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
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**The Influence of Organisational Culture and Organisational Control on the Diffusion of
a Management Information System**

by

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A Doctoral Thesis

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ABSTRACT

The aim of this thesis is to provide an original interpretative understanding of the role of organisational culture and organisational control on the diffusion of a Management Information Systems (MIS). An extensive literature review has revealed a lack of synthesis between organisational culture and organisational control in the understanding of diffusion of an MIS. The literature review was two-fold: firstly, to examine the impact of organisational culture on IS diffusion and, secondly, to examine the impact of organisational control on IS diffusion. The first stage of the review revealed that there are a number of studies on IS diffusion in relation to culture at the organisational level but a relatively fewer studies at the sub-organisational or subcultural level. The second stage of the review highlights that there is also a significant number of studies that have applied the control concept to investigating phenomena related to IS diffusion, e.g. IT adoptions and IT implementations, but very few have explicitly applied the control concept to IT implementations outcomes, i.e. IT diffusion. The review also suggested that there is scarce empirical research on IS diffusion from the twin perspectives of culture and control.

Using an interpretive case study approach, this thesis was able to collect rich data, underpinned by Martin's (1992) conceptualisation of organisational culture, i.e. integration and differentiation, and Kirsch's (1997) and Ouchi's (1979) conceptualisation of organisational controls. These conceptualisations served as interpretive lenses to unearth the dynamic relationship of the application of formal controls on diverging subcultures during staff interactions and use of an MIS during the adaptation, acceptance and routinization stages of Cooper and Zmud's (1990) IT Implementation Model.

The thesis' results highlight a number of contributions to knowledge. Firstly, a contribution is made in the area of IS diffusion research by proposing a conceptual model for IS diffusion. The model offers explanations on how IS diffusion could be achieved despite the existence of diverging subcultures when formal control mechanisms are applied, an implication that suggests that the IS diffusion path may not be smooth and linear but an iterative process. Secondly, a contribution is made in the area of organisational culture and organisational control theories. This thesis' results indicate that during the implementation of an MIS, staff-espoused cultural values changed, highlighting that the culture may not be always stable, and difficult to change. The thesis helps re-conceptualise the existing typology on outcome control by indicating that outcome control, which is conceptualised as deliberate and forceful in nature, could also, unlike behaviour control, be exercised in measures that do not need to coerce or be forceful. Further, the thesis highlights that sanctions rather than rewards were more effective in the application of controls during the diffusion attempts of an IS. Finally, the research contributes to knowledge in the area of practice. This study provides insights on how managers may apply organisational controls to align diverging subgroup members' actions towards integrative behaviours during an IS implementation process, therefore facilitating the attainment of successful IS diffusion.

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Chapter 1 Introduction

This chapter outlines the background to the research problem, the research focus, research aim and questions. Also, the research significance and the contributions of the thesis are summarised.

1.1 Background to the Research Problem

In the past few decades, scholars and practitioners alike have critically discussed the phenomenon - organisational diffusion of Information System/Technology (IS/IT) (e.g. Cavusoglu et al., 2010; Cooper and Zmud, 1990; Schwarz and Chin, 2007). These studies have tried to explain how IS implementation may spread throughout the population of the adopting organisation so as to evaluate the potential benefits the implemented system may provide. Nonetheless, the existing literature still fails to explain and provide insights on how organisations may achieve IS diffusion from implemented systems. The difficulty in achieving organisational diffusion of IS is largely due to majority of organisational members' low level interactions and usage of an implemented system (Cavusoglu et al., 2010; Schwarz and Chin, 2007; Zhu et al., 2006). In particular, Cavusoglu et al. (2010) drew on empirical data to propose an IT diffusion model to explain how members' level of interactions could be influential on the diffusion process of an IT. They suggested that amongst the three studied groups of actors – 'influentials', 'opponents', and 'imitators', the opponent group's behaviours (resisting IT usage) created significant anti-diffusion forces. The opponents' group resistance to IT stifled the positive behaviour the 'influentials' group had towards the IT. This prompted the imitators to copy the behaviour of the opponents group, actions that further hindered the diffusion process. This suggests that implementation of an IT, on its

own, is not sufficient to have a positive impact on the organisation's processes (Fichman and Kremer, 1999). To take full advantage of the implemented IT, the organisation needs to fully integrate the new system into its existing processes to allow the improvement of operational and managerial activities (Hsieh and Wang, 2007; Jaspersen et al., 2005). In other words, members must use the IT both at an enhanced level and on a continuous basis to allow the attainment of successful organisational diffusion, a process that is vital for ensuring the system delivers the expected benefits.

1.2 Research Focus

The focus of this study is the investigation of the organisational diffusion of a Management Information System (MIS) from the culture and control perspectives. This approach would enable the provisions of fresh insights on how organisations that implement new IS could reap the expected benefits from making such huge IS investments.

Adopting culture as a theoretical lens for my study, I view organisation culture (OC) from Martin's (1992) integration and differentiation perspectives of OC. The control perspective adopted for this study is conceptualised as behaviour and outcome controls as examples of formal controls (Kirsch, 1997; Ouchi, 1979). Details for the rationales for this thesis investigating MIS diffusion from the twin perspectives of culture and control are provided in the subsequent sections overleaf.

1.2.1 IS Diffusion

According to Cooper and Zmud (1990), an IT is successfully diffused into an organisation when the technological innovation supports a higher level of operational activities and it improves the competitiveness of the adopting organisation. IS researchers argue that much is still to be learnt from the studies of organisational IS usage and diffusion (Schwarz and Chin, 2007; Williams et al., 2009), because most of implemented ISs do not achieve their benefits (Hsieh and Wang, 2007). I adopt the Cooper and Zmud (1990) IT implementation model to analyse and understand the diffusion process of an MIS. Cooper and Zmud's (1990) IT implementation model, unlike other models (Rogers (1983) Diffusion of Innovation and the Venkatash et al. (2031) Unified Theory of Acceptance and Use of Technology) takes into account of post hoc usage behaviour of acceptance - routinization and infusion stages (Sundaram et al., 2007). These stages respectively highlight how effective and efficient the use of an IT can be.

Previous studies have highlighted that after the euphoria of adopting a new technological innovation, the majority of organisations do not utilise the technology to its full potential, thus creating an assimilation gap, i.e. the difference between the widespread use of the system and adoption of the system (Zhu et al., 2006). This assimilation gap leads to low levels of organisational diffusion of an IS and can undermine the ability and capability of the innovation to increase efficiency and generate savings in time and costs. Many organisations still fail to make a return from the huge investments they make in implementing complex IS (Bartis and Mitev, 2008; Hsieh and Wang, 2007). This is usually because the systems have not been used in a comprehensive way to support higher organisational performance (Hsieh and Wang, 2007; Jaspersen et al., 2005). In other words, organisational staff have not

interacted with the IS at a level that could facilitate diffusion into the organisational setting. In most cases, the failure of an IT system to be fully diffused into an organisational setting is not due to any inadequacy of the physical device but rather to conflict amongst members implementing the system (Von Meier, 1990). This highlights members' rejection of IT and lack of members' participation while attempting to implement the system. IS research has pointed out that the success of an implemented IT in an organisation is not just based on the IT attributes, but the mixture of the attributes of the IT and the organisational practices that support the use of the system (Wagner and Newell, 2011). The diffusion of an implemented contemporary IT is intra-organisational in nature and spans across the boundaries of the organisation (Newell et al., 2001), because members who are expected to use the system reside in different subgroups within an organisation. Therefore, organisational group members who have different job functions normally interpret the interactions and usage of the system differently (Newell et al., 2001), consequently leading to the difficulty in understanding the organisational diffusion of an IT.

It can be argued that the struggles in understanding the organisational diffusion of IT systems are due to existence of intra-organisational groups and their alliances in relation to the use of an IT. Most contemporary organisations rely on intra-organisational alliances across multi-levels (strategic, tactical and operational) and inter-organisational alliances to ensure the effective use of an IT to achieve strategic objectives. The intra-organisational perspective suggests that there are different groups or units in an organisation that need to work in alignment to achieve the overall objectives of an organisation (Newell et al., 2001). The different groups/units in the organisation may suggest sub-cultures that are different from the overall OC, which may affect the implementation and use of a complex boundary-less IT

system. This highlights organisational issues engendering the implementation and use of complex IT.

1.2.2 IS Diffusion and Organisational Culture

One area that has been highlighted as having a potentially important explanatory power in understanding the IS diffusion phenomenon is the role of organisational culture (OC). IS authors have argued the vital role of OC in providing insights on successes and failure factors in the development: acceptance and usage of technological projects (Robey and Boudreau, 1999; Ruppel and Harrington, 2001). However, these studies have assumed culture in organisations to be uniform and consistent across all sub-groups. Blackler (1995) argues that humans will behave differently and have different relationships with their organisation that are based on their job demands, orientations, methods and perspectives. These different subgroups may in turn develop their own subcultures. Developing a better understanding of the role of subcultures can reveal the shared differences and contradictions that may occur amongst organisational subgroups (Martin, 1992), which can provide new insights into the cultural aspects of the organisational diffusion of an IS. Only a small number of IS diffusion researches have considered the subculture perspective in their studies (Leidner and Kayworth, 2006). Nonetheless, some IS studies have adopted the subculture perspective in their works to shed insights onto successes and failure factors in the dynamic process of the development, acceptance and usage of technological projects by the different groups in the organisation, i.e. IT and other business groups (e.g. Huang et al., 2003; Ravishankar et al., 2011; Rivard et al., 2011). Ravishankar et al. (2011) in their study of strategic alignment and implementation of a Knowledge Management System (KMS) have adopted the subculture perspective to highlight three different organisational subcultures - chameleon, countercultural and enhancing,

playing vital roles in the alignment of a KMS implementation to overall organisational strategy. The subculture perspective is vital because user groups have found to exhibit ambivalent behaviours in their decisions to accept or reject to use an implemented IT system (Seo et al., 2011).

Despite the many attempts to improve the relationships between the different subgroups, conflicts still exist, hindering IS usage and also hindering diffusion of the system. Emerging streams of research have highlighted that the cultural differences between business and IT groups in their interpretations of the IT artefact are the reasons for these experienced tensions and conflicts (e.g. Leidner, 2010; Walsh et al., 2010). Due to diverging subcultures hindering diffusion of an IT, senior management (SM) may have to take responsibility for employing policies to formalise, dictate and control how members interact and use an implemented IT.

1.2.3 IS Diffusion and Control

Due to the different interpretations organisational members have of an implemented IT, generating hindrance to the diffusion process, organisational control could play a significant role in facilitating members interacting and using IT in ways that would achieve successful IS diffusion. The control theory is a perspective that has been adopted in organisational research to investigate behavioural patterns of members in relation to complex and non-routine tasks (Jaworiski, 1988). Research stream indicates that top management deploy control mechanisms as examples of control modes - formal (behaviour and outcome) and informal (clan and self), to ensure that members' behaviour and practices are shaped according to

company's guidelines, policies and procedures (e.g. Eisenhardt, 1985; Jaworiski, 1998 and Ouchi, 1979).

IS studies have drawn from the control theory to provide evidence of the importance of the application of formal and informal control mechanisms in the management of complex organisational tasks such as IS. For example, Chua et al. (2012) and Kirsch (1996, 1997) examined the application of controls, which produce positive effects during the development, and execution of IT projects. Chua et al. (2012) have focused specifically more on the clan mode of control to suggest that interactions among group members produce positive effects in achieving the management of IT projects. Kirsch (1996, 1997), however, highlights that relevant project stakeholders exercised various control mechanisms (monitoring, company policies, implementation plan, self-motivation and cultural norms etc.) as examples of behaviour, outcome and self-control to align the different stakeholder goals involved in the development of IT projects. Choudhury and Sabherwal (2003) also applied the control theory to highlight the effectiveness in developing IT projects in the custom and outsourced context.

A different stream of work highlights the negative effects of control on the diffusion of organisational innovation (e.g. Adler and Borys, 1996; Chau and Tam, 2000). Adler and Borys (1996) viewed bureaucratic processes as control mechanisms exercised by managers to either enable or coerce members to achieve set tasks. They noted that coercive procedures on members smothers creativity and encourages member dissatisfaction, while enabling procedures would only help committed members do their jobs more efficiently. Thus, it could be argued that the reviewed work on control highlights positive and negative consequences on IS projects; this implies the relationship between control and IS as complex and

complicated. However, these conflicting results should be expected and not perceived as an inconsistency or weakness in the application of control theory, because as Adler and Borys (1996) suggested, the characteristics of an organisation may account for the central tendency of members' attitudinal responses to implemented controls. This implies that distinct differences found in organisations would influence the outcomes of exercised controls.

Despite the numerous adoptions of the control theory in IS literature, little is known about the effects of controls in IS diffusion. From the review of literature, no research has explicitly studied how and why formal controls (behaviour and outcome) facilitate the diffusion of a complex IT. Much of the existing research on control and IS are focused on a single stage, such as one-shot IT decisions, e.g. IT design, IT development, or executing IT projects. Thus there is little knowledge from the literature about the implications of controls on the various stages of IT assimilation and diffusion in organisations. Therefore, it is vital to examine the relationship between controls and IS diffusion. This would enhance the understanding of how organisations could overcome the struggles of diffusing complex IT due to the existence of diverging subculture members rejecting the system. The application of controls to align diverging subgroups' members towards positive reactions in their interactions and use of the system provides an organisation with the opportunity to diffuse the system to allow a return on the IT investment. In this thesis, I use behaviour and outcome controls as the lenses to conceptualise formal controls. Through these lenses, I illuminate and augment the conceptualisation of behaviour and outcome controls by providing fresh understandings on the achievement of successful organisational diffusion of an MIS and the relationships of the aspects of formal controls.

1.3 Research Aim

This study is not exploring the benefits implementing an IS may bring to organisations but how an implemented IS may be effectively diffused in an organisation's settings and processes so it could reap the benefits expected from the implemented IS. Therefore, the overall aim of this study is to explore the diffusion processes of a Management Information System (MIS) from the theoretical perspectives of culture and control.

1.4 Research Questions

More specifically, this study seeks to address the following research questions:

1. How do subcultural elements influence the organisational diffusion of an MIS?
2. How and why are formal control mechanisms applied during the organisational diffusion of an MIS?
3. How do formal control mechanisms align conflicting cultures to achieve organisational diffusion of an MIS?

To better answer these research questions I draw on Cooper and Zmud's (1990) six-stage IT implementation model, Martin's (1992) framework of OC and Kirsch's (1997) and Ouchi's (1979) conceptualisation of behaviour and outcome controls. The adoptions of these frameworks will illustrate the rationale, cultural and political activities that organisational members manifest during attempts to diffuse a complex IS into its settings.

1.5 Significance of the study

As highlighted in the earlier section of this chapter, scholars and practitioners alike emphasise that achieving successful organisational diffusion of IS still remains a challenge. This problem persists despite the existence of more than two decades of IS research exploring social and organisational factors impacting the implementation of an IS. There are two possible reasons for this. First is that the majority of the IS diffusion studies have only investigated the first step of the complex process of IS diffusion, i.e. the decision to acquire a new technology rather than the sustained use of an implemented IS that would allow the assimilation of the technology into the organisational settings (Jasperson et al., 2005; Mishra and Agarwal, 2010). While some IS researches have investigated the extent and nature of post-adoption interaction and use of IS and the overall implication on IS diffusion (e.g. Huang et al., 2003; Zhu et al., 2006), they often still fail to explain how successful IS assimilation and diffusion could be achieved. Thus, the second possible reason for the continuing occurrence of failure in organisational diffusion of IS is that many of the existing studies have adopted a singular theoretical perspective in their study. This singular approach may not be sufficient enough to understand how successful diffusion of an IS can be achieved in a complex and ambiguous working environment. An organisation is normally complex and ambiguous because of the existence of subgroups with different cognitive frameworks - mental models and knowledge structures. This would suggest that it is essential for IS diffusion research to adopt more than one theoretical perspective.

