one-PL and two-MIA) and IT Professionals samples

	Sub-sample 1	PL	Sub-sample 2	*MIA*
	z-value	*p*-value(2-tailed)*	z-value	*p-value*(2-tailed)*
Geographical location gender	-1.174	0.240		
			-0.545	0.586

* denotes 5% level of significance

The results shows that both null hypotheses were not rejected, which support there is no significant difference between respondents and non-respondents in terms of their geographical location and gender. Similarly in the case of IT professionals, Table 7 shows that the null hypothesis is not rejected for geographical location of respondents.

Table 7 : Mann-Whitney U test for IT Professionals

	IT	Professionals
	z-value	*p*-value(2-tailed)*
Geographical location	-0.395	0.693

• denotes 5% level of significance

4.3.8 Comparison between early and late responses

The researcher classified the questionnaires received according to weeks i.e., from week 1 to week 6. Each questionnaire (response) was classified as an early or late response according to the week it was received. The number of responses for the last m cumulative weeks was compared with the number of remaining respondents. For example, the questionnaire received from a respondent in week 5 was classified as an early response in the group for week 5 to 6 but as a late response in week 1-6, week 2-6, week 3-6, week 4-6 groupings. The "Week6toremaining", "week5to6", "week4to6", "week3to6", "week2to6", and "week1to6" were then grouped into group 1 to group 6 respectively. The null hypotheses used to test for non-response for the two sub-samples of the accountants and IT professional bias were:

Ho: There is no significant difference between early and late respondents in their geographical location.

Ho: There is no significant difference between early and late respondents according to classification by gender.

The results of the Mann-Whitney U test for the sub-samples of accountants (PL) and (MIA), and the sample of IT professionals are presented in Tables 8-10 respectively.

Table 8 : Geographical location – accountants (sub-sample PL)

Group	z-value	p-value(2-tailed)*
1	-3.697	0.0000
2	-0.052	0.9580
3	-0.874	0.3820
4	-1.015	0.3100
5	-0.561	0.5750
6	-0.798	0.4250

Table 9 : Gender – accountants (sub-sample MIA)

Group	z-value	p-value(2-tailed)*
1	++	++
2	++	++
3	++	++
4	-0.332	0.740
5	-0.268	0.789
6	-0.628	0.530

Table 10 : Geographical location – IT professionals

Group	z-value	p-value(2-tailed)*
1	-1.658	0.097
2	-0.080	0.937
3	-0.354	0.723
4	-0.217	0.828
5	-0.609	0.543
6	-0.603	0.546

* denotes 5% level of significance
++ tests could not be performed as there were no late responses for these groups and therefore comparison could not be made where   Group (1) : Comparing between accumulated responses from week 6 and accumulated remaining responses Group (2) : Comparing accumulated responses from weeks 5 to 6; Group (3) : Comparing accumulated responses from weeks 4 to 6; Group (4) : Comparing accumulated responses from weeks 3 to 6; Group (5) : Comparing accumulated responses from weeks 2 to 6; Group (6) : Comparing accumulated responses from weeks 1 to 6

Out of six groups, only for Group (1) was the null hypothesis rejected. Thus, the researcher accepted the null hypothesis of no significant difference between respondent and non-respondents, early and late respondents for both sub-samples of accountants and IT professionals. Therefore, both sub-samples were combined and subsequently referred to as AP with no distinction between the previously called sub-samples PL and MIA.

4.4   *Reliability and Validity*

Naturally, researchers want their indicators to be as good as possible. That means that the measurements which they design should be valid (accurately measuring the concept) and reliable (consistent from one measurement to the next) (Gilbert, 2001, p.23). The reliability and validity of an indicator will depend on the adequacy of the way in which it measures its concept. An indicator links a concept with observable facts.

4.4.1 Reliability

Reliability refers to the purity and consistency of a measure, to repeatability, to the probability of obtaining the same results again if the measure were to be duplicated (Oppenheim, 1996, p.144). A reliable measurement is one where we obtain the same result on repeated occasions (De Vaus, 1986). Adequate reliability is a precondition to validity (Oppenheim, 1996, p.159). The reliability of a scale indicates how free it is from random error (Pallant, 2001, p.6). Two frequently used indicators of a scale's reliability are test-retest reliability (also referred to as "temporal stability") and internal consistency. The test-retest reliability of a scale is assessed by administering it to the same people on two different occasions and calculating the correlation between the two scores obtained.

Internal consistency is the degree to which the items that make up the scale are all measuring the same underlying attribute. This refers to the degree to which the items that make up the scale "hang together" (Pallant, 2001, p.85), in that they are measuring the same underlying construct. It looks at the extent to which the items used to assess a construct reflect a true common score for the construct (Barki and Hartwick, 1994).

One of the most commonly used indicators of internal consistency is Cronbach's alpha coefficient, ranging from 0 to 1, with higher values indicating greater reliability. Ideally a Cronbach's alpha less than 0.60 is considered poor, whereas, those in the range of 0.70, acceptable, and those over 0.80 good (Sekaran, 2000, p.312). In assessing the reliability of the measurement of participation (Q6 of Questionnaire 1), involvement (Q6 of Questionnaire 2), innovativeness of accountants (Q1 to Q10 of Section C, Questionnaire 1) and host organizations (Q1 to Q5 of Section C, Questionnaire 2) (see items in questionnaire 1 and 2), a reliability test using SPSS (11.0) was applied. Items with low correlations were dropped. Cronbach's alpha for the measurement of participation, involvement, innovativeness of accountants and host organizations were equal to 0.91, 0.84, 0.74 and 0.83 respectively. Thus, these alphas coefficients seem to suggest that the questions are reliable measures of the underlying constructs.

4.4.2 Validity

Validity tells us whether the question, item or score measures what it is supposed to measure (Oppenheim, 1996, p.144). A valid measure is one which measures what it is intended to measure (De Vaus, 1986). The main concern is the validity of the measuring instrument itself. That is, when we ask a set of questions (i.e. develop a measuring instrument) in the hope that we are measuring the concept, how can we be reasonably sure that we are measuring the concept we set out to measure (Sekaran, 2000, p.207). There is no clear-cut indicator of a scale's validity and the validation of a scale involves the collection of empirical evidence concerning its use.

The main types of validity are content validity, criterion validity and construct validity. Content validity refers to the adequacy with which a measure or scale has sampled from the intended universe or domain of content (Sekaran, 2000). Criterion validity concerns the relationship between scale scores and some specified, measurable criterion (Sekaran, 2000). The researchers tested three concepts – innovativeness, adopter and participation - during the pilot testing and exploratory study. These concepts were adopted from the Innovation and Information System literature, following Rogers (1983). The innovator and

adopter concepts were categorised using their Likert Scale scores, i.e., scores 27 to 84 were referred to as adopters and scores 85 to 111 innovators. Similarly, Participation categories were divided into active, moderate and passive depending on the Likert Scale scores on each of the activities of ERP implementation following ERPFANS(2002). Construct validity involves testing a scale, not against a single criterion, but in terms of theoretically derived propositions concerning the nature of the underlying variable or construct (Sekaran, 2000). Construct validity is explored by investigating its relationship with other constructs both related (convergent validity) and unrelated (discriminant validity).

4.5 Univariate Data Analysis

The univariate data analysis is reported in this section. The researcher used percentages and mean scores as they are the common practices for analysing questionnaires in surveys. Frequencies tables and graphs of the classification items in section C of both questionnaires such as age, highest level of education, position of respondents etc were also provided. Content analysis was carried out on the responses to the closed-ended questions (Q1, Q3, Q7 and Q10 of Section B Questionnaire 1; Q2, Q4 to Q5 of Section A and Q1 to Q3 of Section B - Questionnaire 2). The responses to the open-ended questions were first coded into categories and then percentages were calculated for each category of response.

4.5.1 Accountants characteristics

The questionnaire contained a section comprising of the background characteristics of the respondents such as the level of education, job position, duration of employment, number of subordinates under their direct supervision. A relevant summary of these characteristics is given in Table 11. The data reveals several interesting features about the accountants. The respondents had a diploma qualification (39.6%) followed by a Bachelor's degree (32.1%); a professional qualification (23.6%) and a Masters degree (4.7%).

Table 11: Background Variables of Accountants

	Respondents		Non-Respondents	
	n	%	n	%
Age				
Less than 25	9	8.5		
25-34	60	56.6		
35-44	33	31.1		
45-54	4	3.8		
Education				
Master	5	4.7		
Bachelor	34	32.1		
Diploma	25	23.6		
Professional Qualification	42	39.6		
Professional Membership				
Yes	29	27.4		
No	77	72.6		
Position				
Top management	18	17.0		
Middle management	66	62.3		
Clerical	18	17.0		
No response			4	3.8
Length of time in position				
Less than one year	12	11.3		
One year to five year	61	57.5		
More than five year	33	31.1		
Number of Subordinates				
Less than five	45	42.5		
Five to ten	22	20.8		
More than ten	17	16.0		
None	22	20.8		
Income				
Less than 15k	12	11.3		
15k-24k	36	34.0		
25-34k	9	8.5		
35k-49k	15	14.2		
50k-74k	15	14.2		
75k-99k	11	10.4		
100k-149k	6	5.7		
150k or more	2	1.9		

The majority of the respondents (56.6%) were aged between 25 to 34 years and between 35 to 44 years (31.1%) and relatively fewer respondents were aged less than 25 years (8.5%) or between 45 to 54 years (3.8%). Only 27.4% of the total respondents were members of a professional body. In the sample, 17% were from top management; 62.3% were at middle-level management, and (17%) were from the clerical level and 3.8% did not answer. According to the length of time in position, the majority of accountants have worked between one to five years (57.5%) and more than five years (31.1%) and very few have worked less than one year (11.3%). Some accountants had no subordinates (20.8%), or

fewer than five subordinates (42.5%) compared to others who had between five to ten subordinates (20.8%) and more than ten subordinates reporting to them (19%).

The largest group of respondents earned between 15K to 24K per annum (36%), followed by those earning between 35K to 49K and between 50K to 74K (14%). The lowest three percentages were for respondents who earned between 25K to 34K per annum (8.5%), followed by those who earned between 100K to 149K (5.7%) and lastly, those who earned 150K or more (1.9%).

4.5.2 Information Systems characteristics

In Section A (see Questionnaire 1), the first question asked the respondents to choose from one of four given descriptions (Type 1 – Type 4) that best described the information system currently being used in their organizations. Electronic Data Interchange (EDI) - Type 1 system is a cross-functional information system, where all information from various departments within an organisation are integrated. An application (Type 2) system is when the system captures and processes specific accounting data resulting from the occurrence of business transactions, e.g. Accounts Receivable, but does not link to other application systems within the accounting or finance department, such as accounts payable and the general ledger. ERP system (Type 3) integrates all related applications within the accounting or finance department, such as order processing and inventory control. The systems also extend to external organisations, such as suppliers and customers. The functional system (type 4) integrates all related applications within the accounting or finance department, such as order processing and inventory control. However, this system is not linked to other departments in the organisation e.g Human Resource and Marketing Department.

Table 12: Information Systems

	Respondents		Non-Respondents	
	n	%	n	%
Type of Information System used				
EDI	26	24.5	-	-
ERP	11	10.4		
Functional	48	45.3		
Application	21	19.8		
Status of Information System used				
Coming into operation	14	13.2	-	
Fully operated	52	49.1		
Proceeding to upgrade versions of the system	20	18.8		
Extending the systems to other parts of company	5	4.7		
In the process of change to a new system	14	13.2		
Other	1	0.00		

The majority of respondents (45.3%) replied that functional systems are being used in their organizations. These systems integrate all related applications within the accounting or finance department, but are not linked to other departments. It was followed by Electronic Data Interchange (EDI) systems (24.5%) and specific application systems (19.8%). Only 10.4% of the respondents currently used Enterprise Resource Planning (ERP) systems, which are fully–integrated information systems.

The next question asked the respondents to state the implementation status of the information system which they selected in question 1. The majority of the respondents were at different stages of implementation, from coming into operation, extending the systems to other parts of organization, proceeding to upgrade versions of the system, having fully operated systems or even in the process of change to a new system, it was assumed that the population of respondents was able to represent the total population of the accountants working in organizations with varied experience of IS implementation.

Overall, 85% of accountants had information systems in place in their organizations as compared with 14% who were having information systems coming into operation. Only 1 respondent did not state any of the criteria given. More specifically, 19% of the respondents responded that their organizations were in the process of proceeding to upgrade versions of the current systems; 14% of the respondents responded that their organizations were in the process of changing to a new system while the other 14% stated that they had just started to implement an IS in their organization. 5% of the respondents were extending their systems to other parts of the organizations. Nearly half of the respondents (49%) had fully utilized their information systems in their organization.

4.5.3 Role of Accountants

The accountants were asked to describe their traditional role in question 1 of Section B (see Questionnaire 1). The respondents gave different answers which were subsequently classified into various categories using the content analysis method. Each response was coded from 1 to 5 (see Table 13 below). For non-response categories, code 9 was given because SPSS software only recognizes code 9 as missing value.

Table 13: Role of Accountants

Category	Code	Respondents	
		n	%
Performance orientation Preparation of financial statements • Proper record keeping • Maintenance of accounts • Backend	1	61	58
Control Ensuring proper internal control for audit purposes	2	10	9
Safeguard company's assets • Ensuring proper cash management • Maintain confidentiality	3	11	10
Reporting Preparation of management reports and analyses for decision making • Preparing budgets and costing analysis	4	18	17
Compliance Ensuring accounting principles are followed, compliance with acts and laws required	5	6	6
No response	9		

Using the procedure outline above, the researcher found that performance orientation (58%) and reporting (17%) were largely classified as the traditional role of accountants by the respondents. 19% of the respondents indicated "controlling" as part of the traditional role of accountants (10% related to cash management and 9% to maintenance of internal controls for audit purposes). Only 6% highlighted compliance as the traditional role of the accountant, ensuring that acts, laws, rules and regulations were properly followed.

4.5.4 Diversion from Traditional Roles

In Question 3, the respondents were asked to state whether the current job descriptions and responsibilities differ from the traditional roles and how the current jobs differ. The new roles were adapted from Brignall et al's (2002) study which states that there were five key roles that could be performed by accountants in process change activities: the generalist, the non-traditional accountant, the linchpin, the facilitator and the interpreter. The respondents' answers were categorized using the content analysis method. Each response was coded 1 to 5 according to the respective categories (see Table 14 below). Code 9 was given to non-response categories and code 99 was for respondents who claimed that their

traditional roles had not changed. Code 9 and 99 was chosen in accordance to the requirements of the SPSS software as missing value and non-applicable value respectively.

Table 14 : New Roles of Accountants

Category	Code	Respondents	
		n	%
THE GENERALIST Being senior member, top management, strategic decision maker, involved in commercial decision	1	12	11.3
THE NON-TRADITIONAL ACCCOUNTANT Involved in operations, not always in office	2	14	13.2
THE LINCHPIN Involved in change agenda i.e., ISO, part of team member comprising of various department	3	8	7.5
THE FACILITATOR Helping out other departments in relation to any initiative undertaken by organization, supplier of information to other departments	4	5	4.7
THE INTERPRETER Most of time in office analysing and interpreting meaningful accounting data	5	7	6.6
NON-RESPONSE	9	18	17.0
NOT APPLICABLE (The traditional role has not changed since)	99	42	39.6

Table 14 shows that 16% of the accountants' responses were classified as the non-traditional accountant, followed by the generalist (11%), the linchpin (7.5%), the interpreter (6.6%) and lastly the facilitator (4.7%). Out of 106, 39.6% responded that their current jobs or responsibilities are not different from the accountant's traditional role. It can be seen that 60% of the respondents had changed their traditional role of bean-counters. This suggested that the findings from previous studies by Brignall et al. (1999), Chenhall and Langley-Smith (1998) and Johnston et al. (2002) are also supported in the case of Malaysia.

4.5.5   Factors Influencing the Changing Role

In Question 4 of Questionnaire 1, the respondents were asked to rank from 1 to 6 the factors that might influence them to change their traditional roles. The factors listed are: Experience with previous system's implementation; Individual characteristics; the nature of the organization's business and environment; Directions and instructions from the top management; Current trend of accountants moving beyond the traditional roles; and Encouragement and support from Professional Accounting Bodies.

Rank 1 is for the most influencing factor and 6 is the least influencing factor. The factors individual characteristics, nature of the organization and direction from the management have a median of 3, both "personal experience" and "move from the traditional role" factors have a median of 4 and the professional bodies' factor was seen as the least influencing factor, scoring the median of 5.

4.5.6 Participation In IS Implementation

Question 5 of Questionnaire 1 asked whether the accountants had a chance to participate in the implementation process of the system chosen in Question 1. About 71.4% of the respondents had the chance to participate in IS implementation in their organizations as compared to 28.6% of the respondents who did not.

4.5.7 Extent of Participation

Question 6 of Questionnaire 1 asked the respondents to state their extent of participation (measured from *not involved at all* to *highly involved*) at every step of the implementation of an information system: Project Initiation; Evaluating Current Processes, Business Practises and Requirements; Setting Up The Project Organization; Mapping The Organization; Mapping Business Processes; Defining Functions and Processes; Software Configuration; Building System Modification; Creating Go-Live Plan and Documentation; Integrating Applications; Testing The System Customisation; Training Users; Running Trial Production; and Maintaining Systems (ERPFANS, 2000), 14 activities/steps in all.

Only 1% of accountants were involved at the initial stage of implementation. This finding was unexpected because the researcher's initial assumption was that accountants are normally involved in the initial stage of implementation, since at this stage their input and feedback are vital in order to ensure that the implementation is a success. As the financial system will comprise all data from all departments, it is very important for the accountants to participate and give input on how they want the data to be organized and classified so the output or outcome of the AIS will be as required.

The extent of participation was expected to be moderate as the implementation moved from initiation to live implementation stages, as at these stages it was expected that the IS department would perform a dominant role as they would be involved with the technicality

of the implementation till it was fully operated and used by all users. It was also assumed that post-implementation stages involved with the maintenance of the system required the expertise of the IS department rather than the accounting department.

In Question 6, the accountants were asked to indicate their extent of participation in *each* of the 14 steps necessary for an implementation of IS to take place. Scores are measured according to Likert Scales where the lowest score of 1 is when the accountant did not get involved at all in the implementation process and the highest score of 5 if the accountant is highly involved during the implementation. The total scores for the extent of implementation were grouped into three (3) categories as follows:

Table 15 : Categories of Participation

Total Scores	14 - 32	33 - 51	52 – 70
Categories of Participation	**Passive**	**Moderate**	**Active**
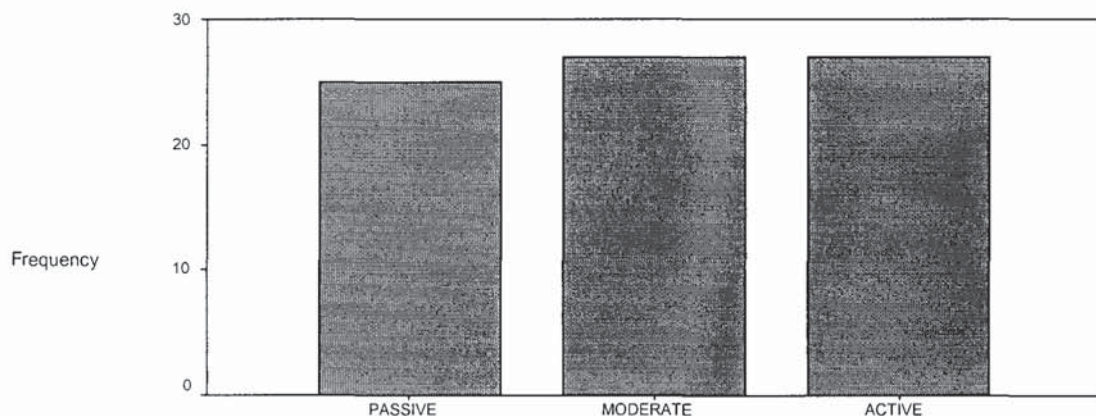
Figure 6 : Accountants – Extent of Participation in AIS Implementation

As can be seen from the graph, the extent of accountants' participation in AIS implementation in their organizations was evenly distributed. 34.2% of the respondents scored moderate to active participation and 31.6% were passive in their participation in AIS implementation. Thus, the results showed that the accountants studied were fairly distributed in terms of their extent of participation in AIS implementation..

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4.5.8 Non-Participation

Those who answered "No" in question 5 were non-participant in IS implementation (22%). These respondents were asked in question 7 to state their reasons for non-participation and the reasons were classified using various categories of responses. Most of the non-participants (80%) stated that they did not participate in IS implementation because they were not required to do so by top management. 4% of the non participants stated that they were not part of the implementation project or team, being new to the organization, claiming it was not an accounting department's responsibility and they did not possess business and process knowledge, as the main reasons for non-participation.

4.5.9 Factors Influencing Participation

The respondents were asked to state their agreement on five scales from "strongly agree" to "strongly disagree" on six factors that might influence them to participate in AIS implementation in question 8. The six factors were taken from a study by Johnston et al. (2002) which identified six pre-requisites, which appear to be important to enable the key roles of management accountants to be fulfilled in the organizational change agenda [see also Brignall et al. (1999)]: *Team player; Sound and established accounting systems; Business and process knowledge; Flexibility; Interpersonal and communication skills;* and *Challenge and change.*

The results showed that the mean score for "flexible job boundary" was the highest (2.35), followed by "challenge and change exists within and outside the business environment" (2.11), "reliable, efficient and automatic accounting system" (2.02), "appointment of someone from the accounting department as one of the members of the implementation team" (2.00). "Having good interpersonal and communication skills" scored lowest with a mean score of 1.93. This means that having good interpersonal and communication skills was very important to the accountants to enable them to participate in AIS implementation as compared to the other factors.

4.5.10 Influence of the Systems Implemented on Role Changes

The respondents were asked whether implementation of the new system has brought about any role changes. 63.2% of the respondents agreed that the systems implemented enable them to change their traditional role which 36.8% disagreed with the statement. Those who responded that their roles have changed were asked how the system has changed their traditional role as an accountant in Question 10. It was an open-ended question; therefore

responses were again categorized using a coding procedure. The majority (13%) of them stated that the IS increased the efficiency and effectiveness of their accounting department and, therefore, they had more time to analyze and interpret data (11%). The IS enabled them to process information for decision making faster (9%) and as a result, the accounting profession had more flexible job boundaries. The IS implementation also required them to have or to be exposed to new knowledge of IT (5%) and lastly, they were required to be part of the team as financial reviews were frequently required during the implementation process. Therefore, they moved from their traditional role to a new role as a result of IS implementation.

4.5.11 Type of Role Performed By the Accountants In Relation To AIS Implementation Project

Question 11 of Questionnaire 1 asked the accountants to indicate - from the scale of 1 (almost never true) to the scale of 5 (almost always true) – the relationship or extent of co-operation between the accounting department and the information systems (IS) department in relation to the AIS implementation. The type of relationship would imply the type of role (participation) required to be performed by the accountants during the implementation. These categories were taken from Mumford (1997), who proposed three types of participation, from least to most direct, as follows:

Table 16 : Types of Participation

Aston University

Illustration removed for copyright restrictions

Source: adapted by the author from Mumford (1997)

The mean score for "representative" role was higher (3.70) than "consultative" (3.50) and "consensus" role (2.94). This indicated that the majority of the accountants surveyed almost always performed a "representative" role in AIS implementation project.

4.5.12 Innovativeness of Accountants

Following Rogers (1983), only a first or early adopter of an innovation within the accountants' population was understood to be an innovator. The underlying assumption was that individual differences between accountants may affect the level of an accountant's involvement and resulting benefits (Doll and Torkzadeh, 1989). Doll and Torkzadeh

(1989) classify the end-users into two categories-"early adopters" and "reluctant users" (p.1153). "Early adopters" are users who quickly adopt end-user tools and easily develop considerable skill in the use of these tools. "Reluctant users" are individuals who lack motivation for involvement and have considerable difficulty learning to use computer systems. Innovativeness refers to the activeness of the accountants in initiating or participating in the AIS implementation. An innovative accountant (innovator) refers to a person who actively favours or strives for progress towards better conditions, which it is hoped that AIS implementations will be. Consequently, this study classified the accountants into innovator and adopter.

Table 17: Innovativeness of Accountants

	Frequency	Percent	Valid Percent	Cumulative Percent
Innovator	57	53.8	53.8	53.8
Adopter	49	46.2	46.2	100
Total	106	100	100.0	

In order to measure the innovativeness of an accountant, Section C of Questionnaire 1 required each accountant to indicate his/her thought on the system he/she used (Question 1), frequency of using computers (Question 2), expertise in using computers (Question 3), thought on the computers used (Question 4), number of computer magazines read (Question 5), number of business magazines read (Question 6) and his/her attention in details in PC-related advertisement (Question 7). The total scores were added and then divided into two categories: innovative accountants (scores 27-84) and less innovative category (adopters) (scores 85-111). About 53.8% of the respondents were adopters and 46.2% were innovators with respect to their innovativeness scores.

4.5.13 Survey of IT Professionals

The researcher surveyed IT professionals in the accountants' organization to assess their respective accountants' involvement in AIS implementation. This approach overcomes the self reporting bias of accountant's involvement and follows the Javenpaa and Ives (1991) approach. Thus, in this manner the level of accountants' involvement scores were obtained using IT professionals' perception scores (see Section 3.8). The IT professionals were also directly involved in all IT planning and implementation in their organizations. Thus, they

were in better position to give information on their organizational characteristics to classify the organization into adopter/innovator host organization categories.

The majority of the IT professionals (66.7%) belonged to organizations with turnover of more than RM25millions (£4.17millions). A large number of professionals (24%) were working in manufacturing industries and construction industries (17%). IT professionals were asked to provide information about their position, length of time at their current positions and the location of their employment in the organizational structure. Two-thirds of the IT professionals in the sample occupied middle-level management (20 respondents) positions and the rest were from the top management (10 respondents).The majority of these professionals (66.7%) have been working for one to five years in their respective organization, followed by those who have been working for more than 5 years (23.3%) compared to a relatively small number who have been employed in the organization for less than 1 year. About 66.7% of these professionals have been working at the corporate level and 30 % at business unit level.

Question 1 of Questionnaire 2 asked the IT Professionals about the type of systems used in their organizations. The result shows that 23.3% of their respective organizations are still in the process of implementing AIS systems and 26.7% have actually fully utilized AIS in their organizations. The IT professionals indicated nearly 12 vendors and SAP was the most frequently cited vendor.

4.5.14 Objectives of Systems

In Question 3 of questionnaire 2, these professionals were asked to choose from the listed categories the main reason(s) for implementing the IS. 70% of the respondents reported that the first main reason was growing business needs and change followed by business process reengineering (BPR). The second main reason was problems with the old and outdated systems and the third main reason was maintaining a competitive advantage. It can be concluded that the external environment such as competition and survival were the main driving forces behind changing to a new IS.

4.5.15 Major Benefits of Systems Implementation

The respondents were asked in Question 4 to state the major benefits of the new systems implemented in their organizations. 40% of respondents indicated that integration, and 33% indicated that operational efficiency and effectiveness have been the main benefits derived from IS. Real time data, cost saving and transparent information were ranked third each by 17% of the respondents. 13% of responses reported productivity, systematic control and competitive advantage as the next benefit category. Better communication and better decision making were ranked by 10% of responses. The next category, accurate information and better performance, was ranked by only 7%. Centralized data base, reduced manpower, user-friendly and better customer relationships were ranked last by all the respondents.

4.5.16 Major Problems of Systems Implementation

In Question 5, these respondents were asked to indicate the major problems in the implementation of IT systems. 30% of the respondents indicated cost of implementation as the major factor, while others indicated time taken in implementing the system and resistance to change, and commitment from users, mentality of the users, compatibility, maintenance and instability of the new system. Need for training during the transformation process was also highlighted, and very few (3%) of the respondents showed concern over data integrity, incomplete data for integration, inflexible, user lack of skills, not up to expertise and developer's staff turnover.

4.5.17 Perceived Accountants' Involvement in IT implementation

In Question 6 of Questionnaire 2, the IT Professionals were asked to indicate their opinion on 10 statements in relation to accountants' involvement in IS implementation in their organizations (see Section 3.8), following Jarvenpaa & Ives (1991). The total scores of involvement were then classified into passive involvement (scores 10- 23), moderate involvement (scores 24-37) and active involvement (scores 38-50).

The results indicated that the perception of the accountants' involvement with IT projects was evenly classified into the three categories of "moderate" (33.3%), "active" (33.3%) and "passive" involvement (30%). Even though 3.3 % of the respondents did not answer the question, it can be safely assumed that the results were representative of the different categories of opinion of the IT professionals and thus, enhance the reliability of the study.

4.5.18 Overall Involvement of Accountants in IT Implementation

Question 7 of Questionnaire 2 asked the IT Professional to note at which stage (initiation, adoption or implementation) the accountants were usually involved. The IT professionals were also asked to state the level of involvement of the accountants (involved fully, partially involved or not involved) at each of the stage.

Table 18 : IT Professionals – Accountants' Involvement

Involvement		Frequency	Percent	Valid percent	Cumulative percent
at initial stage	Involved Fully	15	50.0	51.7	51.7
	Partially Involved	13	43.3	44.8	96.6
	Not involved	1	3.3	3.4	100.0
	Missing	1	3.3	100	
	Total	30			
at adoption stage	Involved Fully	11	36.7	37.9	37.9
	Partially Involved	15	50.0	51.7	89.7
	Not involved	3	10.0	10.3	100.0
	Missing	1	3.3	100	
	Total				
at implementation stage	Involved Fully	11	36.7	37.9	37.9
	Partially Involved	13	43.3	44.8	82.8
	Not involved	5	16.7	17.2	100.0
	Missing	1	3.3	100	
	Total				

When analyzed separately regarding the perception of IT professionals on the accountants' involvement at each of the implementation stages, it can be seen that the 51.7% were involved fully at the initiation stage, 36.7% at adoption and implementation stages (Table 18). Thus, it can be said that the accountants were fully involved at initiation stage but partially involved at the other two stages. It is interesting to note that 50% of the accountants were involved fully at initiation stage. This result seems to suggest that managerial instructions aimed at increasing the user's perception of the usefulness of the implementation might have contributed to higher involvement at adoption stage. Amoako-Gyampah (2005) found a similar pattern for firms which have implemented ERP systems. Furthermore, cultural dimension of power distance and individualism (Hofstede, 1980) can also be used to describe higher involvement at adoption stage (Smith and Hume, 2005). Applied to Malaysian culture, which is characterised as high in power distance (i.e., extent to which the members of a society accept power in institutions and organizations is distributed unequally) and low in individualism (i.e., preference for a closely knit social framework) it seems likely that the accountants might find themselves to conform to organization expectations (Gray, 1988).

4.5.19 Perceived Willingness of Accountants to Get Involved

In Question 9, IT professionals were asked about the overall willingness of accountants to engage in the implementation process. This question was directly related to accountants' involvement role in AIS implementation. The respondents were given six choices to choose from, based on Brignall et al. (2002). The respondents could choose more than one answer. It was found that more than half of the respondents (57%) believed that the accountants participated only in financial matters. 40% of the IT professionals disclosed that accountants were always willing to participate and spend time in all phases. This finding suggests that personal relevance of the technology might have contributed to more willingness of the accountant to get involved (see Barki and Hartwick, 1994). However, the same percentage of respondents indicated that accountants participated only because of instructions from top management. 10% of the respondents claimed that accountants were more reluctant than interested. Only a small percentage classified accountants as not willing to be involved or did not even visit the implementation site.

4.5.20 Perceived Reasons for the Non-participation of Accountants

In cases where the accountants were not participating in AIS implementation, the IT professionals were asked their perception of the major reason for non-participation among the accountants. Most of IT professionals (30%) indicated that the main reason for non-participation among accountants were due to their busy schedule with their current accounting jobs. Other reasons were: not being members of the implementation team and less usability of any accounting or finance skills during the implementation process as indicated by 19% and 15% of the respondents respectively. It was also indicated that accountants lacked an understanding of business processes and lacked communication skills. The lowest percentage of the responses noted that the accountants were reluctant to expose themselves to operations (Johnston, et al., 2002). This finding seems to suggest that non-participation of accountants might have been caused by other conditions surrounding AIS implementation.

4.5.21 Organizational Innovativeness

Following Rogers (1983), organizational innovativeness was defined in a similar way to an accountants' innovativeness. Section C of Questionnaire 2 required the IT professionals to indicate their organization's characteristics. These characteristics are assumed to measure an organizational innovativeness through management philosophy in relation to the type of communication channel being practised; insistence on conformation to accepted standards and specifications; policies on risky activities and opportunities; adaptation to changes in

business conditions; policies on formally laid down procedures; type of formal control of most operations; and policies on adherence to formal job descriptions. Based on the total scores for each of the statements, the host organizations were classified into two categories of innovator and adopter. An organization with an innovativeness score of less than 38 was considered as an adopter organization; those scoring more than 38 were considered an innovator organization.

Table 19 : Organizational Innovativeness

	Frequency	Percent	Valid Percent	Cumulative Percent
Innovator	16	53.5	53.3	46.7
Adopter	14	46.7	46.7	100.0
Total	30			

The underlying assumption was that organizational differences were assumed to be able to promote or inhibit the extent of accountants' involvement in the implementation process. The majority of the respondents (53.3%) belonged to innovator host organizations and 46.7% to the adopter host organizations. Thus, perception and opinion of the IT professionals seem to indicate that most of their organizations were innovative. These findings from accountant and IT professional surveys have been further investigated using four hypotheses developed in Chapter 3.

4.6 Hypothesis Testing

Four hypotheses were generated for this study (see literature review in Chapter 3). The researcher used standard statistical tests such as the t-test, chi-square test and multiple regression analysis. The t-test is a statistical test that helps to show if there is a significant difference between different treatments being tested in a controlled situation. The chi-square goodness-of-fit test uses frequency data from a sample to test hypotheses about population proportions, such as to investigate the difference between innovator and adopter accountants participation in AIS implementation. Multiple regressions identify those variables simultaneously associated with a dependent variable and to estimate the separate and distinct influence of each independent variable on the dependent variable. The hypotheses were tested in two stages. First, the results of these tests and their interpretation are discussed below.

H1: Innovator accountants will participate more actively in AIS implementation than the adopters.

To test H1, the researcher used the scores of innovator and adopter accountants. The useable number of responses was 79 (i.e., accountants who answered Question 6 in Questionnaire 1). Out of 79 accountants, the total score of 38 accountants was between scores 27-84. Thus, these were classified as adopters and the rest were innovators. The researcher used a t-test to determine whether total participation is significantly different between innovator and adopter accountants. If the significance level of Levene's test is $p=0.05$ or less, this means that the variance for the two groups of accountants are not the same, therefore the data violates the assumption of equal variance. In this study, the significance level for Levene's test is 0.616, larger than the cut-off of 0.05. This means that the assumption of equal variances has not been violated (see Table 20).

Table 20: Hypothesis 1

	Type	N	Mean	Std Deviation
Total Participation	Adopter	38	45.18	11.065
	Innovator	41	42.34	11.159
Levene's Test for Equality of variance Total Participation	F	Sig	t	df
Equal variance assumed	0.254	0.616	1.136	77
Equal variance not assumed			1.136	76.64
t-test for Equality of Means	Mean Difference	Std. Error Difference	Sig	
Equal variance	2.840	2.5030	0.260	
Equal variance not assumed	2.840	2.5030	0.259	

Table 20 shows that the difference in the means of 45.18 and 42.34 with standard deviation of 11.06 and 11.15 respectively for the innovator accountants and adopter accountants on total participation is not significant (t=1.136, p=0.26), thus hypothesis 1 is not substantiated.

H2: Innovator accountants are more likely to change their traditional role than adopters.

The classification of accountants into adopters and innovators were then traced back to their responses in Question 9 of Questionnaire 1, that is, whether the system implemented in the organization brought change (s) to their roles as accountants. Only 67 accountants responded. It was assumed that innovator accountants would have a higher percentage of agreement that the system would change their traditional role due to their active involvement in system implementation.

Table 21 : Hypothesis 2

Type			Change of Role (COR)		
			Yes	No	Total
Adopter	Count		38	19	57
	Expected Count		36.0	21.0	57.0
	% within total innovative		66.7	33.3	100.0
	% within COR		56.7	48.7	53.8
	% of total		35.8	17.9	53.8
Innovator	Count		29	20	49
	Expected count		31.0	18.0	49.0
	% within total innovative		59.2	40.8	100.0
	% within COR		43.3	51.3	46.2
	% of total		27.4	18.9	46.2
Total	Count		67	39	106
	Expected count		67.0	39.0	106.0
	% within total innovative		63.2	36.8	100.0
	% within COR		100.0	100.0	100.0
	% of total		63.2	36.8	100.0

	Value	df	Asymp. Sig (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	0.634	1	0.426		
Continuity Correction	0.353	1	0.552		
Likelihood Ratio	0.634	1	0.426		
Fisher'Exact Test				0.545	0.276
Linear by Linear Association	0.628	1	0.428		
N of valid cases	106				

Table 21 shows that out of 57 adopter accountants, 38 accountants felt that AIS implementation changed their traditional role and 19 accountants felt no change in role. Of the 49 innovator accountants, 29 felt changes in their traditional role and 20 did not. Pearson chi-square value of 0.634, with an associated significance level of 0.426, shows that there is no significant difference between innovator and adopter accountants. The corrected value is 0.353, with an associated significance level of 0.552 which is larger than the alpha value of 0.05; therefore we can conclude that the result is not significant. This means that the proportion of innovator accountants that change their role is not significantly different from adopter accountants. Thus hypothesis 2 is not substantiated.

H3: Innovator host organizations will influence accountants to be more actively involved in AIS implementation than adopter host organizations.

Similar to accountants, organizations where the accountants worked (host organizations) can also be classified into adopter and innovator based on their organizational

characteristics (refer Section C of Questionnaire 2). Total scores of less than 38 indicated an adopter Host Organization and vice versa. Innovator Host Organizations have been claimed in the literature to be able to provide the necessary support and environment for the accountants to be actively involved in AIS implementation. This classification was then traced back to the total scores of the accountant's involvement in AIS implementation in Question 6 (Questionnaire 2) to test the hypothesis that innovator host organizations would influence accountants to be more actively involved in AIS implementation than adopter host organizations.