A multi-perspective approach to the study of IS diffusion would enable the explanations of the different cognitive frameworks subgroup members show during the implementation of an IS. These different cognitive frameworks would result in members manifesting inconsistent

implementation practices, which results in conflict and resistance, hence hindering the IS diffusion process. Therefore, it is vital organisational managers understand the different perspectives members bring when involved in IT implementation in order to overcome the difficulties of achieving successful IS diffusion. This study investigates organisational diffusion of an IT from the theoretical perspectives of culture and control. This twin perspective approach allows the investigation of the impact of the relationship between culture and control on IS diffusion. This would help provide vital knowledge to practitioners that when diverging subcultures hinder an IS diffusion process, subsequent application of controls would ensure the diverging subcultures are aligned for the achievement of successful IS diffusion. Further, this thesis would help inform IS scholars that no study of culture in relation to IT projects is adequate except with the consideration of the control perspective.

1.6 Contributions of Thesis

This thesis makes contributions for research, theory and practice.

1.6.1 Implications for Theory

This thesis' results indicate that during the implementation of an MIS, staff changed from organisation-wide values they espoused to values shared within their subgroup. It can be argued that the complexities staff faced during the diffusion attempt of the system did not make staff stay true to the espoused organisation-wide values. They perceived the enacting of subcultural values would serve as protection to the challenges they faced as the MIS progressed from the adaptation stage to the acceptance and routinization stages. This finding contrasts with Schein's (1999), argument that culture is fairly stable, and difficult to change.

Also, the thesis results help re-conceptualise the existing typology on outcome control by indicating that outcome control, which is conceptualised as deliberate and forceful in nature, could also, unlike behaviour control, be exercised in measures that do not need to be coerced or forceful. This re-conceptualisation of the outcome control suggests a theoretical implication that is different to the existing literature on control. Further, I examine the role of the reward/sanction system in the effectiveness of the applied controls during the diffusion attempts of an IS to indicate that sanctions rather than rewards are more effective in the application of controls.

This thesis offers explanations on how diverging subgroup members' engagement with an IS reflects formal control mechanisms put in place by Senior Management to ensure the diverging members utilised the system in a manner that allowed IS diffusion. A further contribution for research is to ascertain the consequence of the formal controls on the patterns of IS diffusion. The process of IS diffusion is normally depicted as linear and sequential (Rothwell, 1994), which might not always be the case due to the dynamic and complex nature of IS implementations (Newman and Robey, 1992). The thesis results suggest that the applied controls during the MIS implementation engenders a diffusion path that is not smooth and linear, findings that contribute to the IS diffusion literature. I explain this by proposing a conceptual model that highlights the consequence of the applied controls on subgroup members' different actions during the MIS diffusion.

1.6.2 Implications for Practice

This study provides insights on how managers may apply organisational controls to align diverging subgroup members' actions towards integrative behaviours during an IS

implementation process, therefore facilitating the attainment of successful IS diffusion. This insight should help organisations predict how applied control mechanisms may impact on the use of an implemented IS, consequently providing a better chance of getting the best return from the huge investments made in IS.

1.7 Research Context

This section provides background information on the studied MIS and the rationale for selecting a bank as the case context.

Management Information Systems (MIS) are complex and sophisticated systems and that can support different interpretations and levels of utilisation (Orlikowski, 1993). They are examples of a multi-faceted IS that are a package of material and cultural properties in some socially recognisable form, such as hardware and software (Orlikowski and Lacono, 2001). These interpretations are likely to be influenced by the cultural behaviours of different groups within an organisation.

The banking industry provides interesting contexts for carrying out IS research because the banking industry is one of the largest adopters and users of IS amongst industry sectors (Zhu et al., 2004). Banks are known to implement IS such as Automated Teller Machines, Enterprise Resource Planning Systems, Internet Banking, KMS, MIS etc. to transform their internal operations and delivery of services to customers. Banks implement IS to connect their intra- and inter-organisational operations; a network of interrelationships characterised as complex and shared (Mulligan and Gordon, 2002). The technological transformation experienced in the banking industry makes the industry an ideal unit of analysis to conduct research for the explanations of the implications of IS implementations in organisations

(Berger, 2003; Pennings and Harianto, 1992). Banks like other organisations implement MIS for data generation and analysis for the production of quick and reliable management information. Thus, a bank provides an ideal context to undertake the study of organisational diffusion of an MIS.

1.8 Research Methodology

The primary aim of my thesis is to extend and contribute the theory of IS diffusion by providing new insights on the understandings of organisational diffusion of a complex Management Information System (MIS) in a bank. I try to achieve this by adopting a case study method in order to take advantage of the interpretive nature of this approach to provide fresh insights into the unexplored dynamics of IS diffusion phenomenon that would be captured from the application of the culture and control theories. Further details of the research methodology adopted for this study are discussed in chapter three of this thesis.

1.9 Structure of Thesis

The content of this thesis is divided and structured into seven chapters as follows: Chapter one is the introduction chapter of the study, which presents the background of the research problem, the research focus, the research aim and questions, and the significance of the study.

The literature review is the second chapter; the chapter highlights the research background and theoretical foundations of the study by examining the existing debate on the research phenomenon - IS diffusion and the adopted the theoretical perspectives - culture and control.

The existing discussions on IS diffusion, culture and control, are critically analysed and

synthesised to reveal existing gaps in the literature, which are used to form the research questions. The third chapter is the research methodology chapter, which explains the methodological approach adopted to undertake the study and address the proposed research questions. The research methodology chapter first discusses the philosophical perspective that guided the research design and methods adopted for study. I further discuss in the chapter, the choice of sites, the selection process and description of the MIS, the data collection methods, discussion on the procedures of the data analysis and ethical issues considered during the study. The fourth chapter introduces the first part of the results of the data analysis; it provides empirical insights into the case - implementation history and time scales of the MIS. More importantly, the fourth chapter presents the empirical findings of MIS diffusion from the viewpoint of the case bank's cultures. This is followed by chapter five, the chapter presents the second part of the results of the data analysis, i.e. MIS diffusion from the perspective of formal controls (behaviour and outcome controls) applied by the case of the bank's SM. Chapter six critically discusses the empirical results from chapters four and five respectively and synthesises the results with past work on IS diffusion, organisational culture and controls. Finally is chapter seven, the conclusion chapter providing a summary of the study that focused on the organisational diffusion of an MIS, from the culture and control perspectives in the case bank. Further in the conclusion chapter, I also elicit the implications of the case results on research, theory and practice. Finally, in the conclusion chapter, I discuss the limitations of the study and recommendations for future research.

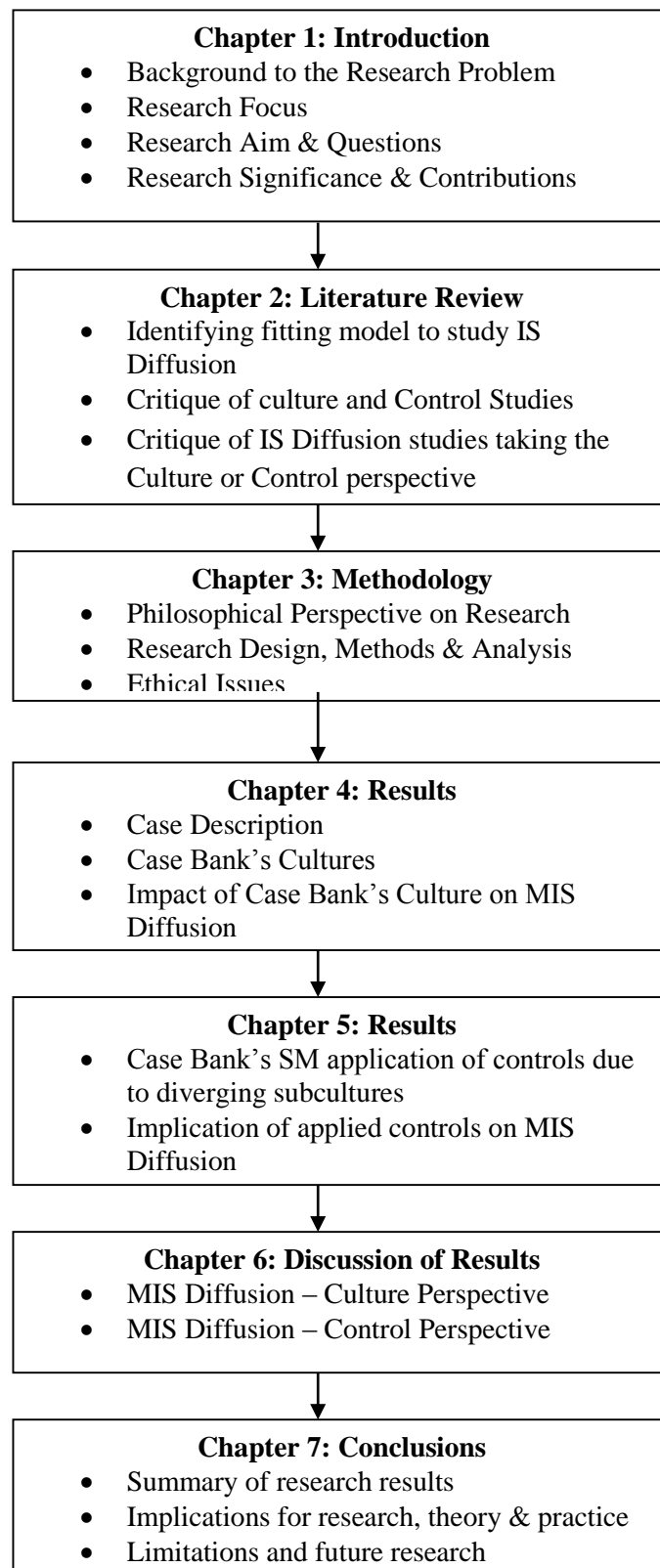


Figure 1-1: Overview of Thesis Structure

Chapter 2 Literature Review

2.1 Introduction

This chapter reviews and synthesizes the extant literature on information systems (IS) diffusion, organisational culture and control.

2.2 IS Diffusion

The considerable amount of IT investments made by organisations does not necessarily translate into organisations effectively applying the technology into their business operations (Feeny and Wilcocks, 1998; Sambamurthy and Zmud, 1994). This has raised debate amongst business executives and academics alike about whether the high investments organisations make in IT will actually make them more effective, efficient and competitive (Peppard et al., 2001). The failure of IT systems to produce the anticipated benefits can be partly explained by the underutilisation of the implemented systems (Jasperson et al., 2005; Peppard and Ward, 2004). In other words, for an organisation to achieve the expected benefits from IT investments, its members must accept and use the IT system in an effective and efficient manner that would facilitate the full assimilations of the system into its organisational settings, i.e. the IS must diffuse completely into the organisational environment. Many organisations fail to achieve IS diffusion because members normally employ the systems in a manner that can be characterised as rare, narrow, low and shallow use of the system's features, preventing them from taking advantage of the full capabilities of the system (Jasperson et al., 2005; Lyytinen and Hirschheim, 1987). In many cases the users resist adopting and complying with the expectations of the system (Robey et al., 2002), engaging only superficially with the system. To overcome the problems of resistance and of the simple

and superficial use of IT systems, senior management, business managers and users of the systems must be convinced that the features of the system will help them achieve their work objectives in simpler ways. The literature suggests that adequate training and change management strategies are crucial in adjusting to the disruptive changes in work processes while trying to fully implement and diffuse an IT system (Jasperson et al., 2005; Robey et al., 2002).

Within the IS literature, a number of models/frameworks have been proposed and developed in a bid to understand IS diffusion better. Therefore, the next section of this chapter provides an in-depth analysis and critique of some the key models developed and adopted in IS literature to investigate IS implementations/diffusion.

2.2.1 Models and Frameworks of organisational diffusion of IT

IS scholars have adopted different IS theories/frameworks in their investigations of the implementation and diffusion of IT systems.

Diffusion of Innovation (DOI) Model

Rogers (1983) defines diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1983, p. 5). The DOI theory looks at factors that influence the decisions to adopt/implement a technological innovation at the individual, group and the organisational level. The DOI theory considers five innovation attributes: relative advantage, compatibility, complexity, observability and trialability. These serve as antecedents to the diffusion process of a

technological innovation. Many studies investigating diffusion patterns and processes of technological innovation have drawn inspiration from Rogers's DOI theory (e.g. Brancheau and Wetherbe, 1990; Ramamurthy and Premkumar, 1995). Ramamurthy and Premkumar (1995) undertook a study, examining the role innovation and organisational factors played in the extent to which Electronic Data Interchange (EDI) diffuses within organisations. They concluded from their path analyses results that the 'relative advantage' and 'compatibility' constructs of the DOI model are vital characteristics that predict how an adopted innovation could be used and diffused within organisations. Also, Mustonen-Ollila and Lyytinen (2003) undertook a longitudinal study in three organisations to investigate IS process innovation adoption decisions. They found that factors such as user need recognition, availability of technological infrastructure, members' past experiences, trials, autonomous work, ease of use, learning by doing and standards influenced the adoption and diffusion of IT technologies. They also highlighted that a large number of the diffusion processes of IS innovations did not follow any visible pattern, i.e. sequential or non-sequential. Cooper and Zmud (1990) and Tornatzky and Fleischer (1990) argue the application of the DOI framework in investigating the diffusion of complex technological innovations at the organisation level may not be appropriate because of the model's inability to give a rich explanation of the diffusion of complex technological innovations.

They highlight that technological diffusion decisions in organisations are not solely rationalistic as experienced at the individual level but decisions that are often cultural and political. Tornatzky and Fleischer (1990) suggest that DOI does not provide analytical rigour of organisational diffusion by its underlying assumptions about individuals and organisations' behaviour. The DOI is more concerned about how individuals are classified into categories,

i.e. innovators, early adopters, early majority, late majority and laggards, by highlighting their degree and individual characteristics to adopt a technological innovation. Orlikowski (1993) argued that the constructs of the DOI model by themselves are unlikely to be strong indicators of complex IT systems, because the DOI constructs which consider adopting decisions at the individual levels ignore the realities of implementing IS innovations within organisations. As noted by Chau and Tam (1997), the DOI model to investigate organisational IS diffusion often fails to recognise the differences in the unit of analysis and environment.

Technology Organisation Environment (TOE) Framework

In a bid to improve the DOI theory, Tornatzky and Fleischer (1990) developed the TOE framework to explore both the micro- and macro-level conditions that may inhibit or facilitate the adoption and diffusion of a particular technological innovation. Organisations adopting a technological innovation need to pay attention to not just the micro-level conditions, which look at internal organisational considerations, but also the external environment, because of the interconnectivity and interrelationships with institutional factors such as customers, business partners and the government. The TOE model is based on technological innovations as being communicated through certain channels over time and within a particular social system. The TOE framework helps in identifying three aspects (Technological, Organisational and Environmental factors) of an organisation that can influence the decision to adopt and implement a particular technology/innovation. Zhu et al. (2006) adopted the TOE framework to develop variables as antecedent factors to explore assimilation and diffusion of IS in organisations. Other studies have also adopted the TOE framework (see Dedrick and West, 2003; Salwani et al., 2009). The TOE framework can be

seen as a useful analytical tool that distinguishes between inherent qualities of an innovation itself and the motivations, capabilities, and broader environmental context of adopting organisations (Dedrick and West, 2003). The TOE framework, unlike the DOI model, provides a good starting point to explore the factors that influence organisational decisions to adopt and implement IT systems because the TOE framework, unlike the DOI model, explores the factors that influence the decision to adopt and implement IS innovations by an organisation. But there is a major criticism of the TOE framework. Studies have suggested that the classical diffusion variables of the TOE framework are not sufficient on their own to determine factors that affect the adoption and implementation of an IT system. Dedrick & West (2003) believe that the TOE framework is just a catalogue for grouping variables and does not represent an integrated conceptual framework or a well-developed theory that can investigate the levels of diffusion. Thus there is a clear need for an improved model or an alternative perspective to better consider contributing and inhibiting factors (Dedrick and West, 2003; Fichman, 1992).

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) proposed by Davies (1986) is one of the most commonly adopted theoretical frameworks utilised empirically in IS research to explore IT acceptance and usage in various contexts (Hsieh and Wang, 2007). The TAM offers a set of explanations about why a given system comes to be accepted. These predictions have been based on the suggestion that attitudes and beliefs (Perceived Usefulness – PU and Perceived Ease of Use PEOU) shape the individual behavioural intention to accept the use of a system. The empirical work of Hsieh and Wang (2007) adopted the TAM model to investigate the

extended use of complex IT systems. As they noted in their research, organisational members' interpretations of an IT system often determine how the system is implemented and used. They have highlighted factors such as perceived usefulness and perceived ease of use as vital antecedents to organisational usage of the technology. Agarwal and Prasad (1999) extend the Technology Acceptance Model (TAM) theory to develop a model that hypothesised a relationship between "Individual Differences" and IT Acceptance. They used the variables – training, experience and personality to define "Individual Differences", whilst using the perception constructs - perceived ease of use (PEOU) and perceived usefulness (PU) in the TAM model as mediating variables. They tested their model by conducting a survey of 230 users of IT innovations and found out that "Individual Differences" impacts users acceptance of new IT via their perceptions of the new system. They also found that the saliency of PU and PEOU are not always invariant in the innovation process. Indeed, one construct might be more salient than the other in the diffusion process. For example, users might have a high perception of usefulness of a system when it was first introduced to them but may find it difficult to use the system. But at a later period in the implementation process, users might have a perceived ease of use of the system due to training and experience. Despite the TAM model being able to shed light on IT adoption and usage, the model provides only limited guidance about how to influence usage through design and implementation (Venkatesh et al., 2003, Wixom and Todd, 2005). Therefore, diffusion studies that have adopted the TAM model to investigate the outcome (success/failure) of a complex IT innovation may not accurately capture the dynamic and processual nature of a socio-technical innovation (Newman and Robey, 1992; Schwarz and Chin, 2007). In other words, the TAM framework which is designed to investigate behavioural intention to use IT at the individual level does not take into consideration the dynamic events and activities of members' post-adoption IT-

usage behaviour, which may offer a more comprehensive explanation of the organisational diffusion of technological innovations.

Unified Theory of Acceptance and Use of Technology (UTAUT) Framework

An extension to the TAM model is the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatsh et al. (2003) to provide a different perspective on technology adoption and usage. They introduced the perceived usefulness (PU) and perceived ease of use (PEOU) constructs, social influence and facilitating conditions as key constructs, while gender, age, experience, and voluntariness of use are hypothesised to moderate the impact of the four key constructs as further antecedents to explain an integrative view of the phenomenon, i.e. post-adoption behaviours of system use at micro-level conditions that can influence IT usage behaviour required for IS diffusion. Venkatesh et al. (2003) have used the UTAUT framework to argue individuals' intentions to engage in post-adoptive use of IT can predict whether individuals would actually engage in the post-adoptive use of the system. They have assumed that cognitions based on performance expectancy, effort expectancy, social influence, and facilitating conditions play vital roles in facilitating individuals' behaviour to adopt and use IT systems. The UTAUT model, which investigates user intentions to use an IT system and subsequent usage behaviour at the individual level, also suffers from the inability of the model to provide insights concisely on how to plan interventions that could promote the continued organisational use and success of an adopted innovation (Brown et al., 2010). In this sense, it continues to carry some of the problems of the TAM model.

IS Success Model

DeLone and McLean (2003) developed and validated a model on IS success based on a previous model they had developed in 1992. Their updated model explains that IS success is dependent on six interrelated dimensions – information quality, system quality, service quality, intention to use, member satisfaction, and net benefits. The model suggests that the relationships between the six interrelated dimensions influence whether the implementations of an IT system would be successful or not. In other words, the model suggest that when an individual derives satisfaction from using a certain system and achieves the net benefits, there would be subsequent use of the system, while the reverse would be the case if the user achieves no satisfaction and benefits. However, the Delone and Mclean (2003) model does not take into account the likely improvement of the IT implementation and usage process; it assumes the process of achieving IS success is a straightforward process. The likelihood for IS success in organisations the first time without any trouble might be a difficult feat to achieve considering that the social implications relating to the development and usage of IT are normally a complicated and complex process (Newman and Robey, 1992).

The Six-Stage Process Model of IT Implementation

Cooper and Zmud (1990) provide a different conceptualisation of IS diffusion. Their unit of analysis is very evidently the organisation. They argue that IS diffusion is the effort an organisation directs toward disseminating appropriate IS innovation within a user community. In their bid to try to understand and resolve the problems of IS diffusion in organisations, they grouped related research into the factors research, process research, and political research. They argue that factors research looks at how individual, organisational, and technological forces impact upon the effective diffusion of IT. These include support from

top management and good IT design of existing infrastructure (Ives and Olson, 1984; Sanders and Courtney, 1985; Schultz, 1984). They go on to show how process research examines social change activities in organisations and argue that IT implementations can only be successful when stakeholders are committed to the change process caused by implementation activities of the IT. They finally suggest that the IS diffusion is dependent upon recognising and managing the diverse vested interests of the stakeholders in the organisation involved in the implementation of the IT systems (i.e. diffusion is a political process) (Cooper and Zmud, 1990; Markus, 1983). These factors highlight the degree of complexity that occurs in a unit that adopts a new IS innovation, particularly in an organisation in its bid to implement fully the new adopted technology.

Cooper and Zmud (1990) theorised organisational diffusion of IT systems to follow a six-stage process: Initiation, Adoption, Adaptation, Acceptance, Routinization and Infusion (see figure 2-1).

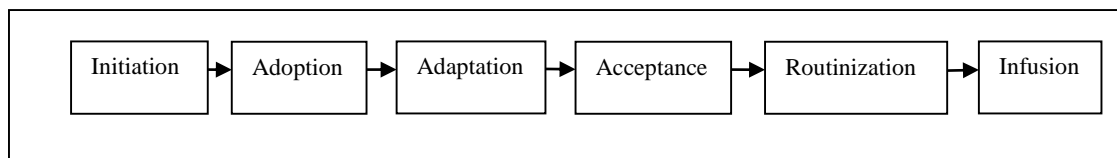


Figure 2-1: (Cooper and Zmud, 1990) IT Implementation Model

The initiation stage, the first stage of IS diffusion, concerns how organisations initiate technological innovations to help solve organisational problems/opportunities due to pressure that results from either organisational need (market pull) or technological innovation (push), or both. Following the initiation stage is the adoption stage. The second stage of IS diffusion highlights the rational and political negotiations required to ensure that top IS and business

executives agree to invest in an IT system and the required resources to accommodate the new technology. However, other IS research also identifies that political rationales are vital factors that affect the latter stages of the diffusion process (Cooper and Zmud, 1990; Laudon, 1985). This may be because of the high level of uncertainty and ambiguity that may occur in an organisation when trying to infuse an implemented IT system into its processes. The third stage of IS diffusion is the adaptation stage, which refers to the stage when the adopted IT system is developed, installed, and maintained. The fourth stage of IS diffusion, the acceptance stage, is a critical stage because this is the phase when organisational members are expected to employ the IT artefact in their work. In many ways, this stage will determine whether the system is likely to be accepted or rejected. The Routinization stage, the fifth stage of IS diffusion, refers to the stage when the use of the IT system becomes a normal and routine activity in the organisation. According to Cooper and Zmud (1990) this is normally a consequence of the organisation's governance systems being attuned to account for the IT application. Finally, the infusion stage of the IS diffusion is concerned with the increased organisational effectiveness and efficiencies obtained from utilising the implemented IT system to its full potential in a more comprehensive and integrated manner to support higher level operational activities in the organisation (Sullivan, 1985; Zhu et al., 2006).

It can be argued that Cooper and Zmud's (1990) six-stage proposed model is an improved version of an earlier model proposed by Pierce and Delbecq (1977) and Rogers (1983). They proposed a much simpler three-stage process involving initiation, adoption, and implementation. This three-stage model is similar to Cooper and Zmud's (1990) model but crucially fails to account for the socio-cultural factors that are central to the diffusion process. In other words, it does not consider how organisational members may be encouraged to

accept and fully use an IT system, which Cooper and Zmud (1990) account for through the acceptance and routinization stages of the model. While the earlier models are more appropriate for analyses at the individual level, Cooper and Zmud's (1990) model has a clear organisational focus, and hence of particular relevance to this thesis. Broadly, this model of IT implementation provides a comprehensive and an organisational-level view of the implementation and diffusion process. In particular, the model also incorporates the later stages of the diffusion of an IT system - IS acceptance, IS routinization and IS infusion, which are crucial to understanding how the diffusion process unfolds. Hence this thesis proposes to view the diffusion of an IT system as consisting of the six typical stages highlighted by Cooper and Zmud (1990).

2.2.2 Critique of existing research on organisational diffusion of IT

Evident from studies on IS diffusion is the conceptualisation of the diffusion process of an IT system as a series of dynamic and social-processual processes, highlighting the stages an implemented IT system pass through in the attempts to diffuse it into organisational settings and processes. IS diffusion studies focus on different implementation stages - pre-adoption activities, the adoption decision, and post-adoption activities, such as IT adaptation, IT use and continued use, to explain challenges organisations face during attempts to achieve IS diffusion.

For example, Hardgrave et al. (2003) studied the adaptation stage and pointed out that factors similar to the UTAUT constructs, e.g. software developers' perceived usefulness and social pressure together with other factors, such as compatibility, and organisational mandates are

noteworthy determinants of software developers' intentions to follow formalised methodologies required to implement a new technology. A different example from IS diffusion literature that studied the adaptation stage is Rai's (1995) work. He pointed out that factors such as instability and performance gaps in the IS department affected the development and implementations of computer-aided software engineering (CASE) tools. Hsieh and Wang (2007) point out that beyond technology attributes and the personal effect of users, organisational complexity involving organisational, managerial, and social factors can significantly influence IT usage behaviours.

However, despite the existing studies, there is still a need for more insight on the extended and continued use of IT required for IS diffusion due to the continued failure of implementations of IT systems in organisations (Liang et al., 2007; Mishra and Agarwal, 2010). Jaspersen et al. (2005) explicitly echoed this point in their theoretical paper. The paper proposes a model to conceptualise post-adoptive behaviour construct and concludes that IS researchers and practitioners often overlook the post-adoptive factors. As highlighted in the aforementioned studies (Hardgrave et al., 2003; Rai, 1995), a majority of studies have mainly focused on initiation and adoption factors that affect diffusion with a minority focusing on post adaptation stages. Nonetheless, Zhu et al. (2006) developed a model based on three assimilation stages - initiation, adoption and routinization; to investigate factors that are antecedents for IS diffusion in organisations. They tested their model on a large data set collected from organisations across developed and developing countries and found that external factors such as competition impact positively on the initiation and adoption, but negatively impact on routinization, and firm size, i.e. large firms with resource advantages

influence the earlier stage of diffusion, but have to overcome structural inertia in later stages of diffusion.

Mishra and Agarwal (2010) in their empirical work draw on managerial and organisational sensemaking and the organisational capabilities literature to develop and propose a model to understand the continued use of IS innovations. The results from the testing of their model, suggest that an organisation's sense and response capability significantly influences organisational decision-making about IT use, and that organisation size does not have a significant effect on the use of IT systems. McMaster and Wastell (2005) highlight a more explicit successful outcome in the implementation of an IT system. Their work adopted a case study method to investigate how IT members of a local government agency developed and deployed a Business Process Re-engineering (BPR) system. McMaster and Wastell (2005) pointed that factors such as strong leadership, engagement of organisational members and the fortuitous occurrence of a series of local crises were vital antecedents for the diffusion of the implemented IT innovation. A significant theme highlighted from studies of organisational diffusion of IT systems is that the dynamic nature of organisation impacts the way IT systems are implemented and used in the organisation. The studies are concerned with exploring how IS diffusion can occur when a technology is implemented in an organisation with existing integrated systems and processes that cuts across the organisation. However, the aforementioned studies have not explicitly investigated how an organisation's assumptions and practices (culture) of vital stakeholders involved in the implementations of IT could shape how the system is engaged with to achieve IS diffusion.

Against this backdrop this thesis proposes that theories of organisational culture (OC) may be

used to provide deeper insights on the complex and dynamic activities that ensue during the implementation and diffusion of an IT system. OC can be vital for understanding IS diffusion, especially in trying to achieve desirable post-adaptive and acceptance usage behaviours of IT. Considering the activities and events of the diffusion stages are distinct from one another, the interactions of the IT in the different stages may result in different orientations and behaviour by users when interacting with the technology across the diffusion process, and simultaneously highlight how members' behaviour and actions are created during the diffusion process. The exploration of cultural assumptions and practices underpin the culture perspective, a perspective that is largely missing in the aforementioned studies on organisational diffusion of IT.

2.3 Organisational Culture

In their attempt to define and explain OC, scholars have drawn on ideas, metaphors, and theories from various disciplines, i.e. Anthropology, Psychology and Sociology. Broadly speaking, the literature identifies two distinct paradigms of organisational culture: the functionalist paradigm and the interpretivist paradigm. The next sections details the assumptions underlying these two paradigms of culture and the resulting implications for research.

2.3.1 The Functionalist Paradigm of Organisational Culture

Smircich (1983) argues that functional studies of OC suggest culture as something an organisation possesses based on agreed assumptions, beliefs and practices, thus treats culture as a variable. She further suggests that cultural researchers who treat culture as

functionalist/variable have an overall aim to create a link between culture and other variables such as commitment and productivity, so as to offer standard direction to organisations about how culture may be managed to ensure organisational success. This functionalist approach to the study of culture suggests that management can create a strong culture, i.e. create organisation-wide consensus amongst its members for achieving anticipated outcomes, such as better productivity and efficiency. Schein (1985) draws from the functionalist perspective to define OC as the shared beliefs, ideologies, philosophies, rituals, myths, and norms that influence actions taken or behaviour of people in an organisation. Schein's (1985) theory of OC argues that culture exists at three levels (assumptions/beliefs, values/norms and artefacts). He argues that the basic assumptions/beliefs are at the core of culture, and influence individuals' relationship with one another and their view of reality and truth. These basic assumptions/beliefs are cognitive structures that enable individuals to perceive situations and make meaning of on-going events and activities, thereby forming the basis for collective actions (Reichers and Schneider, 1990; Sackmann, 1992). Values at the next level of OC represent a manifestation of the adopted beliefs by identifying what is important to a particular group (Leidner and Kayworth, 2006), which defines and dictates their daily practices (actions and communication) and is in the form of social norms of the organisation. These espoused values are more visible and members are more aware of them Schein (1985). Corporate values mould the foundation of what forms OC and guides the behaviour of members (Deal and Kennedy, 1982). At the third level of OC, artefacts are the most visible manifestation of culture (Leidner and Kayworth, 2006). Examples of artefacts may include art (logos & signs), myths, heroes, language, rituals, and ceremony, visible and audible behaviour patterns and technology. They could also include design and layout of the company's website and financial reports. Pettigrew (1979) in his empirical work pointed out

that headmasters in British private education adopted rituals and stories to create members' commitment to their schools. The aforementioned studies have considered OC to be uniform and consistent across organisations, frequently following Schein's (1985) definition of OC as the shared beliefs, ideologies, philosophies, rituals, myths, and norms that influence actions taken or behaviour adopted by people in an organisation.