Table 22 : Hypothesis 3

	Type	N	Mean	Std Deviation
Total Involvement	Adopter	13	30.62	5.3000
	Innovator	16	29.25	6.0830
Levene's Test for Equality of variance Total Involvement	F	Sig	t	df
Equal variance assumed	0.031	0.861	0.636	27.00
Equal variance not assumed			0.646	26.83
t-test for Equality of Means	Mean Difference	Std. Error Difference	Sig	
Equal variance	1.37	2.146	0.530	
Equal variance not assumed	1.37	2.115	0.524	

As can be seen, the difference in the means of 30.62 and 29.25 with standard deviation of 5.300 and 6.083 for the innovator and adopter host organization on total involvement is not significant (t=0.636, p=0.530), thus hypothesis 3 is not substantiated.

H4: The three independent variables (innovativeness, type of role performed, pre-requisites,) will significantly explain the variance in an accountant's participation.

The three independent variables were subdivided into their components resulting in 11 independent variables: total scores of innovativeness (adopter & innovator - Section C Questionnaire 1); type of role performed (consultative, representative & consensus – Question 11 Questionnaire 1); Pre-requisites (Team player; Sound and established accounting systems; Business and process knowledge; Flexibility; Interpersonal and communication skills; and Challenge and change – Question 8 Questionnaire 1). These variables were then regressed against the total scores on participation (Question 6 Questionnaire 1).

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In applying the multiple regression, we have to check that the correlation between each of the independent variables is not too high (e.g. 0.7 and above) (Pallant, 2001, p.143). In this study, the correlation among the independent variables is less than 0.7 therefore all variables will be retained. If values in the column of tolerance of coefficients table is very low (near 0) this indicates that correlation with other variables is high, suggesting the possibility of multi-collinearity. In this study, the values of the eleven independent variables are quite respectable, so this study does not appear to have violated this assumption.

Table 23 : Model Summary

Model Summary [b]

Model	R			Adjusted R Square	Std. Error of the Estimate
1	.351	[a]	.123	-.026	11.276

a. Predictors: (Constant), INNOVATIVENESS, PRE-REQUISITES, TYPE OF ROLE PERFORMED
b. Dependent Variable: TOTAL PARTICIPATION

Table 23 above shows the eleven independent variables with the dependent variable, after all the inter-correlations among the eleven independent variables are taken into account, and the R squared (.123). This is the explained variance and is actually the square of the multiple R $(.351)^2$. The ANOVA Table 24 below shows that the F value of .83 is significant at the .613 level. What the results mean is that only 12.3% of the variance (R-square) in total participation has been significantly explained by the eleven independent variables. Thus, hypothesis 4 is not substantiated.

Table 24 : ANOVA Table

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1158.007	11	105.273	.828	.613[a]
	Residual	8264.341	65	127.144		
	Total	9422.347	76			

a. Predictors: (Constant), TOTAL INNOVATIVENESS, CONSULTACCGDEPT, RELIABLEACCGSYS, TYPE OF IS, FLEXIBLEJOBBOUNDARY, MEMBER FRACCGDEPT, CHALENGE&CHANGE, ACCGDEPTULTIMATRESP, INTERPERCOMMSKILL, APPOINTACCNGREP, UNDERSTDGBUSSPROCE
b. Dependent Variable: TOTAL PARTICIPATION

4.7 Robustness check

The findings show that the 4 hypotheses were not substantiated indicating that neither "innovativeness", "pre-requisites" nor "type of role performed in AIS implementation" were the *major* explanatory factors for the extent of participation among accountants in Malaysia, as evidenced in previous studies. Thus, several procedures were undertaken to ensure that it was not due to something else for example checks were made to ensure that the results were not due to faulty indicators where separate analyses were conducted with the various indicators of the same concept to see if there was a consistency in the patterns regardless of which indicators were used.

Another check was made to see whether the answers to the question were affected by a social desirability factor, by looking at questions which could produce these socially desirable responses. For instance, if most respondents had given much the same answer then the question may not have discriminated adequately between any differences that might exist between respondents, then another question would be used instead.

4.8 Conclusion

This chapter concludes the first part of the study. The main findings show that the 4 hypotheses were not supported and after the researcher was satisfied that the results were not due to technical errors (statistically), the researcher decided to conduct case studies in the private sector to study in detail factors specific to the Malaysian environment which might be absent from the Western literature reviewed in chapter 3. However, the researcher was not able to get access to private sector organizations as the organizations were not willing to disclose their data and the AIS implemented due to privacy and security issues. This had shifted the direction of this research towards public sector organizations, as the Secretary General of the Health Ministry was willing to provide all the necessary assistance for the researcher to conduct studies in two of its hospitals under its jurisdiction [Appendix II]. The hospitals were currently in the stage of implementing AIS. The researcher also obtained verbal permission to study AIS implementation in two public universities for comparison purposes through personal contacts. Therefore, the next chapters that follow will describe the second part of the study in four public sector organizations using a case study approach.

CHAPTER 5

LITERATURE REVIEW: SECOND PART OF THE MAIN STUDY

AIS IMPLEMENTATION IN THE MALAYSIAN PUBLIC SECTOR

5.1 Background

Malaysia is a constitutional monarchy government with 13 states and 3 federal territories. The Malaysian government is distributed into three tiers, namely federal government, state government and local government. The federal government is the highest tier of the government, which comprises ministries, departments and public enterprises. The state government is the second tier of government which comprises ministries (for Sabah and Sarawak only), departments and public enterprises. The local government is the third tier of government, which is governed by the Local Government Act 1976. By virtue of Section 2 of the Act, local authority means any city council, municipal council or district council.

The reforms in public sector have been seen and applied as a means to bring about desired changes in the administration and improve its capacity as well as performance (Siddiquee, 2006; Skålén, 2004). Much of the contemporary administrative reforms are seen as either related to or an integral part of what is known as the new public management (NPM) in the developed and developing countries (Sarker, 2006). The influence of NPM is clearly evident in Malaysia as in other Southeast Asian countries (Cheung and Scott, 2003) over the past decades a range of NPM–type reforms have been initiated and implemented in the Malaysian public sector with the aim of transforming it into an efficient, dynamic and market driven administration(Siddiquee, 2006, p.340). More specifically, NPM suggests changes in the process of budgeting, human resource management, and quality initiatives. In this regard, public sector is beginning to view IT as a major asset (Rocheleau, 2005, p.8) to deliver these changes (Stamoulis et al., 2001). ICT is replacing the paper flows between the pyramid of government and recipient of policy, as well as the public civil service customers. Therefore, ICTs is a major requirement for government to enter the digital age.

The Malaysian government excels in undertaking programmes for IT application in its administration as compared to other developing countries. The information systems in the public sector, however, are often very complex due to the complexity of the legislation that underlies the organizational processes (Khalfan & Gough, 2002). The stakeholders in the

public sector, including in Malaysia, have many different and sometimes conflicting interests and ideas with regards to AIS implementation. This chapter describes the information, communication & technology (ICT) development in the Malaysian public sector in the context of NPM initiatives and then reviews the issues of power and culture that might affect the success of AIS implementation in the case study chapters that follow.

5.2   ICT in the Malaysian Public Sector

Public sector organizations are facing increasing demand of citizens for speedier services as citizens know about more and more 'e-commercialization' in the private sector, as a result, public sector organizations are spending more on e-government services and resources. The use of information technologies has the potential to improve the process of democratic decision making through increased connectivity between constituents and decision-makers, increased transparency through greater documentation and dissemination of public information, and by encouraging collaboration and consultation during the decision making process (Khosrow-Pour, 2005, p.384).

Malaysia, an economy previously known as the largest exporter of tin and rubber, is now moving towards new processes and technology, enhancing utilization of ICT (information and communication technologies), inculcating a culture of excellence and productivity in society[1]. The beacon to drive the country into this new position is the Multimedia Super Corridor (MSC), an idea conceived earlier in 1991 by the Prime Minister of Malaysia, Dr Mahathir Mohamad who unveiled a grand vision for the country to achieve a fully developed nation status in the year 2020 (Ramasamy et al., 2004).

The MSC is both a physical area and a paradigm shift for creating value in the information age. The MSC is a 50x50 km^2 zone, stretching from the Petronas Twin Towers in the centre of Kuala Lumpur to the newly built Kuala Lumpur International Airport (Ramasamy et al., 2004). Within the heart of the MSC are two other mega developments – Putrajaya, the new federal government administrative capital and Cyberjaya, an ICT city with smart buildings and the latest information technology infrastructure to meet both the living and business needs of the knowledge workers. Although more than 700 companies operate

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[1] It has registered a productivity growth of 3.3% per annum which surpassed that of several countries in the Organization for Economic Co-operation and Development (OECD), including the United States, United Kingdom, Canada, France, Germany, Japan and Italy, over the period 1996-2001.

within the MSC, with more than 50 considered world class, published academic literature on the MSC is scant (Ramasamy et al., 2004)[2].

The e-government initiative is an outcome of the MSC that involved transforming the way the government operates and delivers services by improving the accessibility and quality of interactions with citizens and businesses, information flow and processes within government. For example, Phase –I of MSC among other flagship applications included electronic government and telemedicine. There have been computerization programmes in all government agencies and departments but as Blanning et al (1997) noted, that national information infrastructure requires developing skills as well as building a society that is computer literate and fluent to face the 21st century technological environment. The aggregate spending on ICT hardware, software, telecommunications equipment, project management and systems development has been more than 3 billion Ringgit (about 5 hundred million pounds) in every year over the last two decades (Karim and Khalid, 2003). Nonetheless, competitive advantage is not the ultimate objective as competition is much less important in the public sector. Therefore, public sector organizations will be much less willing to invest large amounts of money in IT to gain competitive advantage (Rocheleau, 2005). It is more often a cost-cutting device in improving services to the public.

In order to spend wisely, the public sector has been introduced to various techniques and IT strategies. Previously, the public sector in Malaysia took a decentralised approach in implementing ICT. This approach needs non-technical requirements that include, among others (Karim and Khalid, 2003, p.42): the balancing of financial and economic constraints against the achievement of the strategic objectives; ensuring successful build-up of resources and skills; ensuring a common understanding of expectations across all parties; setting common standards and frameworks across the pilot projects; managing the interfaces of inter-related functionality and interfaces with existing legacy systems; and ensuring effective management of multiple consortia and of the multiple organizations that make up some of the more complex consortia.

The government departments and agencies used their own efforts, training and budgets. For instance, Ong-Giger (1997) noted that national-level economic policy began to

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[2] These companies go through a selection process and once approved receive financial incentives which include a 100% investment tax allowance and the freedom to source funds globally. They also have free importation of multimedia to physical and IT infrastructure.

prioritize the development of high and especially information technology from the late 1980s, which became increasingly urban-centered in the 1990s. However, high cumulative costs, limited availability of skilled resources, inconsistent service quality and lack of integration between systems made the government change to a "whole government" approach[3]. In Malaysia, the E-government initiative is not just about making government electronic. Only 20% of E-government is really about the electronic component whereas the remaining 80% revolves around the various aspects related to government and all its bureaucratic and power issues, such as dealing with agencies still engrossed with the fear of devolvement of power and authority (Karim and Khalid, 2003). The development of ICTs has increased the efficiency of both private and public bureaucracies to manage data and reduce the time necessary for transactions to occur and allows for flatter organizations with decentralized decision-making processes (Khosrow-Pour, 2005, p.385).

In the Malaysian public sector, stakeholders to any change initiative, such as a new AIS, may be classified into four categories: change sponsors; change champions; change agents and change targets (Karim and Khalid, 2003, p.189). Change sponsors are the individuals or groups (if the organization is large) with the power to sanction and legitimize change. They lead change initiatives by playing the management role of assessing the dangers and opportunities that change encompasses.

Change champions comprise of the members within the change sponsor groups who are charged with the responsibility to drive, direct and steer day-to-day implementation of the change. As noted by Lawless and Price (1992) these are members of organizations presenting outside technology to an audience of fellow organizational members who are potential users. Unlike the change sponsor, who merely oversees the change plan, the change champion actually takes full ownership to ensure the change happens as planned.

Change agents are individuals or groups who actually bring about the change. The NPM reforms are designed to get public officials (change agents) to buy in to the modernization and reform agenda and commit to vision of the future presented by the politicians (Horton, 2003). These agents with backgrounds in information technology, business engineering, or business usually start the change process and have significant contribution

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[3] Malaysia lags behind its regional neighbours Japan and Singapore in supply of knowledge workers (Eight Malaysia Plan, 2001-2005).

to the success or failure of a change agenda in any organization. Their significance has received quite considerable attention in the literature. Pettigrew (1985) points out that change agents have at least five interrelated potential power sources – expertise, control over information, political access and sensitivity, assessed stature, and group support. Using these sources of power, change agents are thought to persuade the management that change is in their self interest. Some researchers acknowledged that these change agents have their functions in maintaining and reproducing the existing distribution of power (For example, Nord (1974)].

There are many factors specific to the public organizations that need to be considered in implementing AIS, especially in Malaysia. In comparison to the private organizations, the public organizations have different environmental factors, greater legal constraints and political influences, greater scrutiny, greater complexity of objectives and fewer performance incentives, thus, public sector systems are more concerned about accountability, openness and representativeness than private sector system (Bruce, 2005). Considering the huge amount of investment by the government in making it electronic, the issues of power and culture have significant influence over AIS implementation success in every public organization as the outcome cannot be ignored, because the failure can be detrimental to the ruling party and the country as a whole.

5.3   *Power Issues in the Public Sector*

Power exists in every social, organizational and managerial setting which consists of many levels of management hierarchy. The role of power in organizational change efforts has been recognized as being important since the early 1970s (Bradshaw & Boonstra, 2003). Generally, personal power is required to make change happen in organizations (Boonstra, 2003, p.279) and it has typically been seen as the ability to get others to do what you want them to, if necessary against their will (Weber, 1978). Power concerns the interplay of class structure in a society (Marx, 1976) and is critical to facilitate the implementation of decisions and eventually affects organizational outcomes (Hian & Chian, 1997). Given the scale of work carried out by departments in governmental organizations, it can be inferred that issues of power come into play more frequently (Bouwen, 1995).

French and Raven (1959) suggests a classification of power bases: *coercive power* is based on subordinates' perceptions that the supervisor has the ability to punish them if they fail to conform to his/her influence attempt; *expert power* is based on subordinates'

beliefs that a supervisor has job experience and special knowledge or expertise in a given area; *legitimate power* is based on subordinates' belief that a supervisor has the right to prescribe and control their behaviour; *referent power* is based on subordinates' desires to identify with a supervisor because of their admiration or a personal liking for the supervisor; and *reward power* is based on subordinates' perceptions that a supervisor can reward them for the desired behaviour. Similarly, the change literature informs us of four different power perspectives – manifest vs latent power and personal vs collective power (Bradshaw and Boonstra, 2004).

These power bases can influence subordinate compliance to the management through their ability to punish or reward (i.e. *coercive and reward powers*), their formal authority (i.e. *legitimate power*), and their personality and special expertise, knowledge and experience (i.e. *referent and expert powers*) (Hian & Chian, 1997). Hian & Chian investigate the effects of these power bases (of accounting supervisors) on the compliance and satisfaction of accounting subordinates and the result shows that for accounting supervisors to be effective in inducing subordinate compliance, they should enhance their *expert* and *legitimate* powers and not *coercive power*. Lee explains that coercive power may work in the short run but it will impose a psychological and emotional burden on both the supervisors and subordinates and encourages suspicion, deceit, dishonesty, dissolution and other adverse reactive responses (Lee, 1988).

According to exchange theory in social psychology, power varies across departments, depending upon a department's work substitutability, centrality and ability to cope with uncertainty. Usually the power lies with the department holding vital information, resulting in some departments having more power than others, though it might change over time. For instance, in 1983 Markus reported the conflicting objectives of accountants in the development of a financial information system. The divisional accountants desired a system that would ease the burden of data entry and provide them with timely reports for managerial decisions. On the other hand, the corporate accountants desired a system that would produce consolidated financial statements, tax analyses, and independent audits. Using their authority and power, the corporate accountants excluded the divisional accountants from the design process and subsequently forced the divisional accountants to use a system which reduced their power by making their division performance more transparent to corporate analysts.

In IS literature, IS development is generally assumed to be a rational process, directed towards the improvement of decision making and organizational effectiveness and ignores the possibility that IS design is a political process in which various actors stand to gain or lose power as a result of design decisions (Robey and Markus, 1984, p.5). This is not exactly the case in public sector, as information management is inherently political and information asymmetries give an advantage to one actor over another (Bellamy, 2000). Information technology is about persons and offices high in bureaucracies "letting go" – exercising less authority and control and is about qualitative changes in power and authority in government agencies (Ott & Dicke, 2001, p. 328). Zuboff (1988, p.285) stresses that "a technology that informates can have a corrosive effect on the hierarchical organization of work as it recasts the sources and purposes of managerial authority".

The commitment of political leadership is a driving force behind the NPM implementation efforts (Sarker, 2006). Applied to the context of AIS, this process of change, such as an AIS implementation, is often initiated, coordinated, and controlled by top management (Boonstra, 2003) who have legitimate position power to control the behaviour of others and to change the structure and processes (Bouwen, 1995; Boonstra, 2003). For example, Hian & Chian (1997) examine the effects of power bases on subordinate compliance and satisfaction among accountants. They found that expert power and legitimate power of accounting supervisors are significantly and positively associated with the compliance of accounting subordinates. Since subordinate compliance is necessary for decisions to be implemented and for managers and organizations to function effectively and efficiently, it can be considered the primary target of power bases (p.54). Power is exercised by a supervisor in order to induce his/her subordinates to comply with the supervisor's instructions or wishes.

In the public sector, though managerial power resides in the more latent and unobtrusive operation of language, symbols, myths, and other meaning-making activities, it fulfils a special role in these unconscious power processes because it has the opportunity, more than others, to give meaning to events and in doing so management contributes to the development of norms and values in the organization (Boonstra, 2003, p.288). NPM seeks to explain how power can determine the political struggles around the generation and implementation of reform (Cheung, 1996). Public managers will embrace NPM because it opens up new possibilities of bureaucratic empowerment. The senior bureaucrats would see their roles transform into that of autonomous public managers to secure new ground of

power. NPM will provide them with new mode of empowerment based on managerial freedom and autonomy which can be further enhanced within the market efficiency paradigm (Cheung, 1996, p.48). There are many ways that public managers can exploit its power in securing employees' participation and involvement in AIS implementation in the public sector and eventually accepting it in their work.

Firstly, the management can design the perceptions, values and norms of employees through "management of meaning" or can convey how serious they are with the implementation of change by "labelling" the instructions. Ashmos et al., (1997) view this labelling exercise as creating symbolic meanings to influence the extent of participation of organizational members. They suggest that the frame that a manager gives to an issue alters the way the manager as well as others process information related to making choices about that issue. The type of language used in the management instructions can also influence the targeted employees so Boonstra (2003, p.290) suggests that managers can charismatically use information in such a way that some alternatives no longer seem desirable or by stressing positive outcomes and not mentioning the risks that are taken. Management can exercise its conditional power (Galbraith, 1983) to demonstrate to the organizational members how serious the management is about the implementation project.

Next, in public service motivation research, Brewer, Selden & Facer (2000) suggest that policy makers and public managers should consider employees in decision-making processes as one of the strategies for advancing public-service motivation. Peters (1996) stresses that the best or even the only way to obtain better results from public sector organizations is to adopt some sort of market-based mechanism to replace the traditional bureaucracy (p.21), such as empowerment. Peters & Pierre (2000) claimed that the idea of empowerment has been adopted as one component of the contemporary reforms of management in and out of the public sector (p.12).

Ott and Dicke (2001) suggest that empowerment is an ideology that is optimistic about the knowledge and abilities of lower-level employees if they can be freed from rigid bureaucratic rules and policies and overly optimistic about positive results that can be achieved when people who receive government services are empowered (p.326). According to Ott & Dicke (2001, p.325), empowerment ideology can be sorted into two primary streams: (1) empower employees to make decisions, and (2) empower recipients of services and other members of the general public to influence government decisions.

Kim (2002, p.233) suggests that individuals who participate in strategic decision-making processes are able to influence their working environment in the broadest possible manner and can also clarify their roles to reduce role ambiguity and role conflict during the implementation of strategic plans.

Spreitzer, Kizilos & Nason, (1997) argue the notion that empowerment is derived from theories of participative management and employee involvement. Wagner (1994) noted that participatory management practices balance the involvement of managers and their subordinates in information-processing, decision-making, or problem solving endeavours. Involvement in the process of defining strategic objectives and selecting strategic options may increase influence over the organizational environment (Daniels and Bailey, 1999). Greater involvement by end users will help foster able and 'empowered' employees that can offer substantial contributions to the organization (Spreitzer, Kizilos & Nason, 1997, p.15). In this respect, Kim (2002) said that strategic planning procedures in public agencies should include the employee as a key stakeholder who is necessary to successful implementation of the strategic plan.

Empowerment of lower-level employees and freedom from rigid bureaucratic rules and policies can promote user participation (Ott and Dicke, 2001). Empowerment is about higher management "letting go", turning decisions, responsibility, resources, and accountability over to the employees and/or teams of employees lower in the organization that perform day-to-day tasks (Ott and Dicke, 2001, p.326). This ideology argues for reducing or removing hierarchical layers of top-down controls, expanding employees' decision making and participation. However, "appropriate" forms of direct participation will depend on factors unique to the organization's environment, and these include the competence of management as well as a willingness of both parties (management and employees) to embrace change (O'Brien, 2002). Management involves developing and exercising power and influence to transform individual interests into co-ordinated activities that accomplish valuable ends (Hian & Chian, 1997).

Howcroft and Wilson (2003b) claimed that managers can employ a variety of tactics to enrol employees in the process of participation, with no intention of genuine influence-sharing despite the fact that many contemporary reforms of the public sector advocate empowerment as a solution for many of the problems of governing (Peters and Pierre, 2000) and some managers 'pay-lip-service' to user involvement. Direct participation

introduced by NPM is a powerful rhetoric (Horton, 2003) designed to make civil servants and other public employees feel they have more control over their work situation and can influence government policy implementation strategies but in most cases, the end-users would not be able to participate fully in the IS design and implementation process and will nevertheless be expected to comply with the sign-off process undertaken by the management. The change-managers focus on preventing conflict in the change process by regulating participation of the groups involved or by negotiation about the objectives of the change process and the way it is organized and managed (Boonstra, 2003, p.286). It is argued that resistance can be prevented or averted by propagating a rational vision, by elaborately communicating about the changes, and by having line managers and other groups participate in the process of change (Boonstra, 1997).

Kim (2002) stated that little empirical research has been conducted on the relationship between the participative management of strategic planning processes and employees' job satisfaction in the public sector. Ashmos et al., (1997) highlighted that some researchers predict greater openness and participation at all levels throughout the organization in the face of an opportunity rather than in a time of crisis. In addition, Mumford (1997, p.310) explicitly states that user participation "must be seen to reduce risk by contributing to organizational stability in ways that are recognized by management". It also enables managers to promote an image of being progressive and human-centred, whilst at the same time reducing resistance to change and hopefully improving productivity along the way (Howcroft and Wilson, 2003, p.7). This is in line with the call for accounting supervisor to be sensitive towards the needs and feelings of their accounting subordinates, to treat them fairly and to defend their interests when representing them (Hian & Chian (1997) p.62).

Nonetheless, Peters & Pierre (2000) cautioned that a naïve acceptance of the idea of empowerment without consideration of the negative side effects may generate more harm than good for society (p.10). Indeed Horton (2003) summarized the results from the studies in the developed countries that the assumption made by governments about the motivational effects of many of their personnel reforms are proving to have opposite outcome (p.410). In general, the employees perceive that NPM has actually increased their workload and that most of the additional work is unproductive. According to Peters & Pierre, involvement and empowerment have the potential to be manipulative as once the genie of empowerment is let out of the bottle it may be difficult to contain (p.12). This

can present risks of spending public money unwisely and unfairness to clients. Further, the well-known problems of hierarchical, bureaucratic systems of government may also be inherited by their replacements.

Lastly, the management can promote employees' participation through the alignment of organizational culture. The ultimate objective of affecting power during the implementation is to create acceptance for the "new" organization without significant impact on the culture (e.g. values, beliefs, and assumptions). Sufficient consideration should be given to culture as power is a property of a social group and sources of power are shaped by the observable structures and taken-for-granted culture of the collectivity (Boonstra, 2003, p.281) that define acceptable or non-acceptable behaviour within a particular organization (Kaarst-Brown, 1999). Consequently, power is a cultural artefact that becomes entrenched in the hands of certain dominant and privileged groups (Boonstra, 2003, p.288). Thus, a failure by management to lead in the formation of a positive organizational culture can lead to an inability by management to effectively apply discipline when it may be warranted (Crow and Hartman, 2002).

5.4   *Culture Issues in the Public Sector*

Research on public organizations has revealed a common set of characteristics including the presence of a system of rational rules and procedures, structured hierarchies, and formalized decision making processes. Research studies have shown that public sector departments have a dominant culture that is hierarchical and involves a commitment to rules and attention to technical details, i.e., high level of conformity to formal rules and procedures as control mechanisms. Public choice theory argues that public sector agencies are usually monopolies, with no competitive pressure to innovate (Borins, 2002), and because they are very bureaucratic and performing repetitive tasks with stability and consistency, they will resist changing their culture. On the other hand, Maddock (2002) suggests that public sector organizations in reality have subcultures of staff-groups, managers, boards and users. Due to the existence of the subcultures, public sector organizations are chaotic rather than predictable and that staff are emotionally affected by their own subcultures as much as by formal protocols (p.37).

The government in Malaysia is characteristically works on centralized and bureaucratic structure and the traditional public sector culture is still firmly in place despite NPM

initiatives undertaken by the government. Indeed Sarker (2006) claimed that nowhere in the developing world has the complete package of the NPM model being implemented or it is being considered for implementation. One of the reasons for its lack of fit with developing countries socio-economic environment is that it was an innovation of the developed world with distinct socio-economic, political, technological and cultural background.

As early as 1952, researchers identified more than 160 definitions of culture, and today, it is estimated that culture has been defined in approximately 400 ways (Ferraro, 1994). Merchant (2002) argued that culture is the most useful variable in discussing differences in how people behave, and that communication is central to culture and the management of organizational behaviour. Hofstede (1980, p.26) develops a model of culture as "the collective programming of the mind which distinguishes the members of one human group from another". Hofstede defines culture as "'collective programming of the mind.....,' which is largely invisible and unconscious" (1987, p.1) and as "software of the mind" (1991,p.4). Ralston et al. (1993, p.250) propose culture as a group's 'collective being', which is both static and dynamic in nature, and may be studied by looking at the dimensions of the 'collective being' at a point in time as well as over time. Erumban & de Jong (2006) claimed that the social-cultural ambience, perceived values, institutions and political atmosphere might influence the perception of the individuals within a society in a certain way.

Hofstede's study in 1980 using more than 117,000 questionnaires across 67 countries over a six-year period indicated that the systematic differences in the responses of the employees were by the country of the employees, rather than by education, job classification, gender, age, or any other demographic. Hofstede argues that culture includes a set of societal values that drive institutional form and practice and outlines four constructs or dimensions of common social preference that can be used to measure the base values of individual societies (Hofstede, 1984, p.83-84), described as follows.

Figure 7: Cultural Constructs (Source: Hofstede, 1984)

Individualism versus collectivism	*Large versus Small Power Distance*
Individualism stands for a preference for a loosely knit social framework in society wherein individuals are supposed to take care of themselves and their immediate families only.... The fundamental issue addressed by this dimension is the degree of interdependence a society maintains among individuals.	Power distance is the extent to which the members of a society accept that power in institutions and organizations is distributed unequally.... People in Large Power Distance societies accept a hierarchical order in which everybody has a place which needs no further justification. The fundamental issue addressed by this dimension is how society handles inequalities among people when they occur.
Strong versus Weak Uncertainty Avoidance	*Masculinity versus Feminity*
Uncertainty avoidance is the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. This feeling leads them to beliefs promising certainty and to maintaining institutions protecting conformity. Strong Uncertainty Avoidance societies maintain rigid codes of belief and behaviour and are intolerant towards deviant persons and ideas. Weak Uncertainty Avoidance societies maintain a more relaxed atmosphere in which practice counts more than principles and deviance is more easily tolerated. The fundamental issue addressed by this dimension is how a society reacts on the fact that time only runs one way and that the future is unknown: whether it tries to control the future or to let it happen.	Masculinity stands for a preference in society for achievement, heroism, assertiveness, and material success. Its opposite, Feminity, stands for a preference for relationships, modesty, caring for the weak, and the quality of life.

Hofstede (1980) defined the Individualism dimension and Power Distance dimension as cultural elements. Individualism is a measure of the relative importance that societal members place upon their own views and welfare. In a high individualism society, members place great importance upon themselves or a small peer group. In a low individualism society, members' preferences place more importance upon the greater good for the extended family or organization.

According to Hofstede (1980), power distance is a measure of a society's tolerance and preference for unequal hierarchical power on the job. It is a measure of the perceived power or influence between a superior and a subordinate. Individuals from high power

distance countries have indicated stronger fears of disagreeing with their supervisors and showed less questioning of authority in general. Individuals from low power distance countries believe that any power inequities in society should be minimized.

Comparison studies of different national cultures have captured the interest of researchers such as the culture of the U.S. and Hong Kong (Dolecheck and Dolecheck, 1987); Japanese-Americans, Chinese-Americans, Mexican-Americans and Anglo-Americans (Kelley et al. (1987); France, Germany and the U.S. (Becker and Fritsche,1987); the U.S. and Taiwan (Karnes et al., 1989); U.S., Japan and South Korea (Dubinsky et al., 1991); South Africa and Australia (Abratt et al., 1992); the U.S., Hong Kong and People's Republic of China (Ralston et al., 1993); France, Norway and U.S. (Shultz et al., 1993); the U.S. and Hong Kong (Ralston et al., 1994); and U.K, Ireland & U.S. (Alderson & Kakabadse, 1994). The general conclusion is that people in individualistic countries are inclined to make their own choices, while people in collective countries are more readily willing to conform to the norms of the group (Erumban & de Jong, 2006). This is mainly because cultures with a high degree of power distance are expected to be less open to new ideas, as this may entail decision-making on issues in connection with which there are hardly any historical trends and about which there is very little information (Lee & Peterson, 2000). Nevertheless, according to Erumban & de Jong (2006, p.304), within any given national culture, there will be variations in individual needs as well as in individual, team, and organizational behaviour as national culture is presumed to influence the inhabitants of a country in a similar way. Hofstede et al. (1990) show those employees' shared perceptions of daily practices to be the core of an organization's culture.

Merchant (2002) argued that the success of a corporation is significantly affected by the culture operating in an organization thus, it is important for companies to develop both a generally favourable culture and also specific cultural characteristics to maximize the performance of their employees. According to Ott and Dicke (2001), organizational culture is the "fabric" or the core of an organization's identity and is where an organization's identity, personality, and its distinctive values develop and reside. According to Pratt and Beaulieu (1992), organizational culture is practices of an organization that relate directly to the shared values of the members making up an organizational unit. The organizational culture is important because of its ability to have a potential effect on job attributes such as motivation, behaviour; performance, satisfaction

and commitment (see also Parker and Bradely (2000) on intra-departmental differences in Australian public sector organizations).

As public organizations and services are downsized, devolved and dispersed, employees' morale often plummets as fears and insecurities infect the organizational culture (Ott & Dicke, 2001, p.322). As Brown et al, (2003) suggest that NPM fail to deliver its promise of improved performance as suggested in recent studies (see Morley, 1995) mentioning cultural clashes as a main reason. It may be due to insufficient attention being paid to the culture of the organization into which it is being implemented. They further state that attempts to empower employees and to redesign or enrich jobs are often seen as nothing more than manipulative schemes to get employees to "do more with less". Similarly, Morley (1995) points out that empowerment can also be used as a manipulative strategy to exploit workers in the context of working in the underfunded public services. Stability-seeking public sector organizations having strong central controls and operating in hostile environments can be expected to have personnel systems, that do not reward career public servants for successful innovation but that punish them for unsuccessful attempts (Borins, 2002, p.468). Changing the culture of a government organization is a daunting task and requires multiple conscious efforts and frequently the failure is due to the culture of the organization (Ott & Dicke, 2001).

One way of dealing with cultural differences is to optimize the organizational culture and the leadership styles in such a way that the negative effect of a country's culture is counteracted (Erumban & de Jong, 2006, p.311) because Newman & Nollen (1996)'s observation concludes that businesses perform better when management practices are matched with national cultures. Ott and Dicke (2001) list four functions that may be more important than facilitating change (p.333):

- provide shared patterns of cognitive interpretations or perceptions so that organization members know how they are expected to act and to think;
- provide shared patterns of affect, an emotional sense of involvement and commitment to organizational values and moral codes-of things worth working for and believing in-so that organizational members know what the are expected to value and how they are expected to feel;
- serves as an organizational control system, prescribing and prohibiting certain behaviours; affects peoples' expectation about organizational performance and

thereby influences the quality and quantity of performance (see also Siehl and Martin, 1984, 228-229).

In her study of the relationship between participative management and job satisfaction in local government agencies, Kim (2002) concluded that organizational leaders' commitment to changing organizational culture from the traditional patterns of hierarchical structure to participative management and empowerment should be emphasized in the public sector. Some researchers observed that user involvement in the design of information systems has been reported to enhance the perceived success because user value assumption become embedded into the new system's architecture (Argyris & Kaplan, 1994; Franz and Robey, 1986; Markus & Pfeffer, 1983; Shield & Young, 1989). The NPM initiatives stress the move away from hierarchical command structures to more decentralized, flat organizations, based on matrix structures and teams, and devolved authority and responsibility (Horton, 2003, p.404). Failure by management to simply do this perpetuates a negative culture and leaves management open to costly problems (p.23) as the new accounting system that conflicts with the rules and routines characteristic of the organization's culture is likely to provoke resistance which could threaten or delay the changes. Professionalism can spark strong conflict once a particular group feels that its interests are being threatened (Allen et al., 2002).

In accounting literature, Karnes et al. (1989) used eight cases to survey practising public accountants in the U.S. and Taiwan on unethical business practices. The results indicated that the Americans focused on legal factors, consistent with an individualistic culture. The Taiwanese accountants were concerned with the ingroup affected by the practices and the balancing of perceived benefits and harm from the practices. These actions are consistent with a collectivistic culture. Similar studies were conducted by Pratt et. al, (1993) on British, U.S. and Australian accountants – cultural link to ethics.; Ueno & Wu (1993) examined culture and budget control practices in the U.S. and Japan; Tsui (1996) studied ethical reasoning levels of auditors from Hong Kong and the U.S; Tsui & Windsor (2001) studied the ethical reasoning of auditors from two diverse cultures; Paláu (2001) studied Latin-American respondents. In Malaysia, Patel, et al. (2002) reported differences in the responses of accountants from China, Malaysia, India and Australia on an auditor-client conflict scenario. The Australian accountants were less likely to resolve, and less accepting of resolving, auditor-client conflicts by acceding to clients due to individualistic cultural beliefs.

Smith & Hume (2005) reported that accountants of individualistic societies are more likely to adhere to personal principles even if the results are detrimental to the organization. Accountants of collectivistic societies are more likely to subordinate individual values for those that benefit their organization. Whenever employees feel so strongly that they must follow a course of action beneficial to the company, they may not view the action as a compromise of their own personal principles, that is, commitment to the 'greater good' may, over time, tend to override personal principles. Smith and Hume suggested that if firms have established policies in place that are consistent with the employees' personal principles which have developed over time, they may not often be faced with situations in which they feel compelled to choose between their own principles and the expectations of the organization.

In summary, the researcher argues that NPM reforms and mandated use of IS/IT to transfer the delivery of efficient public services has become a topical issue in the management accounting literature. Thus, the review of literature focusing on NPM, power, empowerment and culture issues in public sector provides a framework to investigate these issues in detail in the case studies. For example, recall that it has been argued that attempts to NPM have often failed due to insufficient consideration of the contextual and cultural framework of the public sector and that these contextual factors militate against transferring unproblematic private sector practices into the public sector (Brown et al, 2003, p.239). Therefore, the researcher will explore the influence of organizational culture in AIS implementation besides power and empowerment.

5.5   *Conclusion*

AIS has been instrumental in contributing to the effectiveness of finance departments and the organization's success in the public sector in improving its services to the public. However, AIS implementation can be a problem due to the different political, economical, technological and sociological factors of an organization, especially in the public sector. Thus, the implementation tends to be successful if compatible with the organizational culture. Therefore, the organizational leaders in the public sector must be culturally competent and should emphasize changing organizational culture from the traditional pattern of hierarchical structure to participative management and empowerment (Kim, 2002). If the management exercise its power carefully and properly, these can promote

subordinates' compliance without much resistance and ultimately will result in positive outcomes from their involvement and participation in the AIS implementation.

CHAPTER 6
CASE STUDIES ANALYSIS PROCEDURES

6.1 Introduction

This chapter describes in detail the data collection procedure in the selected four public sector organizations: two hospitals (Prince Hospital and Queen Hospitals) and two universities (Princess University and King University. Section 6.2 describes the sample in each case study organization i.e., the number and position of the interviews. The position of the interviewees points towards their role and responsibility in the organization. It also serves as indicator of their influence over the operations in a given organization. Section 6.3 describes the procedure for analyzing the interview data. Section 6.4 illustrates how response themes and codes have been developed and Section 6.5 concludes.

6.2 Data Collection

Hospitals

The researcher adopted best approach to access the case study organizations. In the case of two case study hospitals, the researcher initially made contact with a gate-keeper within the Ministry of Health who initiated contact with the Secretary General of the ministry, the most senior administrative officer in the ministry. An official letter from the Ministry (refer to Appendix II) was provided to enable the researcher to secure co-operation from all the hospitals under the ministry's jurisdiction. The ministry was very helpful in facilitating completion of this research.

In the hospitals, the researcher spent the first of six weeks in each hospital to understand and familiar with the operation and structure of both organizations. At this stage, the researcher made field notes, conducted observations and attended informal and formal meetings. In order to understand the operation of the hospitals, the researcher assumed the role of a patient and started her journey from the reception to the revenue collection department, to understand the daily transaction processing cycle within the hospital. A short internship with the finance, IT, human resources and revenue collection departments was also done to understand how the information system works in the hospital and in each department. Documents were collected, staff was interviewed and the system used was

empirically tested and used. During the follow-up study, three weeks were spent in interviewing and observing the progress and development of the AIS implementation. Interviews were conducted at all levels which included patients, staff in each department, security officers, cleaners and cafeteria workers. The main reason was to understand how the system worked and affected all these people. Broad and unstructured questions were used in order to understand the phenomenon studied the accountants' participation in AIS implementation.