2.3.2 The Interpretivist Paradigm of Organisational Culture

The interpretivist paradigm argues that organisations are cultures and treats culture as a metaphor for organisational life (Meyerson and Martin, 1987; Smircich, 1983). In this view, culture is viewed as an interpretive tool to allow the investigation of organisations as a social phenomenon. The stream of research that focuses on interpretivist/metaphoric approach of OC contests the functionalist notion that OC can always be managed in an integrative way for achieving organisational success. For example, Martin (1992) argues that organisations also consist of interests and groups that are multiple, often conflicting with one another and with ambiguous cultural manifestations. Therefore, she argues that study of OC should be interpretivist, so as to provide a comprehensive and thick description of a wide range of familiar and unfamiliar features of organisational life in. Martin (1992) suggests that OC should be studied from three different perspectives – integration, differentiation and fragmentation.

Integration Perspective

The integration concept of OC shows the organisation as having a persistent, consistent and distinct culture across all sub-units (Martin, 1992). The integration perspective assumes that

basic assumptions are shared among organisational members (Schein, 1985). These claims made on the integration perspective highlights what Martin (2002) refer to as interpretations that reflect consensus and agreement across a social system. All members of the social system have the same interpretations of cultural manifestation and view explanations of processes in the same way (Schein, 2004). In this view members share a common view of where the organisation is heading and are fully in tune with the underlying assumptions, beliefs and practices. However, Martin (2005) argues that there could be many subcultural differences within the organisational culture. She further argues in the same paper that consensus and agreement occur across an organisation because senior management articulates a set of espoused values, normally via mission statements, which are then reinforced by a range of cultural displays that supposedly generate organisation-wide value agreement. Schein (1985) highlighted this point by suggesting that the senior management of an organisation integrates behaviours amongst its members by the promotion of their personal values and organisation goals. Organisations are able to achieve organisation-wide consensus via a wide variety of consistent corporate policies and practices. In contrast to the functionalist view of Schein (1985), Barley (1983) takes the symbolic approach to present an integration study, by discussing how funeral directors adopt a series of practices and rituals, such as changing bed sheets on a death bed and putting make-up on a corpse to promote the perception that death can be lifelike. The majority of OC studies take the integration research approach, which Martin (2002) argues is a limitation because the majority of integration studies rely on the views and ideas of the senior management without necessarily taking into consideration the views of other members of the organisation. In other words, an integration study focuses on a small and unrepresentative sample of organisational members to understand and explain culture.

Differentiation Perspective

Organisational subculture highlights the power of different subgroups in organisations, which possess their own beliefs, values, practices and interpretations that may or may not be in agreement with the overall culture of the organisation (Martin, 1992). Differences in values, norms, and practices exist because different groups have different roles to fulfil and have different relationships with the organisation as a whole (Martin, 1992).

Subcultures commonly manifest along functional, occupational and hierarchical lines (Martin, 2005). Martin (1992) provides an example of a differentiation study describing subcultures in functional and occupational terms. She showed how five subcultures in a technological firm reacted differently to organisational issues. Senior management and human resources subcultures were normally in harmony, i.e. reinforced to each other, because both groups subscribed to the egalitarian sharing values of the organisations, such as lateral promotions for members and no mass layoffs of members. There was regular conflict between engineering and marketing subcultures because engineers were perceived to develop products in 'play' without marketing considerations. While assembly line workers normally remained detached in many of the issues that absorbed their managerial and professional colleagues, i.e. orthogonal and just followed management's preferences. The illustration of some elements of unity and consensus in the manifestations of shared values across the boundaries of the SM and HR subgroups are similar to integration studies, but consensus in this case is achieved within the boundaries of an organisational sub-unit (Martin 2005).

Differentiation studies see subcultural relations as hierarchical with no place being neutral to the overall OC (Martin, 1992); this explains the subcultural boundaries that exist in

organisations. Van Maanen's (1991) study of Disneyland ride operators provides a good illustration of the differentiated perspective of culture. The ride operators are a large but distinctly middle-class group possessing coveted skills to do tricky transports tasks, communicate and control customer access to the park and drive area. Another group highlighted in the study is the food vendor group. This group as ranked as low/peasant status compared to the ride operator group who perceived themselves as high status because of the skills they possess and the huge pay differential between the groups. Van Maanen (1991) pointed out that management put employees in these groups for reasons that seemed irrational to the employees. Management decided at the point of recruitment, which group members, would be allocated to which group. This kind of hierarchical structure created dissatisfaction amongst members who were put in a lower status group, i.e. food vendors amongst employees assigned to the ride operators. This scenario normally resulted in conflicts and tensions forcing management of Disneyland tending to broker peace between the subcultures. The management of Disneyland wanted employees to be in harmony but the initial placement of members in hierarchical and groups with no clear reason highlights inconsistency in management policies, i.e. saying something but doing something different.

To summarise, differentiation studies highlight inconsistencies amongst cultural manifestations and suggest that consensus only exists within subgroups. Martin (2005) argues that ambiguous interpretations do not exist within the subgroups. Rather, they are visible at the interstices outside the subgroups, highlighting the boundaries between the subcultures. As in the OC studies viewed from the integration perspective, the methodological choices made in differentiation studies in part influences the kind of results that would be presented (Martin, 2005). Clearly, if the researcher decides to focus on relatively low-ranked members who are

unlikely to hold the views of senior managers, a very different view of the stability of the overall organisational culture might emerge.

Fragmentation Perspective

The paradigm of the fragmented perspective argues that culture shared in an organisation will differ in different organisational groups (Loius, 1985), implying that culture can be as much a fragmenting force as a unifying one (Van Maanen and Barley, 1985). Although organisational members believe that they belong to a single OC, they do not seem to “agree on clear boundaries, cannot identify shared solutions, and do not reconcile contradictory beliefs and multiple identities” (Meyerson, 1991, p 131). Meyerson’s (1991) views are what Martin (2002) describes as fragmentation perspective of culture. She further suggests that the clear consistencies and inconsistencies found in the integrative and differentiated perspectives respectively are hardly evident in the fragmentation viewpoint, leading to an unstable organisation-wide or subcultural agreement (Martin 1992). Martin (2002) argues that the fragmentation perspective highlights ambiguity as the core of culture. In a different work, Martin (2005) defines ambiguity as multiple meanings, irony, paradox and inescapable contradictions that occur when organisation members manifest cultural assumptions. The fragmentation perspective describes the occurrence of ambiguities because temporary generated concerns and interpretations of culture do not unite into shared opinions, either in the form of agreements or disagreements (Martin, 2002). These ambiguities in the interpretations of cultural manifestations are likely to result in paradoxical or ironic actions and reactions (Martin, 1992). Martin (2005) argues that ambiguous interpretations that cause fragmented views in an organisation do not suggest any clear cultural or sub-cultural boundaries within the organisation. This results in members having different interpretations

with no clear agreement of processes. When there is agreement, it is issue-specific and transient, implying problems become activated, generate mixed reactions (positive and negative) then fade away from attention to be overtaken by other issues. Martin (2002 pp. 10-11) says these create “temporary issue-specific networks of connection that disappear and reconfigure themselves in a constant”.

The work of Robertson and Swan (2003) illustrates the fragmented view of OC. Their study focuses on highly educated scientists working within a knowledge-intensive organisation, with an informal structure. The scientists are normally involved with projects regarded as inherently fluid, complex, and uncertain, but they embrace the ambiguities that came with the job. Staff embracing of ambiguity allowed the manifestation of multiple identities as both 'expert' and 'consultant', together with the 'elitism' culture of the company. This promoted the development of a loyal, committed, and effective workforce. For example, the organisation promoted egalitarianism and participation, which allowed members in meetings to discuss and solve organisational problems, with everyone participating in the decision-making process. This allowed staff the minimising of tensions between control and autonomy. Meyerson (1991) investigated cultural ambiguities in hospital work. She noted that social workers were provided with health care goals that were unclear as there was no agreement on the suitable procedures to achieve the goals. However, in an ironic fashion, they accepted the ambiguities and felt any cultural descriptions of their job without the element of ambiguity was incomplete. A contrast to the fragmentation studies explaining some occupations accepting ambiguous work environments is Weick's (1991) study. His work investigates an incident that occurred at an airport in Tenerife during foggy weather conditions. His analysis from the fragmentation perspective reveals an environment where the effects of ambiguities

were less welcoming. He describes the complexities that ensued from the conversations between pilots, air traffic controllers and cockpit crew prior to the crash of KLM and Pan Am aeroplanes. Weick (1991) pointed out the complexities and ambiguities were brought out to the fore due to the dynamic activities of the event, the differences in national prestige, native language, occupation and incompletely-shared knowledge amongst the group of actors. These examples of fragmentation studies highlight that change is in a constant flux, triggered by organisation forces beyond members' control rather than an irregular interruption in an otherwise stable culture (Martin, 1992). However, as Martin (2005) argues, these conclusions on fragmentation studies can only be achieved if the cultural researcher focuses on ambiguous workplaces, as in the example of Robertson and Swan's (2003) knowledge-intensive organisation and Meyerson's (1991) example of social work, and in the context of cross-national communication as evident in the work of Weick (1991). Martin (2005) further argues that a weakness in the fragmentation studies is that they tend to present a form of methodological tautology, i.e. researchers define culture in a specific manner and discover what they are exploring.

Other cultural researchers have critical views of Martin's conceptualisation of OC. For example, while Schein (1990) agrees with Martin's conceptualisation of OC that large organisations may have discrete subcultures with substantial variations, he argues the differentiation perspective may be overstated because, in spite of subcultural conflict, organisations will still have common assumptions that come to the fore at times of crises or when there is a common enemy. Martin (1992) also noted in her book that critics of the fragmentation perspective have suggested that ambiguity is not culture but the absence of culture, and that culture should be defined in terms of clarity, consensus and consistency. In

line with Martin's (1992) work, this thesis takes an interpretivist perspective of organisational culture. The interpretivist assumptions help capture the change and inconsistencies in the cultural environment of an organisation and its subgroups that influence the implementation and diffusion of a complex IT system.

Martin (2002) highlights that there is advantage in using multiple perspectives of OC in a study because multiple lenses are at relationship with one another as against a singular lens characterised in most studies of OC (El Sawy, 1985; Huang et al., 2003; Ruppel and Harrington, 2001). She argues the multiple lenses would help reduce the theoretical blind spots related to a single perspective and allowing the emergence of a more holistic understanding of the cultural dimensions of an organisation. According to Martin (1992), each cultural perspective is an interpretive framework that is subjectively imposed by the researcher while in the process of collecting and analysing cultural data, thus no single perspective should be seen as more suitable than the other when adopted to investigate a research problem. Therefore, this would allow the understanding of organisational diffusion of an IT system across different subgroups of an organisation.

Despite adopting Martin's (1992) OC perspectives as theoretical lenses for the study, in the attempt to predict and measure the complex concept of OC, Schein's (1985) definition of values is chosen for this study to conceptualise OC and subcultures. Organisational values are easier to study compare to basic assumptions/beliefs, which are invisible and preconscious (Alavi et al., 2006; Schein, 1985), while artefacts, which are the most visible, are the hardest to decipher and interpret (Alavi et al., 2006; Leidner and Kayworth, 2006; Schein, 1985). Schein (1987) argues the best way to gain an understanding of culture is to try to capture the deep-seated assumptions of group. Nonetheless, Martin (2002) argues that understanding OC

through artefacts and values need not be superficial, and they are appropriate to understand culture because the interpretations of artefacts and values may reflect deep assumptions. The vast majority of theories adopt organisational values to conceptualise OC (Jackson 1995), which are also evident in works of Quinn and Rohrbaugh (1981, 1983). Quinn and Rohrbaugh (1981) in their study suggested a competing value framework to suggest that organisational effectiveness can be achieved via three sets of competing organisational values. Firstly, organisational focus, i.e. emphasis on organisational members well-being and development to an emphasis to the organisational well-being, to help achieve organisational effectiveness. Secondly, values associated with organisational structure, i.e. emphasis on stability with an emphasis on flexibility, help achieve organisational effectiveness. Finally, values associated with organisational means and ends, i.e. emphasis on vital processes (e.g. planning and goal setting) with an emphasis on final outcomes (e.g. resource acquisition), help achieve organisational effectiveness.

Applying the organisational values concept to the IT context suggests that values of an organisation influence the usage of an adopted IT system (Alavi et al., 2006). This is appropriate as values are reflections of underlying cultural assumptions (Schein, 1992) and because there is evidence of a strong linkage between cultural values and subsequent behaviour and actions of social groups (Posner and Munson, 1979). OC helps firms manage problems of external adaption and internal integration of processes (Schein, 1996). Putting this into context for this research, the role of culture should influence the organisational adaptation and integration of an adopted IT system. Chau and Tam (1997), when discussing work of Hage (1980), argue that because technological innovations can be classified as discontinuous changes in organisations, which involve the development of new processes, the

success of the innovation adopted depends on the degree of match between the innovation's characteristics and the practices currently adopted by the organisation. Leidner and Kayworth (2006) in their extensive review of literature has highlighted how OC theories have been adopted in IS research; they argue that culture is a significant construct in explaining how social groups interact with IT systems. Their review shows that culture studies of IT have been applied in the different contexts such as level of analysis, i.e. national, organisational and subgroup levels.

2.4 Culture and IS Diffusion

Because one of the research objectives of this thesis is to examine the organisational diffusion from the OC perspective, the next section will provide an in-depth review of literature that has adopted the OC theory both from the organisational and subgroup perspectives to investigate IS diffusion.

2.4.1 Organisational Culture and IS Diffusion

Schein (1985) framework of OC is the most popular and generally adopted OC framework by scholars undertaking IS diffusion research. For example, empirical work of Alavi et al. (2006) adopted a case study method to investigate, at a large global information services company, the manner in which OC influences the use of Knowledge Management Systems (KMS) for achieving successful Knowledge Management (KM) practices. They have applied Schein's (1985) perspective of cultural values in their study. They took the soft positivism approach to their case, to suggest that there are discoverable relationships between organisational values

and members' behaviour of IT use and outcomes. Alavi et al.'s (2006) results suggests that dominant local values of embracing collaboration significantly facilitated organisational members using KM tools for more informal and unstructured sharing of tacit knowledge, engendering easy infusion of new members into the organisation. Another research undertaken by Hoffman and Klepper (2000) adopts the Goffee and Jones (1996) OC framework to provide insights on how managers could determine if their OC is high or low on the sociability and solidarity dimensions as proposed in Goffee and Jones's (1996) model. Hoffman and Klepper (2000) argue that these dimensions are vital for mitigating organisational issues that could hinder the assimilation of a new IT system. They elaborate by suggesting that organisations low in sociability and high in solidarity (mercenary cultures) are likely to have more successful assimilation of technology than an organisation high in sociability and low solidarity (networked cultures). A different example that has also taken the value-base perspective of OC in the study of IS implementations is the exploratory work of Livari and Huisman (2007). Their study develops hypotheses and a research model to analyse the relationship between organisational culture and the deployment of systems-development methodologies. They have surveyed a group of IS developers and IT managers on their perceptions of the support, use, and impact of systems development methodologies. The major findings from their study are that IS developers' deployment of methodologies is largely linked to a hierarchical cultural value that is oriented toward security, order, and routinization. IT managers' critical attitudes of the deployment of methodologies in organisations was influenced by values such as productivity, efficiency, and goal achievement, i.e. strong rational culture, are also significant findings from the study. Finally, other studies (Cabrera et al., 2001 and El Sawy, 1985) echo related findings how OC impacts diffusion of IT system. All of these examples suggest that culture at the organisational level is

delicate and has a strong influence on how organisations may cope and adapt to organisational issues that may emerge during the implementation and diffusion of a particular IT system. It can be suggested that the aforementioned studies have assumed in their work that culture in the organisation is uniform and consistent culture across all sub-units, following Schein's (1985) conceptualisation of OC. These studies have assumed that OC is homogenous within and across all subgroups, i.e. integration perspective, and does not specifically address the likelihood for competing culture, conflicts and opposing IT outcomes that may occur among organisational subgroups. They have assumed that organisations would always have the same perceptions of the implemented IT systems, so that every stakeholder involved in the diffusion of IT systems would have homogeneous norms and behaviours toward the system. However, the implementation process of an IT system can be dynamic, radical and can shock like in the organisation implementing it, thus affecting the normal managerial and administrative processes (Thong, 1999), especially in an organisation that is not familiar with the use of a sophisticated IT system. Similarly, the organisation implementing the technology is a social entity comprised of dynamic and complex characters, manifesting multiple and conflicting interpretations while attempting to make sense of their environment. This argument has caused many IS scholars to interpret the dynamics of IS diffusion as a political process, where the order and the course of IT implementation activities are shaped by the conflicting interests of different user groups in organisations, creating user resistance to the organisational change of implementing IT systems.

For instance, Wagner and Newell (2011) explain user resistance to IT implementation which is mainly due conflict among users for increased power, highlighting the political play that occurs during implementing a system that spans across multiple organisational subgroups.

Therefore, the different subgroups may interpret the use of an IT system differently because of their different assumptions and practices. For example, some member may perceive the use of an IT system to be a radical change to the way he or she normally undertakes organisational work (Thong, 1999). Some members, however, may perceive it as enhancing the organisation's dedication to the use of the system and others may perceive the use of the IS as just a slight change they must undertake as part of their daily tasks. This highlights that in most cases, the failure of an IT system to be fully diffused in an organisation may not be due to any inadequacy of the physical devices but rather to conflict, lack of acceptance and user participation within the organisation attempting to implement an IT system. The studies that have looked at IS diffusion and OC by assuming that OC is uniform across the organisation may yet be wrong or incomplete as they would be missing the fact organisational stakeholders – Technologists, Users and Management, involved in IT implementations and diffusion are likely to manifest different behaviour during the interaction and use of a complex and sophisticated IT system. It is important that the different stakeholders' behaviour towards an implemented IT are captured and understood. This will enable us better understand the cognitive process of the various stakeholders that are involved in IT development, implementation and use. This point is further buttressed by Blacker (1995) by arguing that humans will behave differently to responsibilities and have different relationships with their organisation based on the demands from the job, their orientations, methods and perspectives. Humans make sense of their job roles by the boundaries that exist in the organisation; these boundaries that exist in an organisation highlight the subcultures that may be observed in the organisation. Therefore, the difficulty in understanding the diffusion process of IT in organisations may be due to the existence of subgroups and subcultures leading to different and multiple interpretations of an IT system. These arguments

highlight an appropriate justification why studies on IS diffusion and culture should also consider impact of culture on IS diffusion at the subgroup and not just at the organisational level.

2.4.2 Subculture and IS Diffusion

Robey and Boudreau (1999) highlight in their paper that conflicts due to opposing sets of values between organisational subgroups occur when implementing IT systems. Therefore, affecting the ability of systems to be fully assimilated/diffused into the organisation's settings. These arguments have led to a different stream of research to study organisation diffusion of IT systems at the subgroup level, highlighting inconsistencies and ambiguities across subgroup levels during IT diffusion processes. This stream of research on culture and IS diffusion has been largely adopted by Martin's (1992) other conceptualisation of OC, i.e. differentiation and fragmentation perspectives. For example, Huang et al. (2003), have used Martin's (1992) differentiation perspective in their study to get a richer understanding of the impact of culture on the adoption, use and diffusion of an IT system. Their research involved a case study that explored the relationship between organisation subculture inconsistencies and the diffusion of component-based software development methods. They pointed out from their results that conflicting values among subcultures hindered the information sharing and cooperation needed to integrate effectively the technology into the organisational settings. In another study, Von Meier (1999) presented a study that examined work-group subcultures that manifested along lines of occupational differentiation during the implementation process of technological innovations. Also, Von Meier (1999) pointed out two different occupational subcultures, i.e. engineers and operators in an electric power distribution firm had different cultural interpretations of technological innovations. This engendered between the groups

conflict and resistance to the implementation process. Unlike the two different examples highlighting the negative effect of subcultures on the diffusion of IT system, Robbins (2000) presents a positive implication of subcultures on IT outcomes. She discovered that the effective integration of two work-group subcultures (information services and instructional technology subgroup cultures) in a secondary school district facilitated performance outcomes that were beneficial in achieving IT implementation success. This positive interactions of the two work groups is what Martin (1992) characterised as subcultures reinforced into each other. More recent research has adopted the three perspectives of OC in their studies of IT adoptions and implementations. In the first, Rivard et al. (2011) adopts Martin's (1992) three perspectives of OC to investigate at the organisational and group levels, the antecedents of implementing Clinical Information Systems (CIS). They adopted an analytic induction approach to develop theoretical propositions based on the three perspectives of OC and utilised data from three hospitals that implemented CIS. They found out four values - quality of care and efficiency of clinical practices (integration perspective analysis), professional status/autonomy and medical dominance (differentiation perspective analysis), played vital roles in CIS implementation in hospitals. The analysis of their results from the fragmentation perspective reveals that hospital stakeholders occasionally had ambiguous understandings of either some CIS characteristics and/or implementation practices in terms of their consistency with the existing four central values. A second study that has also adopted the three perspectives of OC to investigate the adoption and implementations of an IT is the work of Jackson (2011). He adopted the three perspectives of OC to investigate the adoption and implementations of virtual learning environment (VLE) in a further and higher education establishment in the UK. His findings suggests the organisation failed in their attempt to implement the VLE due to the conflicts, inconsistencies and ambiguities that

arose during the implementation process.

From the above review on literature of culture and IS implementation/diffusion, this highlights that it is vital that research on IT implementations, use and outcomes should be considered both at the organisational and subgroup levels. The study of IS diffusion at the organisational and subgroup levels is vital because contemporary IT deployed in organisations is intra-organisational in nature and spans boundaries of the organisation (Newell et al., 2001). More importantly, IS researchers have highlighted the specifics of subcultures in organisations to help give a better understanding of the role of OC in the implementation and managing of IS in organisations. Therefore, adopting an organisational and subgroup level analysis for the investigation of IT diffusion is vital, because an IT system could acquire different meanings among the different groups in an organisation considering that deployed IT systems are intra-organisation in nature due to the interconnectivity of tasks experienced in organisations. Robey and Azevedo (1994) argued that the conflicting outcomes should be expected rather than seen as an anomaly in the use of an adopted IS in different subgroups of an organisation. McMaster and Wastell (2005) argue that there should be an effective relationship between users and IS/IT administrators/management considering the former see the later as colonialists wanting to impose their will. These examples further provide useful insight on the importance of practice (culture) of an organisation to the diffusion of technological innovations.

Subculture studies in relations to IS diffusion also resonates the idea that organisations consist of groups or multi-levels (strategic, tactical and operational), which are nested into each other. Therefore, different stakeholders are involved in the implementation of IT

systems across organisational groups/levels for the effective deployment of corporate strategies (Newell et al., 2001). The different stakeholders in an organisation are bound to have different interpretations to the rationales for implementing an IT system, which normally manifests in conflicts and IT resistance. A stakeholder – senior management (SM) might see the need to implement IT systems differently from staff members. SM might consider the organisational need to implement an IT system to bring about improvements in traditional ways of practices and ideas (e.g. data processing, distribution, and services). Members who are majority of the users of the technology would perceive the introduction of the technology as offered in a forceful manner, putting them under pressure to change their work habits and routines. This argument is similar to what McMaster and Wastell (2005) called the implicit diffusionist mind-set of innovation process, i.e. innovation that is characteristically seen as a process of importing a technology from outside without necessarily considering the context of where the system would be implemented. This scenario would create amongst subgroup members an atmosphere of anxieties and uncertainties due to resulting changes in their work procedures via the introduction of the new IS innovation. The different stakeholder perceptions on why an IT system is adopted would cause internal conflicts during the implementation process. This would normally lead to members resisting the IT system, which is well documented in the literature on IT usage and diffusion.

For instance, Boudreau and Robey (2005) point out in their research that organisational members came up with ways that were not acceptable to circumvent using an ERP system. This kind of improvisation frequently results in clashes and conflicts with SM that have implemented the system. This leads, to the failure of the implemented IT, because contemporary IT systems like ERP are normally implemented in tandem with business

processes and members are expected to adapt to the new organisational procedures recommended by the systems (Liang and Xue, 2004). In a different study, Bartis and Mitev (2008) found that different stakeholders with different subcultures attributed different meanings to the implementation of a system. User groups felt the IT group and SM did not clearly specify the new IT-enabled business process and that their work practices were not taken into account. These differences in interpretations of the implementation process did not result in users rejecting the use of the system outright, because the majority could not bypass it, but members did not engage with the system in a sufficient and comprehensive manner to facilitate organisational productivities. However, there was overall narrative in the organisation that the implementation was a success. The true reflection was that the IT implementation failed because, despite the organisation's impression that the system was used, it was not used in way that could achieve organisational goals. This nature of use of the system highlights a form of IT resistance that would stop or slow down the IT implementation process and cause implementation failures (Ravishankar et al., 2011; Wagner and Newell, 2004). These examples of IT resistance highlight a negative impact on IS diffusion.

The aforementioned reviewed has empirically examined the role of subcultures in relation to IS implementation/diffusion and makes us appreciate that members will not just have consensus or agreement in the use of an IS but they may also experience inevitable tensions, conflicts and ambiguities in the use of the technological innovation. Therefore, adopting the subculture perspective will facilitate the capture of complexities rather than exclude them, as found in research that adopts a singular perspective of OC, i.e. integration. The studies of IS diffusion from the subculture perspective help give a better understanding of the role of OC

in the implementation and managing of IS in organisations, because it highlights that different subgroups have their own values, behaviours and practices (Martin, 1992). The subculture perspective facilitates an understanding of how cultural values predict whether a group will adopt an IS and an understanding of the dynamics of the implementation process. In summary, as the review above demonstrates, the struggle to understand the diffusion process of IS in organisations may be due to the rational and political negotiations that occur among intra-organisational groups and their alliances in relation to the use of a new IS. The subculture perspectives still remain under-applied in IS research (Leidner and Kayworth, 2006). Only a small number of IS studies have considered the subcultural perspective in their research (e.g. Huang et al., 2003; Ravishankar et al., 2011 and Rivard et al., 2011, Jackson 2011). In particular, the work of Ravishankar et al. (2011) highlight that three different subcultures - enhancing, countercultural, and chameleon were vital in the alignment of an implemented knowledge management system (KMS) with organisational strategy. The enhancing subculture highlights a subgroup that had maintained a strong empathy with the strategic initiatives advocated by the senior management. The countercultural subgroup posed as an obstruction to the SM initiative to align the implemented KMS with organisational strategy. More interesting from this case was the chameleon subculture. This subgroup was able to adapt to the subculture of the unit it was assigned to, i.e. change its subculture to integrate into different subcultures. Despite these results, fewer studies have considered the subcultural perspectives in relation to IS diffusion (e.g. Huang et al., 2003; Rivard et al., 2011). Therefore, the differentiation perspective together with the integration perspective will be adopted as theoretical lenses to explore the diffusion process of the MIS. It was envisaged that by taking this approach, it would be possible to capture the complexity of the unifying elements, inevitable tensions and conflicts leading to IT resistance during the diffusion cycle

of an IT system. This will help understand the complexity and multi-dimensionality of behavioural actions that influence organisational diffusion of an IT system. Also, it will facilitate the generation of 'concise and coherent' insights to the nature of IS diffusion in organisations. These perspectives would be valuable for describing the complexity staff face in the daily use of a contemporary sophisticated IT system.

Meanwhile, none of the above IS-Cultures studies have explored ways in which the different subgroups' interpretations and behaviours could be aligned to positive behaviours towards an implemented IT system. It is likely that intra-organisational alliances across different groups or units in an organisation need to work in alignment to achieve the overall objectives of an organisation. Due to the effects of subcultures generating cultural forces that cause opposition and stalemate to IS diffusion, an organisation might consider controlling and aligning the different interests inhibiting it reaping the benefits of its IT investment. The integration of diverging organisational subcultures is vital in IT implementations (Kirsch 1996, 1997, 2004), and vital for successful organisational diffusion of IT systems. Thus, Senior Management (SM) may have to establish policies to mandate and control members towards the engagement and use an IT system (Xue et al., 2011).

Considering the social processual nature of IS implementation/diffusion, an alternative theory that could serve as a theoretical lens to study of IS diffusion is the Actor-network theory (ANT).

2.4.3 Actor-Network Theory

The Actor-Network Theory (ANT) is a philosophical view developed by Callon and Latour (1981). This philosophical view suggests that humans and non-humans (actors) in

associations with varying degrees of stability (network) enables or engenders others to act (Latour 1992). The ANT is different from other theories e.g. culture or control, because it classifies humans together with non-humans (e.g. IS artifacts, machines) and groups (e.g. institutions, organisations, subdivisions) as actors that could effect change (Hanseth et al, 2004; Whittle and Spicer, 2008). Therefore, the ANT may be useful to study a temporal change-process such as organisational diffusion of an IS, considering technology is part of the overall pattern of the temporal change process (McMaster and Wastell, 2005). The ANT has been adopted in a number of IS studies (e.g. Bob-Jones et al 2008, Bonner 2013, Sarker et al 2006, Scott and Wagner 2003). Scott and Wagner (2003) study used ANT to show how negotiations and trial outcomes served as strengths for the implementation of an Enterprise Resource Planning system. Also, Sarker et al (2006) adopted the ANT to study the failure of a business process change (BPC) project undertaken at a company in the US telecommunications industry. Sarker et al's (2006) case study research used the ANT concept to highlight the creation, gradual expansion, and collapse of the actor-networks in their case site. They further proposed an ANT-based model to describe and explain the sociotechnical features that led to the failure of the BPC. This failure was largely due to constant changes in the relationships between the actors. In turn, this led to a communication breakdown between the actors. More importantly, was the failure of the main actor during post enrolment stage of the BPC, to monitor the actor-network to ensure that dysfunctional actors, due to the changes in the surrounding network, could be re-convinced and re-enrolled. This highlights that the instability of the actor-network was the non-alignment of actors' interests. Therefore, there is a need to shape all interests i.e. human and non-human for the achievement of a stable network where all actors will remain faithful to the network (Whittle and Spicer, 2008). Thus, this brings us back to the control theory as a theoretical lens capable of explaining how

different stakeholders with dissimilar interests during the undertaking of a temporal change process such as IS diffusion could be aligned to a singular interest.

IS research has drawn from Jaworski's (1988), Ouchi's (1979) studies of control in organisations, to highlight how control mechanisms bridge and align the goals of different stakeholders involved with IS projects (e.g. Kirsch 1996, 1997, 2004). Similarly, control mechanisms may be applied to ensure how differing subgroups involved in IT implementations are aligned, consequently this may provide valuable insights to the role of control to achieve successful organisational diffusion of IT systems. The next section will discuss how Senior Management (SM) interventions in the form of organisational controls may shape the subcultures that exist in an organisation to a more integrative culture to satisfy the organisation's requirement to manage problems of external adaption and internal integration of processes such as the implementation of a complex IT system.