Universities

In order to get access to the universities, the researcher made contacts with the system developer and system consultant directly responsible for AIS implementation in each university. Different system developers were responsible for the implementations in the two universities. An external system developer was appointed to develop the integrated AIS in King University while Princess University had its own internal developer for the implementation who worked very closely with an external consultant. Initial contacts and meetings with the system developer and consultant were very important to ensure that the AIS systems studied were similar to the ones in the public hospitals. After a few meetings, the researcher was introduced to the accountant and finance staff directly affected by the system implementation, by the system developer and consultant in both universities. The AIS used in both universities were very similar to the AIS in both hospitals. The next step was to become acquainted with the environment of a public university, which was assumed to a certain extent to differ from that of health services. The ultimate aim was to determine whether the propositions derived from the public hospitals' environment could be extended to that of public universities. The researcher was assigned to the finance department in both universities for six weeks. However, both universities gave the authority for the researcher to make short visits to other departments when necessary. Table 25 shows the chronological sequence of interviews at case study organization. The duration of interviews and total number of people interviewed vary across organization.

Table 25 : Duration and Number of Interviews

This table shows the duration of interviews (on site and follow up interviews) and the total number of Interviews carried out in four case organizations.

Case	Main Study July - October 03		Follow-up Study April - June '05		
	On site period	No of interviews	On site period	No of interviews	Total No of interviews
Prince Hospital	6 weeks	34	3 weeks	7	41
Queen Hospital		6	3 weeks	6	12
Princess University	4 weeks	6	3 weeks	8	14
King University	4 weeks	4	3 weeks	6	10
Total	20 weeks	50	12 weeks	27	77

Table 26 shows that these interviews were conducted in various departments affected by the AIS implementation. The representation of the accountants in the sample was on average 6 persons with the highest number of 8 accountants in the case of Prince Hospital. The senior members of staff were interviewed only at the two hospitals. The interviews lasted from one to two hours. Some of the interviews were conducted with the same people, basically the key person holding vital information about the information system's implementation in order to verify, clarify and validate information. According to Tuckman (1972), "By providing access to what is inside a person's head, [it] makes it possible to measure what a person knows (knowledge and information), what a person likes or dislikes (values and preferences), and what a person thinks, his attitudes and beliefs." Most interviews were tape-recorded but some interviewees requested that the interviews should not be taped. Once transcribed, both tape-recorded and written interviews were referred to the interviewees for validation purposes.

Even though the level of co-operation in both universities was higher than in the public hospitals, the researcher had to give assurances to the department heads that the interviews and data obtained from the fieldwork would be treated in confidence, even within the organization's management level. Thus, this study has been very careful in preserving the anonymity of the organizations studied and people interviewed.

Table 26 : Number and Position of Interviewees

This table shows the number of interviewees and position of these interviewees in each case study organization.

Case	Position of interviewees	No of interviews	Total No of interviews
Prince Hospital	Senior administrator	2	41
	Accountant's General Office	2	
	Medical officer	3	
	Head of revenue department	2	
	Head of IT Department	6	
	Accountant/ head of human resource dept	8	
	Staff member (junior & senior)	10	
	Implementation team member	3	
	Chief Clerk	2	
	Security officer	1	
	Cleaner/cafeteria worker	2	
Queen Hospital	Management staff	2	12
	Accountant	5	
	Senior officers	2	
	Administrative assistant	1	
	Clerk (No IT Department)	2	
Princess University	IT Department Head	1	14
	Accountant 1	3	
	Accountant 2	4	
	Finance Staff	3	
	CIIS Representative	1	
	System developer	2	
King University	Head of ICT Centre & Chief Information Architect	2	10
	Accountant (Bursar)	4	
	Assistant Accountant	2	
	Finance Staff	2	
Total			77

Interview structure

The researcher used broad and general questions at each initial interview to understand the phenomenon studied and related issues. These broad questions ensured that the researcher's own experience and knowledge did not influence the discussion or interviews. Initially, the questions asked were:

(1) What are the AIS implemented in the department?

(2) How do you view the AIS in your department?

(3) What are the current merits and benefits of the AIS?

(4) What are the current roles of accountants and the accounting department in IS implementation?

(5) What are the organizational and environmental conditions that influence the success of the AIS implementation?

(6) How can accountants' participation in AIS implementation be promoted?

(7) What are the consequences of implementing AIS?

6.3 Procedure for Analyzing Interview data

Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study (Yin, 1994, p.102) was used. This method is chosen as it is suitable for processing interviews transcript and provides methods that can reveal findings which cannot be elicited through self-administered questionnaires. The method used in this research compared an empirically-observed pattern with a predicted one, taking into consideration that they were within the same contexts of provision of health services and education. The fundamental comparison between the predicted and actual pattern, however, involved no quantitative or statistical criteria and therefore, lacked precision. This allowed the researcher some interpretive discretion in claiming whether the patterns were violated or, in fact, matched. Until improvements in the techniques are developed in future research, the researcher has been cautious and avoided postulating very subtle patterns.

The main purpose of the interview was to ask questions and make comparisons so that identification, analysis and categorization of raw data could be done. The data collected (represented by different patterns in Figure 8, page 101) were disaggregated into conceptual units. The same label or name was given to similar conceptual units of data. The resulting multitude of code labels therefore needed to be compared and placed into broader, related groupings and categories. Names for these categories were derived by utilising terms that emerged from the data; from actual terms used by the participants, or from the terms known in the literature. The labels were entirely subjective and chosen by the researcher but care was taken that they should reflect the nature and content intended. The researcher used coding procedure of Strauss and Corbin (1998) for coding the interview data in three stages: open, axial and selective coding
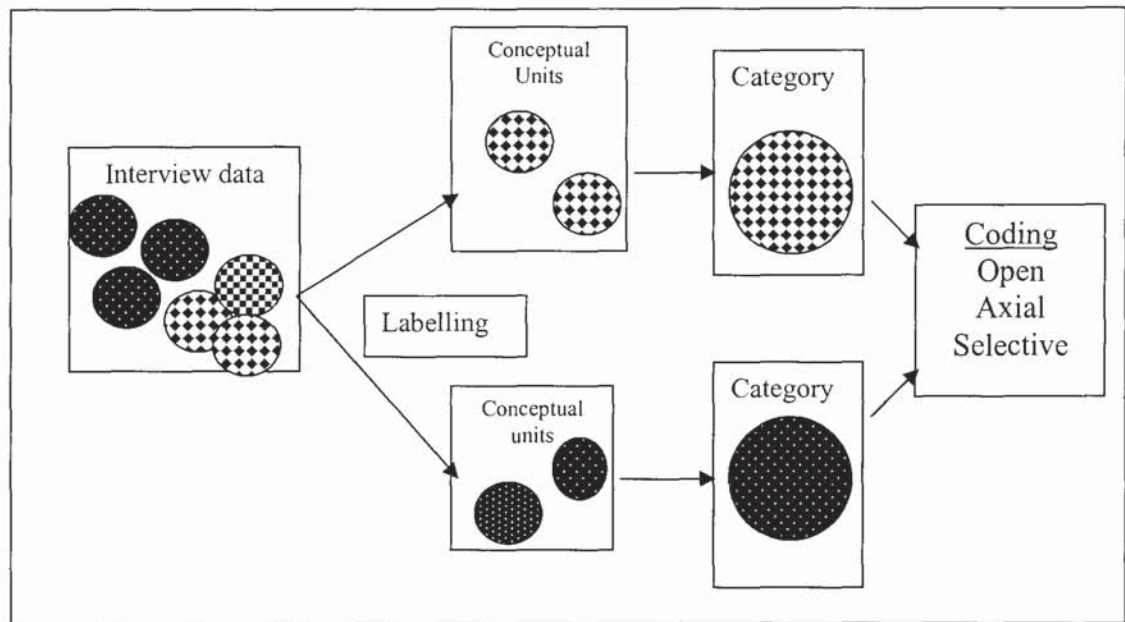
Figure 8 : Categorization of interview data (source: the author)

At the open coding stage, case study interviews were of an open-ended nature, in which the researcher asked the key respondents for the facts of a matter or phenomenon as well as for the respondents' opinions about events. The key respondents not only provided the insights into and opinions on the matter but they also could suggest sources of corroboratory evidence. In some situations, the respondents were asked to propose their insights into certain occurrences and these provided the basis for further inquiry for axial coding in the next stage.

At axial coding stage, the process is to look for relationships between the categories of data that have emerged from open coding. It indicates a process of theoretical development, the restructuring and rebuilding of the data into various patterns with the intention of revealing links and relationships. At this stage, the main objective of the researcher was to explore and explain a phenomenon by identifying what was happening and why, the environmental factors that affected this, how it was being managed within the context being examined and what the outcomes were of the action that had been taken. The main idea was to corroborate certain facts about the phenomenon studied. Once the relationships had been recognised, verification was made against the actual data collected by formulating questions or statements, which could be phrased as propositions to test the apparent relationships. Evidence and negative cases then were sought to support the propositions and gave variations for these relationships.

CONTEXT

ORGANIZATIONAL
DEPARTMENTAL

INTERVENING

CAUSAL

ACTION /
STRATEGIES

CONSEQUENCES

Context
(location of events or incidents pertaining to a phenomenon along a dimensional range)
Causal conditions
(events or incidents that lead to the occurrence or development of a phenomenon)
Intervening conditions
(act to either facilitate or constrain the action/interactional strategies taken within a
specific context)
Action/Interaction Strategies
(directed at managing, handling, carrying out, responding to a phenomenon as it exists in
context or under a specific set of perceived conditions)
Consequences
(may be events or happenings or responsive actions/interactions, may be actual or potential,
happen in the present or in the future

**Figure 9 : Relationships between Categories of Phenomenon Studied (Source: the author, based on
Strauss & Corbin, 1998)**

At selective coding stage, the principal categories are related systematically to other
categories (see Figure 8), validating these relationships and filling in categories that needed
further refinement. This will form a pattern showing the relationships between specific
categories. The phenomenon – accountants' participation in AIS implementation – should
be defined in terms of the conditions that give rise to its existence and what causes its
presence. It should be characterized in terms of the context in which it is situated. The
strategies which are used to manage the phenomenon should be developed and linked to
the phenomenon, as well as the consequences of those strategies.

The last stage is to link and develop relationships between certain categories and sub-
categories and linking them together in the sequence shown above. These statements which
relate to categories and sub-categories must be verified against data. Where further data
supports the statements of relationships, the researcher can turn the statements into

propositions. Some of the relationships will fall outside the paradigm model and will be excluded from the analysis as not all data are applicable to the phenomenon identified.

6.4   RESPONSE THEMES AND CODE

The process of analysing involves going through all transcripts to look for responses that would match the research questions (categories) on *context, causal conditions, action/interaction strategies and outcomes of actions* (Figure 8). The following example illustrates the process by referring to a transcript in Appendix VII. A table has been provided in Appendix XX identifying in which interviews themes were discussed.

The first step is to disaggregate data collected into conceptual units. The same label or name was given to similar conceptual units of data. By referring to the transcript in Appendix VII, the respondent said that, *"now, we are given the instruction not to use FMS starting from August" (Line 22)*. In another conversation, he said that, *"We just follow instruction from accounts department of the Kementerian at Bangunan Perkim. The department is carrying out the Treasury's instruction" (Line 33)*. In Line 54, he said that they were enforced to use the system. All statements indicated the reasons why the accountants participated with the AIS implementation. Thus, the category introduced was for the Causal Category.

In Line 13, he said that, *the previous director was really dedicated and committed in turning this hospital into IT hospital and paperless society in work. In our meeting, he was only allowed diaries to be taken in but not papers. We are also requested or required to give presentation electronically* which is related to another category – Environmental Context Category.

These responses were categorised accordingly and transformed into summary phases and quotes which were then cross-referenced with the interview transcript (according to which line the responses appeared). This process requires repeatedly going through the transcripts for relevant phrases in trying to make comparisons and asking relevant questions pertinent to the same or similar category (Open coding). For example, in the above paragraph, there were three quotations or statements within Causal Category which impliedly indicating that the accountant was needed to follow management's instruction though it is not for the best interest of his department or even his hospital. These were coded as *"Compliance to Management's Instruction (CMI)"*.

Table 27 : A Matrix Display of Summary Phrases and Categories

Interview no	Respondent	Context (@)	Causal Conditions (#)
6	Accountant/ Human Resource Head of Department	OC: "*The previous director was really dedicated and committed in turning this hospital into IT hospital and paperless society in work. In our meeting, he was only allowed diaries to be taken in but not papers.*" *(Line 13)*	CMI: "*now, we are given the instruction not to use FMS starting from August*" *(Line 22)* "*We just follow instruction from accounts department of the Kementerian at Bangunan Perkim. The department is carrying out the Treasury's instruction*" *(Line 33).* "We were enforced to use the system" (Line 54).

Note: The matrix is exhibited to show examples for Context Category and Causal Conditions.

The next step is looking for relationships between the categories of data – *context (OC), causal conditions (CMI), action/interaction strategies and consequences of actions* that have emerged from open coding to explore, explain and to better understand what was happening and why, the environmental factors that affected this, how it was being managed within the context being examined and what the outcomes were of the action that had been taken. However, these categories and sub-categories must be verified against data from other interviews transcripts.

For example, the CMI category had been supported and validated by other interview data available which showed that the accountant complied to the use of e-SPKB even after considering the enormous time spent training staff to use FMS instead, the huge investment spent on developing FMS and despite the fact that there was a lot of uncertainties on capabilities and stability of e-SPKB. In a follow-up interview, the accountant said that e-SPKB was the only platform available to Treasury and other government agencies for payment and distribution of budget purposes and it was not his culture to go against the management direction and instructions. The availability of data in supporting the statements of relationships enables the researcher to turn the statements into propositions: *Accountants perceiving the authority as directly forcing tend to influence their participation in AIS implementation*

6.5   *CONCLUSION*

This chapter describes the data collection and procedure for analyzing interview data. The procedure illustrates the sorting out the data into different categories. The coding has been illustrated. One of the advantages of interview data analysis is that a thorough analysis of individual responses can be done. However, there are limitations especially the possibility of the researcher preconception and knowledge about the subject when deciding the sub-categories to be used. Thus, it is critical that the researcher repeatedly had to go back to the interview data to find supports and to validate. The next chapter describes main case study of Prince Hospital and discusses the results of interview data analysis in this case study organization. Chapter 8 provides supporting evidence from three case studies –Queen Hospital, King University and Princess University to bear upon the results derived from the main case study of Prince Hospital.

CHAPTER 7
CASE 1: AIS IMPLEMENTATION IN PRINCE HOSPITAL

The case study reported in this chapter is of Prince Hospital. Section 7.1 provides a brief background of Prince Hospital and Section 7.2 describes the AIS implementation in the hospital and the participants in the case studies are identified. The contextual factors, causal conditions, and consequences of accountants' participation are identified in systematic fashion using Strauss and Corbin (1998) procedure in Section 7.3. Section 7.4 provides detailed analyses. The reasons for accountants' participation in AIS implementation are highlighted and explained in Section 7.5, which is followed by detailed discussion of actual strategies and action used by accountants in Section 7.6. The consequences or outcomes of these strategies are narrated in Section 7.7 and the factors intervening these actions are indicated in Section 7.8. Section 7.9 brings together narrative and categories in the form of useful propositions and concludes.

7.1 Background of Prince Hospital

Prince Hospital is a 272 bedded hospital and provides secondary care services. It is located within the Multimedia Super Corridor. It operates on Total Health Information System (THIS) which is an integrated information system. The cost of developing this system was RM42.5 million (£6.54 million). The salient features include of this hospital are using information technology infrastructure to implement tele-health concept; providing ergonomic furniture and fittings via planned space utilization; comprehensive out-patient facilities with the latest medical technologies; fully air-conditioned room-warded facilities with one, two and four bedded rooms.

7.2 AIS Implementation in Prince Hospital and participants
7.2.1 AIS Implementation in Prince Hospital

Accounting Information System (AIS) of Prince Hospital is a part of THIS. The earliest version of AIS was a "computerized vote-book system" developed by the Financial Management System Unit (UPSK) at the Treasury Department. This system helped to control expenditures and liabilities ensuring that these do not exceed the approved allocation. It also facilitated in the production of reports such as expenses, liabilities and budget balance (Rauf et al., 2003). Then later on, in 2001, a new Financial Management System (FMS) was developed and used in parallel with the computerized vote-book

system. Initially, the users were not comfortable and were reluctant to rely on data generated by FMS and requested that all data entered into FMS be printed to enable frequent validation and verification with the previous system. An examination of the Management Minutes of Meeting dated 13 June 2002 revealed the report of the implementation team that, frequent tests were carried out until the team was convinced that the FMS system was ready to be used. In fact a manual entitled "Financial management full system overview" (Appendix VIII) was prepared to enable the full linkage of the hospital's financial system with Maximo System, Peoplesoft, Baucer System and Reconciliation System; the other systems within the THIS.

Unfortunately, not long after that, the Accountant General's department introduced e-SPKB to be used in all organizations within the government sector. e-SPKB was an electronic budgeting planning and controlling system (Appendix IX). It included both budgeting and vote accounting modules –which uses vote-book as the main records. The functions included updating of the budget preparation process and enhancing payment and application control by embedding vote computerized accounting procedures, bill registration and progress payment scheduling.

The system was to assist in the budget controlling process, overseeing responsibility centres' expenditures and expediting the preparation of financial documents. The system was developed to facilitate the control of financial information needed for the overall e-government pioneer projects in the country. The hospital still uses FMS in parallel with e-SPKB. Even though the hospital was instructed to fully adopt e-SPKB. The next section describes the participants of the case study who were interviewed to explore the phenomenon.

7.2.2 Participants of the case studies

This case study is based on evidence gained from 41 face-to-face interviews with staff in different roles and positions, who were interviewed on-site in the main study and the follow up study. The age of the participants ranged from 25 to 45 years old. Of the total 12 participants, 4 were female, and 8 were male. The job tenure of these participants ranged from 1 to 12 years, with an average age of 30 in the case of Accountants and senior administrators. As Table 28 shows the participants represented the role as the heads of department or frontline officers. The IT staff represented technical staff with responsibility for infrastructure support and implementation of system.

Table 28 : Participants of the case study

Case	Position of interviewees	No of interviews	AGE	JOB TENURE	GENDER
Prince Hospital	Senior administrator	2	36	8	M
	Accountant's General Office	2	34	12	F
	Medical officer	3	36	3	M
	Head of revenue department	2	45	10	F
	Head of IT Department	6	32	8	M
	Accountant/ Head Human Resources	8	41	6	M
	Staff member (junior & senior)	10	25-31	9-11	M & F
	Implementation team member	3	38	4	M
	Chief Clerk	2	43	7	M
	Security officer	1	52	2	M
	Cleaner/cafeteria worker	2	26	1	F

7.3   Data Analysis Procedures

The researcher used Strauss and Corbin (1998) model for data analysis. This model consists of three groups of coding procedures called open, axial and selective coding. This procedure provides guidance for the researcher to relate categories to each other and reveal their relationships. Open coding is the process of identifying, naming and categorizing the essential idea found in the data. Axial coding develops a deeper understanding of the relationships in the phenomenon underlying data through the process of connecting various data categories that were determined during coding. Selective coding develops the theory that best fits the phenomena by identifying a story that reveals a central phenomenon.

To illustrate, from the interview transcript, "compliance to management instruction" was discovered as category which was named as causal condition.   In the second step, hereafter referred to as open coding, this causal condition was been further refined in terms of its properties i.e., degree of intensity, and dimension such as supporting and forcing. In the third step, hereafter referred to as axial coding, context and intervening conditions acting upon the category were indicated, which might have led to certain actions or interactions as an effect to causal condition. These reactions have consequences at individual and organizational level. In the forth step, hereafter referred to as selective coding, the relationship between causal factors and action are related to varying contextual conditions to develop hypotheses. Step five summarized the whole process.

STEP 1: LABELLING CATEGORY

LABELLED DATA	DISCOVERING CATEGORIES	NAMING A CATEGORY
…instruction from AG Department …management wanted to realize IT Hospital High expectations from higher authority, internally and externally "…tend to forget lunch and other things entirely:…..we can get tense easily" "we are expected to finish our work on time with the current AIS…" abide to management instruction no or limited resistance instruction given with short notice realising the ambition of the Ministry of Health speeding up Vision 2020 All workforces was orchestrated towards the vision accountants were the change agents who receive directions and instructions from change champion and change sponsor (the change sponsor was the Secretary-General to the Ministry of Health. Change champions is the Ministry) adhere to rules, regulations, instructions and directions from the AG's department to get budget and resources supplied a common platform for all finance departments in government sector not being given the funding to renew the licence for FMS have no choice but to use their system, instead of ours	Compliance to management instruction	Causal condition

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STEP 2: OPEN CODING

DISCOVERING CATEGORIES	NAMING A CATEGORY	DEVELOPING CATEGORIES	
		PROPERTY	DIMENSION
Compliance to management instruction	Causal conditions	Degree of intensity	Supporting Forcing

STEP 3: AXIAL CODING

1. IDENTIFYING THE PHENOMENON: ACCOUNTANTS' PARTICIPATION				
Causal Conditions	Context	Intervening Conditions	Action/Interaction Strategies	Consequences
Compliance to management instruction	Environmental context • Accounting professional and governing bodies • Government and regulatory bodies	Infrastructure availability • Physical infrastructure availability • Social infrastructure availability	Providing Consultation	Individual Level • Leverage technical and communication skills of the accountant • Enhance job enrichment • Increase job stress and workload • Changes in role

STEP 4: SELECTIVE CODING

TYPE OF VAR.	CORE CATEGORY IDENTIFIED	PROPERTY LEVEL	DIMENSIONAL LEVEL	RELATIONSHIPS UNDER VARYING CONTEXTUAL CONDITIONS	SUBSTANTIVE HYPOTHESIS (STTMT)	DATA VALIDATION (Representative Of Concept)
Dependent Variable (DV)	Compliance to management instruction	Degree of intensity	Supporting Forcing	Accountants tend to participate if they were being forced by the management rather than voluntarily	**Accountants perceiving the authority as directly forcing tend to influence their participation in AIS implementation**	Comply to use e-SPKB even after: a. time spent training staff to use FMS b. money spent on developing FMS within THIS c. lots of uncertainties on capabilities and stability of e-SPKB Reason given: a. the only platform available to Treasury and other government agencies for payment and distribution of budget purposes b. culture of abiding to the management direction and instructions with no or limited resistance.

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STEP 5:

DEVELOPING RELATIONSHIP PARADIGM OF IDENTIFIED CATEGORIES AND SUB-CATEGORIES

PRINCE HOSPITAL

Consequences
leverage technical and communication, enhance job enrichment, increased job stress and workload, changes in role, paperless working environment, increased specialization of personnel, increased interdependency, improved quality of interaction with other departments and government agencies, reinvention of new role of accounting, enhanced efficiency and effectiveness, success AIS implementation, reduced resistance to change, more reliance on the new system, accurate payment, bottom-up/lateral communication, friendly IT hospital, online and permanent records of patient, fast reporting and retrieval of information, disintegrated IS, high operating costs, leveraged typing skills, less personal touch, more technical breakdown, lower productive among some employees & a paperless society.

Causal condition
Current AIS problems and limitations

Accountant
Implementation
Participation
  Consultation
  Exercising
  influence
• •

Intervening conditions
Infrastructure availability, social influence, emotional barriers, perceptual barriers, personal characteristics, skill barriers, conflict resolution, current job reasons and system characteristic

Causal condition
Recognition and promotion

Causal condition
Compliance to management instruction

Organizational Context
Organizational culture, philosophies and values, flexibility and management operational capability.
Departmental Context
Finance structure and orientation technology investment strategy

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The above categories and sub-categories discovered in Prince Hospital are discussed below.

7.4 *Data Analysis*

7.4.1 *Contextual Factors*

The researcher identified three major categories as organizational contexts: organizational culture, philosophies and values, organizational flexibility, on the other hand, two categories as departmental contexts: finance structure and technology investment strategy underpinning accountants' participation in AIS implementation.

Table 29 : Organizational and Departmental Context

CONTEXTUAL FACTORS	
Organizational Culture	Finance Department's Structure and Operation
Organizational Philosophies and Values	Management Operational Experience
Organizational Flexibility	Department's Technology Investment Strategy

7.4.2 Organizational Culture

Organizational culture represents the shared beliefs, values, norms, expectations, and assumptions that manifest in behaviour and bind people to an organization (Hofstede, 1993). Prince Hospital was considered as a "new" organization since it started its operation in 2000. Every organization member was very well aware of its mission to become an IT hospital and the importance of achieving it. It was like accumulating the whole pool of resources and working towards the same objectives. Since the hospital is located in a very newly opened area, the new capital city of the country, with limited infrastructure capability, achieving the mission was not an easy path. Nonetheless, every member was willing to work hard to achieve the objective. In this situation it was vital to have a very strong and committed top management. The culture could be considered as a strong culture involving a high level of social integration and well-articulated set of beliefs and values.

This was evidenced by a statement by the accountant:

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"The previous director was really dedicated and committed in turning this hospital into an IT hospital and a paperless society in the making. In our meetings, he only allowed diaries to be taken in with no papers in sight. We are also strongly encouraged to give presentations electronically"

The management clearly practised the "employee-oriented" style, especially in the finance department. This was crucial, especially during the transition period from AIS (FMS) to e-SPKB. The accountant, who was also the head of the human resource department, expressed his management philosophy as follows:

"If only I can remember names of all the staff in the hospital. I would like to know each one of them from all levels, from the sweepers to the doctors and head of department (HOD) personally. There shouldn't be barriers between bosses and staff. I believe in motivating my staff this way... being more open to them so that they are willing to be open as well to me."

Undoubtedly, the accountant was admired by his staff for his openness and willingness to share burden and workload. For example, there was one time when the system broke down and at that time the staff was in a hurry to finish payroll processing so that every employee can get his/her pay on time before forthcoming festive holiday. The staff, the majority of whom are married women, had to stay back until very early in the next morning to complete the job. The accountant stayed late and helped them in their work.

Aliza, a staff member described him:

"... Well, to me, a definition of a boss is someone who's willing to work with his or her staff and also willing to stay back in the office until 4 am to finish work. My boss fits the definition..."

This organization practised a "team-working" culture. Aminah from the finance department said:

"I feel happy working here. My work can be done on time. We are very close to each other. We work as a team and whoever gets the higher share of workload or is under pressure to finish her work, the rest of us will laugh at her... just to tease her before we help her out. We turn the pressure into a fun working environment."

This was also further emphasized in the revenue collection department. Azizah, a senior member of staff said that:

"It is easier having the system as I just need to click here and there. Training was given within a short period of time, 2 to 3 days. But, I do not have a problem in using the system except that the systems were always a hanged. We work as a team. I believe we are the only government hospital that is customer-friendly and I am proud of that."

This culture was embedded in the working life of the organization as open communication was practised by every departmental head. Frequent meetings were held and the management instilled positive thinking in the employees, resulting in their becoming highly motivated. The employees were willing to work long hours during this transition period of converting into e-SPKB fully for the benefit of the hospital and the community. This scenario was definitely a departure from the normal working culture of employees working in a government sector in Malaysia.

7.4.3 Management Operational Experience

Prince Hospital was managed by people specially appointed for it. They were selected from senior officers from other public health sector organizations with experience and knowledge of public sector operations. Even though most of the pioneer group members withdrew even before the hospital became fully operational, the new members also consisted of senior officers with similar experience and knowledge. The group was sent for training by the external consultant appointed by the Ministry of Health.

Both the group and the external consultant developed an integrated THIS for the hospital. Since most of them were medical experts and specialists, managing an IT hospital with a paperless environment was quite a challenge. They knew how a public hospital operated previously and this experience was a great help in designing how the components of the

medical aspects could be integrated with the administration aspects. Since the group members were later appointed as the management of the hospital once it was operational, the members were very concerned about the success of the implementation. This prompted them to issue directions and instructions to all staff in the hospital to participate actively and cooperate with the implementation.

Participation is seen as critical to enhance management control of the employees (human resources). The management believed that by sharing decision making unanimous decisions could be achieved and bind all employees' actions and behaviour. This could contribute to organizational stability by reducing risk and resistance from the employees to managerial initiatives. The managing director stressed that participation could lead to commitment to the organization and this indirectly could generate its own propensity to meet organizational objectives without the inducement of rewards.

7.4.4   Organizational Philosophies and Values

The philosophies of the Ministry of Health and Prince Hospital are both governed by their mission and vision.   These are then embedded in their operation and practises. The Ministry of Health has a vision to become a nation of healthy individuals, families and communities through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally adaptable and consumer-friendly, with emphasis on quality, innovation, health promotion and respect for human dignity, and which promotes individual responsibility and community participation towards an enhanced quality of life (Vision & Mission Statement, Ministry of Health, 2002).

The mission is to build partnerships for health to motivate and assist people to: attain fully their potential in health; appreciate health as a valuable asset; take positive actions to improve further and sustain their health status to enjoy quality of life. The three corporate values of the Ministry of Health are caring service, team work and professionalism (Vision & Mission Statement, Ministry of Health, 2002- Appendix X).

The vision and core values of the ministry are the basis of the vision and core values of Prince Hospital. The mission and vision of the organization is clear, compelling, ambitious and, most

importantly, consistent with the ministry's ideology. Both the ministry and the organization have shared vision and values. As explained by Abdul, an implementation team member:

"We were taken to a building and Chief Director of Health at that time used to come and 'bombard' us with new vision, mission et cetera as a step forward towards corporatization. The government servants in the team got tired of all this. But then part of the driving forces was the expectation of the people. It would have been much easier if it was not in the new IT-capital city in the making. People were eyeing this project and some people were waiting for it to be a failure. We don't want to let that happen."

The vision of Prince Hospital was further emphasized by Aishah, one of the senior staff of the hospital:

"Our wards are in rooms and …… On top of that we have new wards, executive wards with telephone, television facilities and three suites. Charges are still the same (as in other public hospitals) even though they are for first class facilities. They are still lower than private hospitals in Malaysia. …. I sincerely believe that this hospital caters especially for Malaysian people with the exception of charges to hardcore poor people but not to the outsiders… All maintenance costs are funded…heavily subsidized by the government. Government is always at the losing end."

Asan, a staff member of the collection department claimed:

"…We are very professional indeed. Especially when dealing with patients. Some of them do not even have sufficient money to pay. We would advise them to settle by instalments and take whatever they have at the moment as the first instalment. The aim of the hospital is to deliver its services to the citizen and not to generate profits from its operation."

The vision and mission statements of the hospital were displayed beautifully almost everywhere in the hospital. It had become the employees' way of life in providing services to their patients and community.

7.4.5 Organizational Flexibility

The term flexibility has been used rather loosely to refer to a blend of capabilities and attributes that facilitate adjustments to environmental change. Some researchers have drawn distinction between internal and external flexibility (Tienari and Tainio, 1999). The researcher defined organizational flexibility as the ability of an organization to adapt to changes introduced inside the organization. Implementation lag is an important determinant of organizational flexibility because changing over from one setup to another involves costs. Implementation lag has been defined in various ways in the literature. The researcher defined a lag, as duration of time between the date of the system being implemented and the date when the system is fully utilized in the organization. The lag between the two stages will be determined by the flexibility of the organization to adapt to changes resulting from the introduction of the new AIS implementation.

A problematic implementation inhibited smooth institutionalization of the new AIS in the Hospital. Ajak, a member of finance staff described one occasion where the problem was notable:

> *"There was one time when we were asked not to use e-SPKB as the system was in the process of upgrading to a new version and we were asked to do our work manually. How can I produce the reports needed manually? And all these doctors are like vultures if their claims are not paid on time... I argued that we can't do our work without the system.... But no use, I guess. They don't understand"*

The system was implemented in September 2002 but it was not fully functional and still in the process of fine-tuning. The problem was not with the organization but with the AG department who kept on modifying AIS version to be used. The assistant to the director assured that the implementation stage was as stipulated and as planned. The management pledged that all problems that occurred were immediately identified; rectified and solved at all levels and staff would normally be informed to take action accordingly. The management kept on trying to come up with collective measures to ensure the success of the implementation and the employees were willing to work hard to realize the vision and mission of the hospital. Thus, this hospital could be considered as very flexible in AIS adoption.

7.4.6 Finance Department's Structure and Operation

The department was operating in an online environment with emphasis on the "paperless society" concept using the new e-SPKB FMS. The department comprised two main sections, finance and human resources, situated within a large administration office. The finance section had staff of six individuals and each individual handled different jobs and responsibilities such as payments to external suppliers, processing of invoices and payroll. The human resource section handled the recruitment process, staff welfare and benefits, promotion, transfer, resignation and processing of pension payments for retiring staff. Being a public sector organization, the salient feature where the legitimate control is allocated according to position in the organizational hierarchy was maintained.

Since the responsibilities of the finance section focused mainly on payments, the department could not be classified as either business oriented or professionally oriented following Swanson (1994). It was not professionally oriented because it does not compete in the market for the best qualified accounting and finance staff. Rather, the department practises a "paternalistic approach" as Orlowski (1993) describes it, whereby lifelong employment is offered to the staff. In Prince Hospital, the finance department was accountable both to the top management for reporting and also to the AG for resources and budget supplied.

In this case, the top management and the supplier for resources and budget were two different parties. Thus, taking a different approach, it was classified as a technology oriented department, since using technology is the main focus of a newly invented government department, replacing the previous manually oriented department. It handled the AIS implementation on its own as the IT department in the organization was not functioning as it should be. It performed only monitoring, reporting quality services of the IT contractor, developing simple applications, procurement and recommending hardware and software to be bought.

7.4.7 Department's Technology Investment Strategy

Technology was considered as a strategic investment as it changed the way the department operated and performed its function. It had always been the focus of the department to have

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AIS integrated with THIS, even though FMS was disintegrated from THIS. The changes that IT brought received plenty of attention from stakeholders in and outside the organization. The success of the AIS implementation was important in order to embark on e-government (Minister of Health's speech - Appendix XI) and at the same time the department was the pioneer department in the organization handling an AIS implementation to be integrated with the THIS. The management instructed other departments to consult the finance department if they had any queries and problems related with their IS implementation.

7.5   Reasons for Accountants' Participation in AIS Implementation

Causal conditions refer to the events or happenings that make a phenomenon happen. In this case study, many events collectively produced the phenomenon under investigation – accountants' participation. The causal conditions in Prince Hospital: "recognition and promotion", "compliance with management instruction" and "current AIS problems and limitations" have collectively produced the phenomenon. The absence of these causes would otherwise encourage accountants not to participate in the implementation.

Table 30: Causal Conditions

CAUSAL CONDITIONS	
Compliance with Management Instruction Recognition and Promotion	Current Accounting System's Problems and Limitations

7.5.1   Compliance with Management Instruction
The fundamental reason for participation of the accountant was to realize the ambition of the Ministry of Health to establish an IT-hospital in the new capital city. The whole workforce in the government sector was orchestrated towards the vision. In this project, accountants were the change agents who received directions and instructions from change champions and change sponsors. Change sponsors are individuals or groups if an organization is large, with the power to sanction and legitimize change. In Prince Hospital, the change sponsor was the Secretary-General to the Ministry of Health, and change champions were the members within the change sponsor groups who are charged with the responsibility to drive, direct and steer

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the day-to-day implementation of the change. Accountants were the change agents or the implementers in AIS implementation in the finance department. The success of these change agents would depend on how well they diagnosed and forecasted change events or impacts. The application of skills and ability to manage changes, involvement and participation at the ground level, where change is most felt, is critical for a successful change programme (Karim and Khalid, 2003, p.191).

In addition to being the change agent in the organization, the accountant had to adhere also to rules, regulations, instructions and directions from the AG's department (Appendix XII). The main reason was that the finance department was to report directly to that department for resources and the budget supplied. The AG's department stipulated how the accountant should manage his department and required him to adhere to specific procedures.

In Prince Hospital, the accountant who was the change agent for the implementation of FMS in THIS was also the change champion for the implementation of e-SPKB in the finance department as directed by the AG department. It was his responsibility to ensure that the implementation of e-SPKB was a success, as it was the mechanism for a common platform for all finance departments in the government sector to realize E-government initiatives. Trapped between two responsibilities with two different AIS, eventually the accountant was given the green light by the top management to proceed with the e-SPKB implementation. The main reason was that FMS within THIS could not communicate with the AG department's system (e-SPKB) and that all payments to suppliers and salaries to the staff of Prince Hospital could only be generated through e-SPKB and not with any other system. Raju, the accountant revealed his frustration:

> "... Last time, we had two systems running parallel in the hospital – e-SPKB from the AG and FMS – part of THIS by external consultant. However, now we are given the instruction not to use FMS starting from August. After so much effort sending staff for training and time spent during the development and implementation, we are instructed otherwise. We have to let FMS go as we need to renew our licence and since we are not being given the funding to renew the licence therefore, we have no choice but to use their system, instead of ours. This ministry is a self-accounting Ministry in which we do the processing of payments and the AG department will issue the payments. e-SPKB is the only platform where the processing art can be linked online. In that way,

we are forced to use the system and now, at the current state, we are slowly disintegrated from the integrated THIS... Sometimes I'm not sure why, especially after spending so much of the ministry's money on the external consultant. Now, we are using only the e-SPKB for the finance department but that system was not fully developed as the AG department is still relying on the vendor (external) on the latest version of e-SPKB and nobody can guarantee for how long we are going to use this version. Can you?"

Amin, the Chief Clerk also expressed his disappointment with e-SPKB implementation during the main study:

"Well, to put it dramatically. .... What we have (FMS) is a system that stands alone. We have got to be practical because our in-house system is not being used by other parties. For instance, if we are the only one using IT while other people are still using paperwork, we are all alone, what's the use? Even though our system is the most outstanding one (Laugh). It's really frustrating actually. The worst part of it is that I know what's going to happen next."

The accountant was also required to attend a briefing and training session at short notice. Participation in the training session was not voluntary. He was expected to understand the basic processes of the system and then to give the same briefing to his staff in the office. Any further queries were to be forwarded to the AG's branch within the ministry:

"I was very shocked when they called us for a training session on e-SPKB. I told the programmer, you've thought about the process but not the human resources availability. Whatever it is, the AG department gave us only three months to start using the systems, assuming we want to use the system."

In addition, the staff perceived high expectation from the higher authority as the main reason for their being highly motivated, either internally or externally. Afizah, a staff member explained:

"...high expectation from everybody. We sometimes tend to forget our lunch and other things as well. This is a place where we can get tense easily. We are expected to finish our work on time with the current AIS; I wonder when it is going to be over."