2.5 Organisational Controls and IS Diffusion

Organisational policies, rules and guidelines influence members to produce needed patterns of behaviour (Schein, 1992). But Zmud (1982) argues that formalisation, such as clear work guidelines, well-documented procedures and policies when applied to facilitate use of technological innovations has a negative effect on the earlier stages of IS diffusion, i.e. initiation and adoption stages of the diffusion process due to the political dialogues that occur at this stages. This view has made IS practitioners baulk at the idea of applying strict policies and guidelines in the implementation of IT innovations, especially at later stages such as IS acceptance, IS routinization and IS infusion. However, Grover and Goslar (1993) in their

review of Moch and Morse's (1977) work, argue that formalisations have a positive impact on the implementation process. It can be argued that formalisations in the form of a clear plan of work, well-documented policies and guidelines are manifestations of organisational controls.

Weber (1947) defines control as a practice where hierarchical authorities create and monitor rules in order to regulate and restrict members' patterns of interaction with organisational processes. Similarly, Flamholtz et al. (1985) define organisational control as an organisation's effort to increase the probability that members will behave in ways that could lead to achievement of organisational aims and objectives. These aforementioned studies highlight a form of control that is behavioural in nature as the control mechanisms applied are to enforce members to act in particular ways. The research on control also highlights another control mode apart from behavioural control, i.e., outcome control as described in Eisenhardt (1985), Jaworiski (1998) and Ouchi (1979). They specify that the behaviour and outcome control modes are applied as formal control mechanisms not just to instruct and monitor members' behaviour but also to test and evaluate required outputs produced by members in relation to a defined goal structure. The literature on control also suggests that control modes could be informal which rely on self and clan control mechanisms that ensure that members adhere strictly to prescribed processes to achieve performance standards (Ouchi, 1979). The control literature highlights how control mechanisms could be deployed formally or informally to improve the relationship between team members' actions and team performance in relation to IS. Therefore, an organisation may deploy formal and informal control mechanisms to better align the different IT usage behaviours

2.5.1 Formal Control Modes and Mechanisms

Formal controls are control modes that allow controllers such as managers to use mechanisms in a formal documented approach - company policies, guidelines rules and procedures to influence members' behaviour to achieve desired behaviour or outcomes (Eisenhardt, 1985; Kirsch, 2004). Two types of formal controls have been commonly identified in existing literature – behaviour and outcome controls. In behaviour control, the controller explicitly specifies to the controllee, rules and procedures that are to be followed in order to achieve desired tasks. Controllers seek to influence controllees' methods of achieving the set tasks by observing and monitoring their behaviour while controllees undertake the tasks. Ouchi (1979) posits that controllers are only able to exercise the behaviour control mechanisms when there is a full knowledge of the transformation process. Kirsch's (1996), views formal control in a behavioural sense. She documented how an IS development manager applied behaviour control to ensure that the required functionality was built into the system by an IS project manager during the development of a complex IT system. The IS development manager used behavioural control mechanisms such as meeting regularly with the IS project manager to monitor the appropriateness of the IS project manager's efforts and processes and to redirect work as necessary. Henderson and Lee (1992) investigated how a range of behaviour control mechanisms affected the performance of an IS design team. They pointed out that project managers who served as controllers exercised behaviour control mechanisms, such as codified standards, procedures, and practices on team members (controllees) to achieve performance during system-design tasks such as requirements elicitation, programming and documentation for the development of software projects. It can be argued that the application of the behaviour controls during IT projects is dependent on the clarity in the context where the controls are applied, i.e. whether both controllers and controllees are clearly aware of the

information, procedure and methods required to get tasks done. Nidumolo and Subramani (2004) argue that when environmental uncertainty in regard to technological requirements and other critical aspects of software development are high there could be ambiguity in information about methods that should be used to develop software projects, affecting the programmability of desirable organisational behaviours. Hence, organisational attempts to pre-programme behaviours in an ambiguous environment are likely to be counterproductive and unachievable because knowledge of precise behaviours and processes that will transform inputs into outputs are low and not clear (Eisenhardt, 1985; Ouchi, 1979). Therefore, control mechanisms that may be applicable in such contexts are controls that rely on mechanisms that can possibly effect an organisation's desired result by specifying performance criteria without necessarily being concerned with the process, i.e. outcome controls.

Kirsch (1996) argues that the exercising of examples of outcome controls are easier to implement compared to the behaviour controls, especially when there are high uncertainties in processes and methods required for tasks specifications. In outcome control, the controller defines specific desired task outputs, sets appropriate targets and permits controllees to choose how they meet the output targets. The controller normally evaluates performance of the controllee by examining the degree to which targets set are met, but unlike in behaviour controls, do not necessarily monitor the processes used to achieve the targets. Eisenhardt (1985) argues that the application of outcome controls would be dependent on whether desired outcome of tasks are measurable. Also, Kirsch (1997) suggests that outcome controls can only be effective if task specifications and task outcomes can be measurable against set standards. An example of outcome control was highlighted by Kirsch et al. (2002), who reported that clients used outcome control mechanisms such as scheduling and specification

of deliverables to specify to project leaders how to achieve systems developments but also permitted them to choose how they completed the IT project. Henderson and Lee (1992) pointed out from their study that project managers' strong control of outcomes in software projects was important and resulted in more efficient execution of software projects. Choudhury and Sabherwal (2003) also showed that client personnel testing of software deployed by a vendor served as an outcome control mechanism that help controllers measure controllees' performance against specified outcomes of an IS project.

As in the deployment of behaviour controls, to deploy outcome controls there is a need for a high level of standardisation of performance criteria to allow the evaluation of task outcomes. Nidumolu and Sabherwal (2004) argue that standardisation in contexts of outcome control required for the achievement of software development tasks is reflected in the greater use of uniform metrics to assess outcomes and in benchmarks for evaluating software development performances, such as the number of defects per line of code in the final outcome of the project. However, Orlikowski and Baroudi (1991) takes a critical view of the deployment of universal standardised development approaches as forms of outcome control mechanisms. She argues that the approach assumes a one-size-fits-all approach that overlooks the existence of contextual differences that can affect outcomes of IS projects. Unlike the behaviour controls, it is clear that outcome controls are used when controllers can evaluate outcomes to determine if controllees produce the required outputs, irrespective of the process or behaviours followed. Despite the difference in behaviour and outcome controls, these types of controls share a common essential assumption that the controllers at a higher level need to apply deliberate and forceful measures to influence controllees' behaviours at a lower level (Chua et al., 2012; Henderson and Lee, 1992; Kirsch, 2004). Nonetheless, providing

appropriate incentives in the form of a reward/sanction system could align the contrasting goals between the controllers and the controllees. For example, Kirsch (2004), who examined the dynamics of controls during the different phases of executing IT projects, highlighted that reward/sanction mechanisms were utilised by both IS and business stakeholders to ensure the successful installation of an open system and business process changes. In short, formal control mechanisms have been applied in IS research to understand how desired behaviours and outcomes in relation to IT projects can be measured, evaluated and achieved. The literature suggests controllers apply formal control modes in an intentional and forceful manner on controllees to align contrasting organisational objectives (Kirsch et al., 2002).

2.5.2 Informal Control Modes and Mechanisms

Informal controls are modes where the controller relies on social or norm-emphasising strategies to ensure set objectives are met by the controllee (Choudhury and Sabherwal, 2003; Kirsch 1997). Informal controls are of two types - self- and clan-controls (Choudhury and Sabherwal, 2003; Kirsch, 1997). Self-control is an example of an informal control mode which refers to a relational form of control that does not require any form of formal control by the controller, but is based on a controllee's driven measures that are in align with the controller's goals and objectives (Jaworski, 1988; Kirsch, 1997). Choudhury and Sabherwal (2003) highlight that in the exercising of self-controls, the controllee adopts mechanisms such as establishing standards for his or her own behaviour, establishing a timetable for project milestones and monitoring progress against milestones. In other words, the mechanisms the controllers exercise in the formal controls are also adopted and applied by the controllee of his own volition. Henderson and Lee (1992) highlighted that when controllers (project

managers) find it difficult to measure whether controllees (IS managers/users) achieve specific targets, they encourage controllees (IS managers/users) to use self-control.

Kirsch (1996) suggests that when multiple stakeholders (project managers, IS managers and users) are involved in the development of an MIS, the application of self-controls can be beneficial to the project. She highlights how IS managers are more likely to induce self-control than IT users, because the former have more experience of managing ISD projects, unlike the users who are less familiar with such IT activities. The key idea underpinning self-control is that group members take the required initiative to motivate themselves to perform required tasks or employ alternative work procedures to ensure the achievement of organisational goals. It could be argued that members exercise self-control mechanisms because they have the intrinsic motivations to show freedom and self-sufficiency in their work processes. This group of members would have confidence in their abilities and understanding of their work processes.

Clan control indicates a form of control that is applied in a scenario where a group of people are dependent on others based on their shared common goals (Ouchi, 1979). Like self-controls, Ouchi (1979) argues that clan control will be suitable when there is an identification of acceptable behaviours via shared experiences and rituals, and project outcomes are difficult to measure. Thus, there may be a need to choose members carefully with suitable professional training, socialise them to the aims and values of a clan. The clan control mechanisms tend to lessen the potential differences between the controller's and controllee's goals by transmitting an integrative culture among the controllees, so they can all have the same beliefs, values and the same behaviour (Choudhury and Sabherwal, 2003; Kirsch, 1997).

Choudhury and Sabherwal (2003) highlight, in their study of outsourced information systems development (ISD) projects, the positive impact relying on clan control mechanisms, such as common cultural beliefs among user groups and self-managed individuals on the development process of IS projects. They suggested that a typical buyer-vendor relationship was transformed into a clan-like scenario when clients and vendors involved in projects arranged their contract so that each would be able to use the developed system to present their individual technologies.

Research on the informal control observes how interactions among group members and self-motivated individuals have had a positive effect in achieving project goals (e.g. Chua et al., 2012; Kirsch, 2004). However the literature also highlights that the portfolio of informal controls may be difficult to enact because of the differences between various stakeholders, while collectively attempting to undertake a complex IT project (Newell et al., 2004). This is usually evident if the adopting organisation may be classified as “late adopters” of technological innovations (Thong, 1999). This kind of organisation, usually embarking on complex IS innovation for the first time, would have little technological sophistication to undertake complex IT implementations, thus inhibiting the abilities of the different stakeholders to work as clans or have the intrinsic motivations to undertake the implementation of a complex IT system. Also, as noted by Kirsch (1997) and Jaworski (1988), project size also affects the choice of control modes. They point out that formal control modes could be more appropriate for larger projects while the informal control modes are more suited to smaller projects. Theory would suggest that senior management executing such IT projects are more likely to use formal control mechanisms rather than informal control modes.

2.5.3 Role of Rewards and Sanctions in Control

It can be argued that to achieve the objectives of any form of deployed control mechanisms it must be associated with a reward and sanction system. A reward and sanction system is put in place to ensure that controllees follow the laid-down behaviours or meet the goals set by the controllers. In other words, members do not take anything for granted but adhere to the implemented policies and procedures set by the organisation. To ensure controllee compliance, there is a clear explicit link between the reward and sanction system to the formal modes of controls – behaviour and outcome, while the informal controls – self and clan are associated with rewards and sanctions in an implicit context (Eisenhardt, 1985; Kirsch, 2002). In self-control, reward is not bestowed on the individual by any formal controller (Kirsch, 1996), but is linked to the psychological feelings of satisfaction and well-being. Rewards and sanctions in clan control are based on whether the controllee has acted according to values, norms, and objectives of the group (Kirsch et al., 2002). However, some academics argue that rewards and sanctions in organisational control are implicit (Choudhury and Sabherwal, 2003; Eisenhardt, 1985). Consequently they do not focus on the reward and sanction element of organisational control but only on the measurement and evaluation of organisational controls. This study takes a broader perspective by including the role of rewards and sanctions on the various deployed control modes in the bank, but more importantly how it impacts on the diffusion process of the MIS. This was achieved by directly asking informants questions about existing rewards and sanctions designed by the bank to ensure the compliance to the use of the MAXIM system.

2.6 Research Gaps and Conceptual Framework

The first gap identified from the review of extant literature concerns the insufficient understanding of how cultural and subcultural dynamics influence the IS diffusion process. There is also relatively scarce research on how and why formal controls may influence the organisational diffusion of an IT system. The literature review on control and IS highlights that existing studies pay attention to a single stage of the diffusion process, i.e. IT design, IT development, or executing IT projects. As diffusion progresses from the acceptance stage to the routinization stage, and finally to the infusion stage, it is expected that the organisational members' degree of interaction with an IT system would increase. However, there could also be an increase in IT resistance due to members' differences, conflicts and power struggles when they interact with the IT system. Therefore, examining the influence of formal controls on the post-adoption process of an IT system may be beneficial. This underscores the importance of studying the application of formal control by senior managers to ensure members' compliance with the engagement and use of complex IT systems. In other words, this control perspective could enhance our understanding of how organisations could overcome the effects of subcultures which are clearly vital for achieving IS diffusion.

The second gap pertains to a lack of knowledge of the effect of exercised controls on the diffusion of an IT system. Addressing this gap could provide fresh empirical insights into IS diffusion patterns, which are often described as logically sequential and linear (Cooper and Zmud, 1990; Rothwell, 1994).

The third gap relates to the question of rewards/sanctions and control mechanisms. There is a limited understanding of the implication of applying sanctions but not rewards in the implementations of controls during the IT diffusion process.

This thesis addresses these gaps by investigating the organisational diffusion of a Management Information Systems (MIS) in the Nigerian operations of a global bank, by adopting the twin perspectives of culture and control. In the main this thesis aims to answer three research questions:

1. How do subcultural elements influence the organisational diffusion of an MIS?
2. How and why are formal control mechanisms applied during the organisational diffusion of an MIS?
3. How do formal control mechanisms align conflicting cultures to achieve organisational diffusion of an MIS?

Drawing on Cooper and Zmud's (1990) IT implementation model, this thesis proposes a conceptual framework to better explain the role of organisational culture and organisational control in the diffusion of an IT system (see Figure 2-2). The framework reflects the broad focus of the study that helps guide the empirical research required to answer the study's research questions. The proposed framework draws directly on the review of literature presented in the preceding sections of the chapter. The study of IS diffusion from the twin perspectives organisational culture and organisational control serve as boundaries for the proposed framework.

Martin's (1992) concept of organisational culture – integration, differentiation and fragmentation is particularly suited for the study of the organisational diffusion of IT systems. The integration perspective shows organisational members' behaviours may reflect a consensus in accepting or resisting the use of an IT system. The differentiation perspective shows organisational members behaviours may reflect conflict among different member groups, i.e. subcultures or countercultures, in the use of a system. And finally, the fragmentation perspective shows cultural members manifesting ambiguities during the implementation of an IT system. These three different perspective of OC has the potential to offer a balanced, novel and nuanced perspective of cultural elements at play in the stages of an IT diffusion. The conceptualisation of the organisational control theory is drawn from work of Kirsch (1997) and Ouchi (1979) i.e. formal and informal controls.

Following Rivard et al.'s (2011) work, the framework (see Figure 2-2) delineates the boundaries of these lenses while excluding other external factors (organisation's trading partners and industry support) that may play roles in the diffusion process. These aforementioned factors are not the focus of the thesis.

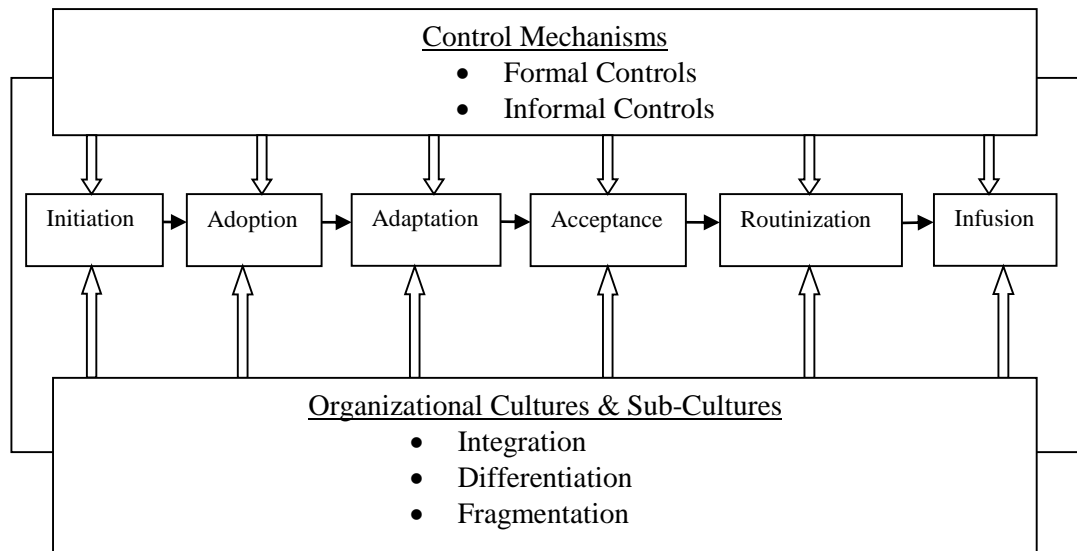


Figure 2-2: Proposed Conceptual framework

This initial framework developed from literature will be examined using empirical data in the following sections. Upon the presentation of the proposed conceptual framework for the study, the next section provides concluding remarks on the literature review chapter and discusses the identified gaps in the literature.

2.7 Summary of Literature Review and Gaps in Literature

This chapter reviewed and synthesised the literature on organisational culture, organisational control and IS diffusion. The first stage of the review revealed that there are a number of studies on IS diffusion in relation to culture at the organisational level but a relatively fewer studies at the sub-organisational or subcultural level. The second stage of the review highlights that there are also significant amounts of studies that have applied the control concept to investigating phenomena related to IS diffusion, e.g. IT adoptions and IT implementations, but very few have explicitly applied the control concept to IT implementations outcomes, i.e. IT diffusion. The review also suggested that there is scarce

empirical research on IS diffusion from the twin perspectives of culture and control. Thereby, the literature review identified three gaps, presented the thesis's research questions and conceptual framework.

The next chapter is the research methodology chapter, which details the research design and methods adopted in this thesis.

Chapter 3 Research Methodology

3.1 Introduction

The aim of this chapter is to discuss the overall research methodology adopted for this thesis. The thesis adopts the qualitative research methods to study the phenomenon -organisational diffusion of IT from the twin perspectives of culture and control. The specific research method employed is the case study research, and the interpretive epistemology that is the underlying philosophical assumption that guided the research design. The chapter is organised into five sections. The first section discusses the philosophical perspectives, i.e. epistemological assumptions that can inform empirical research. The second section describes the qualitative research methods. In the third section is the presentation of the research design and methods employed to undertake the study. The fourth section concludes the chapter by discussing the methods adopted to analyse the collected data. The final section highlights the steps and tactics to address ethical issues.

3.2 Philosophical Perspectives

To undertake empirical social research (e.g. quantitative or qualitative), some underlying assumptions about what constitutes valid research and which research methods are appropriate must be considered (Myers, 1997). The philosophical assumptions considered for this study are related to the underlying epistemology that guides research. Epistemology considerations are important for how knowledge would be created (Hirschheim, 1992). The rationale for undertaking research is to create and contribute to academic knowledge; the type and kind of data to be collected for research will depend on assumptions about knowledge and how it can be generated (Bryman and Bell, 2007; Hirschheim, 1992). Orlikowski and

Baroudi's (1999) work undertook a comprehensive review of research assumptions and methods in IS research and followed Chua's (1986) classification of research epistemologies as positivist, interpretive, and critical paradigms. These epistemological paradigms are the underlying assumptions for undertaking qualitative research (Myers, 1997). There are also other conceptualisations of underlying paradigms for qualitative research as noted by Guba and Lincoln (1994) – positivism, post-positivism, critical theory, and constructivism. The difference in the conceptualisations of epistemological paradigms relates to how they are applied in social practice but with distinctions that are not always so clear and certain (Lee, 1989; Myers, 1997). Revising and re-labelling the different perspectives of epistemological paradigms is beyond the scope of this thesis. Thus, the aim is to establish a philosophical perspective that underlies the thesis's research design and how it helps answer the research questions. In discussing the epistemological paradigms used to guide research design, Chua's (1986) three-fold classification of research epistemologies - positivist, interpretive, and critical paradigms is adopted. This is suitable as evident in the review work of Orlikowski and Baroudi (1999). Chua's (1986) three-fold classifications is the most commonly adopted research philosophy and methods in IS research. Nonetheless, this thesis also considers the "scientific realism" or "soft positivism paradigm", a new and emerging paradigm that is joining the research philosophy and epistemology debate (Kirsch, 2004; Madill et al., 2000).

3.2.1 Positivist Research

The positivist research approach maintains that the study of social reality is objectively measured (Myers, 1997) and our assumptions of knowledge of reality are via methods of natural science (Chua, 1986; Lee, 1991). The positivist methods of inquiry adopt principles of measuring properties that are independent of the researcher and his or her instruments (Myers,

1997) and perform hypothetic-deductive accounts of scientific explanation of a phenomenon from a sample to a stated population (Myers, 1997; Nandhakumar and Jones, 1997; Orlikowski and Baroudi, 1991).

It is fair to say that the majority of research in the IS discipline is based on the positivist perspectives (Mingers, 2003), i.e. the use of quantitative methods to propose quantifiable measures of variables and development of hypotheses to test theories. Nonetheless, this trend is gradually shifting with many IS studies adopting the other epistemological paradigms. The positivist approach has also been adopted in qualitative research (Benbasat et al., 1987; Yin, 2003). Scholars have questioned whether the use of a positivist approach within social sciences can actually produce objective and reliable knowledge (e.g. Danziger, 1990; Sherrard, 1998), with suggestions that the interpretive approach and qualitative methods may be better suited and relevant in investigating knowledge in the social science field (Rennie, 1995).

3.2.2 Interpretive Research

The interpretive paradigm maintains that the creations of reality/knowledge are only via social constructions such as language, consciousness and shared meanings. This is unlike the positivist paradigm that is based on the notion that reality is objectively determined (Orlikowski and Baroudi, 1991). The interpretive research is based and shaped by the hermeneutics and phenomenology disciplines (Boland, 1985). The hermeneutics discipline refers to the theory and practice of reading and interpreting written texts (Lee, 1999), while the phenomenology discipline draws on the philosophical foundations of subjective

experience and human consciousness to understand and interpret reality – humans actions and events (Bryman, 2001).

According to Orlikowski and Baroudi (1991), qualitative studies that adopt the interpretive approach must follow three broad criteria. First, assume a nondeterministic perspective, where the intent of the research is to increase understanding of the investigated phenomenon within cultural and contextual situations. Second, the interested phenomenon is studied in its natural setting and from the perspective of the participants. Finally, researchers do not impose their outsiders' a priori understanding on the situation. These criteria suggests that unlike the positivist perspective, the interpretive research does not have predefined independent and dependent variables that are imposed into the social settings for the testing of theories, in order to make sense of the complex realities of human beings and their processes (Kaplan and Maxwell, 1994).

The interpretive research method is becoming popular in the IS discipline (Mingers, 2003). Walsham (2006) suggest that the interpretivist research method can make a valuable contribution to both IS theory and practice if the method is carried out and written up carefully. This is a view previously highlighted by Orlikowski and Boroudi (1991). The application of the interpretive perspective in the IS discipline facilitates the “understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context” (Walsham, 1993, p. 4-5). However, the interpretive research has been open to much scrutiny, and the credibility of its findings has been criticised due to the fact that created knowledge via this approach is dependent more on the researcher's authority (Madill et al., 2000).

3.2.3 Critical Research

Critical studies assume that social reality is historically constituted and people produce and reproduce social reality due to their conscious actions to change their social and economic circumstances, despite constraints in form of social, cultural and political dominations (Myers, 1997). Critical researchers attempt to evaluate and criticise the status quo, through the exposure of what are believed to be deep-seated, structural contradictions within social systems, so as to transform the social reality under investigation (Lyytinen and Klein, 1985; Orlikowski and Baroudi, 1991). The main aim of the critical approach is to highlight oppositions, conflicts and contradictions in contemporary society, and seek to eliminate the causes of alienation and domination, i.e. achieve emancipation (Myers, 1997). The critical approach has been applied in IS qualitative research (Ngwenyama and Lee, 1997; Hirschheim and Klien, 1994). As argued by Lee (1999), critical researchers are not just onlookers but influence and are influenced by the social and technological systems they are studying. He has suggested there is little guidance on the application of the critical perspectives.

Nonetheless, Myers and Klein (2011) have responded to this criticism by providing a set of six principles as a guide to undertake critical field research in IS. The six principles are broken down into two categories - element of critique and element of transformation. The element of critique is based on the three principles: principles of using core concepts from critical social theorists, the principles of taking a value position, the principle of revealing and challenging prevailing beliefs and social practices. However, the element of transformation is based on the other three principles – the principle of individual emancipation, the principle of improvements in society and the principle of improvements in social theories.

3.2.4 Scientific Realism Research

The “scientific realism” also referred as “soft positivism”, is an emerging epistemological assumption for creating knowledge (Kirsch, 2004; Madill et al., 2000). It is perhaps worthy to note as highlighted by Ravishankar et al. (2011), that the use of the term “soft positivism” in this thesis, is different from its use in the legal fraternity discipline where it refers to the intellectual position about the association between laws and morality (Mitrophanous, 1997).

Due to criticisms that knowledge created from qualitative studies (interpretive or critical perspectives) is riddled with subjectivity and bias, some qualitative researchers have tried to introduce the concepts of objectivity and reliability into the evaluation of qualitative research (e.g. Kirk and Miller, 1986; Miles and Huberman, 1994). However, as argued by Madill et al. (2000), these can only be achieved if the scientific realism epistemology is adopted in the undertaking of qualitative analysis. The scientific realism approach avails the researcher the opportunity to reveal pre-existing phenomena and relationships among them (Kirsch 2004). It also allows the conduction of data analysis with certain expectations based on prior theory, but also allowing some unexpected findings and explanations to emerge from the data, as described by the interpretivist approaches (Ravishankar et al., 2011). The adoption of the scientific realism framework in empirical social research, although imperfect, can be the best mode of capturing true representations of reality and generation of knowledge (Madill et al., 2000).

In summary, to investigate this thesis’s research questions, the philosophical perspective that informed the qualitative research largely corresponds with the interpretivist approach of

knowledge creation. The application of the interpretivist perspective in this thesis is discussed in further detail in the research methods section. The next section introduces the qualitative research methods.

3.3 The Qualitative Research Methods

This is a research based on the interpretivist paradigm of management research, rather than the positivist. The shared views of interpretivism is that research in social sciences (people and their institutions) should not be in a form of research done in natural sciences, which is the kind of research the positivists are sympathetic to, and is termed quantitative research (Bryman and Bell, 2007). Qualitative research is based on the notion that reality is socially constructed rather than objectively determined (Cassell and Symon, 2004). Thus, qualitative research helps provide greater insights into a sociological problem or statement. The qualitative method is interpretative because the method relies on open questions and opinions from informants as the input to an analysis (Creswell, 1998). It involves developing a description of an individual or setting by the researcher, who analyses words and views of informants for themes, making interpretation and drawing conclusions (Creswell, 2003). Many qualitative researchers argued that the qualitative approach involves studying the depth and complexity of phenomena in their natural settings (Myers, 2009; Straus and Corbin, 1990) and interpretations of the phenomena should be drawn from meanings people bring to them (Denzin and Lincoln, 1994).

Table 3-1: Distinction between qualitative and quantitative data (Saunders et al. 2007)

Qualitative Data	Quantitative Data
Based on meanings expressed through words	Based on meanings derived from numbers
Collection of results in non-standardised data requiring classification into themes	Collection of results in numerical and standardised data
Analysis and interpretation conducted through the use of conceptualisation	Analysis and interpretation conducted through the use of tables, diagrams and statistics

Data from a qualitative research includes texts from interviews, visual diagrams, participants' observation, archival data, and structured exercises, such as cognitive mapping and repertory grids (Myers, 2009). Denzin and Lincoln (2003) argue that interviews are the most commonly used data collection instrument for the qualitative approach, as they provide in-depth information about the research questions. There are four main qualitative research methods highlighted in qualitative research literature: case study research, action research, ethnography and grounded theory. These research methods are discussed as follows:

3.3.1 Case Study Research

The case study research is an "empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used" (Yin, 2003, p.23). Yin (2009) also used the case study to describe a unit of analysis. He argues that

case study designs could be a single-case or multiple-case designs, and within these two variants can have units of analysis that are unitary or multiple. In other words, single and multiple case study designs could be holistic and embedded, i.e. design could be single (holistic), single (embedded), multiple (holistic) and multiple (embedded).

The use of case study methods has been the most applied research qualitative method in the IS discipline, just behind laboratory experiments, and surveys research design. This is highlighted in the analysis of Mingers (2003) on research designs utilised in IS studies. Benbasat et al. (1987) specifically suggested that the case study research method is beneficial for studying IS because it enables the study of IS in its natural setting to allow the understanding of the nature and complexity of the processes involving the IS artefact, i.e. the study of the organisational issues rather than technical issues. As suggested by Myers (1997), the case study research can be based on either the positivist, interpretive, or critical epistemological perspectives.

3.3.2 Action Research

The action research is similar to the case study approach but the researcher is actually immersed in the settings the research is undertaking, where he/she is clearly part of the research to act as an agent of change in a particular circumstance (Lee and Lings, 2008). Myers (1997) in his review of qualitative methods, highlighted work of Clark (1972) suggesting that action research is concerned with expanding the understanding of the social science community, where the goal is simply to apply social scientific knowledge but not to

add to the body of knowledge. Despite the recent increase interest in action research in IS studies; there are very few studies that have adopted the research method (Myers, 1997).

3.3.3 Ethnography

The ethnography research draws from the social and cultural anthropology disciplines; it employs varieties of techniques to collect data, such as observation of participants, study of personal documents, in-depth interviews and discourse analysis (Cassell and Symon, 2006; Myers, 1997). The ethnographic researcher will have permitted access to spend a substantial amount of the time to study people's social meaning and activities, to understand and interpret the participants in a particular setting (Cassell and Symon, 2006; Lewis, 1985). As suggested by Myers (1999), the ethnographic research method is one of the most in-depth research methods, and allows a researcher to get closest to the investigated phenomenon. The adoption of the ethnography research method has now been widely used in the study of information systems in organisations (e.g. Klein and Myers, 1999; Myers, 1999; Orlikowski, 1991). Nonetheless, undertaking ethnography research can take a great deal of time, due to the time needed for the dissecting approach for data collection and conducting of many levels of interpretive analysis (Harvey and Myers, 1995). This type of research process can be overwhelming for the young researcher.

3.3.4 Grounded Theory

Grounded theory research method helps to develop theory that is grounded in data, systematically gathered and analysed (Myers, 1997). Studies that have adopted the grounded

theory procedures do not necessarily start from existing literature, but rather use the literature to compare the results revealed from their data analysis (Urquhart and Fernandez, 2006). According to Myers (1999), grounded theory approaches are becoming increasingly common in the IS research literature because the method facilitates developing context-based, process-oriented descriptions and explanations of the investigated phenomenon. A study employing grounded theory procedures is appropriate for studying IS phenomena in organisations because it assists the development of theoretical concepts directly related to the phenomena being observed, while simultaneously considering the organisations in which the investigated IS phenomena are embedded (Orlikowski, 1993).