Despite the hospital's being more flexible in its bureaucratic organization (Appendix XIII) than other organizations within the public sector, the general culture within the hospital was one of compliance to management directions and instructions with no or limited resistance. For example, on one occasion when the implementation of the integrated AIS was crucial, a letter was issued by every department head requiring a team of selected staff to work overtime (Internal memo dated 1st January 2003 – Appendix XIV). The selected staff worked overtime with no or limited resistance, even though they were given very short notice beforehand to make the necessary arrangements.

7.5.2 Current Accounting System's Problems and Limitations

Another major reason behind the accountant's participation in AIS implementation was the problems and limitations faced by the accountant in using FMS. The ministry does the processing of payments and the AG department effects and issues payments. The current AIS (FMS) is part of the common platform among various agencies but it cannot communicate with these parts, and therefore was considered unsuitable. e-SPKB was the only platform where the processing art could be linked across agencies (Appendix IX).

In the hospital, the only element left within THIS was the revenue collection unit. The main reason was that the data were captured from the moment a patient was registered to the moment when he or she paid for his/her treatment fees and medicines. This payment was then captured automatically into the revenue system and sent automatically to the finance department. However, the revenue collection department had been experiencing major problems in terms of reporting data redundancies and inconsistencies. The system did not comply with the type of reporting required by the government, and as a result, the departmental head was making the extra effort of preparing her report manually to be submitted to the regulators.

The department head of revenue collection, Aishah, expressed her dismay:

> *"The reports are not what I and the government agencies want. In fact, too much diverts from what we requested. As a result I prepare my own reports to comply with the government's requirements. I don't trust their systems. Accruals according to the*

system are very much higher as compared to my own manual records. Of course, I wouldn't want high figures of accruals on my reports because we are very efficient in collecting our payment. I just knew their figures are not correct. I am not really sure what went wrong but I am dealing with the customers (patients). We have problems in refunding patients' deposit and the major source would be the finance section. They are slow in preparing vouchers and unfortunately patients come to us for refund."

Other than that, the inflexibility of the system made it almost impossible to charge the patient accurately. Prince Hospital was the only hospital with first class facilities and therefore, first class rates should be charged for all categories of wards. Unfortunately, this was not consistent with the circular issued by the Public Services Department which said that the eligibility of government staff to first class facilities depends on a criterion, such as position and seniority. Since this hospital only provided first class facilities, patients working as government staff eligible for third class facilities should be charged at the third class rate according to their eligibility, even though they received treatment at first class facilities. This further complicated the existing problems with THIS, as noted by the department head:

"Our main problem lies with the eligibility of government servants to receive treatment here. For example, those who are eligible for second class will receive first class treatment as we have no second class facilities throughout the hospital. The hospital only has first class of 4-bedded, double-bedded and single rooms. The system will automatically charge them at first class rate. It is not the patient's fault to be treated at a first class ward and therefore, they should be charged accordingly according to eligibility (second class, in this case). Unfortunately the system can't capture all these problems, unlike other public hospitals which have first, second and third class wards."

Whatever data were being input into the system would be channelled directly to the finance department for reporting to the AG department. If the data were incorrect and inconsistent, this would affect the overall performance of the hospital. When the AG department requested for e-SPKB to be used, this made the problems even worse. The information from the revenue collection department could not be channelled electronically to the finance department, as the two systems could not communicate with each other. Thus, the accountant as the mediator between the two systems' users and as the change agent of e-SPKB needed to participate throughout its implementation. According to the Chief Clerk, Ahmed, this participation

agenda was a mechanism to "cement commitment" of employees to managerial initiatives – in this case, e-SPKB.

7.5.3 Recognition and Promotion

Since there was only one accountant, competition was not an issue. He was a very pleasant and popular middle manager in the organization. Being the only accountant in the hospital, which was going to be in the "limelight" when it became the first paperless hospital in the country, was a rewarding experience in itself. However, by participating and leading the implementation team the accountant gained recognition from top management and this gave him a better chance of promotion.

7.6 Accountants' Actions and Strategies in AIS Implementation

In Prince Hospital's accountant's participation strategies included providing consultation and exercising influence.

Table 31: Accountant's actions and strategies

ACCOUNTANTS' ACTIONS & STRATEGIES	
Consultation	Influence

7.6.1 Consultation

The researcher believes that consultation is the minimum effort that an accountant can exert in AIS implementation. At this stage, the accountant's knowledge, experience and skills are very important. The extent of consultation depends on the interest of an accountant in the implementation project. He/She can be very pro-active and always willing to be part of the project team and share his views, knowledge and understanding on each issue arising from the implementation. Consultation can also occur where the developer, vendor or any member of the project team consults the accountant as need arises.

The core implementation team, which was formed before the hospital was built, initially did not have any representative from the finance department. It is not surprising therefore, that

FMS did not have sufficient or appropriate information designed into the system. When the accountant was appointed to the implementation team, he was consulted rigorously and it took about six months time for the core implementation team to rectify the problems identified by the accountant. All the loopholes in the systems were corrected and internal controls were embedded into the system. It was very clear that consultation from a person who had a financial background was very vital to the success of AIS implementation. At this stage, the accountant acted as a consultant and worked very closely with the developer and communicated the results and problems to a newly formed Information, Communication and Technology (ICT) committee in the hospital.

Raju, the accountant was also consulted by the Head of Department (HOD) of revenue collection. Revenue collection was part of the integrated THIS system and since the accountant was aware of the problems from informal and formal meetings with the HOD, his involvement was inevitable. Initially, Raju was reluctant to be part of the implementation team when the government made it very clear that the licence for the FMS would not be renewed and thus support from the vendor would be lost. Since no funding was available to proceed with FMS implementation, the accountant predicted that the efforts would not be worthwhile. The accountant was further discouraged by the fact that the system would not be able to communicate with the whole system proposed by the AG department, as e-SPKB was the only way for the common platform to be achieved and the finance function to be performed. The lack of integration between systems and agencies was expected to become a perennial problem. When asked about the problems faced, Raju asserted that:

> " .. Maybe you should talk first to PTM (IT Centre), the developer and the policy maker before you can really understand the problems that we are facing currently. We are more the end-users and are not really involved with the systems, apart from using them. If we have any problem, we will call Ms J, the System Analyst of the ministry in Kuala Lumpur.... Other than that we'll just have to wait.....and basically do nothing. We are totally dependent on the system to do our work."

However when the internal controls were embedded into e-SPKB to monitor the activities and performance of the finance department the accountant realized that it was something that he did not want to compromise. High importance was attached to e-SPKB, and any queries were

to be forwarded directly to the programmer of the ministry, which further impeded the participation of the accountant.

In addition to being consulted constantly by the developer in developing FMS, Raju was also consulted by the Managing Director (MD) of the hospital on the progress and performance of the FMS, especially on the accuracy of data generated by the FMS as compared to the previous UPSK. For example, he suggested that a copy of the record/details of payment made by the AG could be used to update the FMS. He highlighted that the current human resource system had not been interfaced with FMS, resulting in his staff having to enter the information manually into the system.

7.6.2 Influence

Influence is another level of participation. Ability to exercise influence implies the authority of the accountant to make decisions, direct the implementation project or even to secure commitment from staff and other departments to support the system. Raju had significant influence over the implementation project. On one occasion, while having meetings with the developer of FMS, Raju influenced the MD to request that the new data captured by FMS be cleared on the basis that the reports generated by FMS.

Raju also exercised his influence when he insisted that outpatients' collection be entered manually into the system as the volume of data was small instead of having a fully automated sub-programme for outpatient receipts as suggested by the developer. He made important visits to other sites or departments as he needed to monitor progress of implementation and give briefs to the respective staff on how their component would affect the finance department and be integrated within THIS. He asserted that these visits facilitated inter-departmental communication and coordination. They enabled clarification of each department's function and ensured its requirements were met by the system's specification. They also bridged the traditional divisions of the organization. Raju at this stage exercised his influence on each department as to what information he wanted and in what form, from their system. The outcome was the enhancement of inter-departmental communication and collaboration. He established channels of communication at an early stage of the implementation project to keep

his staff and other departments' staff updated on the project status. As the change champion, his main intention was to secure commitment and exercise influence by talking, promoting, coaching, leading and actively working closely with staff to implement change.

7.7   *Consequences of Accountants' Participation in AIS Implementation*

The consequences are the impact of accountants' participation either at individual-level, at department-level or at organizational-level. These consequences are the results of actions/interaction strategies that have been taken to manage the phenomenon. The researcher has identified a number of consequences resulting from Prince Hospital's accountant's strategies regarding the implementation of AIS at individual-level, departmental-level and organizational-level. The consequences at individual-level are shown in the Table 32 below.

Table 32: Consequences of Accountants' Actions and Strategies

CONSEQUENCES INDIVIDUAL-LEVEL	
Enhanced Job Enrichment	Changes in Role
Increased Job Stress and Workload	

7.7.1   Individual-Level

At Prince Hospital, Raju was appointed as the change agent for FMS implementation and as the change champion for the e-SPKB implementation. Both appointments demanded high technical skills, either financial or IT-related from him. As the head of the finance department and only person who was very well-versed with the specific Treasury instructions and circulars, he needed to work closely with the developer. Even though the developer had experience in developing similar systems in other hospitals, this implementation required a great deal of effort since THIS was intended to be an integrated information system and was the first of its kind in a government hospital. The system had to be able to generate specific reports required by the governments on a timely basis.

Raju admitted that it was not an easy job being responsible for both systems. At the same time he had to be able to make sure that the developer understood what he needed from the system.

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The longer the time taken to implement the system, the more costly it was going to be for hospital. He said he learnt a lot while working with the developer. He also obtained good knowledge of the technical aspects of the system and was fully aware of its full potential and problems. The developer did not have staff stationed in the finance department, consequently, whenever finance staff had difficulties with the system, he was the first person that the staff would go to, and most of the time he was the person who tried to solve their problems. Inability to solve the problem would increase the back-log of his department and this was not something that Raju was willing to risk.

Raju was part of the implementation team and most of time he was required to communicate the progress of the implementation to the ICT committee members, which comprised of medical officers who lacked both financial and IT technical skills. It appears that his communication skills played a major role. He had to be able to communicate using simple terms in order for the committee to understand, evaluate and make decisions with respect to the progress of the implementation.

7.7.1.1 Enhanced Job Enrichment

Raju's participation in the FMS implementation made him an important "figure" in the organization but of course with pile of workload in addition to his already demanding work. He needed to report on frequent basis to the ICT committee members, and attend meetings with his staff, developer and regulators. Despite his busy schedule, he gained a legitimate position in the eyes of his staff and colleagues. Even though he was new, the criticality of the project in transforming the hospital into an IT-hospital with a fully integrated IS made him feel important and able to gain self-respect from all levels of the organization. This was evident when the researcher made a tour around the hospital with him; everybody would greet him. He was known as the "boss". He explained that his work now was "different" from what an accountant should be doing but he was pleased in terms of job enrichment. He had become knowledgeable in AIS implementation and had learnt how manual accounting could be transformed into "virtual" books and accounts. He was not only the accountant but was also the consultant and an ICT committee member.

7.7.1.2   Increased Job Stress and Workload

AIS implementation had undoubtedly relieved Raju from his routine and repetitive work but this positive impact did not decrease the amount of job stress experienced. His responsibility towards the success of the implementation and the demand on him from higher authority put great pressure on him in realizing the implementation in his department. This job stress was made worse when the AG department gave him only short notice to start using e-SPKB. First, he had to deal with resistance from his staff and to arrange for training for them to use the e-SPKB system. Then, he needed to work closely with his staff during and after the system's implementation. He spent sleepless nights in his office in making sure that the implementation proceeded according to the schedule. He said he was "married" to the system and this caused increase job stress and "other" workloads. The problem got worse when both systems (FMS and e-SPKB) were running in parallel. He had to check and approve the reconciliation of both systems' balances (if there is any) at site.

7.7.1.3   Changes in Role

At a later stage of the implementation of FMS and then e-SPKB, his burden was lifted by the integrated IS. His work was no longer routine and repetitive and he could concentrate more on strategic decision making. He spent most of his time in meetings with top management, either within or outside the organization. He claimed that his work transformed him to act more like a "reporter" rather than an accountant. He was also invited to facilitate training for other staff within government agencies and to share his experience and knowledge as the change agent (FMS) and change champion (e-SPKB) of AIS implementation.

7.7.2 Departmental-Level

The researcher has identified a number of consequences resulting from Prince Hospital's accountant's strategies regarding the implementation of AIS at departmental-level as shown in Table 33 below.

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Table 33 : Consequences at Departmental Level

CONSEQUENCES: DEPARTMENTAL LEVEL	
Paperless Working Environment	Successful AIS Implementation
Increased Specialisation of Personnel in the Finance Department	Reduced Resistance to Change
Increased Interdependency and Improved Quality of Interaction with Other Departments and Government Agencies	More Reliance Being Placed On The New System To Get Work Done
Enhanced Efficiency and Effectiveness of the Department	Accurate Payments to Creditors

7.7.2.1 Paperless Working Environment

Participation of the accountant enabled realization of the ambition of having a paperless working environment in the finance department. Previously, paperwork was done using numerous manual forms. All these forms were required to be filled in for every transaction that took place. However, since the integrated THIS took effect, these forms were no longer used. Not only did this reduce the space needed for storage but it also transformed the offices into a more pleasant and cleaner environment, with no papers lying around the workplace (The Star, 2003 - Appendix XV).

7.7.2.2 Increased Specialisation of Personnel in the Finance Department

The successful implementation of the AIS as a result of the participation of the accountant made specialization of personnel in the finance department possible. By having the integrated AIS, every staff member had a specific task such as payroll, payables and reporting. The tasks were interconnected and as a result, the information flowed from the staff's workstation to the accountant's.

7.7.2.3 Increased Interdependency and Improved Quality of Interaction with Other Departments and Government Agencies

Raju shared and exchanged ideas with other colleagues in other departments and government agencies. His participation depended greatly on the extent of his communication. The interdependency among government agencies was improved by having a common platform as intended by the AG because every transaction has a certain extent impact on other departments

and government agencies. Previously, the finance department had worked solely with the officer in-charge in the AG's department and reference was also made to the same officer for inquiries etc.

7.7.2.4 Enhanced Efficiency and Effectiveness of the Department

The participation of the accountant helped the re-invention of the role of the finance department. The implementation of the AIS enabled repetitive tasks such as preparing payments and reports to be taken over by AIS. This left room for the staff to concentrate on analyzing and reporting on their performance, for example, the status for each batch of payments made. Inquiries regarding the details of the transactions raised by the AG could be responded immediately in a speedier fashion. The department was providing more of a "customer service" rather than performing repetitive tasks and had become very effective and efficient in delivering its services.

7.7.2.5 Success of AIS Implementation

Participation of the accountant contributed to the success of both the FMS and e-SPKB implementation. As the "owner" of the accounting process, Raju's participation was critical at all stages of the implementation. Initially, the FMS implementation was led by a human resource person, but this led to another six months of identification and rectification of errors. It was when Raju was employed and led the AIS implementation that a major improvement was noticed. The participation also accelerated the implementation process, as effective communication between Raju and the developer made smooth implementation possible.

7.7.2.6 Reduced Resistance to Change

Initially, the finance staff resisted e-SPKB as they had just familiarized themselves with FMS. The implementation efforts of Raju and his dedication made his staff realize how important it was to accept e-SPKB and take part in the implementation. Raju managed to secure commitment from his staff and this contributed greatly to the success of the implementation of e-SPKB.

7.7.2.7 More Reliance on the New System to Get Work Done

The e-SPKB implementation reduced nearly all the routine work previously performed by the finance staff and thus alleviated their burden. The work of finance department became more analytical rather routine work. However, if the system broke down or any problems were

encountered while performing their jobs, they contacted the AG's department directly. This increased dependency on the AG's department, and led to greater reliance on the system to perform daily work.

7.7.2.8 Accurate Payments to Creditors

The e-SPKB implementation cleared all backlogs and expedited the processing of payments to creditors. Payments could be made promptly and faster either by cheque or electronic funds transfer (EFT). Unlike previously, all cheques and payments to creditors would be issued directly by the AG's department. The finance staff only needs to enter the details and linked to AG department for payment upon on-line approval of the payment vouchers by the accountant (Appendix XVI).

7.7.3 Organizational-Level

The researcher has identified a number of consequences resulting from Prince Hospital's accountant's strategies regarding the implementation of AIS at the organizational level as shown below.

Table 34 : Consequences at Organizational Level

CONSEQUENCES ORGANIZATIONAL LEVEL	
Bottom-Up/Lateral Communication	Improvement of Typing Skills among Medical Officers
IT-Friendly Hospital	
Online and Permanent Records of Patients from Date of Birth	Less Personal Touch and Eye Contact With Patients
	More Work In The Event Of Technical Breakdown
Fast Reporting and Retrieval of Information	Lower Productivity among Employees
Disintegrated IS	Paperless Society
High Operating Costs of Printing and Stationery	

7.7.3.1 Bottom-Up/Lateral Communication

The integrated FMS and e-SPKB improved and facilitated interdepartmental communication across the organization. The information flowed freely within the organization and the channel

of communication was very open. Thus, the mode of communication was transformed from a top-down approach to a more lateral and bottom-up form of communication.

7.7.3.2 IT-Friendly Hospital

The integrated IS reduced significantly the waiting time experienced by patients. The medical records containing the medical histories of patients could be obtained and accessed online by medical officers. The hospital had interrelated systems from registration, radiologist, and clinics to the collections department. The patient needed only to follow the sequence indicated in the card given to him at reception upon his arrival (Berita Harian, 2003 - Appendix XVII).

7.7.3.3 Online and Permanent Records of Patients from Date of Birth

One of the most important objectives of the Ministry of Health was to have online and permanent records of all patients from date of birth, which could be accessed at any clinic and hospital in the country. The integrated IS of Prince Hospital marked a milestone in creating such a database in the country (Suleiman, 2005 – Appendix XVIII).

7.7.3.4 Fast Reporting and Retrieval of Information

AIS implementation enabled fast reporting and retrieval of information. This enhanced decision making among top management. All inquiries could be answered promptly and this improved relationships with outside organizations such as suppliers and customers.

7.7.3.5 Disintegrated IS

The implementation of e-SPKB marked the end of FMS within the THIS application. The other systems left within THIS were revenue collection, procurement and human resources. However, planning was under way by the respective authorities to impose their systems on all government agencies, including Prince Hospital. THIS was slowly being disintegrated.

7.7.3.6 High Operating Costs of Printing and Stationery

An integrated IS implementation greatly increased printing and stationery costs. A large quantity of printed material was claimed to be needed as *backups* for the information available on line.

7.7.3.7 Improvement of Typing Skills among Medical Officers

Integrated IS forced the medical officers to input directly the consultation, treatment, symptoms and causes experienced by each patient. The medical officers complained of having to type rather than writing down the information on a manual medical record. As a result, the

typing skills of the officers improved tremendously. It was a difficult experience from their viewpoint, but it was a learning process as they got used to the system.

7.7.3.8   Less Personal Touch and Eye Contact with Patients

Integrated IS had setbacks as well. The patients complained that the medical officers were too busy typing-up all the information onto the screens rather than having close and personal eye-to-eye contact with them as they had done previously.

7.7.3.9   More Work In The Event Of Technical Breakdown

The paperless environment prohibited the maintenance of manual medical records. However, there were many incidents when the system broke down and the doctors needed to ask patients their medical history and the latest treatment given to them. The patients needed to recall and the doctors had to rely on the information given.

7.7.3.10   Lower Productivity among Employees

Too much exposure to the screens was identified as the major cause of staff becoming tired easily. The medical officers were still not used to the new way of doing work and it might take some time before they became familiarized and expert in performing their job in a paperless environment.

7.7.3.11   Paperless Society

The integrated IS had transformed all organizational members of Prince Hospital into a paperless society. The commitment of the top management had made this possible. The MD forbade his executives and officers to bring notes and papers into meetings. Notices were everywhere reminding organizational members to ensure that no paper was left behind on their workstations. Ultimately, the office environment was turned into a conducive and professional environment. No papers were in sight at any time to ensure that the ambition of becoming a paperless society became a reality.

The next section highlights the intervening conditions that might have moderated the extent of participation among the accountants in AIS implementation.

7.8 Intervening Conditions for Implementation Efforts in AIS Implementation

The intervening conditions mentioned by the interviewees are infrastructure availability (physical and social), social influence (interpersonal communication and acquaintance with system developer), emotional barriers, perceptual barriers, personal characteristics, skill barriers, conflict resolution, current job reasons and system characteristics.

Table 35 : Intervening Conditions of Accountants' Actions and Strategies

INTERVENING CONDITIONS	
Infrastructure Availability	Skill Barriers
Social Influence	Conflict Resolution
Emotional and Perceptual Barriers	Current Job Reasons
Personal Characteristics	Systems Characteristics

7.8.1 Infrastructure Availability

7.8.1.1 Physical Infrastructure Availability

Prince Hospital was constructed in the newly developed capital city of Malaysia, which is far from the hustle and bustle of Kuala Lumpur. Infrastructure, such as public transportation, utilities and facilities, was still limited in this area. This had affected significantly the success of any communication network due to, for example, limited availability of telephone lines.

Consequently, the organization experienced intermittent system hang. Even though a diagnostic test had been carried out to determine the cause of server hang, the problem remained the main issue in the daily working life of organizational members using the integrated information system. Some staff were idle for a few days in a week, because their work depended totally on the system.

Indirectly, this problem had some impact on the participation of the accountants. Even though they were willing to participate in all stages of the implementation, their motivation was eroded by this intermittent hang issue. Considering they had their own workload to perform,

they were not willing to participate in any way, most of the time due to frustration caused by this problem. Raju expressed his trouble:

> *"........ I tell you that e-SPKB is not that reliable. The system is always down. For example, the whole morning today there's no power supply... as you can see, I'm stranded with all these vouchers, backlogs that need to be approved online. If I were to do it manually, it could be done much faster. Most of our customers do not really understand what we are going through... to them, by having computers, services should be better off and here, we are struggling to get our work done."*

Afiza, a finance staff member said:

> *"The system is always hanging, very slow and if it's been idle (not being used) even for only 2 minutes, it will hang. You can see it now... looks like we have to log in again, and key in the passwords again."*

Access to the system was being disrupted by frequent "hanging" and longer than expected time taken to retrieve information. The current server was no longer capable of handling the ever increasing number of users and transactions being processed.

When this problem was referred to the head of the IT department, he said that the hospital needed more telephone lines, as the system was getting slower. He asserted that using Microsoft contributed to this problem and would have preferred Linux, which was free, but he knew that nobody within the Ministry Of Health was well-versed in Linux. A representative from the ministry said that they would try to resolve any problem that might arise from time to time. This problem could be overcome by providing better infrastructure by managing the interface of inter-related functionality and interfaces with existing legacy systems and enhancement of information and communication technologies (ICT).

7.8.1.2   Social Infrastructure Availability

Due to the short notice given to the hospital to use e-SPKB, staff were not given sufficient and appropriate comprehensive training. The emphasis was more on on-the-job training. Aminah, a staff member said:

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"No, I never received any formal training. I learn from my senior from time to time. When staff from the IT department from AG came, they just did their work whatever necessary. No, they never asked for my feedback and I never asked them questions. There was no communication."

Azizah, another staff member said:

"I remember that the only training given was half day training from the AG department. Then two representatives were requested to go to the AG's office for briefing. They put more emphasis on training-on-the job or hands-on-training. We normally discussed and exchanged ideas among ourselves as to how to use the system or when we encountered problems in using the system. If we couldn't resolve that, we would ask the AG's department or the helpdesk of the Information Technology Centre (ITC) in the ministry. I have vast working experience but being a senior, I seldom use a computerized accounting system. The department called the vendor to give me training but, even before the training was completed, I was instructed to use the e-SPKB. For the first month, the person previously in charge of payroll was around, so things were not that bad. After three months, I was not well-versed with the system but started using it fully on my own."

Training should be given to all levels of organizational members, even to the departmental heads. A member of the administrative staff complained that application and approval of leave were to be made online. However, this seemed to be impossible, for various reasons. Firstly, the leave entitlements for all staff had not been updated to the new computerized system from a manual system. Therefore, it was difficult to check whether the application has been approved, since the available balance of leave could not be monitored on line. Secondly, the department heads were not given training in how to use the system, including how to approve staff applications online.

When asked why proper training was not given in her department because this might reduce dependency on external consultants for development and training, a member of staff in the IT department explained that turnover in her department was high due to promotion, transfer etc. Her department was normally considered to be a stepping stone for better business

opportunities and this actually had an impact on the time that could be offered to Prince Hospital for support services.

7.8.2 Social Influence

In this case study, two types of social influences are identified: interpersonal communication and acquaintance with the system developer.

7.8.2.1 Interpersonal Communication

Communication with other end-users of the proposed system of the first IT hospital was the first step that Raju took before venturing into the AIS implementation. The director of the first IT-hospital was willing to share her bad and good experience in implementing AIS.

Raju and the IT departmental head were at the same level of reporting. The IT department supported only in terms of monitoring performance of the system developer and recommending hardware and software to the ICT committee. Informal contact with IT management gave Raju some idea of what was expected of him. Raju, instead of the IT departmental head, was the process owner and thus the change champion of e-SPKB implementation in Prince Hospital.

Raju also maintained a very close relationship with staff at all levels. His interaction and communication, informally and formally, with all the staff enabled him to evaluate and appraise the acceptance and expectation of all staff within the organization towards the AIS implementation ideas and this helped him to plan strategically how to win support from them.

7.8.2.2 Acquaintance with System Developer

Effective communication and discussion with the system developer of e-SPKB with respect to the outcomes and limitation of the e-SPKB systems had not been experienced much in Prince Hospital. Raju claimed:

> *"The programmer did sit and discuss but it is ages now since I requested what I wanted and highlighted the problems with the system but it is no use. I did go to the head of the IT department but so far, there is no response yet. There are other IT*

hospitals going to be built soon and I really want to see whether they are going to have more accurate reporting than our system."

According to the system developer, effective communication and willingness from the accountants were important because they only knew how to develop a system and relied on the accountants to work closely with them on what they wanted from the system. The accountant in this hospital worked closely with the previous developer since he was in the team right from the beginning. The external consultants to Prince Hospital when THIS was first developed were very dedicated. They had problems keeping the core implementation team on focus and even provided the team with basic IT classes. But, unfortunately the "heat" of changing a manually operated government hospital was too much so the consultant retired even before the project took off.

7.8.3   Emotional and Perceptual Barriers

Raju saw involvement in the AIS implementation as a way of gaining appreciation and recognition from top management and legitimating his position in the eyes of other colleagues in government agencies. He also saw it as one way of motivating subordinates to accept and adopt AIS and therefore as a way to overcome resistance among his subordinates and secure their commitment through the concept of "leadership by example" introduced many years ago by the government. He believed that individuals would feel more responsible for carrying out decisions in which they had been involved

In addition, the perception of how long the system would be maintained in the organization was also an important factor. The unpleasant experience with the previous efforts of FMS implementation being replaced by coercion by the AG's department was quite detrimental to the accountant's perception of e-SPKB implementation. But he also knew that he was required to make the implementation a success. As in the case of replacing FMS with e-SPKB, he was expected to participate in the project, and he did so.

7.8.4 Personal Characteristics

Raju was a friendly person and he maintained a close working relationship with staff at all levels. He was willing to work late with subordinates when the system was down. Stating that it was part of his responsibilities, he explained:

> "Well, you should be there with your staff when things are good as well as when things go bad. I still remember one incident when the system was down and we had to come up with our payroll of the month. We had to do it manually. I stayed back till 4am with my staff and we took turns to sleep... we needed rest in order to keep going."

Personal knowledge and experience could influence Raju's decision to be involved, as a process of internalization. His knowledge and experience could greatly influence him to evaluate the drawbacks and benefits of the participation and this is further exhibited in his actions and strategies in their participation.

Ajak, a member of the implementation team explained:

> "...Experience played a major role. Initially the core implementation team did not have any member with an accounting background. The main problem was to understand the "language". All the system came with corporate terms like workforce. Then we proceeded to finance, what were debits and credits. Then we had to develop the voucher systems..."

7.8.5 Skill Barriers

In Prince Hospital, Raju understood very well the business processes due to his experience with the implementation of FMS previously. However, his technology related skills were lacking. Raju covered up this deficiency by having a good and close relationship with the developer and staff. Consequently, development in his skills helped him to manage emergent issues as a result of e-SPKB implementation.

7.8.6 Conflict Resolution

Conflict had always been the core central issue in AIS implementation in Prince Hospital. At the highest level, the conflict came from the regulators, i.e., the Ministry of Health and AG department had their own agenda in realizing the Prime Minister's vision of electronic government envisaged in Vision 2020. The ministry's direction for Prince Hospital to become

an IT-Hospital witnessed the implementation of an integrated IS, Total Health Information System (THIS). It was not long after THIS implementation that the AG department made it mandatory for all finance departments in government agencies to use e-SPKB, so they would have a common platform and electronic way of doing finance in government. This disintegrated FMS from THIS and it was replaced by e-SPKB. Raju said:

> *"THIS has no finance module so we bought and linked FMS and THIS then unfortunately came AG with its e-SPKB system being imposed on us. We knew that e-SPKB was being developed at that time but what we did not know was the milestone for it to be implemented. That's why we bought FMS and MAXIMO (for inventory). Both systems can communicate."*

He further explained:

> *"What we are doing currently is actually conversion from the manual to the computerized systems. Even if you try and check the AG system, it is a duplication of what we actually have right now (FMS). Its just the process is being short-circuited. Previously, we had to send physical documents to AG then AG sent them back in bulk. Now, we have digital signatures with the system."*

One medical officer, Amizan, perceived the change as an attempt to change the social order that existed in the organization. He said that he would not participate if he was the accountant as he was not sure of the real intention of management and taking new responsibilities was very risky in his opinion.

7.8.7 Current Job Reasons

Raju joined the training session and was a team member of the implementation team. As an accountant, he was required to comply with the relevant instructions and circulars issued by the AG's office in preparing financial statements of his organization. Even though he was satisfied with his current job responsibilities, he expected that the system proposed by the AG's department could take over most of his routine burden, thus enabling him to do more strategic thinking in managing his department and organization as a whole. However, his expectation has not been realized yet as there were many "break-downs" that needed to be attended to even after the follow-up study was conducted by the researcher in the organization.

7.8.8 Systems Characteristics - THIS

In this case, the system was an integrated IS which had an impact on all departments at all levels. It enabled patients' medical records, including all procedures taken, list of medicines and drugs given and results of laboratory tests being undertaken, to be accessed online. Therefore, mistakes such as missing records, errors in the filing system and failure to record tests undertaken in the laboratory could be avoided. This helped the hospital to maintain continuity of care towards its patients and enabled reference to be made by one department to another.

7.9 Propositions

In this section, propositions are generated from relationships found between the categories. The results of the analysis suggest the following substantive propositions. The main relationships between the categories and the phenomenon under investigation are shown in the table below.

Table 36: Substantive propositions

PRINCE HOSPITAL	
Categories	**Substantive Propositions**
Causal conditions	Accountants perceiving the authority as directly forcing, recognizing the limitations of the current AIS and perceiving recognition and promotion as important tend to participate actively in AIS implementation.
Organizational context	Strong and positive organizational culture, Management operational experience and flexibility of the organization encourage the accountant's participation.
Departmental Context	Strategic IT investment strategy and the nature of Finance department structure and orientation positively influence the accountant's participation in AIS implementation.
Intervening Conditions	Infrastructure unavailability, unresolved conflicts, high emotional, perceptual and skill barriers did not influence accountant's participation in AIS implementation. Positive social influence, good personal characteristics, dissatisfaction with current job and integrated AIS positively influence accountants' participation in AIS implementation.
Actions and Strategies	The ability to perform a consultative role and to influence AIS implementation is associated with accountants' participation in the implementation.
Consequences	The accountant's participation tends to leverage his technical and communication skills to meet demands from top management, enhance his job enrichment, increase his job stress and workload and change his traditional role. At departmental level, the participation results in a paperless working environment,

	increased specialization of personnel, increased interdependency, improved quality of interaction with other departments and government agencies, improved efficiency and effectiveness and a new role for the department, leads to success of AIS implementation, reduces resistance to change among the finance department, results in more reliance on the new system to get work done. At organizational level, the accountant's participation tends to enhance lateral communication in the organization.

This chapter has covered the first case study. The next chapter will proceed with the analysis of the other cases namely, Queen Hospital, King University and Princess University.

CHAPTER 8

AIS IMPLEMENTATION IN QUEEN HOSPITAL, PRINCESS UNIVERSITY & KING UNIVERSITY

AIS encompass systems that are either used by accountants, by other decision-makers employing accounting information, or in tasks that involve the application of accounting data (Reneau and Grabski, 1987). This chapter is laid out as follows: Section 8.1 and 8.2 provides a brief background of Queen University, Princess University and King University, and describes AIS systems implementation in these organizations. Section 8.3 presents the descriptions of participants followed by analysis of contextual factors underpinning AIS in Section 8.4. The causal conditions for accountants' participation are investigated across 3 cases in Section 8.5. Section 8.6 elaborates on accountants' actions and strategies in AIS implementation followed by discussion on the consequences of their participation efforts in Section 8.7 and intervening conditions are also presented in Section 8.8. The chapter concludes with the proposition derived from the analysis in Section 8.9.

8.1 Background

Queen Hospital is one of the largest referral (public) hospitals among the four referral hospitals within Klang Valley. The hospital started its operation in 1985 and currently provides services to nearly 500,000 people. The Ministry of Health has increased its investment over the years on this hospital to meet the ever increasing needs of the community in the area. The hospital has a staff of more than 1,500 dedicated people having expertise in general medicine, paediatrics, gynaecology, ENT, ophthalmology, psychiatry, surgery, obstetrics, orthopaedics, dermatology and tuberculosis. It gained ISO 9002 accreditation in December 1998 and it is currently in the process of achieving accreditation from the Malaysian Society for Quality in Health.

The Princess University used to be an experimental centre run by a government agency in 1956 for offering preparatory courses to rural youths in what was then British-ruled Malaya. It became an autonomous body with its own Governing Council in 1967. It was awarded University status by the Malaysian Prime Minister on 26 August 1999. The university has 3 satellite campuses, 12 branch campuses and 6 city campuses. Presently, the main campus is

host to 45.5% of the total number of students, while the rest are distributed across other campuses.

King University was previously a branch of a public university named Duke University. Its status was established as University College of Engineering and Technology Malaysia on 16 February 2002. Incorporated under the Universities and University Colleges Act 1971 by the Royal Decree of His Majesty the King of Malaysia, King University was set up as a competency-based technical university specializing in the fields of engineering and technology. The university has two campuses which accommodate 3,490 students. It also has 15 hostel blocks for students' accommodation.

8.2 AIS Implementation in Queen Hospital, Princess University & King University

This section describes the accounting and related systems operated by Queen Hospital, Princess University and King University. The implementation process included how different teams designed and put together numerous information systems for these organizations however the prime focus of discussion in following sections is on the AIS and their phased implementation.

8.2.1 Queen Hospital

IS implementation in Queen Hospital was primarily determined by the Financial Management System at the Treasury Department. The implemented AIS in Queen Hospital are the Modified Budgeting System, Micro Accounting System, Patient Management System and Computerized Vote-Book System.

8.2.1.1 Modified Budgeting System (MBS)

MBS was first introduced as a pilot project under Phase I in three ministries: the Ministry of Health, Public Work and Utilities, Welfare. It was a modification of the Programme and Performance Budgeting System (PPBS) which was introduced in 1988. It was a major initiative by the Treasury and represents a set of modifications to the existing PPBS. Later on it was implemented in other government Ministries/ departments in phases and has covered almost all of the federal ministries (see Table 37).

Table 37 : Phases of MBS Implementation (Source: National Institute of Public Administration)

Phase	Year	Number of Ministries/ Departments
Phase I	1988	3 Ministries
Phase II	1992	7 Ministries/ Departments
Phase III	1993	7 Ministries/ Departments
Phase IV	1994	17 Ministries/ Departments
Phase V	1995	17 Ministries/ Departments

MBS is a management information system and focuses on the relationship between input, output and impact. MBS requires planning and controlling of all input, output and the impact on each activity of government agencies. The main objective of MBS is to improve allocation of resources via the budgeting process in order to best satisfy the government's policy objectives within its overall fiscal constraint. The budgeting process is envisaged to improve the effectiveness and efficiency of government programmes by fostering a more conducive management environment, and to strengthen mechanisms for the accountability of controlling officers and programme managers, not only in terms of compliance with rules and regulations but particularly in terms of the efficiency and cost effectiveness of programme delivery to the government's clientele.

The MBS is premised on two basic management principles, i.e. letting managers manage and the devolution of authority to as low a level as is practically possible. Departmental heads can therefore have control over some aspects of resource mix so that they can respond expeditiously to changes in the dynamic external environment. The Controlling Officer (in most cases, the accountant) is responsible for determining the performance of his/her department in terms of output and impact, which are recorded on the programme agreement of the department. The programme agreement is a document that records inputs, outputs and impact of an activity as agreed upon between the Federal Treasury and the department during budget execution. Controlling officers are given greater powers in the utilization of the organizations resources. For example, they can transfer resources across activities within a particular programme without prior approval from the Treasury. Input monitoring, however, is not abandoned.

8.2.1.2   Micro Accounting System (MAS)

The Micro Accounting System (MAS) is a detailed accounting system, with emphasis on costing the outputs, namely services and products, of each federal government ministry and department. The main objective was introduced to assist the management in making

comparisons between the planned cost and actual cost and also in identifying the flow of the cost per output. It has been implemented across all government agencies/ministries but was first introduced in three ministries – the Ministry of Health, Works and Information, and in one department – the Accountant General's Department in 1992. MAS implementation was carried out by two committees in the Ministry of Health- a Steering Committee and an Implementation Committee. It has been implemented in more than 80 hospitals in Malaysia. The National Institute of Public Administration (INTAN) in co-operation with the Malaysian Administrative Modernization and Management Planning Unit (MAMPU), the Accountant General's Department and the Financial Management Systems Unit of the Federal Treasury, conducted the training required for all the agencies affected by its implementation. The introduction of MAS, which provides the most cost-effective method of providing quality services to the public at large, has become a mechanism for better accountability of resource utilization among public sector organizations.

8.2.1.3 Patient Management System (SPPD)

The main objective of this system is to reduce accrued receipts from debtors (patients) and improve productivity and quality of service to the public. The major accounting information functions performed by this system are patient's outstanding balance, interim and final bills, reminders, bill payments and revenue collection and administration information. It is intended to be used by nurses, paramedics, record officers, and revenue and kitchen units. It has been in use in eleven hospitals.

8.2.1.4 Computerized Vote-book System

Computerized vote-book system is a single user computerized application system developed for recording and retrieval financial information kept in the vote-book and to enable reporting on allocation and expenditure, and vote-book (accounting records maintained by the ministry) reconciliation with detailed reporting of expenses. The main objective was to promote the application of the computerized system in ministries and government departments. The system was a way of overcoming the problems and limitations arising from maintaining a manual vote-book, such as difficulties in getting accurate and detailed updated financial position. This system was developed by the Financial Management System Unit (UPSK) at the Treasury Department. The system was developed to cater for the need for keeping and maintaining detailed, current and accurate financial information so that ministries and departments can control the authorized allocation and expenditure.

8.2.2 Princess University

IS implementation in Princess University was primarily led by the centre of integrated information system (CIIS) based at the Princess University. The major parts of the IS are the Human Resource Management System (STARS), Financial Accounting Information System (FAIS) and Student Information System at CIIS.

8.2.2.1 Financial Accounting Information System (FAIS)

The Financial Accounting Information System (FAIS) was the first system that went live in 2001. The integrated and modular system offers all required utilities to address all conceivable financial elements. It is the result of another joint venture comprising project teams between the university and the main contractor. System development, testing and post evaluation work involved both parties except the needs analysis and system design which was conducted by the university solely.

The complete system consists of 14 integrated modules such as the general ledger, accounts payable, accounts receivable and fixed and non-fixed asset management. The features of the system conform to local governmental and commercial needs and have utilities that allow for user-defined security control and other needs such as setup utilities for users to customize modules.

8.2.2.2 Integrated Student Information System (iSIS)

The Student Information System was designed and developed through another collaborative project. The complete system consists of 18 main modules. The four principal modules are the student intake system, the academic affairs system, the student affairs system and the student accounting system. It is a transactive web-based application and is comprehensive in nature, addressing the needs of a multitude of user groups. The system main purposes of the system are to improve data and reporting quality, easy access for users who are physically distant [through Local Area Network (LAN) and Wide Area Network (WAN)], minimize data redundancy, better control of the academic processes, faster decision making, reduce overall time and cost for collation of data and preparation of reports for management.

It is comprehensive in nature, encompassing the needs of a multitude of user groups. For instance, Wide Area Network (WAN) and Smartcard applications offer inter-operability with other systems such as the Library Information System. Utilities allow for user-defined security

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control, configurable menus address specific departmental or organizational needs, set-up utilities permit users to customize modules, and user selectable reports can be filtered at runtime.

8.2.2.3   Executive Information System (EIS)

The Executive Information System (EIS) was developed jointly by a team from the university and a consultant from a university in the United States. There are two main components of EIS: Corporate EIS for top management and Department EIS for the department heads. The Corporate EIS contains information for all departments for comparative purposes, whilst the Department EIS enables each department head to view only information relevant to his department. The first working model has been deployed, focusing on four critical areas where information is needed to improve the efficiency and effectiveness of managing the institute.

8.2.2.4   Expenditure Analysis System

Relevant data on allocation, monthly commitment, orders and payments of each department are uploaded from the Bursary System (BS) regularly. The objective of this system is to help the department heads (Cost Centre managers) in tracking "This Year's" expenditure in relation to their allocation. The system also helps in the preparation of the "Next Year's" budget.

8.2.3 King University

The accounting systems in King University were stand-alone applications which comprised of the following: Modified budgeting System (MBS); Micro Accounting System (MAS) and computerized vote-book system. King University began drawing up its ICT master plan and put it into action in March 2002 (see Appendix XIX). The overall project was estimated to be valued at RM9.7million (£1.5million). The integrated management system (IMS) was aimed at improving management across the administration, HR, finance, students and asset management systems.   This IMS was suitable for educational institutions which find themselves pioneering and embracing solutions to enhance and complement their educational offerings, while at the same time unifying the various educational communities would gain that competitive advantage critical to survival and fortitude in the education industry. It comprises five complete integrated systems, which were designed to support both client and web based applications with a 3-tier architecture: IMS Student Information System, IMS Integrated Financial System, IMS Human Resource and Administration System and IMS e-learning. IMS Student Information and IMS Financial description is provided below.

8.2.3.1 IMS Student Information System

IMS Student Information System provides useful accounting related information. This system consists of modules such as Admission Management, Student Registration, Hostel Management, Subject Registration, Examination Management, Timetable Management, Student Financial and Sponsorship, Student Activities, Research Progress Management, Student Counselling, Graduation and Alumni and IMS Financial. From these modules, financial information is derived by the multiple users in the University for admission, hostel and fee records management.

8.2.3.2 IMS Financial

IMS Financial is a complete integrated financial solution enabling the deployment of effective financial processing to deliver convenient, secure and efficient campus auxiliary services to students, faculty and staff. It is built upon strong management and financial tools, from budgeting and general ledger to vendor management and reporting. It enables reusability of forms and sharing of content, which could be easily and securely accessed from a central database. IMS Financial module functionalities consist of Budgeting, Purchasing, Account Payable, Account Receivable, General Ledger, Salary Processing and Student Information.

8.3 Participants

The detail description of the participants of the interviews conducted such as the position of interviewees, number of interviews, the age, tenure and gender is provided in Table 38 below.

Table 38 : Participants of interviews

Case	Position of interviewees	No of Interviews	AGE	TENURE	GENDER
Queen Hospital	Management staff	2	30-38	2-5	F
	Accountant	5	39	8	F
	Senior officers	2	37-49	6-8	M
	Administrative assistant	1	27	4	M
	Clerk	2	26	3	F
Princess University	IT Department Head	1	44	13	M
	Accountant 1	3	37	17	M
	Accountant 2	4	43	18	M
	Finance Staff	3	39	15	F
	CIIS Representative	1	46	14	M
	System developer	2	36	16	M
King University	Head of ICT Centre & Chief Information Architect	2	49	4	M
	Accountant (Bursar)	4	35	2	M
	Assistant Accountant	2	42	6	F
	Finance Staff	2	34	8	F

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From the above description of AIS in three cases, it can be concluded that implementation was recent in the case of Princess University (2001) and King University (2002). The development and implementation activities involved university stakeholders and outside vendors, suppliers and consultants, in contrast to in-house development and implementation team in the Queen Hospital.

These differences provide a natural setting to explore the extent of accountants' participation in AIS implementation because greater openness, culture, flexibility of organization might have influences the participation level in the subsequent sub-sections. In exploring the impact of these influence, the researcher has focused only on the unique and significant influences that differ across three case studies to avoid repetition.

8.4   Contextual Factors

The organizational contexts identified in 3 case studies are organizational culture, organizational structure and organizational flexibility, and the departmental contexts that have been identified are the role of finance in the firm, technology investment strategy, the finance department operation and accounting staff.

Table 39: Organizational and Departmental Context

CONTEXTUAL FACTORS	
Organizational Culture, Philosophies and Values	Role of Finance in the Firm
Organizational Structure	Technology Investment Strategy
Organizational Flexibility	Finance Department's Operation and Control
Management Stability	Accounting Staff
Management Competence	Board of Directors' Involvement

8.4.1 Organizational Culture, Philosophies and Values

Being awarded with ISO 9002 accreditation in 1998 has led to a change in the working life and working environment of Queen Hospital. The staff were required to observe the quality

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culture by strictly following stipulated procedures in their routines. Nonetheless, the changes were not significant as their daily working life was very task-oriented and repetitive in nature. The management still adopted a top-down approach with very "closed", highly structured and limited channels of communication. Access to important financial and operating information was highly restricted and information-sharing among different sections in departments was less emphasized.

In contrast, Princess University's culture was very progressive and forward-looking defined by its mission, vision and philosophies. Though the objective is the same since its establishment in 1956 (to improve and safeguard the socio-economic status of Bumiputeras - the Malays), the university has always striven towards excellence in all its operations and stressed quality assurance programmes and utilization of integrated information systems. It was the first higher education institution to be accredited with MS ISO 9002 for its examination management and its teaching and learning excellence. However, being the largest university in the country the institutionalization process at all levels and branches make it difficult for its entire staff to embrace the culture and ideas of the top management.

The King University has the mission "to be a world class competency-based technical university". It is interesting to note that even though the university emphasizes technology, it also stresses Islamic core values such as sincerity, trustworthiness and wisdom to its staff and students. The Rector believed that the combination of religion in a technology–based university was important to produce graduates with high technical knowledge and skills, and with strong ethical and moral values. The impact on the staff working culture was to motivate them to apply those values in their work practises without neglecting the latest technologies available in performing their jobs yet, this had not been observed in practiced when the study was conducted.

8.4.2 Organizational Structure

Queen hospital has a very hierarchical organizational chart. The line authority was much apparent. The hospital was headed by a director and was assisted by two vice-directors and four department heads handling finance, administration, facilities and operation. Every department head was assisted by an assistant and comprised of between three to five staff.

Since it was an old government-funded hospital, it is very bureaucratic, centrally-governed, hierarchical and a "closed" organization.

King University was established in 2001 and was funded by the government. However, its board of directors comprised of leaders in the automotive engineering, petroleum and gas industries. There were also representatives from the Ministry of Education and State Secretary General. The board of directors was headed by the chairman who is also a leader of industry. Even though, the university had industrial leaders in its board, the university was still hierarchical in nature. Since it was still in the process of transition to becoming a privately-run university, it was still very new and more time was needed to transform the structure of the university.

8.4.3 Organizational Flexibility

Queen Hospital was considered a very rigid organization and inflexible to changes due to its bureaucratic nature. Most of the AIS used prior to were more than 10 years old. Furthermore, there was no IT department in the hospital and any issue that arose from the use of the AIS have to be dealt with directly by the Information Technology Centre (ITC) in the Ministry of Health.

8.4.4 Role of Finance Department

This theme was only discovered in Queen Hospital. It was found out that the traditional role of finance did not help promote accountants' participation in AIS implementation because the finance department performed a traditional finance function. These include data processing, mainly budgeting and payment processing, meeting expectations and reporting to internal and external customers. The main concern of the department was to meet the reporting requirements of external customers such as the Treasury, Accountant General and the State Health Department with respect to the budget and resources supplied.

8.4.5 Technology Investment Strategy

Information technology had been less emphasized in Queen Hospital before e-SPKB was implemented as the focus was on operations. IT has not been considered a good investment and thus, needed to be controlled. Even if there had been a slight improvement in the percentage of IT allocation in its budget, it was not significant. This had inhibited the accountant to feel motivated to participate in its implementation.

On the other hand, Princess University had long recognised the opportunities offered in symbiotic relationships with other organizations such as the Ministry of Higher Education and the Malaysian Institute of Accountants. These "smart partnerships" featured in all modes of its operation. Sharing of resources, expertise and knowledge, in general, resulted in key organizational processes being re-designed. This was part of the strategy of the university to reconcile itself to technological, social and economic developments. This might be one of the reasons why its accountants were so pro-active in promoting the new AIS. Likewise, King University demonstrated its commitment to IT investment by building a high performance IT and communications infrastructure with the completion of a 10 Gigabit Ethernet (GE) network based on Avaya solutions, making it the first fully integrated university in Southeast Asia. The Head of the ICT Centre and Chief Information Architect described the university's motivation:

> *"We believe that if an organization wants to remain a player in the networked economy of the next century, we need to find ways to tie the supply chain and demand chain to the internal system to create greater efficiency and improved collaboration. To achieve all this, we must have a very strong integrated information access system and comprehensive e-management capabilities."*

8.4.6 Finance Department's Operation & Control

All staff in Queen Hospital should observe all the rules and regulations such as the Treasury Instructions, service circulation letters from the Ministry of Health, the Public Administration Development's circulars and cabinet instructions. This department, like other departments in the government sector, was highly regulated and formally controlled.

8.4.7 Accounting Staff

The accounting staff in Queen Hospital comprised very experienced staff, very senior in terms of age and position but with low knowledge and usage of IT.

As Badrul, one of the management staff indicated:

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"Most of the staff is very capable, trustworthy and experienced people but because they have served too long in the government and settled down, they are comfortable and complacent with their work, and thus just perform the routines which they are expert at. You can't beat them on rules and regulations to be followed. They have mastered them by heart."

Layleng, the accountant (and also the head of the finance department), mentioned that most of her staff had quite low motivation. Their main concern was to finish their work for the day and to perform their duties as stipulated. For example, when doing reconciliations, her staff's concern was to get it tallied rather than reporting on the variances and differences as compared to previous months. Furthermore, she was not required to do this which was why she did not do it. According to Layleng:

"Anyway, the ministry depends very much on the Health Department at state level to give feedback and report on any discrepancy and non-compliance of any part, since a copy of all reports will be sent to the department...but I don't think they have the manpower in the accounting department to check the accuracy of the reports. They are also following what their predecessor used to do."

Most importantly, most of the senior staff viewed IT as a threat to their experience and seniority. They refused to learn the new technology and hand-over most of the responsibilities to new staff. They were looking forward to retirement and did not want to add more "burdens". As a result, the accountant did not feel inspired to participate in the AIS implementation.

In contrast, although most of the accounting staff in Princess University had more than six years of experience and were used to the way they worked, they were very supportive of the FAIS and worked very hard to understand and bear with the transition process. With the support from both accountants as the change champions and change agents of the FAIS implementation, the staff were slowly able to adapt and accept FAIS as part of their "life".

8.4.8 Management Competence

King University was headed by key leaders in industry. They were well-known figures in the country and very reputable. Their experience changed the way the university was managed

from when it operated as a branch of Duke University. The management adopted more of a private sector style of management in managing the university. This was unique, since the college university was a public university being managed by private sector management. The competence of the management was unquestionable and this greatly helped the university in moving towards becoming the first technology college university in the country, implementing an integrated system.

8.4.9 Management Stability

Princess University was established nearly five decades ago. Successive leaders have been appointed from key leaders in industry, with the exception of the recent appointment of the chancellor from its own internal senior management. Thus, there had been no change in the university's strategy, vision, mission and philosophy since its establishment. The new chancellor has declared that the university will still continue its management and operation style. The management was considered as very stable and very supportive of the recent initiative of integrated IS implementation in the organization throughout the country, starting with the Bursary in the main campus. According to Mohamed, the IT Department Head of the University, as much as possible the university had the policy of making sure that all levels of employees took part in every initiative introduced by management. This is to ensure that all employees would have a say in the decision-making process and would not be left out of experience and be ready when the initiatives were actually been implemented. The stability of the management had helped the accountants to be part and actively participated in the new AIS implementation.

8.4.10 Board of Director's Involvement

In King University, the board of directors demanded frequent reporting on the progress of the AIS implementation as they wanted to be directly involved with it. This was especially important when the system was initially rejected by the assistant accountant. On contrary, the new accountant was very supportive of the project even though the assistant accountant was still very reluctant to give her cooperation by giving reasons such as being too busy. The new accountant tried to influence her to participate, as that would indirectly influence other finance staff who had served years under her authority to participate as well.

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The following section highlights the causal conditions for accountants to participate in AIS implementation across all 3 case studies.

8.5   Reasons for Accountants' Participation in AIS Implementation

Causal conditions refer to the events or happenings that make the phenomenon occur or happen. In the cases studied many events have collectively produced the phenomenon under investigation, implementation efforts. The causal conditions are compliance with management instructions and the current AIS's problems and limitations. In the absence of these causes, there would be no incentive for accountants to participate in the implementation.

Table 40 : Causal Conditions

CAUSAL CONDITIONS	
Compliance with Management Instruction Competition With Other Accountants	Current Accounting Systems Problems and Limitation

8.5.1   Compliance to Management Instruction

Queen Hospital was not fully ready when it embarked on the new integrated AIS, eSPKB. The instruction was issued regardless of whether the infrastructure was ready for the system. Even though the hospital was not "psychologically" ready for the system to take effect, the accountant as the change champion said it was part of her job to adhere to all rules and regulations. In a separate interview, Karina, an administrative assistant, claimed that the accountant was forced to participate. She said it was a normal practise for top management to impose decisions on employees. A payroll clerk, Kassim, claimed employees were expected to comply with the sign-off process undertaken by management blindly. Even when she was visited during the follow-up study, Layleng said nothing much had changed even though the department was now implementing eSPKB "live".

Being part of a progressive and dynamic organization, the accountants in Princess University were appointed as the change champions and change agents for the AIS implementation and they were accountable for the implementation project.

Mizan, one of the accountants, explained:

> "This is a huge responsibility. We are operating within a huge department. The expectation is so great from the top management. We cannot fail."

Since the bursary had a few sections, units and branches in other campuses, the accountants were required to participate concurrently at each stage of the implementation. Accounting staff in the government sector are accountable to follow all directions and instructions.

Muzid, the other accountant, elaborated:

> "This is not a private sector. We are working within the public sector. As a public officer, I am accountable to my top management. We can't please ourselves most of the time, but the same goes for the private sector personnel. But here, we are talking about the nation's interest rather than our own interest. Recently our government staff are required to sign a declaration of loyalty to the King, government and all its administrative machineries. This is where I chose to work so I have no good reason not to comply with all the instructions and regulations. It's for the nation's interest."

His subordinate, Morsam, revealed that even if the accountants did not participate in the implementation, they would normally sign-off the project especially when it fulfils the organization's interest as a whole.

In King University, the top management informed the Bursar that he was appointed because he was an IT consultant and that the success of IMS Financial implementation was very important to the university. He was also required to report fortnightly to the Board of Directors on the progress and problems faced during the implementation. He said his main appointment depended not so much on whether he could perform a bursar's job and responsibilities, but on his ability to lead the implementation project.

8.5.2 The Current Accounting System's Problems and Limitations

Previously, the finance department in Queen Hospital used separate stand-alone applications for different purposes. The MBS was used to show the efficiency and effectiveness of the accountant in utilizing resources (funding) supplied by the government. Micro Accounting System (MAS) in theory should provide the accountant with cost information that needed to be shown in the MBS. However, those two systems did not communicate with each other and neither of them was linked to the computerized vote-book system which produced the actual allocation received and the expenditure of the organization. All the systems usually took a long time to process transactions and involved much paper work. On top of that, the systems were not able to handle the ever-increasing transactions volumes. Due to all these, the accountant in Queen Hospital had to be very active in the implementation project to give input and also because she believed the new systems could eventually overcome the limitations of the old obsolete AIS.

Similarly, in Princess University, prior to new AIS, the accounting systems used were stand-alone applications and designed for specific purposes and tasks. These systems were outdated and could not cater for the growing number of staff and students, resulting in a massive volume of transactions to be processed at any particular time. The systems were also not able to generate timely information, badly needed by top management in making strategic decisions. Since the university had branches throughout the country, an integrated information system was seen as the solution to ensure that all the organization members were effectively informed and moved at the same pace with the university. Muzid the accountant disclosed that the participation required by the top management was important to cement commitment from the organizational members. Mohamed, a CIIS representative said:

> "We are a very dynamic university. The student intake is increasing from time to time. We have no choice but to have a new integrated information system that can cater for this massive development. The current AIS we are using were more than 10 years old. They were not designed to meet such a transformation as we are currently experiencing."

In King University, the AIS used were basically inherited from Duke University's stand-alone applications. These systems obviously would not be able to cater for the development of a

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technology-based university. The new infrastructure was already prepared to make way for the new AIS.

Thus, it can be concluded that the weaknesses of the AIS in all organizations studied made it possible for the accountant to participate in the new AIS implementation so that the same problems and weaknesses would not surface again.

8.5.3 Competition between Accountants

Princess University had more than 20 accountants responsible for various sections and units in the main campus as well as in all its branches throughout the country. Being located on the main campus, the two accountants, Mizan and Muzid, had better opportunities to become leaders. When they were requested to be part of the implementation team, they volunteered to be directly involved with the integrated IS implementation throughout the organization. Competition was very stiff in Princess University to make it to the top, the Bursar of the university wanted to get better salary and promotion. They had to prove their contribution to the organization to secure a better evaluation and hence, a better chance of promotion.

In King University, the new Bursar had to outperform his assistant who had been eyeing for his position. His assistant had more experience and knowledge as she had served more than seven years in the public sector. This competition was even bitter when the assistant accountant resisted his ideas and the proposed systems. This competition had made the Bursar actively participate in the new AIS implementation to ensure its success.

It can be concluded that there were many reasons that made accountants participate in AIS implementation. The section that follows explains the type of participation performed by the accountant in AIS implementation across 3 case studies.

8.6 Accountant's Actions and Strategies in AIS Implementation

Table 41 : Accountants' actions and strategies in AIS implementation

ACCOUNTANTS' ACTIONS & STRATEGIES	
Consultation	Influence
Designing Systems	Budgeting & Controlling

8.6.1 Consultation

When the main study was conducted, Queen Hospital was still at the initiation stage and the accountant's effort was not yet significant. Her participation became very active when the organization moved from the initiation stage to the live implementation of e-SPKB. Exchange of information with other change champions during briefings and trainings helped her to anticipate the possible outcomes. Unlike previously, where she was required to do physical infrastructure and manpower planning for the implementation, recently she worked very closely with the consultant in setting up the financial aspects of the new system, such as the organizational profile, calendar and parameters. She was consulted frequently, especially when the system was about to be implemented.

In Princess University, the accountants gave consultation at three different levels: within their department, with the CIIS and the developer, and also in other units and branches throughout the country. Firstly, at the departmental level, each accountant was consulted on the usage of the systems by his staff on routine basis. They were also consulted by CIIS to specify needs and make sure that all government's rules and regulations were observed. The success of FAIS implementation depended very much on how effectively they communicated the needs to the developer. The accountants also acted as facilitators and trained other colleagues and staff members from other units, sections and branches.

A member of the Finance Department's staff, Mariam, noted, referring to Mizan, the accountant:

> "My accountant worked hard for the AIS project to be a success. I was not really sure whether I was going to like the new system or not, but it is much more easy to use and more advanced than the one we previously used. I have to get used to it. My accountant uses the system himself, all the time. He'll be the first to help if I encounter any problem."

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In King University, the Bursar gave consultation both to finance staff in the finance department and to the BOD. The Bursar had previously been an IT consultant proposing the same IMS Financial to other universities so he understood the system well. After becoming the Bursar, he was able to help the finance staff better on all aspects of the system without much barrier. The Board also asked him to share his experience in implementing the IMS system in another university where he was the IT consultant.

8.6.2 Influence

In Queen Hospital, Layleng, as the department head managed to instruct all implementation team members to stay back with her after office hours in rotation to take note of any difficulties that arose with the new system. Any problem faced would be handled directly by her staff under her supervision. The implementation was not easy in Queen Hospital even though e-SPKB had been successfully implemented in other government departments and agencies.

In Princess University, the accountants played an active role in all discussions and meetings with the other implementation team members. Muzid said that having a very good knowledge of IS made it easier for him to convey the needs and requirements from the users' point of view. At the same time, he could exercise his influence to give suggestions and recommendations to the system developer and CIIS. For example, when CIIS proposed that the Bursary buy new hardware and software, the accountants would evaluate the proposal to see whether the spending was wise or not. They also needed to make sure that any proposal for a new system had to conform to government's rules and regulations.

Morid, a representative from the system developer mentioned:

> "The accountants, both of them, know their stuff well. We know how to design a system but what we do not know is what the user wants from the system to be developed. They suggested a few alternatives to go about designing the system. They were very frank too. If our design was not up to their expectation, they told us so. We would normally go back to the discussion table for further clarifications on things until all parties were satisfied."

Mizan claimed that having such influence was very important in ensuring that the implementation team kept focus on its target date and objectives. In the long run, this influence could help expedite the implementation project.

The Bursar in King University was new to the finance staff and the public sector. Nevertheless, the Bursar used his authority and ability to influence the BOD to instruct all finance staff to be more actively involved in and be serious about the implementation project by devoting more time to test the proposed system to overcome reluctance and resistant to the new system.

8.6.3 Designing Systems

The accountants' role in designing AIS system was evidenced only in Princess University. Both accountants in Princess University had different backgrounds and knowledge. Mizan had very good knowledge of IT and IS designs and Muzid was very knowledgeable about all the rules and regulations to be embedded into FAIS. This good combination made the tasks and jobs of the system developer and CIIS easier. The combination of the expertise of the accountants enabled the system design to be completed on schedule. The accountants conveyed what the users wanted from FAIS and the system developer used this information to propose the modified version of FAIS. Mizan handled the design stages and Muzid audited the trail accounting system to make sure that all rules and regulations were complied with.

8.6.4 Budgeting & Controlling

Budgeting and controlling was performed only by accountants in King University. The Bursar of King University had previously worked as a full time IT consultant and when he was appointed, he was also required to prepare the implementation budget, and to monitor and control funds already allocated for the project. He was asked to avoid unnecessary cost as the university did not want to invest in a project which had the potential to be a failure.

The next section highlights the impact of the accountant's participation in the organization studied.

8.7 Consequences of Accountant's Participation In AIS Implementation

The accountant in Queen Hospital managed to improve and strengthen her technology and interpersonal skills. She was more open and able to make her staff realise the potential of the e-SPKB implementation. She became a more process-oriented person and managed to refine all the processes involved in her department and claimed that she became more knowledgeable about the organization's operations.

In Princess University, the accountants already possessed the technical and communication skills necessary to be involved in the implementation project. Therefore, it was not really clear to what extent their technical and communication skills had been leveraged. However, their skills enabled them to act effectively as intermediaries between: top management and the target users; and the targeted users and the system developer. They successfully expedited the implementation project as users' needs and requirements were effectively communicated to the system developer by becoming good intermediaries for all parties involved by reconciling different interests and needs. Since the system was an integrated system, they needed to be made aware of the possible benefits and problems of having such a system in the organization.

Muzid explained:

> "This is amazing. I haven't got time for myself any more. I am very busy with the project. I am not always in the office. Apart from my involvement as a member of the implementation team, I am conducting various briefings throughout the country to all campuses, helping the system developer to demonstrate the new systems to targeted users. Otherwise, I will be in the main campus collaborating with the system developer to handle training of the modules of the new systems."

According to Morsam, a member of the finance staff, participation of the accountants had helped them achieve what they wanted from the new AIS, customised yet complying with the rules and regulations of the government. With the new integrated system in place, all hardcopies could be archived and stored in a warehouse. The integrated FAIS also made the boundaries between job responsibilities for each module clearer and enabled users to access data which were physically distant (through the network) and respond to inquiries almost

immediately. The quality of interaction with other sections, departments and government agencies had also been improved and helped top management with analyses important for investment and decision-making purposes at the strategic level. Furthermore, the more obvious increase in employee productivity led to greater overall effectiveness and efficiency of the department.

Most importantly, the implementation efforts from the accountants in Princess University managed to overcome resistance to change initially experienced by the accountants at the time of the FAIS implementation. Their commitment and dedication towards the project managed to secure the staff's trust and acceptance of the project. Mustapa, one of the system developer's staff said,

> *"Previously, they couldn't see the benefit of the system. Our strategy is to get the core person and the rest is history. A knowledgeable core person has the advantage of having accounting and MIS knowledge. When he talks he can convince his people as he knows his stuff. He should be the pioneer user and his subordinates will then follow. We can claim that the system enables their work to be performed easier as requesting the user representative to fill a "user requirement form" is better because the user himself is requesting from us. They are usually willing to commit to the project at all stages."*

The new FAIS had many benefits such as permitted collation and analysis of financial transactions to be performed with just the press of a button and reduced the need for the analytical skills of the accountant.

At the organizational level of Princess University, transparent information and easy accessibility of the information paved the way for lateral communication rather than a top-down approach. Also, the standard integrated information ensured all staff across the organization, in the main and branch campuses throughout Malaysia, followed the same working procedures and standards. This facilitated the implementation of uniform working standards among more than 7,000 staff within the organization. The accountants in Princess University reported the overall time and cost reduction for collation of data and preparation of

reports for management as a result of full utilization of information technology in the organization.

In King University, Noraini, the assistant accountant, revealed that the bursar's active participation resulted in successful implementation of the new AIS and this, according to Nana, the accountant's assistant, would enhance commitment of the employees to the organizational change initiatives. The researcher did not find any evidence of economic benefits such as time and cost reduction for collation of data and preparation of reports for management from the interview transcripts in the case of King University and Queen Hospital.

8.8 *Intervening Conditions for Implementation Efforts in AIS Implementation*

The intervening conditions mentioned by the respondents during the field work were: infrastructure availability (physical and social), social influences (interpersonal communication and acquaintance with system developer), emotional barriers, perceptual barriers, personal characteristics, skill barriers, conflict resolution, current job reasons and system characteristics.

Table 42: Intervening Conditions of Accountants' Actions and Strategies

INTERVENING CONDITIONS	
Infrastructure Availability	Skill Barriers
Social Influence	Conflict Resolution
Emotional and Perceptual Barriers	Current Job Reasons
Personal Characteristics	System Characteristics

8.8.1 Infrastructure Availability

The researcher classified infrastructure availability into physical and social infrastructure availability. Physical infrastructure is the basic physical and organizational structure needed for the implementation of a system. Social infrastructure availability is the availability of access for the people involved in the implementation of a system to the system being implemented. This includes training, knowledge and access to the system. Top management in Prince Hospital gave assurance that more training would be provided to encourage end users to use the system in their work and to get them more involved with IT and the system, by

providing more PCs and a better information and communication technology (ICT) working environment.

The pressure from the Ministry made the management change its focus and direction and improve the infrastructure facilities in Queen Hospital. Previously, during the main study, Layleng the accountant pointed out her frustration:

> "Ask, hmmm ... our networking is not ok yet. The e-government initiative gives us the "green-light" but we are not ready yet. The other system, e-Perolehan, will also be forced on us in the future. Even though both systems originate from the Treasury, they require separate lines. The developer has already installed both lines but unfortunately they cannot configure with each other. I did ask the vendor why we need to have two lines for the systems that came from the same source. The vendor said they were just doing their job as instructed. Each system appointed different vendors and now when the two lines cannot communicate with each other, the vendors have stopped their work and we are here stuck with all the lines and wiring as you can see from here"

When the follow-up study was conducted, the accountant was very happy with the latest developments and maintained a good rapport with the IT unit of the ministry to expedite the IT project in her department.

Princess University implemented a 10 Gigabit Ethernet network across its 15 campuses nationwide. The network would initially cover the main campus and upon completion would cover 14 other campuses including those in Sabah and Sarawak (Eastern Malaysia). The project would be undertaken by Cisco Systems and local IT integrator Solsis, and the cost of the project was projected at RM20 million (£3 million). The vice chancellor said that with the implementation of this new network, e-learning would be a reality. "E-learning is one of the most effective ways of accelerating the learning process in line with our vision to become one of the top universities. With this new network, other applications like wireless, VOIP and video conferencing are also a possibility in the near future."

King University's ICT master plan was implemented in two phases since its inception in 2001. The first phase involved passive equipment installation, including the installation of 15 kilometres of fibre cabling and about 3,900 UTP Cat6 nodes for both data and voice ports. In

the second phase, active equipment was to be installed, comprising a network with 100 switches, incorporating two 10-gigabit Ethernet switches; voice for supporting 700 phones, including 58 Internet protocol (IP) phones; and a wireless network with 255 antennas. The King infrastructure was ready and it would be used to run many applications inclusive from integrated management systems and e-learning system.

Training is an important element for the staff in both Princess University and Queen Hospital to understand and use the new AIS. Princess University, through its CIIS, provided continuous and systematic training courses to all targeted users within the university. Training was also a good mechanism to reduce resistance and indirectly motivate the intended users to adopt the system. The system developer in King University not only offers customisation to meet different clients' needs but also provides extensive user training, ensuring that clients could deploy the system.

8.8.2 Social Influence

The accountant in Queen Hospital had a very close relationship with the finance and administration staff. They normally had a "long lunch break" together every Friday. She normally arranged for an informal meeting during that time to discuss work and problems at work with her staff in the finance and administration departments. Though they had a formal department meeting, the interaction was limited due to hierarchy and the closed channels of communication within the organization, thus an informal meeting was very useful.

Mizan, the accountant in Princess University, was known to have a close relationship with other IS specialists. His informal communications network influenced him to personally participate in the implementation project. Muzid was an active member of a professional accounting body in Malaysia. He said he joined most of the courses offered by the professional body during weekends to further enhance his knowledge about AIS implementation. This opened up his way of thinking and perceptions about participating in AIS implementation and he became enthusiastic about the project, especially when he was appointed as one of the leaders for FAIS implementation.

Mizan reported:

"I should say that my technical skills are just sufficient for the work that I am doing now. I could never learn all these from my accountant's work. Seeking knowledge should not be limited to the classroom. You've got to build contacts in all fields. I've met many other accountants who are much more knowledgeable in IT than I am. Starting from trouble shooting and problem solving, our communication extended to more technical stuff. This networking and knowledge gained is not something that you can gain in the classroom."

The Bursar in King University had previously worked as a full-time IT consultant for accounting and finance modules. Thus, he was within the "IT" community of programmers, IT analysts, multimedia designers and others. This informal network was a great help for him during his involvement in the AIS implementation in his university.

8.8.2.1 Acquaintance with System Developer or Vendor

Queen Hospital did not get sufficient and proper assistance on AIS implementation as there was no IT department in the hospital and any problem occurred would be resolved by the senior clerk or the accountant before it was communicated to the ITC at the Ministry, if the problem was persistent. Even the developer of the system was difficult to get in touch with even though user feedback forms were sent to them for further follow ups.

In Princess University, the system developer and the accountants had good working relationships with the initiative of the CIIS. The effective communication and good relationship between the parties elevated the spirit and commitment of the project team members. Muzid said:

"We have a good understanding and collaboration with the system developer. They are willing to listen to you and try to understand what you want from the new system. Obviously they can think far ahead in terms of system development but they can be very firm if our requirements are too ambitious, or likewise, too rigid."

In King University, the system developer was the developer of IMS education (a finalist of the 2003 PIKOM-Computimes ICT awards for ICT software of the year). Its simple philosophy of helping clients and a strong competitive edge through the use of technologically superior

products and solutions meant that it was committed to provide King University the most effective integrated campus and knowledge system solution. It ensured the success of each implementation phase, from pre-sales consultancy through post-implementation development, training and support. Therefore, the system developer stationed a few of its staff permanently at King University so that they could provide the best assistance available at any time with respect to the implementation project.

8.8.3 Emotional Barriers

In Queen Hospital, e-SPKB was seen just an alternative of doing the same procedures (electronically). Layleng, the accountant, was very supportive of e-SPKB but could not do much without the support and commitment from top management. As a result, she could see many negatives rather than benefits of the system to her department. She claimed:

> *"To me this system is only a modification of what we currently have. I accept the fact that the system might help us to finish our work faster, but what happens if the system hangs? My staff have to work late and during weekends to clear any backlog. Now, that is something that I don't think my staff are willing to sacrifice. They have the luxury of going back when office hours end at 16.30 every day and I am sure that there will be lots of reporting and checking needed to be done until my staff are familiar with the system.*
>
> *Further I feel that the system might require larger storage since the paymaster will not have the physical documents, the auditors will surely come to us for further evidence and documentation. A paperless environment would only be at the paymaster site (AG's department) while we at the responsibility centre have to keep all documents and need more big boxes and a storeroom to store them. I told my girl to pile and tie up everything once e-SPKB is being implemented. In case of any court hearing, they will surely need physical documents."*

These problems were still in existence even when the follow-up study was conducted in Queen Hospital. On the other hand, these problems were not experienced by the accountants in Princess University. They perceived the project as an opportunity rather than a threat to their careers and became excited at participating in the implementation project.

In one of the interviews, Muzid said:

> *"This is something that we should have done a long time ago. Even though we might not be the first, I am sure that we are not that late. I know that this integrated IS can put the university to the forefront as compared to other local universities. I am really looking forward to the day when all the modules are fully implemented and this university becomes the first paperless university in the country."*

In King University, emotional and perceptual barriers were seen as the major problems inhibiting the accounts assistant and her staff to participate in the implementation project. They got used to the old way of working and were very complacent such that they were very reluctant to change to the new AIS. However, when they started to see how the new AIS made their work easier and faster then only they became very co-operative and enthusiastic about the project.

8.8.4 Perceptual Barriers

In Queen Hospital, Layleng participated in the AIS implementation because she was asked to and not of her own willingness. Even after the management had given the "green light" with respect to e-SPKB implementation, she was still not happy with the new AIS.

The accountants in Princess University knew immediately the benefits that the system could offer to the finance department in all campuses throughout the country. They wanted to improve the effectiveness and efficiency of the finance department and become more strategic not just performing and reporting repetitive tasks and routines. Muzid, when commenting on the negative perceptions of some of his staff towards the system, said:

> *"I can't see why they do not want to participate. We have to accept changes as we grow. For example, your life started when you were born and changes are taking place nearly in every day of your life as we grow older. This is just part and parcel of life. They have to accept and adapt to changes or else they will be left behind."*

8.8.5 Personal Characteristics

The accountant in Queen Hospital stated that the management did not give sufficient support for her to actively participate in the AIS implementation. She claimed that she's so keen to

participate and believed that she would actively participate if she secured the right support from the management.

In Princess University, the accountants were very innovative and pro-active about the implementation of AIS in the organization, irrespective of the support given by the top management. Thus, in this organization, the impact of the instruction of the top management was not that significant in influencing accountants to participate, as it was not the main driving force. Similar evidence could be found in King University as the Bursar was very knowledgeable about both accounting and IT. Thus, it was not a surprise that he was very dedicated and to be part of and lead an implementation project was his "life" and this further influenced the extent of his involvement and participation in the project.

8.8.6 Skill Barriers

In Queen Hospital, Layleng said that when she had just started working in the finance department she had limited knowledge of business processes, technology and communication skills. After spending her time with the e-SPKB team member, she realized that she had learnt a lot and experienced new things apart from accountant's routines. She admitted that it would have been "smooth sailing" for her if she had already acquired the necessary skills before she committed to and participated in the e-SPKB implementation.

Both accountants in Princess University had an acceptable level of technical and social competence, which helped them to participate efficiently in the implementation project. Thus, skill barriers were not really a major moderating factor in Princess University.

Speaking on behalf of both accountants, Mizan said:

> "We are good partners. He is very knowledgeable about all Treasury instructions and circulars that needed to be complied with when designing AIS in the government sector. I am at an advantage with my technical skills. As I said before, I learnt a lot from my friends and books. My curiosity helps a lot. Well, whatever it is, by combining us in this project; it boosted my own confidence in our own capability to lead this implementation project in all campuses in the country."

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In King University, as compared to the accountant, his assistant had average knowledge of business processes, which might be due to lack of exposure and experience in her current job, as she was transferred from another government agency which was not an educational institution. Thus, she might not possess the necessary and sufficient technology and communication skills.

8.8.7 Conflict Resolution

In Queen Hospital, Layleng indicated that there was a conflict between two different authorities who enforced two different systems for payment and procurement. Both systems could not communicate with each other and there was no support from the top management to resolve the matter. Since IT was not being emphasized, many installation and maintenance of the equipment necessary could not be made possible. She was still facing the same problem during the period when the interviews were conducted during the follow up study.

In Princess University, the proposed integrated IS did not conflict with the instructions and circulars issued by the Treasury or instructions from the Accountant General's department. The system could communicate with the system proposed by both government agencies and thus, conflict in the implementation efforts was less in evidence in this university. According to Morsam, a member of finance staff, sharing decision-making led to larger consensus across the organization and, thus, increased management control over human resources. This would indirectly minimize the risk of conflict within and between groups of employees and the management.

In King University, the Bursar thought that he was appointed on a part-time basis by the Board of Directors due to his excellent track record in accounting and IT. Little did he know, that the main reason for his appointment was to disclose to the Board the progress and the status of the IT implementation in Duchess University, the main competitor of King University. He was expected to act discreetly to satisfy both the Board and Duchess University, where he was also an IT consultant. It was unethical and difficult for him to be in the position. During the follow-up study in 2005, he resigned both as a part-time Bursar and a part-time IT consultant in King University and Duchess University respectively.

8.8.8 Current Job Reasons

The accountant in Queen Hospital was not happy with her reporting responsibility and said that she had done the reporting like a "parrot" but there was no action taken as the systems used previously could not link to each other. As a result, she had to prepare reports generated from each system separately and had to do another analysis to combine results from both report of which could actually be done automatically if both systems were linked to each other. Layleng, the accountant, previously said:

> "The MAS system was instructed to be used by the Prime Minister's office. My staff just need to key in and the programme will run by itself. It is for costing purposes but our management never look into it but still we send the report for reporting purposes. Even that is for filing purposes only, as so far there is no feedback whatsoever on whether we are efficient or not. I heard that an accountant at the ministry level will review the system to enable it to estimate cost per patient. It's a new project but I don't know how far it will go. I've been doing the reporting like a parrot."

At Princess University, the accountants were excited with the new system's ability to uplift most of their routine burden, thus enabling them to do more strategic thinking in managing their departments and the organization as a whole so that they could enrich their job portfolios and spectrum of duties.

However, in King University the Bursar loved with what he was doing and applying his knowledge and experience in two different organizational contexts but within the same government sector made his job more challenging and fulfilling.

8.8.9 System Characteristics

In Princess University and King University, the new AIS characteristics influenced greatly the extent to which the accountant (s) were willing to be involved and participate in the implementation project. Realising how the system could significantly change the functions and operations of the finance department, made them feel proud to be part of the implementation team. Unfortunately, the accountant and her staff in Queen Hospital did not share the same views.

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8.9   Propositions

Propositions are generated from relationships evident between categories. The results of the analysis suggest the following substantive propositions. The main relationships between the categories and the phenomenon under investigation are shown in the table below.

Categories	PRINCE HOSPITAL	QUEEN HOSPITAL	PRINCESS UNIVERSITY	KING UNIVERSITY
	Substantive Propositions	Substantive Propositions	Substantive Propositions	Substantive Propositions
Causal Conditions	Accountants' perception of the authority as directly forcing tended to influence their participation in AIS implementation.	Accountants perceiving the authority as supporting rather than forcing tended to influence their participation in AIS implementation.	Accountants perceiving the authority as directly forcing tend to influence their participation in AIS implementation.	Bursar (Accountant) perceiving the authority as supporting rather than forcing tend to influence positively their participation in AIS implementation.
	Accountants perceiving the limitations of the current AIS tend to participate actively in AIS implementation.	Accountants perceiving the limitations of the current AIS tended to actively participate in AIS implementation.	Accountants perceiving the limitation of current AIS tend to actively participate in AIS implementation.	Bursar perceiving the limitations of the current AIS tends to actively participate in the new AIS implementation.
	Accountants perceiving recognition and promotion as important tend to participate actively in AIS implementation.		Accountants perceiving competition with other accountants will actively participate in AIS implementation.	Bursar perceiving competition with his assistant accountant will actively participate in AIS implementation.
Organizational Context	Strong and positive organizational culture encourages the accountant's participation.	Weak organizational culture negatively influences accountant's participation	Strong and positive organizational culture encourages accountant's participation	Strong organizational culture positively influences bursar's implementation efforts.
	Management operational experience is positively related to the accountant's participation in AIS implementation.	Bureaucratic and hierarchical organizations are negatively related to accountant's participation in AIS implementation.	Management stability will heighten the accountants' participation in AIS implementation.	Less bureaucratic and hierarchical organizations are positively related to bursar's efforts in AIS implementation.
	If the organization is flexible then accountants will heighten their AIS participation.	If the organization is inflexible then accountant will limit his AIS participation.		BOD involvement will influence positively the bursar's participation in AIS implementation.

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Categories	PRINCE HOSPITAL	QUEEN HOSPITAL	PRINCESS UNIVERSITY	KING UNIVERSITY
	Substantive Propositions	**Substantive Propositions**	**Substantive Propositions**	**Substantive Propositions**
				Management competence will influence bursar's participation in AIS implementation.
Departmental Context	Strategic IT investment strategy positively influences the accountant's participation in AIS implementation. Finance department structure and orientation influence the extent of accountants' participation in AIS implementation	Role of finance department in organization will not influence accountant's participation in AIS implementation. Poor IT investment strategy inhibits accountant's participation in AIS implementation. Highly regulated and formal control of finance department negatively influences accountant's participation.	Strategic IT investment strategy positively influences accountant's participation in AIS implementation.	Strategic IT investment strategy promoted bursar's participation in AIS implementation.
Intervening Conditions	Infrastructure unavailability and unresolved conflicts did not influence accountant's participation in AIS implementation. Positive social influence, good personal characteristics, dissatisfaction with current job and integrated AIS positively influence accountants' participation in AIS implementation.	Lack of knowledge and skills among the accounting staff influenced negatively the accountant's participation in AIS implementation. Infrastructure unavailability, unresolved conflicts, negative social influence, less innovative characters and non-integrated AIS inhibit accountant's	Lack of knowledge and skills among the accounting staff influence positively the accountant's participation in AIS implementation. Infrastructure unavailability and unresolved conflicts did not influence accountant's participation in AIS implementation.	Infrastructure unavailability, unresolved conflicts, negative social influences less innovative characters, and non-integrated AIS inhibit bursar's participation in AIS implementation. Dissatisfaction with current job positively does not influence bursar's effort in AIS implementation.

Categories	PRINCE HOSPITAL Substantive Propositions	QUEEN HOSPITAL Substantive Propositions	PRINCESS UNIVERSITY Substantive Propositions	KING UNIVERSITY Substantive Propositions
	The lower the emotional, perceptual and skill barriers the greater the participation of accountants in AIS implementation.	participation in AIS implementation. Dissatisfaction with current job positively does not influence accountant's participation in AIS implementation. The higher the emotional, perceptual and skill barriers the lesser the participation of accountants in AIS implementation.	Positive social influence, good personal characteristics, dissatisfaction with current job and integrated AIS positively influence accountant's participation in AIS implementation. The lower the emotional, perceptual and skill barriers the greater the participation of accountant in AIS implementation.	The higher the emotional, perceptual and skill barriers the more passive the participation of the bursar in AIS implementation.
Actions and Strategies	The ability to perform a consultative role, to influence towards the success of the implementation is associated with accountants' participation in AIS implementation.	The ability to perform a consultative and planning role is associated with accountant's participation in AIS implementation.	The ability to design the proposed systems, to perform a consultative role, to influence towards the success of the implementation is associated with accountant's participation in AIS implementation.	The ability to perform a consultative role, do budgeting and controlling and exercise influence is associated with the bursar's participation in AIS implementation.
Consequences	The accountant's participation tends to leverage his technical and communication skills to meet demands from top management, enhance his job enrichment, increase his job stress and workload, change his traditional role.	The accountant's implementation participation tends to leverage her technical and communication skills to meet demand from top management.	The accountant's participation tends to leverage his technical and communication skills to meet demand from top management, tends to enhance his job enrichment, job stress and workload, s participation tends to result in changes in his traditional role, result in	The bursar's implementation effort tends to leverage his technical and communication skills to meet demands from top management.

Categories	PRINCE HOSPITAL	QUEEN HOSPITAL	PRINCESS UNIVERSITY	KING UNIVERSITY
	Substantive Propositions	Substantive Propositions	Substantive Propositions	Substantive Propositions
	At departmental level, the participation results in a paperless working environment, increased specialization of personnel, increased interdependency, improved quality of interaction with other departments and government agencies, improved efficiency and effectiveness and a new role for the department, leads to success of AIS implementation, reduced resistance to change among the finance department, results in more reliance on the new system to get work done. At organizational level, the accountant's participation tends to enhance lateral communication in the organization.		paperless working environment in his department, increase specialization of personnel in finance department. The accountant's participation tends to increase interdependency and improved quality of interaction with other departments and government agencies, improve efficiency and effectiveness and provide a new role of finance department. The accountant's participation leads to success of FAIS implementation, tends to reduce resistance of change among the finance department, result in more reliance on the new system to get work done, leads to improve quality of data and reporting, enhance lateral communication in the organization, tends to result in an implementation of uniform working standards across the organization, leads to reduction in time and operating costs.	

CHAPTER 9
CROSS-CASE ANALYSIS OF AIS IMPLEMENTATION

This chapter covers cross-case analysis. The emerging categories have been compared to formulate substantive and formative propositions. Section 9.1 describes theoretical basis for cross-case analysis and Section 9.2 outlines the cross-case analysis procedure. Section 9.3 discusses the substantive propositions in relation to the causal conditions such as, organizational, departmental and environmental conditions that influenced the accountant's decision to participate in AIS implementation. Section 9.4 analyses the participation of the accountants during AIS implementation. Section 9.5 discusses the consequences of such participation, lists final formal propositions and concludes.

9.1   Theoretical Basis of Cross-Case Analysis

According to Miles and Huberman (1994, p.173), there are two reasons for doing cross-case analysis. The first is to enhance generalizability in terms of the relevance or applicability of the findings to other similar settings. On the other hand, a second reason for cross-case analysis is to deepen the understanding built through examination of similarities and differences across cases. This procedure allows pinning down specific conditions under which a finding will occur (see Glaser & Strauss, 1967, 1970). Similarly, Yin (1994, p.45) has stressed that every case should serve a specific purpose within the overall scope of inquiry and each case must be carefully selected so that it either (a) predicts similar results (a literal replication) or (b) produces contrasting results but for predictable reasons (a theoretical replication). If done properly, the evidence from multiple cases is often considered more compelling (Yin, 1994, p.45) as comparison is a powerful conceptual mechanism, fixing attention upon the few attributes being compared and obscuring other knowledge about the cases (Denzin and Lincoln, 2000).

The researcher made comparisons between the accountants' participation in public services organizations operating in health and education sector. The case studies referred to in this chapter as Prince Hospital, Queen Hospital, Princess University and King University has been analyzed in Chapter 7 and 8. These cases present different IT environments within the health and education services sector. When the main study was conducted in 2003, Queen Hospital and King University were still at the initial stages of implementing their new AIS. However, all four case organizations had implemented their new AIS when the follow-up

studies were conducted in 2005. The similarities and differences between four case organizations are presented in Table 43.

Table 43: Similarities and Differences of Case Organizations

Case	Sector	IT Base	Implementation Stage	Finance Department Orientation	Year of Est.	Type of current AIS	Size of organization
Prince Hospital	Health	Yes	Implementation	Technology	2000	Integrated	272 (No of beds)
Queen Hospital	Health	Yes	Implementation	Customer	1985	Non-integrated	831 (No of beds)
Princess University	Education	Yes	Implementation	Professional	1956	Integrated	>10,000 employees
King University	Education	Yes	Implementation	Business	2000	Non-integrated	<1,000 employees

9.2 Cross-Case Analysis Procedure

The cross-case analysis is performed by making comparisons across four cases. This comparison of similarities and differences is intended to develop propositions. Similarities found in more than two cases are taken as formal propositions. Propositions found in two case studies needed more examination to be validated as formal propositions; therefore evidence from other cases that would support or weaken the development of these substantive propositions was examined in order to consider these propositions as formal propositions. If there was no contradiction in other cases, then, such a proposition was considered a formal one. If there is any evidence of contradiction, then, it remained as a substantive proposition. Propositions mentioned only in one case study were treated as only substantive propositions and not as a part of formal propositions. This approach enabled the researcher to be more structured in analyzing the case studies. Fig 10 illustrates this procedure.

Figure 10 : Examples of Cross-case Analysis strategy (Source: Author, based on Abdel-Maksoud, 2003)
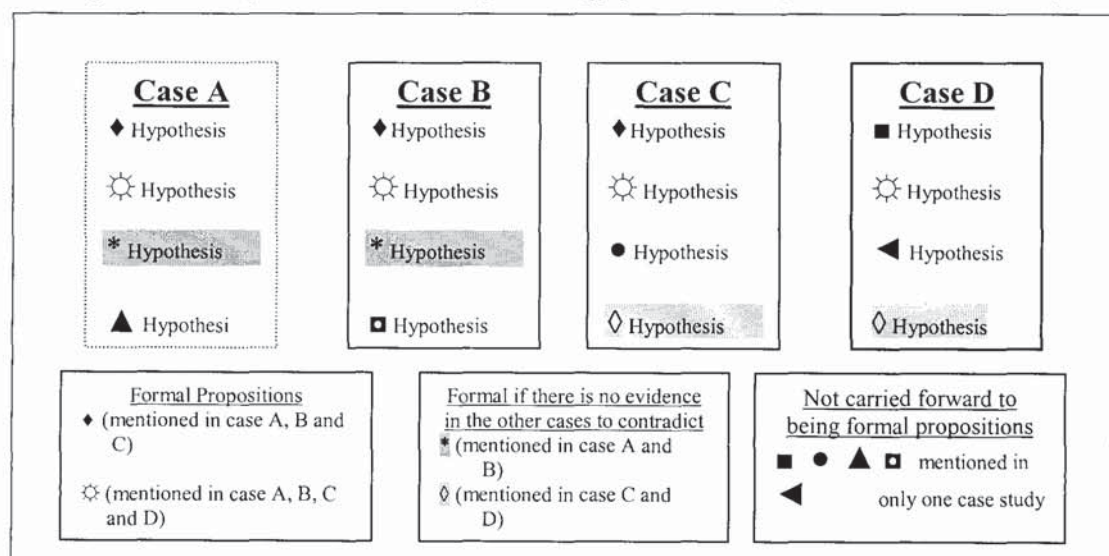
9.3   Formal Propositions – Reasons for Accountants' Participation in AIS Implementation

Table 44 presents the main causal conditions that have been mentioned by interviewees in the four cases regarding reasons for accountants' participation in AIS implementation.

Table 44 : Main Causal Conditions

Labels	Prince Hospital	Queen Hospital	Princess University	King University
Competition with other accountants			√	√
Compliance to management's instruction	√	√	√	√
Problems and limitations of current AIS	√	√	√	√
Recognition and promotion	√			

9.3.1 Similarities of the Causal Conditions

The similarities that have been identified are compliance to management's instructions and problems with and limitations of the current AIS. These two propositions appeared more explanatory of the accountants' participation as elaborated below.

9.3.1.1   Compliance to Management Instruction

The accountants in the four cases mentioned that they need to observe the upper level management's instructions at all times and these were the major reasons why they participated in the AIS implementation project. In both hospitals, the Ministry was very committed to realizing its aim of having a database of medical records of all patients using IT platform. This commitment was reflected in the construction of new IT-hospitals throughout the country and all hospitals were instructed to actively participate in this project. All these directions and instructions were channelled directly to all management of all hospitals in the country. However, this "urge" to compliance was embraced more keenly by newly established hospitals, such as Prince Hospital, as compared to "mature" hospitals, such as Queen Hospital.

The management of new IT-hospitals was eager to fulfil these responsibilities and under pressure to be modern hospital having IT platform. AIS, was a part of an integrated IS to be implemented in these hospitals. The accountants were under great pressure to ensure the success of the implementation, considering that the training given was not sufficient for them to acquire the necessary skills and knowledge to take responsibility. The AG department had made it mandatory for the accountants in the government departments to

use e-SPKB system in order to have a common platform. Consequently, the accountant in Prince Hospital had to let go the FMS, a newly implemented AIS, to give way to e-SPKB that had been proposed by the Accountant General's department. Irrespective of which AIS was instructed to be implemented the relevant accountant elaborated during the interviews that the instruction to use AIS made him participate in the implementation because he would be accountable for its success.

In the case of Queen Hospital, the management was not that eager to work towards having an integrated IS due to lack of infrastructure capabilities. In fact the main problem was changing the mindset of people who had been working in the organization for years, and were used to this old system. The management finally decided to keep up with recent technologies and did not want Queen Hospital to be left out. Their hard work paid-off when the management agreed to set up a new IT department to help them with the implementation. Slowly, the employees started to see the immediate benefits of the new AIS due to continuous efforts of the accountant. This significantly improved the level of participation among all employees in the finance department.

In both public universities, the pressure to implement an integrated IS did not originate from the Ministry of Education. The ministry was not as aggressive as the Ministry of Health in realizing the E-government initiative. The pressure came from the management of each university. Both managements were very proactive in their IT strategy and this was reflected in their commitment to provide the best possible infrastructure facilities for their universities to implement an integrated IS, including an AIS. In Princess University, the accountants with good knowledge of IT and years of experience were appointed to speed up the project in the Bursars department. The accountants were very active in consulting and facilitating targeted users in training and gave demonstrations jointly organized with the system developer.

In the case of King University, a bursar was appointed, acting as the accountant, who was educated in accounting and had previously worked as an IT consultant. He was made the leader of the AIS project. Both the accountants in the Princess and King Universities participated in the AIS implementation as instructed by their respective managements and because their managements were very committed towards their respective AIS projects. It was very obvious that all the accountants participated in the projects because they needed to comply with managements' instructions and directions. The type of "signal" indicating whether the instruction was a coercive or more encouragement was very important to

determine the extent of accountants' participation in AIS implementation. For example, Raju, the accountant in Prince Hospital told that:

"We started with FMS – part of THIS, to achieve the objective of the ministry. However, now we are given the instruction not to use FMS starting from August. We are instructed otherwise by the Accountant General's department to use e-SPKB. It is the only platform where the processing art can be linked online with the issuing of payment of the AG's department. In that way, we are enforced to use the system.....Further, we need the platform to enable processing of payment and salaries to all our employees...."

In Princess University, Mizan, an accountant, elaborated:

"This is not a private sector. We are working within the public sector. As a public officer, I am accountable to my top management... we are talking about nation's interest rather than our own interest... This is where I chose to work so I have no better reason not to comply with all the instructions and regulations. It's for the national interest."

The interviewees in the four case study organizations stressed the importance of compliance with management's instruction as the main factor influencing the accountants to participate in AIS implementation. When the accountant of the Prince Hospital and the IT Department Head of Princess University were asked why compliance to management's instruction is common in the public sector, they said that the public sector is the largest organization in the country with large number of employees at all levels from nearly all the states in Malaysia. Thus, compliance with instructions would help management unite this diverse group of employees. Participation was a practical way for management to control human resources by emphasizing the sharing of decision-making. It might also be due to employees' lack of understanding, their assumptions that they had to comply with the sign-off process undertaken by management and their belief that the decision would be imposed on them any way. Nevertheless, according to an account clerk in King University, management would normally employ a variety of tactics to get employees to participate.

This participation was however dependent on the accountant's personal characteristics and whether the accountant perceived the management's instructions as coercive or just encouragement. The accountant participated actively in the implementation project if he

perceived the instruction as coercive. It was expected however that his/her personal characteristics would also play a major role in determining his/her extent of participation. Innovative or proactive accountants did not need management to instruction or force them to participate actively. They knew they needed to comply with the instructions and participate in the project. Accountants who were less innovative and passive needed management's encouragement to actively participate in the project or else they would only participate passively in the implementation project.

Therefore, the **first formal proposition** regarding the relationship between compliance to management instructions and an accountant's participation in an AIS implementation project is:

> "Accountants perceive the management's instruction as coercive or encouragement to participate in an AIS implementation project"

9.3.1.2 Current Accounting Information System's Problems and Limitations

The current accounting information system's (AIS) problems and limitations experienced by the organization studied was one of the major factors that influenced accountants to participate in an AIS implementation project. The problems and limitations of the current AIS used in the organizations affected the department's effectiveness and efficiency. The case study organizations developed AIS more than 10 years ago and it was not able to cope with the increasing demand for information that needed to be processed. In Queen Hospital, all the application within AIS were not integrated and linked to each other as they were stand-alone applications, thus, information sharing and decision making for various reasons could not be carried out immediately. Likewise, in King University, the current AIS were basically stand-alone application systems used when it was a branch of Duke University. These systems were obviously not able to cater for the development of a technology-based university. In Prince Hospital, the AIS that it used did not meet the government's reporting requirements and therefore, the revenue collection department had been experiencing major problems in terms of data redundancies and inconsistencies in reporting. In addition, the system was inflexible and did not comply with the type of reporting required by the government. Aishah, the head of the department expressed her dismay:

> *"But the reports are not as what I and the government agencies want. In fact too much diverts from what we requested. As a result I prepare my own reports to comply with the government's requirements. I don't trust their systems..."*
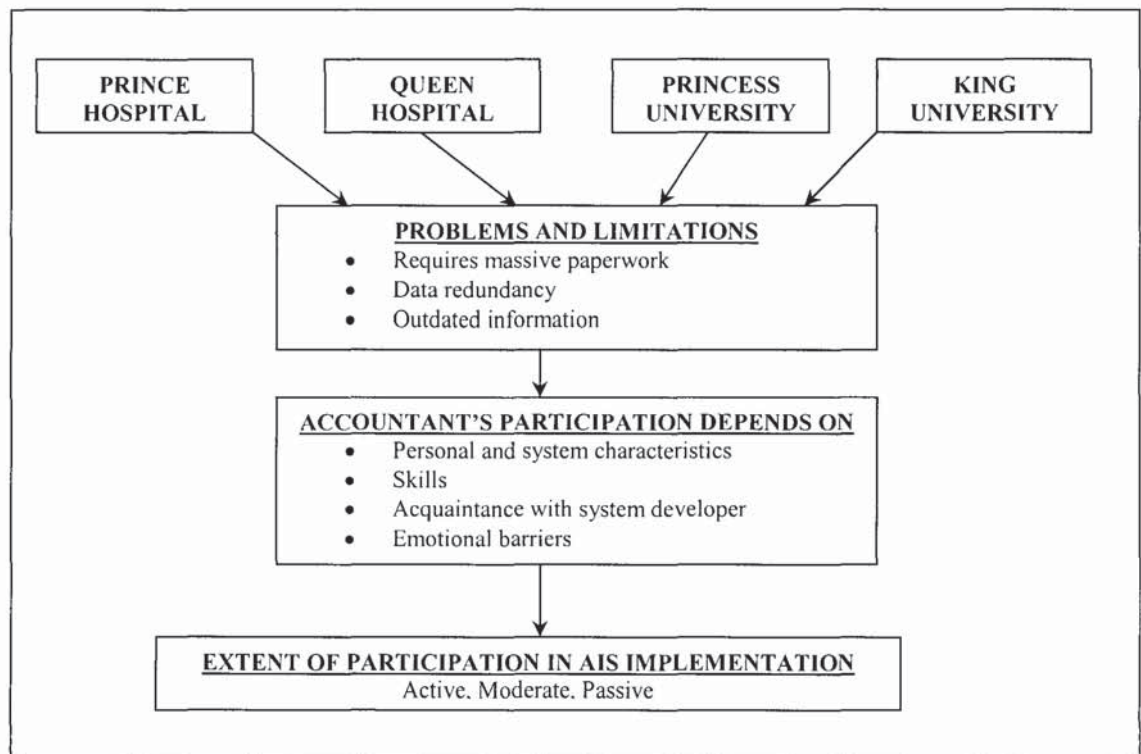
Similar problem was experiences by Princess University where the AIS did not generate information on time even though they were badly needed by the top management in making strategic decisions. The integrated information systems were clearly not able to move at the same pace with the growing changes experienced by the university to achieve its aim to be a "mega university" in the future

All the accountants in the organizations mentioned the problems and limitations of their current AIS as a major reason why they participated in an AIS implementation project. Therefore, the **second formal proposition** regarding the relationship between current AIS problems or limitations and accountant's participation in AIS implementation projects is:

"The current AIS problems or limitations influence accountants to participate in AIS implementation projects"

Figure 11 summarizes the views about the current AIS limitations and problems and the relationship with accountants' participation.

Figure 11 : Current AIS' Problems and Limitations

PRINCE HOSPITAL — QUEEN HOSPITAL — PRINCESS UNIVERSITY — KING UNIVERSITY

PROBLEMS AND LIMITATIONS
- Requires massive paperwork
- Data redundancy
- Outdated information

ACCOUNTANT'S PARTICIPATION DEPENDS ON
- Personal and system characteristics
- Skills
- Acquaintance with system developer
- Emotional barriers

EXTENT OF PARTICIPATION IN AIS IMPLEMENTATION
Active. Moderate. Passive

9.3.2 Differences in the Reasons for Accountants' Participation

According to the cross-case analysis procedure outlined earlier, when a proposition emerged from only one case, it was considered a formal proposition but treated as a substantive proposition for a specific contextual case. The researcher identified one such proposition that emerged from more than one organization and this was subjected to the cross case analysis in the next section in some detail.

9.3.2.1 Competition with Other Accountants

This proposition emerged from Princess University and King University. These organizations differ in terms of organizational structure and the type of orientation in the finance department despite being in the public education sector. Both universities had more than one accountant who handled different types of responsibilities within the finance function. Accountants in both organizations mentioned that competition with accountants from other units in the organization made them participate in the AIS implementation project. The form of participation would make a difference between a change champion and a change agent similar to the difference between a leader and a follower.

Accountants in Queen Hospital and Prince Hospital did not mention competition as a cause of their participation. In Queen Hospital, she was the only accountant so competition was not the case. This might be the reason why competition was not mentioned by her and this left Prince Hospital to be examined further. The accountant mentioned that the finance function was separated from the collection and purchasing department. But still competition was not a main issue. Currently he was solely responsible for both departments, in line with recent changes in the organization. Thus, this contradicted the proposition and hence it was accepted as a formal proposition but remained as a substantive proposition. In summary, the substantive propositions and the formal propositions concerning reasons for accountants' participation in the AIS implementation project are listed in Table 45 below.

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Table 45: Reasons for Accountants' Participation in AIS Implementation

	ORGANIZATIONS	SUBSTANTIVE	PROPOSITIONS	RESULT	FORMAL PROPOSITIONS
PRINCE HOSPITAL PROPOSITION	QUEEN HOSPITAL PROPOSITION	PRINCESS UNIVERSITY PROPOSITION	KING UNIVERSITY PROPOSITION		
		Accountants perceiving their working environment as competitive tend to participate actively in AIS implementation project	Accountants perceiving their working environment as competitive tend to participate actively in AIS implementation project	X	
Accountants perceiving their management's instruction as coercive tend to participate actively in AIS implementation project	Accountants perceiving their management's instruction as encouragement tend to participate passively in AIS implementation project	Accountants perceiving their management's instruction as coercive tend to participate actively in AIS implementation project	Accountants perceiving their management's instruction as coercive tend to participate actively in AIS implementation project	√	Accountants perceiving their management's instruction as coercive tend to participate actively in AIS implementation project
Accountants perceiving the problems and limitations of current AIS tend to participate actively in AIS implementation	Accountants perceiving the problems and limitations of current AIS tend to participate actively in AIS implementation	Accountants perceiving the problems and limitations of current AIS tend to participate actively in AIS implementation	Accountants perceiving the problems and limitations of current AIS tend to participate actively in AIS implementation	√	Accountants perceiving the problems and limitations of current AIS tend to participate actively in AIS implementation
Accountants perceiving participation as a means of getting recognition and promotion tend to participate actively in AIS implementation project				X	

9.4 Formal Propositions – Organization Influences for Participation in AIS Implementation

Table 46 presents the main organizational conditions that have been mentioned by interviewees in the four organizations. The Board of Director's involvement, management competence, management operational experience and management stability have only been mentioned in one organization as important organizational influences. Therefore, the researcher maintained them as substantive propositions.

Table 46 : Main Organizational Conditions

Labels	Prince Hospital	Queen Hospital	Princess University	King University
1. BOD Involvement				√
2. Management Competence				√
3. Management Operational Experience	√			
4. Management Stability			√	
5. Organizational Culture	√	√	√	√
6. Organizational Flexibility	√	√		
7. Organizational Philosophies and Values	√	√	√	√
8. Organizational Structure		√		√

9.4.1 Similarities in the Organizational Influences

The researcher identified two propositions that were similar across the four cases. These are presented in Table 47. The similarities were organizational culture and organizational philosophies and values. These two propositions appeared more explanatory of the accountants' participation as elaborated below.

Table 47 : Detailed Organizational Labels

	Organizational culture		Organizational flexibility		Organizational philosophy and values (Existence)		Organizational structure	
	Weak	Strong	Rigid	Flexible	Yes	No	Bureaucratic	Non Bureaucratic
Prince Hospital		√	√		√			
Queen Hospital	√		√		√		√	
Princess University		√			√			
King University		√			√			√

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9.4.1.1   Organizational Culture, Philosophy & Values

Organizational culture is said to represent the shared beliefs, values, norms, expectations, and assumptions (Hofstede, 1993). A strong organizational culture means that a particular organization has strong shared beliefs, values, norms, expectations, and assumptions among its members. This can be found in the form of the existence of a vision, mission and client's charter which was further translated through administrative policies such as a service quality policy. The organizations studied operate in public sector which is service orientated. The Malaysian public sector organizations generally have large power-distance and rule orientation. The researcher assumed that these cultural factors would be reflected in the way the organizations implement their administrative policies in order to achieve their vision, mission and client's charter.

All the organizations studied have their own mission and vision statements, consistent with the mission and vision of the ministry in which they operate (see Appendix X for Ministry of Health). The mission and vision statements of the hospitals were guided by the Health Ministry and all universities were guided by the Education Ministry. The National Education Philosophy is "Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonic, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards and who are responsible and capable of achieving high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large" The mission of the Ministry of Education is to develop a world-class quality education system which will realise the full potential of the individual and fulfill the aspiration of the Malaysian nation.

In Prince Hospital, organizational members were geared towards achieving a successful implementation of an IT-hospital with a paperless environment. The researcher observed that it was a stressful environment as every one knew that they needed to conform to the rules and regulations. An integrated IS implied that all departments had to work together and this improved interdependency between departments. The accountant was very active in making sure that this project was a success when he led the implementation.

On the other hand, the staff in Queen Hospital had a quite weak set of beliefs and values with respect to their duties and responsibilities, because their jobs were generally task-oriented and repetitive in nature. The management adopted a top-down approach, very "closed", with limited channels of communication. This weak culture inhibited the accountant to actively participate in AIS implementation. The management wanted to put Queen Hospital on the same map as the rest of the hospitals in the country. The responsibility was given to the IT department but the accountant was not given the support and encouragement to be part of the implementation team.

In Princess University, organizational members were geared towards implementing an integrated IS, starting with the finance department, moving towards a mega university status. The accounting staff initially resisted the project, but later the commitment and active participation of the accountant managed to change the situation. They worked very hard in groups as the group leader needed to report to the accountant very frequently. Since the organization was very large, interdependency was very important, especially as the IS was an integrated system.

Similarly, in King University organizational members were geared towards implementing an integrated IS, starting with the finance department, towards a technology-based university status. The accountant was very active but this was not the case among the staff. The staff was not so keen towards the project. The stress was on the accountants to influence other staff to participate because of the widespread use of the accounting systems by all departments in the organization.

The mission and vision of the organization were set out by the top management in both universities. This was communicated through various channels to the organization's members. The Princess University aimed to be a "world-class university" in the future and for King University, the mission and vision were set out when it was first established as a College university. It aimed to be the first technology based university. In both cases, the top management were very committed towards the achievement of the vision and mission through the philosophies and values instilled in the organizations. Despite their emphasis on technology, both organizations incorporated religious values, in this case Islamic values, in their printed philosophies.

In summary, all four organizations studied had set out their mission and vision as part of their philosophies and values. The differences between them would concern how the organizational members worked towards the achievement of the mission and vision, with or without support from the top management. In this research, participation in AIS implementation by the accountant could be seen as accountants' effort in contributing towards the achievement of the vision and mission. Therefore, the **third formal proposition** regarding the relationship between organizational culture, philosophy and values and accountant's participation in AIS implementation projects is:

"Organizational culture, philosophy and values influence accountants' participation in AIS implementation projects"

9.4.2 Differences in the Organizational Influences

The researcher identified two propositions which were different across four cases studied. Each proposition emerged from more than one organization and which are subject of the cross-case analysis in the next section in some detail.

9.4.2.1 Organizational Flexibility

The increasingly dynamic business environment has forced organisations to look for ways to increase their flexibility to be able to react to changing conditions. An organization is flexible if it is capable of multiple responses to its environment (Phillips & Tuladhar, 2000). A firm that exhibit low flexibility is therefore rigid in administrative relations and strictly adheres to bureaucratic practices (Adonisi, 2003; Barret & Weinstein, 1998; Khandwalla, 1977). Similarly, within the context of AIS implementation, the researcher defined organizational flexibility as the ability of the organization to adapt to changes as a result of a new AIS implementation. It is the difference between the time the AIS was implemented and its full utilization.

Prince Hospital was very flexible as it took only a few months to switch from FMS to e-SPKB. The finance department was given short notice from the AG department to start using e-SPKB. This was made possible due to the active participation of the accountant in making sure that the implementation was a success and that the resistance from staff could be overcome. On the other hand, being a matured organization, Queen Hospital was inflexible in responding to changes. It was also difficult to change the mindset of the staff that got used to the old AIS and to get them involved with the new AIS. Thus, it took a very long time for the accountant to convince top management that it was important for her to actively participate. She could only participate upon granting approval from the top

management. Only top management could decide how soon the organization should take up with the new AIS and they were convinced only after she highlighted the achievement of other hospitals in using the new AIS. It can be summarised that organizational flexibility can influence the time taken by the accountants to actively participate in AIS implementation.

However, when analysis was further carried out in Princess University, it was found out that the rigidity of the organization did not stop the accountant from actively participating in AIS implementation. The university has branches and offices and every single change initiative would be difficult to be implemented due to many hierarchical levels within the organization. Despite this, the accountants were actively participated in the AIS implementation and thus contradicting organizational flexibility as a determinant. This was further examined in King University. This organization was not flexible as it was difficult to secure commitment from the staff to support the AIS project as they were previously employed as the staff of Duke University. All the staff still had a sense of oneness with the old Duke University rather than the newly formed university, King University. Regardless of that fact, the accountant's participation was very active. Since the proposition was not further supported in the other two cases, the proposition remains as a substantive one.

9.4.2.2   Organizational Structure

In King University, the organization was not as bureaucratic as other public universities which might be due to the composition of the Board of Directors who were key leaders in the petroleum industry and the public sector. Thus, the way it was managed was similar to the management of private organizations. The active participation of the accountant supported organizational structure as a determinant of accountants' participation. This proposition was examined further in Queen Hospital. The organization was very bureaucratic, very hierarchical with closed channels of communication and it took a very long time for the accountant to have the right support and infrastructure to actively participate in the new AIS implementation. Thus the proposition was supported in the case of King University.

However, the proposition was not supported either in Princess University or Prince Hospital. In Princess University, the branches and campuses were scattered all over the country and this made it difficult for the IT initiatives to be conceptualized, diffused and implemented in the whole organization. The accountants' participation was a challenging task. However, despite the bureaucracy of the organization, both accountants were very

active. The same case was evidenced in Prince Hospital. The structure was in divisions and was very hierarchical even though with more open communication. Regardless of the structure, the participation was active thus, the hypothesis was not supported and these propositions remain as substantive ones. Two substantial propositions and a formal proposition concerning the accountants' participation are listed in Table 48.

Table 48 : Organizational Substantive and Formal Propositions

ORGANIZATIONS' SUBSTANTIVE PROPOSITIONS				FORMAL PROPOSITIONS
PRINCE HOSPITAL PROPOSITION	QUEEN HOSPITAL PROPOSITION	PRINCESS UNIVERSITY PROPOSITION	KING UNIVERSITY PROPOSITION	Organizational culture, philosophy and values influence accountants' implementation efforts in AIS implementation projects
Strong culture involving a high level of social integration and well-articulated set of beliefs and values positively influence accountants' implementation efforts in AIS implementation project	Weak culture involving a low level of social integration and poorly-articulated set of beliefs and values negatively influence accountants' implementation efforts in AIS implementation project	Strong culture involving a high level of social integration and well-articulated set of beliefs and values positively influence accountants' implementation efforts in AIS implementation project	Strong culture involving a high level of social integration and well-articulated set of beliefs and values positively influence accountants' implementation efforts in AIS implementation project	
Accountants tend to be active in their implementation efforts in AIS implementation project in organizations guided with philosophy and values	Accountants tend to be active in their implementation efforts in AIS implementation project in organizations guided with philosophy and values	Accountants tend to be active in their implementation efforts in AIS implementation project in organizations guided with philosophy and values	Accountants tend to be active in their implementation efforts in AIS implementation project in organizations guided with philosophy and values	

9.5 Formal Propositions – Departmental Influences on Participation in AIS Implementation

Table 49 presents the main departmental conditions that have been mentioned by interviewees in the four cases studied. The role, structure, strategy, and operations of finance department were mentioned as important influences in each organization. However, the researcher did not find these influences in more than one organization except

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technology investment strategy; therefore, the researcher maintained them as substantive propositions.

Table 49 : Main Departmental Conditions

Labels	Prince	Queen Hospital	Princess University	King University
1. Role of finance in firm		√		
2. Finance department's structure and orientation	√			
3. Technology investment strategy	√	√	√	√
4. Finance department operation and control		√		
5. Accounting staff		√	√	

9.5.1 Similarities in the Departmental Influences

The researcher identified one proposition that was similar across the four cases, i.e., technology investment strategy as shown in Table 50.

Table 50 : Detailed Departmental Labels

	TECHNOLOGY INVESTMENT STRATEGY		ACCOUNTING STAFF	
	Expenses to be Controlled	Strategic Investment	High Level of Knowledge in Accounting and IT	Low Level of Knowledge in Accounting and IT
Prince Hospital		√		
Queen Hospital	√			√
Princess University		√	√	
King University		√		

9.5.1.1 Technology Investment Strategy

IT was a strategic investment in Princess University and King University. In both cases, top management was very supportive of IT initiatives and accountants were very active in AIS implementation. The finance department was the pioneer department implementing the AIS in both organizations. Thus, the success or failure of the AIS implementation could give direction to future implementation within the organizations and thus the achievement of their visions and missions. However, this is less evident in the other two organizations. For instance, in Queen Hospital, this was not the case. IT was not a strategic investment, top management did not emphasize IT investment and so, the AIS implementation was not a priority on its agenda. Even though the organization finally implemented the new AIS and changed its priority, it had implications for the extent of the accountant's participation.

In summary, with accountants in two organizations actively participating in AIS implementation in organizations, which emphasized IT, and passive participation of the accountants in the organization not emphasizing IT, the researcher considers this as a formal organizational condition. Therefore, the **fourth formal proposition** regarding the relationship between technology investment strategy and accountant's participation in AIS implementation projects is:

"A positive technology investment strategy positively influences accountants' participation in AIS implementation"

9.5.2 Differences in the Departmental Influences

The researcher assumed that participation of the accountant could be influenced and motivated by the level of IT knowledge and skills of his or her staff because this can build a supportive environment by making his or her tasks to participate in the implementation of the new AIS easier and faster. The assumption was supported in the two hospitals. For example, the staffs in Queen Hospital generally had lesser knowledge of IT but were highly competent. On contrary, in Princess University, the staff and the accountants possessed good knowledge of IT and the Bursar, as the division head, had always emphasized on knowledge seeking and upgrading. Thus, in Queen Hospital the extent of accountants' participation was inhibited by the lower skills and level of knowledge of the key staff as compared to the Princess University. Those evidences supported the proposition that the characteristics of the accounting staff could determine the extent of participation of the accountants.

On the other hand however, this proposition was not supported in both Prince Hospital and King University and thus, remains a substantive one. For example, in Prince Hospital, the majority of staff in the organization was employed on a temporary basis. However, the lack of knowledge and experience did not stop the accountant from actively participating in AIS implementation. Furthermore, in King University even though the staff was very complacent and were not very supportive of the AIS project, this did not stop the accountant to actively participate. Clearly, these evidences conflicted with the proposition and thus it could not be supported as a formal proposition. The formal propositions concerning the accountants' participation are listed in Table 51.

Table 51: Accountants' Participation: Organizational Substantive and Formal Propositions

ORGANIZATIONS' SUBSTANTIVE PROPOSITIONS			FORWARDED CONDITIONS	FORMAL PROPOSITIONS
PRINCE HOSPITAL	QUEEN HOSPITAL	PRINCESS UNIVERSITY / KING UNIVERSITY		
Finance departments that consider technology as a strategic investment influence positively accountants' implementation efforts in AIS implementation projects	Finance departments that consider technology as expenses to be controlled influence negatively accountants' implementation efforts in AIS implementation projects	Finance departments that consider technology as a strategic investment influence positively accountants' implementation efforts in AIS implementation projects	TECHNOLOGY INVESTMENT STRATEGY	Technology investment strategy positively influences accountants' implementation efforts in AIS implementation

9.6 Formal Propositions – Environmental Influences on Accountants' Participation in AIS Implementation

This section discusses similarities and differences across the four cases concerning the environmental conditions that have affected the participation of the accountants. Table 52 presents the main environmental condition labels that have been mentioned by interviewees in the four cases studied.

Table 52: Main Environmental Conditions

Labels	Prince Hospital	Queen Hospital	Princess University	King University
1.Accounting Professional and Governing Bodies	√	√	√	√
2. Government And Regulatory Bodies	√	√	√	√

9.6.1 Similarities in the Environmental Influences

The researcher identified two propositions that were similar across four cases, which are the government and regulatory bodies and accounting professional and governing bodies in Table 53.

Table 53: Detailed Environmental Labels

	GOVERNMENT AND REGULATORY BODIES INFLUENCE		ACCOUNTING PROFESSIONAL and GOVERNING BODIES INFLUENCE	
	Strong	Weak	Strong	Weak
Prince Hospital	√		√	
Queen Hospital	√		√	
Princess University	√		√	
King University	√		√	

9.6.1.1 Government and Regulatory Bodies Influence

In the government sector, an officer is expected to be meticulous, dedicated, efficient, honest, trustworthy and responsible in performing his/her duty at all times. An officer committing a breach of undertaking is liable to disciplinary action in accordance with the public officers (conduct and discipline) regulations 1993. According to Section 4 of the Financial Procedures Act, if the accounting officers fail to perform their duty, they can be surcharged (fined). The staff in the four organizations is obliged to comply with the

Treasury and the Accountant General's (AG) department's instructions and directions. Thus, the researcher considers this as a formal environmental condition.

9.6.1.2 Accounting Professional and Governing Bodies

In general, the accounting profession is governed by the Malaysian Institute of Accountants (MIA). In addition to MIA, some members of the accounting profession are also governed by other accounting professional bodies such as the Association of Certified Chartered Accountants (ACCA), the Chartered Institute of Management Accountants (CIMA) and the local Malaysian Association of the Institute of Chartered Public Accountants (MAICPA). In order to remain in the professional bodies, accountants need to upgrade their skills and this is done as a part of CPD (continuous professional development) or CPE (continuous professional education).

All these initiatives significantly influenced the attitude of accountants toward IT and related aspects, the importance and consequences of their participation in AIS implementation and for some accountants, leverage their technical skills. Thus, the researcher considers this as a formal environmental condition. Therefore, the **fifth formal proposition** regarding the relationship between technology investment strategy and accountant's participation in AIS implementation projects is:

> "Strong influence from accounting professional and governing bodies influences positively accountants' participation in AIS implementation"

The two formal propositions concerning the accountants' participation in AIS implementation are listed in Table 54.

Table 54 : Accountants' Participation: Environmental Substantive and Formal Propositions

ORGANIZATIONS' SUBSTANTIVE PROPOSITIONS				FORWARDED CONDITIONS	FORMAL PROPOSITIONS
PRINCE HOSPITAL	**QUEEN HOSPITAL**	**PRINCESS UNIVERSITY**	**KING UNIVERSITY**		
Strong influence from government regulations and regulatory bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from government regulations and regulatory bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from government regulations and regulatory bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from government regulations and regulatory bodies influence positively accountants' implementation strategies in AIS implementation projects	**GOVERNMENT REGULATIONS AND REGULATORY BODIES INFLUENCE**	Strong influence from government regulations and regulatory bodies AND accounting professional and governing bodies influence
Strong influence from accounting professional and governing bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from accounting professional and governing bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from accounting professional and governing bodies influence positively accountants' implementation strategies in AIS implementation projects	Strong influence from accounting professional and governing bodies influence positively accountants' implementation strategies in AIS implementation projects	**ACCOUNTING PROFESSIONAL AND GOVERNING BODIES INFLUENCE**	positively accountants' implementation strategies in AIS implementation projects

9.7 Formal Propositions – Accountants' Actions & Strategies in AIS Implementation

The researcher identified that budgeting and controlling, designing accounting systems and planning have only been mentioned in one organization as an important influence. Therefore, the researcher maintained them as substantive propositions.

Table 55 : Main Participation Labels

Labels	Prince Hospital	Queen Hospital	Princess University	King University
Budgeting and Controlling				√
Consulting	√	√	√	√
Designing accounting systems & planning			√	
Influence	√		√	√

9.7.1 Similarities of the Accountants' Participation Conditions

The similarities that have been identified are consulting and influence in accounting information system (AIS) implementation.

9.7.1.1 Consultation

Consultation was mentioned as the main factor contributing to the accountants' participation in AIS implementation project. In Prince Hospital, Raju, the accountant complained:

> "I have more work than I used to have. Being involved in this implementation project I tend to be more stressful. Everybody needs and expects financial information from me. I am having problems with the current financial system. I can't produce updated information on time. To do that, I need to sit in my office all day. But, I can't. On top of that, I was instructed to be in this implementation team."

The accountant was normally consulted on the specific nature of accounting systems. In Queen Hospital, the accountant had actively participated in all discussions and meetings concerning the project. As expected, she was the leader of the implementation team even though a new IT department had been set up. The new IT executive consulted her on regular basis in making sure that she knew what the accountant wanted to have in the new AIS and customized it to the hospital's operations.

The accountant of King University was expert in designing accounting systems. The two accountants of Princess University shared and complemented their experience and knowledge with each other to work closely with the system developer during the implementation project. The interviewees in the four cases stressed the importance of consultation as part of accountants' participation. Therefore, the relationship between consultation and participation in AIS implementation is:

> "Accountants' participation is associated with consultation work performed by them during the implementation project"

9.7.1.2 Influence

In addition to consultation, the accountants were also exercising their influence both at higher and lower levels of management. Being a controlling officer of an organization, an accountant could influence top management's commitment towards the project positively or negatively. They could also influence the system developer on the outline of the new accounting systems as they knew best what their staff wanted from the system. Being the head of department, they also could influence their staff to participate, accept and adopt the new AIS.

In King University, the accountant influenced top management to instruct his staff to participate more in the implementation project. In Princess University, both accountants worked very hard to influence the system developer to deliver a system, which they felt was the best for their organization. They did not hesitate to turn down proposals, which did not address fully what they wanted from the accounting system. The accountant in Prince Hospital was having a tough time in influencing the staff to turn to the new e-SPKB system, as mandated by the Accountant General. He previously gave training on and coerced FMS to be used in his department before e-SPKB became a mandatory system. Consequently, he managed to influence his staff to fully convert to the new system. The interviews in these three cases stressed the importance of exercising influence as part of accountants' participation in the AIS implementation project. Therefore, the **sixth formal proposition** regarding the accountants' participation in AIS implementation projects is:

> "Accountants' participation is associated with consultation work performed and influence exercised during the project implementation"

The four cases' substantial propositions and the formal proposition concerning the accountants' participation are listed in Table 56.

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Table 56: Accountants' Participation – Actions & Strategies Substantive and Formal Propositions

ORGANIZATIONS'		SUBSTANTIVE	PROPOSITIONS	RESULT	FORMAL PROPOSITIONS
PRINCE HOSPITAL PROPOSITION	QUEEN HOSPITAL PROPOSITION	PRINCESS UNIVERSITY PROPOSITION	KING UNIVERSITY PROPOSITION		
"Accountants' participation is associated with provision of financial information during the implementation project"	"Accountants' participation is associated with consultation work performed by them during the implementation project"	"Accountants' participation is associated with the consultation on rules and regulations and uniqueness of the organizations to be followed during the implementation project"	"Accountants' participation is associated with evaluation of the proposed system during the implementation project"	√	"Accountants' participation is associated with consultation work performed by them during the implementation project"
"Accountants' participation is associated with influencing the staff during the implementation project"		"Accountants' participation is associated with influencing the system developer during the implementation project"	"Accountants' participation is associated with influencing top management during the implementation project"	√	"Accountants' participation is associated with influence exercised by them during the implementation project"

9.8 Formal Propositions – Consequences of Accountants' Participation in AIS Implementation

The researcher examined the similarities and differences across four cases concerning the consequences of the implementation efforts. Table 57 shows consequences at individual, department and organization level.

Table 57: Main Consequences Conditions

Labels	Prince Hospital	Queen Hospital	Princess University	King University
Individual level	√	√	√	√
Departmental level	√	X	√	√
Organizational level	√	X	√	X

9.8.1 Similarities in the conditions of the Consequences

The researcher found that consequences could be identified at individual, departmental and organizational levels depending on the implementation stages of the AIS.

9.8.1.1 Individual Level

The accountants of Prince and Queen Hospitals mentioned that participation in AIS implementation leveraged their technical and communication skills. In the absence of the system developer's staff during the implementation, most of their staff member turned to them for consultation. Consequently, these accountants improved their technical skills and knowledge. The effective communication helped the finance department in reducing backlogs. Furthermore, the need to communicate to ICT committee members, who comprised mostly of the medical officers, forced the accountant in the Prince Hospital to communicate effectively with them. The accountant had to use simple language to communicate the progress of the project. In Queen Hospital, the accountant had become more open to her staff.

In Princess University, the accountants acted as the intermediaries between top management and target users and between target users and the system developer's staff and this enhanced their communication skills. Since the accountant in King University was previously an IT consultant, he had also learnt a lot about accounting in the public sector and he would not have problems with IT. By working in King University, he managed to leverage his public sector accounting knowledge.

Job enrichment was evidenced when the accountant in Prince Hospital mentioned that his job was different from the normal work of an accountant. He attended meetings, most of the time with top management, both internal and external to the organization, meeting very important people. He said his new tasks benefited his position in the eyes of his staff. The accountant in Princess University said it was like venturing into a new venue and he did not feel like an accountant anymore.

In terms of work performed, the accountant in Prince Hospital said the participation increased stress. According to an accountant in Princess University, this was due to high expectations, conflict of interests, and a heavy workload. Their work was no longer routine and their role had changed from that of an accountant to a reporter in Prince Hospital and to facilitators in Princess University. The accountants at Princess University conducted courses and training workshops and demonstrated the software to targeted users across Malaysia. They also became ambassadors of the new system and were able to clear doubts and inquiries and communicate problems and benefits to users.

9.8.1.2 Departmental Level

The finance departments in Prince Hospital and Princess University worked very hard towards a paperless working environment. They aimed to have less space needed to store hardcopies and a more conducive environment for their staff. Princess University started to archive documents and a warehouse was built to keep old documents for reference and other purposes.

An integrated IS was claimed to increase the specialization of personnel by delegating staff to specific tasks or modules within the integrated system. For example, Princess University had an integrated IS which consisted of 14 integrated modules. This could increase interdependency and improve quality of interaction with other staff, departments and agencies. The AG department argued that this resulted from the common platform advanced by the system.

The new system generally resulted in a new role for accounting, which further enhanced the efficiency and effectiveness of the department. The focus changed to one of analyzing and performance reporting rather than performing repetitive tasks. The finance departments in Prince Hospital and Princess University responded to inquiries immediately and transformed

into departments, which emphasized better customer service. Princess University's new system enabled users to access data, which are physically distant through its network.

The operational efficiency of the accounting departments was also improved. Accurate payments to creditors could be arranged and backlogs could be cleared. For example, payment could be made through cheque or electronic funds transfer (EFT).

Participation of the accountants obviously could reduce resistance to change among the employees. In Prince Hospital, the staff was initially resistant to e-SPKB because they were familiar with FMS. In addition, in Princess University the accountants acted as the core personnel to secure staff trust in and acceptance of the AIS project. In both cases, their participation convinced staff to accept and use the new systems. This would ultimately speed up and lead to successful AIS implementation in the departments. The finance department helped top management to make quick strategic investment decisions.

However, in Prince Hospital there was a pattern of increasing reliance on the system to get the job done that resulted in idle hours when the system broke-down. In Princess University, analyses were prepared at the press of a button and reduced dependency on accountants' analytical skills. Thus, the staff might overlook further validation and accuracy checking. However, this evidence could not be confirmed in Queen Hospital and King University as they were still at the initiation stage, thus this proposition remains substantive in this study.

9.8.1.3 Organizational Level
The new AIS created a lateral communication with free flow and open channels of communication, but in Princess University different priority levels were also set up to address different user needs and authorities. The new AIS enabled the Prince Hospital to achieve its aims to be a friendly IT-hospital by reducing waiting time and to be able to access medical records online. The new AIS provided fast reporting and retrieval of information and enhanced better decision making. They improved relationships with suppliers and customers within a paperless society.

In an educational setting, Princess University's AIS enabled the implementation of uniform working standards across an organization with more than 7,000 staff. They also reduced time and operating costs for the collation of data and preparation of reports for management.

Negative aspects were also experienced by the organizations. In Prince Hospital, the new AIS was slowly disintegrated from THIS when FMS was being replaced by e-SPKB. In Prince Hospital, staff complained of rising operating costs, such as the printing and stationery, even though they also improved typing skills among medical officers. Unfortunately, there was less personal touch and eye contact with patients. More work needed to be done in the event of technical break-downs. For example, in Prince Hospital, a doctor needed to ask patients for their medical history when the system did not work. In that organization lower productivity of employees was noted as a result of exposure to screen monitors.

However, in summary the proposition regarding the consequences of accountants' participation in AIS implementation is:

> "Accountants that put their efforts into the AIS implementation would gain through improvements at their own personal, departmental and organizational levels"

9.9   *Conclusion*

In this chapter, researcher identified similarities and differences using cross-case analysis to derive the formal propositions. A large number of substantive propositions were found to be similar across the four cases. Propositions that were mentioned only in two cases were further investigated for further evidence, whether supporting or contradicting, in other cases. The propositions for which there was not any contradictory evidence from the other two cases were considered valid and *formal* propositions. Otherwise, these remained as *substantive* propositions. The examination of causal conditions, environmental context and consequences of accountants' participation revealed the following formal propositions:

- Accountants who perceive the management's instruction as coercive or encouraging would participate in AIS project implementation.

- Current AIS problems and limitations influence accountants to participate in the AIS project implementation.

- Strong organizational culture, philosophy and values positively influence accountants' participation.

- A positive technology investment strategy positively influences accountants' participation in AIS implementation.

- Strong influence from government regulations, regulatory bodies and from accountants' professional and governing bodies influence positively accountants' participation in AIS implementation.

- Accountants' participation is associated with consultation work performed and influence exercised during the project implementation.

- Accountants who participate in AIS implementation efforts experience improvements at their personal, departmental and organizational level.

Although these propositions are reasonably supported using case specific context but there might be other factors that might have not been included. The number of factors worthy of examination might be large relative to the number of case studies available. As Miles (1979) suggests that accurate but thin generalization across cases are likely to be the only results when the analyst is struggling with the need to make sense across a number of sites which has contextually specific causes and consequences regarding the phenomenon under investigation.

CHAPTER 10
CONCLUSIONS AND IMPLICATIONS

This research investigated the determinants of accountants' participation in AIS implementation in Malaysia using a two-part study approach. The quantitative results showed that determinants of accountants' participation in the AIS implementation are not similar to those identified in the literature. In the light of these findings, the researcher extended the research using a qualitative approach to find out uniqueness of Malaysian context. To this end, four public sector organizations were selected for the qualitative analysis, cross-case analyses were conducted to compare accountants' participation in AIS implementation in these organizations, and testable research propositions were derived. These propositions are then compared with the literature, to show how the research findings fit into the body of knowledge. The extent, to which the propositions fit with the literature, is indicated by a degree, which varies from "to some extent", "to a very small extent" and "none" (Perry, 1998). "To some extent" means that, a derived proposition is consistent with the literature. "To a very small extent" means that, a derived proposition about which there was anecdotal but no strong empirical evidence, and "none" means that, a newly derived proposition which has not been indicated in the literature. As a way of summarizing and highlighting the core research findings from this research, Table 58 states the main propositions alongside reference to previous studies where applicable.

Out of 7 propositions in Table 58, 2 propositions are consistent with the literature and 3 propositions are supported by empirical results. There are 2 propositions that are newly derived in this research that relates to the influence of current AIS problems and limitations, and investment strategy of organization, on the accountants' participation in AIS implementation in the public sector organizations. These two new propositions imply that investment strategy and current limitations of AIS are the areas omitted in literature that are found to be of significant importance. From investment strategy perspective, it makes sense that accountant's participation plays a greater role in realization of the objectives of overall IT strategy. On the other hand, being aware of the current limitations of AIS, act as empowerment mechanism for the accountants to participate in re-designing of AIS.

Table 58: Research Propositions and Extent of Support in Previous Studies

RESEARCH PROPOSITION	RANGE	PREVIOUS STUDIES	REFERENCE TO PREVIOUS CHAPTER/PAGES
Accountants perceive the management's instruction as coercive or encouragement to participate in AIS implementation project.	TO SOME EXTENT	Ashmos et al., 1997 ; Burns, 2000; Galbraith, 1983; Howcroft and Wilson, 2003; Kaarst-Brown, 1999; Mumford, 1997	Chapter 5, p.88,90 Chapter 3, p.30 Chapter 5, p.88 Chapter 1, p.1, Chapter 5, p.89 Chapter 5, p.90 Chapter 5, p.91. Chapter 3, p.32 Chapter 4, p.68, Chapter 5, p.90.
Current AIS problems and limitations influence accountants to participate in AIS implementation project.	NONE		
Organizational culture and existence of organizational philosophy and values influence accountants' participation.	TO A VERY SMALL EXTENT	Allen et al., 2002; Crow and Hartman, 2002; Smith, 2000	Chapter 5, p.96 Chapter 5, p.91 Chapter 3, p.22
Technology investment strategy positively influences accountants' participation in AIS I implementation.	NONE		
Strong influence from government, regulations and regulatory bodies, accounting professional and governing bodies influence positively accountants' participation in AIS implementation.	TO A VERY SMALL EXTENT	Broadbent et al., 1991	
Accountants' participation is associated with consultation work performed and influence exercised by them during the implementation project.	TO SOME EXTENT	Berry et al., 1995; Brignall et al., 1999; Johnston et al., 2002; King et al., 1994; Lawrence and Low, 1993; Saleem, 1996	Chapter 3, p.31,36,40,42,47 Chapter 4, p.63,64, 67,73. Chapter 1, p.1 Chapter 3, p.22,31,32,33,38, Chapter 4, p.64.67,73 Chapter 3, p.39

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RESEARCH PROPOSITION	RANGE	PREVIOUS STUDIES	REFERENCE TO PREVIOUS CHAPTER/PAGES
Accountants who participate in the AIS implementation efforts would result in improvement at individual, departmental and organizational level.	TO A VERY SMALL EXTENT	Doll and Torkzadeh, 1989; Howcroft and Wilson, 2003; Ives and Olson, 1984; Rajagopal, 2002; Saleem, 1996	Chapter 1, p.2. Chapter 3, p.23, 24, 37. Chapter 4, p.68 Chapter 1, p.1, Chapter 5, p.89 Chapter 5, p.90 Chapter 10, p.229 Chapter 3, p. 34.

Source: the author

10.1 Implications for knowledge

This section aims to highlight contributions of the research to the wider body of knowledge.

The research's contribution lies in the first hand AIS implementation experience in the organizations studied, and the insights into how AIS implementations are handled in the Malaysian organizations. A two-part study methodology was used due to inaccessibility to the private sector in Malaysia to conduct case-studies. Strauss (1998) made a point that recent economic and technological developments have strengthened the case for "worker participation" in so-called "developed" countries. This research extended the case to a developing country.

The findings show that current AIS problems, limitations and the nature of the authority instruction are the main determinants of accountants' participation in the Malaysian public sector. The nature of the authority's instructions, either coercive or encouraging, can influence the perception of the accountants whether the instruction is to "force" or "support". Active participation of the accountants is expected from the accountants who are less innovative and with lower skills levels, because only this category of worker would significantly change or move towards participation if being coerced. Those with high innovation and skills would in general are willing to participate regardless of the nature of the instruction.

The extent of accountants' participation varies from passive to moderate to active. In this research, accountants' participation is viewed as passive if they provided consultation during

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the AIS implementation. On the other hand, it could be viewed as very active if the accountants exercise their influence over any aspects of the implementation.

A framework has been further developed to represent the model of accountant implementation participation (AIP) as follows. The dependent variable of accountant implementation participation (AIP) was influenced by current AIS problems and limitations and the nature of instructions from authority. An intervening variable that surfaced as a function of the authority instruction was accountants' perception of these instructions. This perception resulted from the internal diffusion experienced by the individual accountants to decide whether to comply with or counter the instruction. This would help understanding of how the participation of the accountants could be affected by the nature of the authority's instructions.

The perception of the accountants could help conceptualize how the authoritative instructions brought about participation of the accountants. As can be seen from the figure 12 below, accountants' level of innovativeness and skills mediated the relationship of their perception of the authority's instructions to their extent of participation in AIS implementation, after controlling for the environmental factors.

Figure 12: Model of Accountants' Implementation Participation (AIP) (Source: the Author)
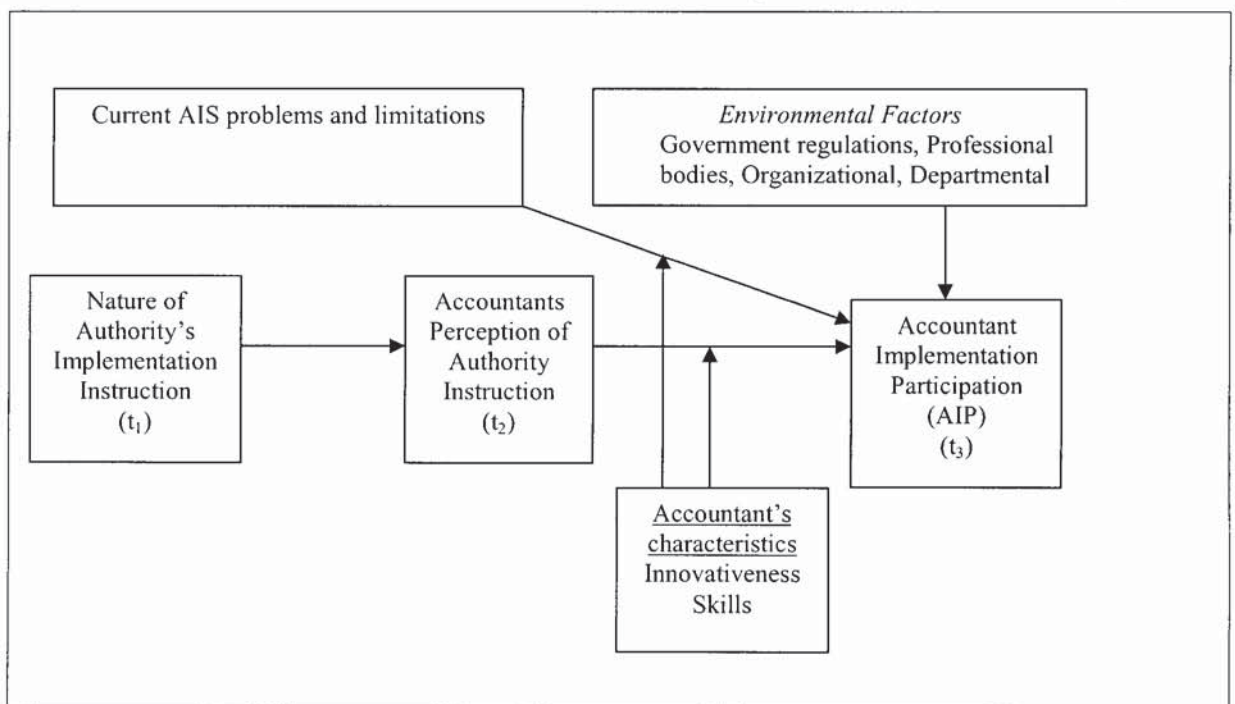
In summary, while the implementation instructions from authority explained the variance in the participation of the accountants, the perception of the accountants of such instructions did not add to the variances already explained by the independent variable. The perception of the accountants surfaces at time t_2, as a function of the authority implementation instructions at time t_1, to bring about accountants' implementation participation (AIP) in time t_3. The extent of an accountant's implementation participation (AIP) can be influenced by authority, with forms of control ranging from a clear instruction as "coercive" to subtle indications of "encouragement". Accountants' level of innovativeness and skills had contingent effects on the extent of participation. In other words, the extent of participation depended on how innovative and skilful accountants were in handling the implementation. If the accountants were highly skilled and innovative in the implementation, then no matter how they perceived the instruction from authority, the extent of their participation did not differ and was always high.

It was found that current AIS problems and limitations positively motivated accountants to participate in AIS implementation projects. Likewise, the coercive nature of authority implementation instructions made the accountants perceive it as coercive, and this in turn explained why they participated in AIS implementation. These accountants are more likely to actively participate if they are being coerced by the authority as they might be reassured by the possibility of legitimating themselves in the eyes of authority.

The case studies of Queen Hospital and Prince Hospital show that active participation is likely to result only in cases where the accountants are less innovative and with poor technical and social skills. More specifically, it was found that the more coercive the nature of the instruction from the authority to implement AIS, the greater the possibility of participation of accountants with poor skills and less innovative features. On the other hand, case study of Princess University and King University show that accountants who are very innovative and have high levels of social and technical skills do not need force from the management to participate as they perceive themselves as competent, and do not need incentives to participate in the implementation. Thus, the extent of participation among poorly skilled and less innovative accountants could be passive if they perceived the instruction as merely an encouragement.

Based on the above discussion, this research proposes six formal propositions to be tested:

- The greater the problems and limitations of the current AIS, the greater the participation of accountants in new AIS implementation
- Perceptions of authority instructions as coercive or encouragement will influence positively accountants' implementation participation.
- A positive relationship exists between "coercive" instructions and the extent of participation for <u>less innovative</u> accountants, but not for highly innovative ones.
- A positive relationship is expected between "coercive" instructions and the extent of participation for <u>poorly skilled</u> accountants, but not for highly skilled accountants.
- Accountants who perceive the authority instruction as "encouragement" will demonstrate a lower degree of participation if they are <u>less innovative</u> relative to others.
- A negative relationship is expected between an "encouragement" instruction from authority and the extent of participation for <u>poorly skilled</u> accountants, but not for highly skilled accountants.

The directions of relationships of the proposed propositions are shown in Table 59.

Table 59: Directions of relationships of propositions (Source: the Author)

Relationship (Independent and dependent variables)	Hypothesis	Direction
Current AIS Problems and Limitation Accountant Participation	H1	+
Coercive instruction Accountant participation	H2	+
Encouragement instruction Accountant participation	H3	-
Coercive instruction and Innovative accountant Accountant participation	H4	+/-
Coercive instruction and high skilled accountant Accountant participation	H5	+/-
Coercive instruction and passive accountant Accountant participation	H6	+

Relationship (Independent and dependent variables)	Hypothesis	Direction
Coercive instruction and poor skilled accountant Accountant participation	H7	+
Encouragement instruction and innovative accountant Accountant participation	H8	+/-
Encouragement instruction and high skilled accountant Accountant participation	H9	+/-
Encouragement instruction and less innovative accountant Accountant participation	H10	-
Encouragement instruction and poor skilled accountant Accountant participation	H11	-

10.2 Implications for policy and practice

This section highlights the implications of the research for the policy and practice of the accounting profession:

- A more refined understanding of the innovative role of accountants within organizations and ways to promote accountants' participation in IS implementation in organizations to maintain their organizational significance and to ensure that their "relevance" (and that of their profession) is not lost (cf Johnson & Kaplan, 1987).

- Recognition of accountants' participation and contribution towards the success of change processes and the importance of positioning accountants' participation appropriately in relevant literature.

- The concept of AIP may also have many implications such as an alternative explanation for failed implementation of change projects, as an alternative explanation of reality construction during change processes, and in terms of new testing of participation as a legitimate element in change processes.

- Most importantly, top management can benefit by better positioning the accountants' skills and expertise for the benefit of the organization and focus on education and training efforts for those accountants who are most likely to resist IT/IS. Its attention should first focus on providing an adequate infrastructure supporting the innovation and then turn attention to directly motivating the individuals affected by such innovation in organizations.

- Better understanding of the consequences of the finance department's orientations so that managers will be able to better position and shape these units consistent with expectations for innovation.

- Professional bodies can provide appropriate and continuous training and courses to prepare existing and future accountants for their new and challenging tasks and environments.

10.3 Limitations of the research

This research focuses on AIS implementation as one of the many public sector reform mechanisms and on the accountants as specific users of AIS and the role they play during AIS implementation. This research, like any other research, is not without its limitations. The limitations are as follows:

- Kennerly and Neely (1998) have shown that using case studies of companies at different stages of the implementation of systems can best examine the lagged effects of such investment. However, the results of each case study are substantive and present only that specific case. Even the formal propositions that emerged from cross-case analysis are directly related to the specific cases and cannot be generalized statistically. The four cases are not sufficient for generalization; rather they provide better analysis than a single case study.

- Due to its qualitative nature, the researcher's conscious and unconscious biases during data collection, coding and interpretation are acknowledged. The researcher has taken steps to minimize these biases by using theoretical sampling techniques and making constant comparisons of data, interviewees, methods and adopting a multiple case study approach.

- The four case studies were conducted in a Malaysia and thus the results are context specific and might not be generalizable to other countries, which have their own specific and unique socio-economic and political characteristics, which might lead to different results.

- No significant results at the survey stage may often be a result of poor instruments or lack of control over the research setting. There is a need to develop and validate standard measures for accountant's participation. Since the measures were developed partly by exploratory data analysis, psychometric weaknesses may exist in the current results.

- Causal linkages between accountants' perceptions of authority instructions and the extent of accountants' participation remain unexamined and tangled. Additional theoretical constructs such as participative decision-making theory (Howcroft & Wilson, 2003) may be profitably brought into subsequent analysis. More powerful measures of participation specifically for accountants also need to be developed.

- This research is limited to public sector organizations, with a small sample size, and features a cross-sectional study rather than a longitudinal one, which would be more suitable for studying implementation processes through time.

These limitations are acknowledged, but they do not detract from the significance of the findings but rather provide platforms for future research.

10.4   Implications for Methodology

The results derived from the usage of the two-part study should give a fresh insight into exploring similar or other accounting issues in the private sector as well as in the public sector. The results derived from syntheses of literature hope to bridge the gap between the literature and this is consistent with the understanding that real-life accounting can no longer be isolated from other related innovations or IT issues, and a recognition that information system is a multi-perspective discipline, hence the complexity of the field should require a pluralism of research methods (Wood-Harper, 1985).

Vitalari (1985) argues that:

"......It is important for the researcher to collect both qualitative and quantitative data that accurately describes the setting ....the documentation of the context must go beyond the standard demographics such as industry type, revenue level...Other more qualitative information should be provided such as description of the managerial climate and culture...and level of cooperation with the researcher. The point is that richer contextual information will allow others to later use the research findings in constructive ways not anticipated by the original researcher and develop new insights."

A two-part study in the private and public sectors is a very challenging work but was carries out due to the nature of the research problem studied. The survey stage was not an easy task in this research. It started with a preliminary study in six private sector organizations in Malaysia. It was also a learning process of getting access to organizations and interviewing respondents. The analysis was then compared with the literature to help identify variables that needed to be examined and used in the questionnaires. The questionnaires were then piloted tested on a sample of public listed companies on the Kuala Lumpur Stock Exchange, and followed up by discussion with IT analysts and consultants to refine the questionnaires before they were distributed to all accountants in Malaysia. Triangulation of respondents and methods needed to be done to secure a better response rate.

However, the qualitative methodology was the most challenging part of the research. Incorrect interpretation of data might sacrifice the true meaning given by the respondents at any point in time. Concepts and themes needed to be developed and the masses of data and the different meanings attached to them by different respondents from different backgrounds made this task the most challenging stage of the analysis. The researcher prepared a self-keeping report format to categorize data into causes, environmental factors, organizational factors, departmental factors, strategies and consequences of strategies for each organization and for comparison of all four organizations studied. This helped make the analysis more structured and organized. In addition, the freedom of the researcher to handle and control her data led to more creative ideas to be developed both for the methodology and issues to be investigated.

The concepts derived from this analysis still lack a solid conceptual foundation. They need to be embedded in a sound theoretical framework. Empirical research may then be employed to further the distinction and foster understanding of both the importance and the role of accountants in AIS implementation. Continuing efforts should be made to validate the constructs. Taking a positivist approach, future research can examine convergent and discriminant validity using multiple methods to develop better measures and instruments. The test-retest reliability of the instrument should then be evaluated. Large multi-organization samples should be gathered to confirm factor structure, discriminant validity and efficacy.

10.5   Implications for Future Research

The need for accountants to shift their responsibilities and expand their portfolios is vital. Since deployment of IT has become an important agenda in organizations and requires concerted efforts among organizational members, future studies therefore, need to consider how the roles of accountants can be altered in an IT implementation context and to identify the institutional influences on such changes. This might require a longitudinal study employing an ethnographic methodology. Future studies can also explore other organizational change programmes and take into account the institutional influences (DiMaggio and Powell, 1983) that might facilitate or inhibit accountants to actively participate in IT/IS implementation processes.

Future research should also study the process of how accountants' participation can change their traditional role, and how this new role is being institutionalized as organizations move from the initiation to the implementation stages of an organizational change agenda. Future research should also include a larger scale survey to test the proposed propositions so that the findings can be better generalized to the population of accountants in Malaysia. The results can be used to refine the proposed model and test further its application within other AIS applications or other professionals or in different settings. Alternatively, research should also be conducted to explore whether Malaysian accountants currently have the necessary skills and expertise to perform their new role as a result of IT advancement. This will encourage the policy makers of higher learning institutions and professional accounting bodies to review the suitability of the courses offered to current and future accountants.

How clearly or consistently "management instruction" is perceived throughout an organization is worthy of further research, especially given the variety of communication processes used during implementation projects, such as electronic media through email and intranets. In addition, since the literature on cultural investigations of IT in organizations remains rare it might be fruitful to acknowledge that compliance to management instruction is one element of organizational culture in the public sector. Studies can be extended to private sector organizations experiencing similar AIS implementation to further explore this culture issue.

Future studies can also be conducted to explore the "fit" between different key subcultures such as the users, managers and IT specialists in enhancing accountants' participation in AIS implementation. Any incongruence of cultural values between different sub-cultures can threaten AIS implementation success.

Lastly, future studies might want to consider how the social and political nature of IS implementation, such as the extent to which hidden agendas, power centres and managerial assumptions, inhibit, repress and constrain accountants' participation. Studies exploring the extent to which the accountants' participation is being used to help legitimize the new system rather than to obtain their input would be an avenue worth exploring.

10.6   Conclusion

The literature suggests that certain determinants are imperative to influence accountants' participation in AIS implementation. This research shows that the process of influencing the accountants to participate is more complex than the literature suggests. There were many issues that surfaced during the field study, such as conflict and empowerment, which set a foundation for further research about how participation can be secured and developed to help make the implementation of AIS part of an organizational change agenda success.

Appendices

I. QUESTIONNAIRE EVALUATION FEEDBACK

ASTON UNIVERSITY

This evaluation is critical in order to refine the questionnaire. Therefore, your kind feedback is greatly appreciated. Thank you in advance for cooperation and precious time spent.

1. Do you understand what the survey is all about?

2. Are you comfortable with the layout design of questionnaire?

3. Is the wording of the items clear?

4. Are the answers (options) given adequate?

5. The most difficult question to answer is Question no _____ . The reason(s) is/are:

6. The most confused question to answer is Question no _____ . The reason(s) is/are:

7. The most irrelevant question to answer is Question no _____ . The reason(s) is/are:

8. Other important issue(s) that need(s) to be addressed with respect to accountants' involvement in the system diffusion process in an organization:

9. In order to refine the questionnaire, I would like to suggest

Thank you very much

II. LETTER OF APPROVAL FROM THE MINISTRY OF HEALTH TO GAIN ACCESS TO ALL PUBLIC HOSPITALS IN MALAYSIA

TO WHOM IT MAY CONCERN

Y. Bhg. Datuk/ Dato'/Sir/Madam,

THE CHANGING ROLE OF MANAGEMENT ACCOUNTANTS IN INFORMATION SYSTEMS IMPLEMENTATION – MALAYSIA EVIDENCE

This is to inform that Mdm Radiah Bt. Othman, is a lecturer of MARA University of Technology, and is currently studying for Doctor of Philosophy (PhD) in Accounting Information Systems (AIS) at Aston University, Birmingham, United Kingdom, financed by the Public Services Department.

2.   The title of her thesis is "The Changing Role of Management Accountants In Information Systems Implementation – Malaysia Evidence". As a requirement of her research programme, she will be conducting survey and data collection (first phase) from various relevant agencies especially within the Ministry of Health, starting from 7 July and hoping to finish by 7 August 2003.

3.   We are grateful if YBhg. Tan Sri/Dato'/Sir/Madam could permit and assist her in conducting survey, collecting data in your section/ department for her to complete her research.

Thank you.

'SERVICE FOR THE COUNTRY'

Yours faithfully,
[signature]
(DR CHUA HONG TECK)
On behalf of the Secretary General,
Ministry of Health, Malaysia

Tel: 03-2698 6362
Ext: 319
e-mail: chteck@moh.gov.my

KEMENTERIAN KESIHATAN MALAYSIA
BAHAGIAN KORPORAT
TINGKAT 3, BLOK A
JALAN CENDERASARI
50590 KUALA LUMPUR

Tel: 603-26985077
Fax: 603-26935149

Ruj. Kami: (43)dlm.KKM-205/A/7
Tarikh: 19 Jun 2003

KEPADA SESIAPA YANG BERKENAAN

Y. Bhg. Datuk /Dato' /Tuan / Puan,

THE CHANGING ROLE OF MANAGEMENT ACCOUNTANTS IN INFORMATION SYSTEMS IMPLEMENTATION- MALAYSIA EVIDENCE

Adalah dimaklumkan bahawa Puan Radiah Bt. Othman, adalah seorang pensyarah Universiti Teknologi MARA, sedang mengikuti pengajian peringkat falsafah kedoktoran (PhD) di dalam bidang Accounting Information Systems (AIS) di Aston University, Birmingham, United Kingdom, di bawah tajaan Jabatan Perkhidmatan Awam (JPA).

2.   Tajuk penyelidikan bagi pengajian beliau ialah "The Changing Role of Management Accountants In Information System Implementation-Malaysia Evidence". Sebagai memenuhi keperluan penyelidikan tersebut, beliau akan mengadakan soal selidik dan pungutan data (peringkat pertama) dari pelbagai agensi yang berkaitan terutamanya di Kementerian Kesihatan, mulai 7 Julai dan dijangka selesai pada 7 Ogos 2003.

3.   Bagi menyokong penyelidikan beliau, sukacita sekiranya Y.Bhg. Tan Sri/ Dato'/ Tuan / Puan dapat membenarkan dan membantu beliau menjalankan soal-selidik dan pungutan data di Bahagian / Jabatan Y.Bhg. Tan Sri/ Dato' / Datin / Tuan / Puan.

Sekian, terima kasih.

'BERKHIDMAT UNTUK NEGARA'

Saya yang menurut perintah,

(DR. CHUA HONG TECK)
b.p. Ketua Setiausaha,
Kementerian Kesihatan Malaysia

Tel: 03-2698 6362
Samb : 319
e-mail : chteck@moh.gov.my.

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III. QUESTIONNAIRE 1 : ACCOUNTANT

INFORMATION SYSTEMS IMPLEMENTATION AND THE CHANGING ROLE OF MANAGEMENT ACCOUNTANTS

MALAYSIAN EVIDENCE

A questionnaire for accountant/accounting personnel

RADIAH OTHMAN

DOCTORAL CANDIDATE

AND

STAN BRIGNALL
SENIOR LECTURER

FINANCE, ACCOUNTING AND LAW GROUP

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ASTON
UNIVERSITY

A Study Of Information Systems Implementation And The Changing Role Of Management Accountants

Dear Sir/Madam

The Finance, Accounting and Law Group at Aston Business School of Aston University, Birmingham, United Kingdom currently undertakes research on organisational change and involvement of accountants in the IS implementation. This particular project in this research scheme undertaken by Radiah Othman, looks at the IS implementation and the changing role of Malaysian accountants in the diffusion stages. For this research to be successful, help from accountants and Information System's Head Department/Managing Director in your company are required.

This questionnaire has been sent to only a small, but representative, sample of Malaysian accounting and IT personnel and it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of Malaysian accounting and IT personnel. The enclosed easy to complete questionnaires will take about 20 minutes. We are interested in your immediate reaction. There is no "right" answer. Your first response is usually the best. Once completed, please return the completed questionnaire by using the stamped, self-addressed envelope that is provided in this package.

This survey is conducted anonymously and to ensure that anonymity and confidentiality is maintained, please ensure that the completed questionnaire is returned using the envelope provided. We would like to assure you that only aggregated results are given in any report and/or paper resulting from this study. Your organisation will have no way of knowing how you have responded. Your help and participation in this research is greatly appreciated.

Thank you very much and we look forward to hearing from you at your earliest convenience.

Yours truly,

Stan Brignall
Senior Lecturer, Aston University

Radiah Othman
Lecturer, Faculty of Accountancy, UiTM

SECTION A: THE SYSTEMS IN YOUR ORGANISATION

Please read the following four statements describing types of information systems you may use in your department to answer question no 1.

Type 1	Type 2
❖ This is a cross-functional information system, where all information from various departments within an organisation are integrated ❖ However, the system is not be linked with suppliers' and customers' information systems.	❖ The system captures and processes specific accounting data resulting from the occurrence of business transactions. E.g. Accounts Receivable. ❖ However, the system is not linked to other application systems within the accounting or finance department, such as accounts payable and the general ledger.
Type 3	Type 4
❖ The system integrates all information and functional areas (departments) within the organisation ❖ The systems also extend to external organisations, such as suppliers and customers.	❖ This system integrates all related applications within the accounting or finance department, such as order processing and inventory control. ❖ However, this system is not linked to other departments in the organisation e.g. Human Resource and Marketing Department.

Please tick (/) in the relevant box provided below.

1. Which of these statements do you think best described the information system currently being used in your organisation?

Type 1		Type 3	
Type 2		Type 4	

2. Is the system:

Coming into operation ....

Fully operated ....

Proceeding to upgrade versions of the system.........

Extending the systems to other parts of company

....

In the process of change to a new system...............

Other: Please specify ....

3. Please give the date when the system was adopted by:

    a. Your Organisation: _____(month)_____ (Year)

    b. Your Department : _____(month) _____ (Year)

    c. You   : _____(month) _____ (Year)

    d.

1. In your opinion, what are the traditional roles of accountants? (Please list in the box provided)

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│                                                             │
│                                                             │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```

2. Are your current job descriptions and responsibilities differ from the traditional roles listed above? Please tick the correct box.

   ```
   ┌──────────┐                              ┌──────────┐
   │ YES      │                              │ NO       │
   │          │                              │          │ e go to Question 5
   └──────────┘                              └──────────┘
   ```

3. What are the new roles that differ from the traditional roles listed?

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│                                                             │
│                                                             │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```

4. How do you rate the importance of these factors in influencing your changing role as an accountant? (please rate 1 to 6: where 1 is the most important factor)

Factors	Ranking
❖ *My experience with previous system's implementation* ❖	
❖ *Individual characteristics: I am a pro-active accountant who is willing to actively involve and participate in change activities in my organisation, that is beyond my traditional role*	
❖ *The nature of my organisation's business and environment*	
❖ *Directions and instructions from the top management*	
❖ *Generally all accountants are now moving beyond the traditional roles*	
❖ *Encourage and support from professional bodies e.g. MIA, ACCA, CIMA*	

5. Have you had the chance to participate in the implementation process of the system (described in Question 1) in your organisation? Please tick the correct box.

   ```
   ┌──────────┐                              ┌──────────┐
   │ YES      │                              │ NO       │
   │          │                              │          │ se go to Question 7
   └──────────┘                              └──────────┘
   ```

6. Indicate your extent of participation in each of the following tasks of the system's implementation stages in your organisation by circling the appropriate scale.

3 TASK	Not Involved At All		Moderate	Highly Involved	
	1	2	3	4	5
Project Initiation..	1	2	3	4	5
Evaluating Current Processes, Business Practices & Requirements...	1	2	3	4	5
Setting Up The Project Organisation......................................	1	2	3	4	5
Mapping The Organisation...	1	2	3	4	5
Mapping Business Processes...	1	2	3	4	5
Defining Functions & Processes..	1	2	3	4	5
Software Configuration..	1	2	3	4	5
Building System Modification...	1	2	3	4	5
Creating Go-Live Plan & Documentation................................	1	2	3	4	5
Integrating Applications...	1	2	3	4	5
Testing The System Customisation..	1	2	3	4	5
Training Users..	1	2	3	4	5
Running Trial Production..	1	2	3	4	5
Maintaining Systems...	1	2	3	4	5

(Please proceed to Question 8)

7. *Due to certain circumstances, you were unable to participate in any stage of the system's implementation in your organisation as described in Question 6. Please list three reasons that inhibited you from participating.*

a.

b.

c

8. *Accounting/finance has always been one of the busiest departments in any organisation. However, given the following factors listed below, how much do you agree or disagree with each of them in influencing you to actively participate in the system's implementation in your organisation.*

*If you have not been participated in the system's implementation process, how much do you agree or disagree with each of these following factors **to influence you to actively participate** in the system's implementation in your organisation.*
Kindly circle one answer in each line across.

		Strongly agree 1	Agree 2	Undecided 3	Disagree 4		Strongly disagree 5		
a.	Appointing someone from the accounting department as one of the members of the implementation team		1	2	3	4	5		
b.	Having a reliable, efficient and automatic accounting systems to do my current jobs therefore, will have the extra time needed to actively involve		1	2	3	4	5		
c.	Having an extensive understanding of the business and many of its operations and processes		1	2	3	4	5		
d.	Having a flexible job boundaries		1	2	3	4	5		
e.	Having a good interpersonal and communication skills to work with IT consultants, internal customers, managers and other staffs		1	2	3	4	5		
f.	Having the challenge and change exists within and outside the business environment		1	2	3	4	5		

9. *In your opinion, has the system being implemented in your organisation brought change(s) to your role as an accountant or accounting personnel.* Kindly tick (/) in the appropriate box.

☐ *Yes*   ☐ *please proceed to Section C*

10. In what way(s) do you think the system has (have) changed your traditional role as an accountant or accounting personnel.

The following group of items to the relationship between accounting department and the information systems (IS) department. Please use the following scale in responding to these items.

Almost never true 1	Not usually true 2	Neutral 3	Usually true 4	Almost always true 5
Implementation team always consult someone from my accounting department				
Accounting department, not the IS people, assume ultimate responsibility for the success or failure of new system's implementation project				
Implementation team contains one or more members from accounting department				

SECTION C : ABOUT YOURSELF

Tick the response(s) that best describes the application of the system in your organisation.

1. Indicate your thought on the systems that you are using:

very important unimportant	1	2	3	4	5	6	7	8	9	10 very
not needed at all needed	1	2	3	4	5	6	7	8	9	10 very much
essential nonessential	1	2	3	4	5	6	7	8	9	10 very
very trivial fundamental	1	2	3	4	5	6	7	8	9	10 very
very insignificant significant	1	2	3	4	5	6	7	8	9	10 very
means nothing to me to me	1	2	3	4	5	6	7	8	9	10 means a lot
of no concern to me me	1	2	3	4	5	6	7	8	9	10 of concern to
very irrelevant	1	2	3	4	5	6	7	8	9	10 very relevant
matters to me to me	1	2	3	4	5	6	7	8	9	10 doesn't matter

2. Approximately, how frequently do you use computers in a week?

☐ Less than 5 hours   ☐ 16 to 30 hours

☐ 6 to 15 hours   ☐ more than 30 hours

3. How expert are you in using computers?

☐ Novice   ☐ Intermediate   ☐ Advanced   ☐ Expert

4. Please indicate your thought on the computers that you are using:

helpful	1	2	3	4	5	6	7 harmful
easy to use	1	2	3	4	5	6	7 difficult to use
threatening	1	2	3	4	5	6	7 non-threatening
boring	1	2	3	4	5	6	7 intriguing
enjoyable to use	1	2	3	4	5	6	7 frustrating to use

5. How many computer magazines have you read in the last 6 months? ☐

6. How many business magazines have you read in the last 6 months? ☐

7. How closely do you read or examine PC-related advertising in those publications listed in (5) and (6)?

Not | 1 | 2 | 3 | 4 | 5 | Very

At All [   ] closely

8. *Your highest level of education:*

☐ PhD   ☐ Master's Degree   ☐ Bachelor's Degree

☐ Diploma   ☐ Professional Qualification ☐ STPM and Lower

9. *Your income per annum (in RM'000):*

☐ Less than 15   ☐ 15 to 24   ☐ 25-34   ☐ 35-49

☐ 50 – 74   ☐ 75 – 99   ☐ 100 –149   ☐ 150 and more

10. *Your age (in years) :*

☐ Less than 25   ☐ 25 - 34   ☐ 35 – 44   ☐ 45 – 54   ☐ More than 55

12. Please state your position or title in the company: _____

13. *Year(s) and month(s) in current position or title:* _____year(s) _____month(s)

14. *How many people report directly to you?* ☐

15. *The accounting component constitutes at least 75% of your responsibilities.*

☐ Yes   ☐ No

16. *Do you have a professional qualification?* ☐ Yes ☐ No

17. *Are you currently an active member of any professional body?*

☐ Yes   ☐ No

18. *State the name of the professional body(ies).*

[   ]

■■■

If you would like to receive a summary report of the findings of the study, please provide an e-mail address for contact purposes.

E-mail address:

IV. QUESTIONNAIRE 2 : IT PROFESSIONAL

ASTON UNIVERSITY

INFORMATION SYSTEMS IMPLEMENTATION AND THE CHANGING ROLE OF MANAGEMENT ACCOUNTANTS

MALAYSIAN EVIDENCE

A questionnaire for IT/IS Department Head or IT personnel

RADIAH OTHMAN

DOCTORAL CANDIDATE

AND

STAN BRIGNALL
SENIOR LECTURER

FINANCE, ACCOUNTING AND LAW GROUP

Research Institute

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ASTON
UNIVERSITY

A Study Of Information Systems Implementation And The Changing Role Of Management Accountants

Dear Sir/Madam

The Finance, Accounting and Law Group at Aston Business School of Aston University, Birmingham, United Kingdom currently undertakes research on organisational change and involvement of accountants in the IS implementation. This particular project in this research scheme undertaken by Radiah Othman, looks at the IS implementation and the changing role of Malaysian accountants in the diffusion stages. For this research to be successful, help from accountants and Information System's Head Department/Managing Director in your company are required.

This questionnaire has been sent to only a small, but representative, sample of Malaysian accounting and IT personnel and it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of Malaysian accounting and IT personnel. The enclosed easy to complete questionnaires will take about 10 minutes. We are interested in your immediate reaction. There is no "right" answer. Your first response is usually the best. Once completed, please return the completed questionnaire by using the stamped, self-addressed envelope that is provided in this package.

This survey is conducted anonymously and to ensure that anonymity and confidentiality is maintained, please ensure that the completed questionnaire is returned using the envelope provided. We would like to assure you that only aggregated results are given in any report and/or paper resulting from this study. Your organisation will have no way of knowing how you have responded. Your help and participation in this research is greatly appreciated.

Thank you very much and we look forward to hearing from you at your earliest convenience.

Yours truly,

Stan Brignall
Senior Lecturer, Aston University

Radiah Othman
Lecturer, Faculty of Accountancy, UiTM

SECTION A : SYSTEMS CHARACTERISTICS

Enterprise Resource Planning (ERP) systems integrate all information and functional areas (departments) within the organisation and extend to external organisations, such as suppliers and customers.

1. Does your organisation currently implementing or using ERP system?

   ☐ Yes, in the implementation process   ☐ Yes, we use the system

   ☐ No, we implement/use other system.

2. Who is the main vendor of the system in your organisation?

3. What does your organisation hope to achieve by having the system (described in Q1) in your organisation?

Business Process Reengineering		Part of reformulation of business strategies	
To cure a fragmented IT platform		Problems of old and outdated systems	
To cure a logistics problem		Respond to business growing and changing	
Maintaining competitive advantage		Other: please specify	

Implementation of a system brings with it benefits and problems to the organisation concerned. Please list the benefits and problems experienced by your organisation in question 4 and 5 respectively, in rank order. That is, number 1 is the major benefit/problem and number 3 is a lesser benefit/problem experienced by your organisation in adopting the system.

4. Major Benefit (s)

   1. _____
   2. _____
   3. _____

5. Major Problem(s)

   1. _____
   2. _____
   3. _____

6. The following group of items pertains accountant involvement in system's implementation in your organisation. Please circle the number that best reflect your opinion.

Accountant's personal involvement in firm's use of IT				
1	2	3	4	5
less than once a year	*once a year*	*monthly*	*weekly*	*daily*

Accountant's role in corporate IT steering committee				
1	2	3	4	5
no committee	no accountant's input	accountant is a member	accountants is the chairman	accountants is a defacto committee

Accountant's knowledge of competitors' use of IT				
1	2	3	4	5
weakly informed	informed	knowledgeable	good knowledge	extremely knowledgeable

Accountant's informal contact with IT management				
1	2	3	4	5
less than once a year	once a year	monthly	weekly	daily

Accountant's knowledge of IT opportunities in the firm				
1	2	3	4	5
weakly informed	informed	knowledgeable	good knowledge	extremely knowledgeable

Number of levels between IT Head and CEO				
1	2	3	4	5
one level from CEO	two levels from CEO	three levels from CEO	four levels from CEO	more than four levels from CEO

Number of levels between Accountant and CEO				
1	2	3	4	5
one level from CEO	two levels from CEO	three levels from CEO	four levels from CEO	more than four levels from CEO

Accountant's prevailing thinking about IT spending				
1	2	3	4	5
expenses to be controlled		resources to be allocated fairly		strategic investment

Accountant's perception of IT's importance to the firm				
1	2	3	4	5
no concern for IT		neutral		IT is the single most critical factor for firm

Accountant's vision for IT			
1	2	3	4
no vision	technical vision	functional vision	generic vision

7. Overall, how were management accountants involved in a system's implementation process? (For each stage please tick the appropriate box)

	Involved fully	Partially involved	Not involved
Initiation Stage (e.g. Project Initiation, Evaluating Current Processes, Business Practices & Requirements)			
Adoption Stage (e.g Mapping Business Processes, Defining Functions & Processes, Software Configuration)			
Implementation Stage (e.g. Integrating Applications, Testing The System Customisation, Training Users)			

9. Overall, how do you describe the willingness of management accountants to engage in the implementation process? (You may tick more than one box)

- ☐ Always willing to participate and spend time in all phases
- ☐ Participate only in financial matters
- ☐ Participate only because of instruction from the top management
- ☐ More reluctant than interested
- ☐ Did not even visit the implementation site
- ☐ Not willing to involve
- ☐ Other: _____

10. In your opinion, what have been the major reason(s) for the non-participation of management accountants in the implementation process?
(You may tick more than one box)

- ☐ Implementation process do not require any accounting/finance skills
- ☐ Lack of understanding of business processes
- ☐ Not a member of the implementation team
- ☐ Too busy with their current accounting/finance jobs
- ☐ Reluctant to expose themselves to operations
- ☐ Lack of communication skills with IT consultants, implementation team etc
- ☐ Other: _____

SECTION B : ORGANISATIONAL DETAILS

Kindly provide information in the boxes below in relation to your organisation. Please remember that all information will be held as strictly confidential.

1. Please state the Industrial Sector that best represents your organisation's major activity. (E.g. Manufacturing)

2. What are the major activities of your organisation? (E.g. Providing management consultancy services).

3. What was/is the organisation's annual turnover (last published accounts)?

    RM

SECTION C : ORGANISATIONAL CHARACTERISTICS

In the following questions, we would like to learn something about your organisation. Please tick (/) the relevant box.

1. How many employees are there in your company?

Less than 1,000	☐	5,000 to 9,999	☐
1,000 to 1,999		10,000 to 49,000	
2,000 to 4,999		50,000 or more	

2. What is the percentage of your employees holding master's degree and above?

Less than 5%	☐	5 – 14%	☐	15 - 24%	☐
25 - 34%		35 – 44%		45% or more	

3. How many sites are involved in the system's implementation ☐

    (sites can be departments or functional areas involved in the implementation)

4. How do you rate your organisation's diversity?

    (A diverse organisation normally has functional differentiation with a greater variety of specialised tasks)

☐	☐	☐	☐	☐
1	2	3	4	5

    Not diversified   Neutral   Very Diversified

5. *In the questions that follow, please circle the appropriate number for the management philosophy that is actually being practiced in your organisation. '1' represents the expression on the left-hand side and '7' represents the expression on the right-hand side.*

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	1	2	3	4 some of both	5	6	7	
a. highly structured channels of communication and highly restricted access to important financial and operating information	1	2	3	4 some of both	5	6	7	Open channels of communication with important financial and operating information flowing quite freely throughout the organisation
b. Strong insistence on conforming to accepted standards and specifications	1	2	3	4 some of both	5	6	7	Strong support for challenging accepted standards and specifications
c. Strong emphasis on avoiding or minimising risky activities	1	2	3	4 some of both	5	6	7	Strong encouragement to look for new and novel opportunities
d. Strong emphasis on holding fast to true and tried management principles despite any changes in business conditions	1	2	3	4 some of both	5	6	7	A strong emphasis on adapting freely to changing circumstances without too much concern for past practice
e. Strong emphasis on always getting personnel to follow the formally laid down procedures	1	2	3	4 some of both	5	6	7	Strong emphasis on getting things done even if this means disregarding formal procedures
f. Tight formal control of most operations by means of sophisticated control and information systems	1	2	3	4 some of both	5	6	7	Loose, informal control; heavy dependence on informal relationships and norm of cooperation for getting work done
g. Strong emphasis on getting line and staff personnel to adhere closely to formal job descriptions	1	2	3	4 some of both	5	6	7	Strong tendency to let requirements of the situation and the individual's personality define proper on-job behaviour

SECTION D : ABOUT YOURSELF

1. Your position within the organisation: _____

2. How long have you been employed in the current position: _____

3. Your department: _____

4. Where in the organisational structure are you employed?

Corporate Level   Business Unit Level

Other(Please specify): _____

★★

Thank You For Your Time And Participation

Your Cooperation And Contribution To This Study Is Greatly Appreciated

Information provided will be held in strictest confidence

If you would like to receive a summary report of the findings of the study, please provide an e-mail address for contact purposes.

E-mail address:

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V. FOLLOW UP LETTER (Main Study's First Follow-Up Covering Letter)

ASTON BUSINESS SCHOOL

RESEARCH INSTITUTE
Stan Brignall
Radiah Othman
Aston University, Aston Triangle
Birmingham B4 7ET, United Kingdom
Tel +44 (0)121 3593611 ext 4906
Fax +44 (0) 121 3335620
Email: othman_radiah@yahoo.co.uk

Date :

Dear Sir/Madam

Questionnaire on Accountants and Enterprise Resource Planning (ERP) Systems Diffusion

On 19 February 2003, a questionnaire seeking your opinion about accountants' involvement in ERP diffusion in your company was mailed to you. Your name was drawn in a random sample of accounting and IT personnel in Malaysia. If you have already completed and returned it to us please accept our sincere thanks. If not, please do at your earliest convenience.

We fully understand your tight and busy schedules but because it has been sent to only a small, but representative, sample of Malaysian accounting and IT personnel it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of Malaysian accounting and IT personnel. If by some chance you did not receive the questionnaire, or it got misplaced, please email us at othman_radiah@yahoo.co.uk

Thank you very much for your kind co-operation and your help is greatly appreciated.

Sincerely,

Radiah Othman
Project Supervisor
Finance, Accounting and Law Group

VI.   Main Study's Final Follow-Up Covering Letter

A S T O N BUSINESS SCHOOL

RESEARCH INSTITUTE
Stan Brignall
Radiah Othman
Aston University, Aston Triangle
Birmingham B4 7ET, United Kingdom
Tel +44 (0)121 3593611 ext 4906
Fax +44 (0) 121 3335620
Email: othman_radiah@yahoo.co.uk

Date :

Dear Sir/Madam

Questionnaire on Accountants and Enterprise Resource Planning (ERP) Systems Diffusion

On 9 January 2003, a follow up letter was mailed to you. If you have already completed and returned the questionnaires to us please accept our sincere thanks. If by some chance you did not receive the questionnaire, we enclosed copies of the questionnaires for your kind attention and action.

We fully understand your tight and busy schedules but because it has been sent to only a small, but representative, sample of Malaysian accounting and IT personnel it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of Malaysian accounting and IT personnel.

Thank you very much for your kind co-operation and your help is greatly appreciated.

Sincerely,

Radiah Othman
Project Supervisor
Finance, Accounting and Law Group

VII. EXAMPLE OF TRANSCRIPT

Interview No 6: Accountant/Human Resource Head of Department – Prince Hosp

Line	Conversation
Line 13	the previous director was really dedicated and committed in turning this hospital into IT hospital and paperless society in work. In our meeting, he was only allowed diaries to be taken in but not papers. We are also requested or required to give presentation electronically Some doctors are not used to the system. Some of them, especially the seniors, will stick to the method of writing down on paper and then accumulated everything before typing them to the system. It's a redundant work, takes a longer time but they are comfortable with that. The new generation of doctors are more inclined to IT it seems.
Line 22	"now, we are given the instruction not to use FMS starting from August"
	The core implementation team initially did not representation from finance department. Therefore, it did not sufficient or appropriate information as input to the system. It took us 6 months to rectify the problems... we couldn't use the system at all.
	This THIS last time, embedded the financial management system (FMS) as well. It was but not now. Last time in fact, everything is integrated until the AG's office comes up with its own ESPKB system and we have no choice but to use their system, instead of ours.
Line 33	We just follow instruction from accounts department of the Kementerian at Bangunan Perkim.
	The department is carrying out the Treasury's instruction. This ministry is a self-accounting Ministry in which we do the processing of payment and the AG department will issue the payment and ESPKB is the only platform where the processing art can be linked on-line with the issuing of payment of the AG's department.
	In finance, the only element left THIS is the revenue unit.
	The main reason is that the data is captured the moment when a patient is registered to the moment when he or she pays for his treatment/medicine.
	This payment is then captures automatically into the revenue system. If this system is also taken over by the AG's department, then you can say 'bye-bye' to the whole system of IT hospital in a way.
	Human resource, for an example, maintain database of the personnel using people soft but payment of salaries, allowances and entitlements are made through ESPKB.
	"....... I tell you that ESPKB is not that reliable. The system is always down. For an example, the whole morning today there's no power supply... as you can see that I'm stranded with all these vouchers, backlogs, that need to be approved on-line but...
Line 54	we were enforced to use the system"

VIII. FINANCIAL MANAGEMENT FULL SYSTEM OVERVIEW

The documentary evidence **USER GUIDE: INTRODUCTION TO E-SPKB** relating to this appendix was in Malay Language. It has not been transcribed because of its technical details such as manual for using certain accounting information system modules. The transcription requires the help of an expert or a professional transcriber to minimize errors, including misinterpretation of content. However, on examiner's request, it can be transcribed.

X. MINISTRY OF HEALTH'S VISION & MISSION

VISION AND MISSION

Vision for Health

Malaysia is to be a nation of health individuals, families and communities, through a health system is equitable, affordable, efficient, technologically appropriate, e nvironmentally adaptable and consumer-friendly, with emphasis on quality, innovation, health promotion and respect for human dignity and which promotes individual responsibility and community participation towards an enhanced quality of life.

Mission

The Mission of the Ministry of Health is to build partnership for health to fac and support the people to:

- Attain fully their potential in health

- Motivate them to appreciate health as a valuable asset

- Take positive action to improve further and sustain their health statu to enjoy a better quality of life

XI. MINISTER OF HEALTH'S SPEECH 28 JANUARY 2003 ON THE OFFICIAL OPENING CEREMONY OF PUTRAJAYA HOSPITAL (PRINCE HOSPITAL)

The documentary evidence **Minister of Health Speech 28 January 2003** relating to this appendix was in Malay Language. It has not been transcribed because of its length. The transcription requires the help of an expert or a professional transcriber to minimize errors, including misinterpretation of content. However, on examiner's request, it can be transcribed.

XII. CIRCULARS ON JOB PRESCRIPTION OF FINANCIAL OFFICERS IN MALAYSIAN GOVERNMENT

The documentary evidence **Circulars on Job Description of Financial Officers in Malaysia** relating to this appendix was in Malay Language. It has not been transcribed because of technical and legal terms. The transcription requires the help of an expert or a professional transcriber to minimize errors, including misinterpretation of content. However, on examiner's request, it can be transcribed.

XIII. ORGANIZATIONAL CHART

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CARTA ORGANISASI BAHAGIAN PENTADBIRAN HPJ

```
                          Pengarah
                             |
                      Timbalan Pengarah
                             |
                     Pen. Peg. Tadb. N32
                             |
                      Pen. Tadbir N22
                             |
        +--------------------+--------------------+
        |                    |                    |
  Unit Kewangan      Unit Pentadbiran      Unit Perkhidmatan
```

Unit Kewangan

- Pem. Tadbir (K)W 17 (1)
- Pem. Tadbir (K)W17 (2)
- Pem. Tadbir P/O N17(3)
- Pem. Tadbir P/O N17(4)
- Pem. Tadbir P/O (sam.)
- Pem. Tadbir P/O (sam)
- Pem. Tadbir P/O (sam.)

Unit Pentadbiran

- Pem.Tadbir P/O N17 (1)
- Pem. Tadbir P/O (sam.)
- Pem.Tadbir P/O (sam.)

Unit Perkhidmatan

- Pem. Tadbir P/O N17 (1)
- Pem. Tadbir P/O N17 (2)
- Pem.Tadbir P/O N17 (3)
- Pem. Am. Rendah N11
- Penandu R3

Catatan:

Kew 1 - Roseaini Musa
Kew 2 - Norzehan Tengah
Kew 3 - Khaizura Mohd Zubir
Kew 4 - Wan Anita Wan Abdullah

XIV.   INTERNAL MEMO INSTRUCTING STAFF TO WORK OVERTIME

Ruj. Tuan   :HPJ/400-9/1
Ruj. Kami   : HPJ/400-9/1 (ADMIN)
Tarikh   :01 JANUARI 2003

Pengarah
Hospital Putrajaya,
Pusat Pentadbiran Kerajaan Persekutuan,
Presint 7,
62250 Putrajaya.

Arahan Menjalankan Kerja Lebih Masa mulai Januari hingga Disember 2003

Adalah saya di arah merujuk perkara di atas dan sukacita memaklumkan
bahawa Tuan /Puan seperti di Lampiran A adalah di kehendaki membuat Kerja
Lebih Masa dari Januari hingga Disember 2003, memandangkan Hospital ini
sedang mengalami kekurangan kakitangan dan untuk kepentingan perkhidmatan
Hospital Putrajaya.

Sekian, Terima Kasih

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(SELVARAJAH A/L KANAPATHY)
Penolong Pegawai Tadbir N32
b/p Pehgarah
Hospital Putrajaya.

XV. NEWSPAPER CUTTING – STATE OF THE ART SERVICE AT
PAPERLESS HOSPITAL, THE STAR, 10TH MARCH 2003

XVI. SAMPLE OF ON-LINE PAYMENT VOUCHER TO CREDITORS

The documentary evidence **Sample of On-Line Payment Vouchers** relating to this appendix was in Malay Language. It has not been transcribed because of its technical details. The transcription requires the help of an expert or a professional transcriber to minimize errors, including misinterpretation of content. However, on examiner's request, it can be transcribed.

XVII. NEWSPAPER ARTICLE – FRIENDLY HOSPITAL BY BERITA HARIAN, 10TH JANUARY, 2003

The documentary evidence **Newspaper Article Friendly Hospital by Berita Harian 10 January 2003** relating to this appendix was in Malay Language. It has not been transcribed because of its length. The transcription requires the help of an expert or a professional transcriber to minimize errors, including misinterpretation of content. However, on examiner's request, it can be transcribed.

XVIII. POWER POINT SLIDES BY TAN SRI DATO' DR ABU BAKAR
SULEIMAN ON ASIAN PERSPECTIVES ON EHEALTH AS AN AGENT
FOR REFORM – MALAYSIA.

(ON PRINCE HOSPITAL – PLEASE REFER TO SLIDE ON "CURRENT
SCENARIO...FACILITY-BASED IT")

XIX. ICT MASTERPLAN OF THE UNIVERSITY

E-Management's Vision

Strategically manage the organization through the implementation of a high performance and technology based system, focus on *Integration, Automation, Artificial Intelligence, Dynamic and Paperless*, and developed using *Rapid Development Methodology*, towards the creation of *Knowledge Environment* to achieve organization's vision.

Create

Efficient Administration, Teaching-Learning, Research & Development

Create

K-Organization

Toward

A WORLD CLASS COMPETENCY-BASED TECHNICAL UNIVERSITY

E-Management's Mission

Develop & Deploy integrated World Class business processes with E-Management's Principles:
- Integration
- Automation
- Paperless
- Artificial Intelligence
- Knowledge Based

Support 24x7 all level of staff, student and community inside and outside the organization

Increase efficiency in Administration, Teaching-learning process and Research & Dev. Activities.

Reduce operation cost and increase productivity- Cost Effective

Create Knowledge Environment - Provide conducive environment for experiential learning, development and research

Inculcate good culture values

Supporting all type of System

Senior Managers (Strategic Planner)

Executive Information System

Knowledge Workers

Decision Support System

Middle Managers (Think Tank)

Knowledgable Operation Managers

Knowledge Workers Support System

Office Automation System

Knowledgable Operational Workers

Transaction Processing System(TPS)

Supporting all type of Student

UNDERGRADUATES   POSTGRADUATES

RESEARCHER & COLLABORATORS   SHORT COURSES' STUDENTS

Supporting a Credit community

KUKTEM

E-Management

Knowledge Enrichment

Committed & Supportive
Management

Committed & Proactive Developer

Committed & Proactive User

Ongoing Education   Ongoing Involvement   Ongoing Relationship   Ongoing Group Learning   Ongoing Training

Ongoing Continuation   Ongoing Meeting   Ongoing Briefing   Ongoing Workshop

---

E-Management Education System
Single Gateway
(KUKTEM's E-Community)

Profile, Budget, Salary, OT,
TNT,Leave,Attendance,
Subject,Performance,
Meeting,Helpdesk,
Staff Evaluation

Admission,Profile, Course,
Credit Transfer,Exam,
Result, Fees, Payment, Ledger, Sponsor,
Loan, Refund, Accommodation,Research,
Activity, Discipline, Counseling,
Completion of Study, e-learning

Budgeting, Purchasing, Ledger,
Booking, Scheduling, Helpdesk
Event Mgt., Asset Mgt,
Resource Management,
Resource Evaluation,

STAFF

STUDENT

RESOURCES

FINANCIAL SYSTEM

DSS & Executive Information System

Knowledge Management System

E-Management

Knowledge Enrichment

KUKTEM   Kolej Universiti Kejuruteraan & Teknologi Malaysia   e-Community

Welcome to KUKTEM e-community

Welcome to KUKTEM e-Community

E-Management

Knowledge Enrichment

---

e-Community   Kolej Universiti Kejuruteraan & Teknologi Malaysia

---

STUDENT MANAGEMENT SYSTEM

E-Management

Knowledge Enrichment

Figure 3.1

- ADM=Admission
- REG=Registration
- CSS=Class Scheduling
- SR =Subject Registration
- INV=Invoicing
- ELR=E-learning
- AEV=Academic Evaluation
- ESC=Exam Scheduling
- EXM=Examination
- GRD=Graduation
- ALM=Alumni
- SA=Student Affairs
  - Activity, Counseling,
  - Discipline

STUDENT MANAGEMENT MODULE

ADM   ALM
REG   GRD
CSS   EXM
SR   SA   ESC
INV   ELR   AEV

Financial Management Module

Resource Management Module

Knowledge Management

E-Management

Knowledge Enrichment

XX. INTERVIEWS THEMES
The numbers in the table shows the interview number conducted in each of the case study organization in the main study and follow up study.

	Themes	Prince Hospital	Queen Hospital	Princess University	King University
1	Competition with other accountants			2,3,7,12	1,10
2	Compliance to management's instruction	1,10,13,18,27,32,36	3,5,6,7,9,11	3,4,6,11,13,14	1,4,5,6,10
3	Problems and limitations of current AIS	6,9,12,17,28,34	1,4,6,5,10	1,4,8,12	2,3,6
4	Recognition and promotion	11,14,18			
5	BOD involvement				2,6
6	Management competence				3,7
7	Management Operational Experience	7,22,25,31,35			
8	Management Stability			1,7,9	
9	Organizational culture	19,23,29,30,36	1,2,7,8	3,10,11	1,5,8
10	Organizational Flexibility	5,21,28	3,11		
11	Organizational philosophies & values	3,4,26,33	7,9,11,12	1,2,11,14	4,7,9
12	Organizational Structure		2,10		1,6
13	Role of finance in firm		4,12		
14	Finance department's structure & orientation	5,12,20			
15	Technology investment strategy	2,31,14	5,8,11,12	4,5,12	2,7,8
16	Finance department operation and control		2,3,10		
17	Accounting staff		1,8	5,10	
18	Budgeting and controlling				5,8
19	Consulting	15,21,37,38	1,3,4,8,9	6,13,19	4,9,13
20	Designing accounting systems & planning			6,9,14	
21	Influence	3,8,16,40		2,7,8,13	3,4,9

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