In view of the above review of qualitative research methods, the next section discusses the research method this thesis adopted as a strategy of inquiry to design the research and data collection efforts. The choice of the research method influenced the way the fieldwork/data collection activities were conducted.

3.4 Research Design and Methods

Guided by the research aim to understand organisational diffusion of IT from the twin perspectives of culture and control, an in-depth case study method was adopted, which enabled the undertaking of the research in a field-based setting. This provided the opportunities to study members' activities in a day-to-day, face-to-face manner and allowed instant access to the informants. Case studies are particularly suitable when trying to answer the 'how' and 'why' questions of a research phenomenon (Yin, 2009). Following this approach enabled the exploration of the depth and complexity of the organisational diffusion

of a Management Information System (MIS) by utilising the meanings of members that engaged with the system so as to interpret the MIS diffusion process. Using a case study method, the “interpretivist” approach (Walshman and Weama, 1994) was adopted, implying this approach enabled the understanding the organisational forces (organisational culture and organisational control) as deep interpretative processes, which both influence implementation and diffusion of an IT system. Unlike the positivist approach, which measures organisational culture and organisational control through predefine independent and dependent variables for theory testing, the interpretative approach assumes organisational culture and organisational control are not fixed, but constructed and reconstructed through the on-going actions of organisational members over time (Hirschheim and Newman, 1991). This interpretivist approach allowed the capture of healthy descriptions (first-hand experiences, dynamics and problems) of the complex and intertwined conceptual structures, i.e. organisation culture and organisational control (Walsham, 1995), in relation to the implementation and diffusion of an IT within the case study site. This was vital to understanding what was happening in connection with senior managers, users and IT designers trying to diffuse an MIS. Thus, this allowed the emergence of unexpected findings and explanations from the data.

This study adopts Martin's (1992) framework of organisation culture that highlights the two perspectives as integration and differentiation. The fragmentation perspective was not adopted because there was little or no evidence of ambiguities and paradoxes at Liga Bank. Perhaps, an explanation for this, is that Banks' are examples of financial organisations that are heavily regulated and are not normally characterised as ambiguous organisations involved with activities regarded as inherently fluid and uncertain. Therefore banks would actively seek to avoid ambiguities and irregular interruptions that could lead to contradictions in their

work environment, but embrace a rather stable culture. Thus, this study represent the segmentation of the integration and differentiation perspectives of organisational cultures by examining members' views and their behaviours at the organisational and the group levels, when interacting with an IT system. As highlighted by Martin (2005), to overcome the methodological flaws identified in integration and differentiation studies; the methodological choice of this thesis will be to investigate the cultural manifestations of members across the three tiers of management, i.e. strategic, tactical and operational.

Also this study draws from Kirsch's (1997) and Ouchi's (1979) conceptualisations of organisational controls as formal, i.e. behaviour and outcome controls. Drawing on the conceptualisations of organisational culture and organisational control, MIS diffusion is studied subjectively through the organisational culture and organisational control lenses. How and why an organisational diffusion of an MIS could be achieved via senior management applying formal control mechanisms to align different member interpretations of the processes of the system is explored. This design of the soft or subjective mode of analysis is consistent with Walshman and Wea's (1994) procedure of undertaking interpretive research of the dynamic process of an IS implementation. Following this approach allowed the provision of fresh insights in the unexplored dynamics of IS diffusion phenomenon. This facilitated the consideration of the historical, political; organisational cultural and organisational control aspects that influenced the implementation and usage of an MIS.

There are two major approaches in studying organisational diffusion of an IT system - the factor research and process research approaches (Rogers, 1983). The factor approach seeks to only identify static organisational forces, by undertaking a fieldwork in a one-time snapshot

of the implementation activities of an IT system (Cooper and Zmud, 1990). Therefore, findings generated from the factor approach should be held tentatively because of the reduced time considered in the diffusion process (Cooper and Zmud 1990). The process research allows the identification of dynamic organisational forces during the diffusion of an IT system by examining relevant stakeholders' behaviours in the use of the system over a sustained period of time i.e. a longitudinal study. Due to the prolonged period – December 2010 to October 2012, of this case study research, a process research approach was adopted to study the diffusion process of an MIS. As argued by Mohr (1982), Sabherwal and Robey (1995), taking the process approach allowed this thesis to focus and provide in-depth explanations on the implementation processes of an MIS. Further, adoption of the process approach facilitated the explanations of how and why the implementation processes occurred the way they did and how the implementation processes affected the outcomes. These were achieved from the informants' narratives of the implementation activities of the MIS. Similar to the work of (Van de Ven and Poole, 2005), the narratives served as interpretive acts of what happened during Liga bank's attempts to diffuse an implemented MIS.

As argued by Hirschheim and Newman (1991), the interpretative approach allowed the assumption that organisational culture, organisational control and IS diffusion are not fixed, but constructed and reconstructed through the on-going activities and actions of the organisational members over time. To this end, the developed conceptual framework from literature (see chapter 2) was further explored and refined at the case site. Cooper and Zmud's (1990) six-stage IT implementation model was adopted to develop the framework and guide the data collection efforts. However, this thesis has stopped short to assume that the investigated phenomenon (IS diffusion) was relatively stable, as the positivists would argue.

Therefore, an inductive analytical approach was subsequently adopted. This approach enabled the expansion on the pre-identified constructs that constituted my developed framework and engender new findings. This helped produce a revised conceptual framework that highlights a causal description of the indications of the theoretical perspectives (organisational culture and organisational controls) and the way we understand the organisational diffusion of IT. The case study from the organisational culture and organisational control perspectives facilitated the capturing of how and why the events and activities emerged during the diffusion of an MIS. Therefore, instead of treating the MIS artefact as a static bundle of features, the design of which directly affects how members evaluated it, each interaction a member had with an MIS was viewed as the basic unit of analysis that determined implementation and usage behaviours of an MIS. In other words, rather than assuming that different members utilised the MIS in the same way, or that the same member would utilise the system in a constant manner during the diffusion process, this thesis propose as highlighted by Al-Natour and Benbasat (2009) that each member-artefact interaction is to be studied separately.

3.4.1 Site Selection

This research focus guided the selection of the case study site and an organisation that had recently implemented a robust enterprise MIS was chosen and had evidence of members manifesting different interpretations of the technology and also evidence that the organisation had put in formal mechanisms to ensure members engaged and used the system. This provided an opportunity to understand the organisational diffusion of an IT system from the twin perspectives of organisational culture and organisational control. The adoption of a

single-site design ensured that the study was able to control for differences in organisational processes that could complicate findings if multi-case studies was adopted. Also, from a practical point of view, a multi-case design was not adopted because organisations contacted about the research plans were not comfortable that the MIS of rival firms was going to be studied. Although a single case study, it is a multiple-case design, i.e. units of analysis are embedded, because the IS diffusion study involved the study of three IT implementation stages (adaptation, acceptance and routinization), stages which have their own unique events and activities.

Liga Bank, a pseudonym, is the organisation that was studied. Liga is a Nigerian-based global bank operating in 21 countries including the UK, France and the US. Liga Group includes Liga Bank PLC and wholly owned subsidiaries – Liga Asset Management, Liga Capital Management, Liga Insurance, Liga Pensions Custodians, Liga Registrars, Liga Stock Broking and Liga Trustee. The bank is a global financial services organisation that provides wide range of corporate and investment products and services, including project finance, equities trading and a range of electronic banking solutions. The bank with total assets in the excess of \$19 billion is a multi-billion dollar multinational bank, which employs over 13,000 full time personnel worldwide and provides financial services to over 7.2 million customers. Liga bank, a leading financial services institution adopted an MIS to assist in efficient management of its huge data resource. The bank is divided into three key groups – Finance, IT and Operations.

The finance group is in charge of financial control, balance sheet management, investors' relations, credit administration, appraisals of financial investments and risk management of the bank and its subsidiaries. They are also responsible for the credit ratings of the bank and its subsidiaries. The Finance Group project and forecast processes for the bank and its subsidiaries involves quarterly, annual and five-year projections. It is expected that financial analysis undertaken by the group to support management decision taking adhere to integrity and accuracy. The group is sub-divided into 'Corporate Finance' and 'Africa Finance'. Corporate Finance is primarily responsible for the financial operations of the bank, offshore banks and all its non-banking subsidiaries, i.e. Liga Asset Management, Liga Capital Management, Liga Insurance, Liga Pensions Custodians, Liga Registrars, Liga Stock Broking and Liga Trustee, except for Liga Africa. Africa Finance is responsible for the coordination of financial activities for all its entities in 17 African Countries. They review all the different accounting standards across the different regions and ensure that a standard accounting procedure is implemented across the entire group, for example the implementation of International Financial Reporting Standards – IFRS.

The IT Group provides infrastructure for the bank and its subsidiaries in terms of delivering the required operating network, system engineering and deploying of traditional banking services via electronic channels in accordance with the bank's established operating standards. The IT group is responsible for developing and implementing software applications in the form of Management Information Systems (MIS), intranets, central databases and analytical tools for the strategic business units that need them. They also have the responsibilities of providing the operating parameters for the bank's functional groups and members' use of the bank's IT infrastructure and IT application systems. Finally, the IT group

ensures IT security of all its electronic information resource, data assurance of the bank and support members organisational use of the bank's IT infrastructure and IT application systems. The Operations Group is made up of the operational excellence, operational control, electronic channels & Mobile Banking and performance management units. The operational excellence unit is responsible for the re-engineering for any and all the business units/subsidiaries in Liga bank. They ensure customer service levels are maintained at the highest standards by investigating all processes and transactions that lead to customers making queries and complaints. They are responsible for making sure that customer' complaints and queries are resolved in the quickest possible time. They also investigate how the bank could be run in a cost effective way. The operational control unit monitors, reviews and ensure that all local and foreign transactions, trade operations, treasury activities and reconciliations of the bank are done within the policy and procedures of the bank and that it meets the framework of regulatory bodies (Central Bank of Nigeria, Security Exchange Commission and Nigeria Deposits Insurance Corporation). The performance management unit is responsible for setting up Key Performance Indicators (KPIs) for measuring and appraising the performance levels of members. They design frameworks and tools that are used to drive, sanction and reward the performance of members, units, subsidiaries and the overall bank. The e-channels units and mobile banking units are respectively responsible for utilising electronic and mobile technology platforms to deliver traditional banking services.

Table 3-2: Liga Bank Groups and Units

S/N	Group	Unit
1	Finance	Corporate
		Africa Finance
2	IT	MIS
		Infrastructure
		Security
3	Operations	Operational Excellence
		Operational Control
		Performance Management
		E-Channels
		M-Banking

The next section provides the background to the research and informs the reader's understanding of the stakeholders at work within Liga Bank as its headship considered the MIS selection, why it was implemented and overview of the system.

3.4.2 MIS selection

The bank, operating in a dynamic and turbulent global business environment, recognised the need to implement a robust enterprise MIS to effectively and efficiently manage its deluge of data. In November 2006, there was clear agreement and consensus throughout Liga Bank for the need of a sophisticated MIS. Five months after the realisation, deliberation and the agreement for the need of an MIS, i.e. April 2007, the erstwhile Group Managing Director

(GMD) sponsored this project, which facilitated the support of the project from all top management members. The GMD setup an advisory committee from the executive management team; this committee was called Finance and IT general committee. Top executives from this committee were tasked with the responsibility to select a suitable MIS that would meet the requirement of the bank. The advisory committee deliberated and assessed the bank's existing IT infrastructure to determine which MIS would be compatible and integrate well with its systems. They also wanted a system that would be reliable and would integrate well, considering that the system would be primarily handling the processing of financial data. One year after the committee was set up, i.e. March 2008, they selected a system that they believed that would make their global organisational processes more efficient and effective. They adopted and implemented an MIS called MAXIM. MAXIM was developed in-house at Liga bank by a dedicated management information (MI) team made up of IT expatriates from India and local IT personnel supervised by an IT expert, a former top executive of Citibank, London.

Despite the change in the leadership of the bank, the present GMD, being a protégé of the former GMD, also gave his full support to the continued implementation and usage of MAXIM. This management buy-in was very crucial in ensuring all resources (financial and human) were put in place to ensure the adoption and implementation of MAXIM. The budget for the development and implementation of MAXIM in Liga Bank was \$3.25 million. This budget was part of the bank's 'Total Operating Cost' of about \$30 million for the financial year of 2008. The selection of MAXIM was also influenced by the fact MAXIM had also been adopted by other reputable global banks - Citibank and Samba Bank (formerly known as The Saudi American Bank). Apart from rational justifications, there was also evidence of

political justifications in the selection of MAXIM used by these aforementioned banks, because two of the committee members (Head of MIS & Head of African Subsidiaries) were former senior member of Citibank and employed as expatriates.

3.4.3 Overview of MAXIM

MAXIM was developed in-house at Liga Bank by a dedicated management information (MI) team made up of IT expatriates from India and local IT personnel supervised by an IT expert, a former senior member of Citibank, London. MAXIM, a three-tier software architecture system is a revolutionary tool capable of speeding up the process of complex data analysis for the generation of sophisticated management reports. MAXIM facilitates the access of the bank's operational and financial data from the core banking application - FINACLE, for sophisticated analysis of data to generate information and reports for management to make timely strategic decisions; table 3-3 presents the features of MAXIM. The back end of the system uses a relational Oracle database, the middleware which is the application itself uses an Oracle and Sybase Server database written in Pro*C language. The front end has two interfaces – COGNOS and TOAD, which all synchronise with the MAXIM database. The COGNOS interface is an 'off the shelf' business intelligence tool developed by IBM Corporation. COGNOS is a business intelligence tool that helps in the data processing and analysis for management information. It is very user-friendly and very interactive; this was particularly welcoming for members who are not particularly 'tech savvy'. This is unlike the Toad interface, which requires a bit more IT skill to use, and is used mainly by the developers and administrators of MAXIM. The scalability of the system ensured that the MAXIM team

could enhance the functionalities and capabilities of the system based on the recommendation made from end-users, to further satisfy their respective job functions.

Table 3-3: Features of Liga Bank's MAXIM

MAXIM Features	Description
Extractor	Pulls data from the core of the bank application (FINACLE)
Repository	Facilitates the creation and storage of data - products and services delivered by the bank, customer details and demographics, financial figures and intellectual assets within the bank.
Communicates	Interfaces with other MIS tools and databases for the effective and efficient management of the bank's stock of information.
Analytics	Classification, Debugging, Diagnosis and Interpretation of extracted data from the various applications it interfaces with
Report Generating	Facilitates the timely generation of accurate and interactive reports for making management decisions.

3.4.4 Case Access and Data Collection

Case access to Liga bank was negotiated via a top executive of the bank by proposing the thesis's research plans, and he extended his full support to my fieldwork plans. Given that it is an academic research from a top UK University, he showed keen interest in getting an independent perspective of the organisational consequence of implementing a sophisticated MIS in their bank. Before the commencement of the fieldwork, informal interviews were

conducted via telephone and Skype with some IT managers to gain an understanding about the bank, its IT department and MAXIM. A total of 47 individual, semi-structured field interviews with key interviewees in the bank’s headquarters in Lagos, Nigeria were conducted (table 3-4). The interviews had a duration range of 30-75 minutes. Forty-four interviews were tape-recorded with the informants’ permission and the conversations subsequently transcribed. Three interviewees refused to be tape-recorded; therefore recording of these interviews involved taking notes and expanding into field notes immediately after the interviews. In addition, follow-up interviews were conducted via telephone calls, email and chats via BlackBerry messenger. Full details of the specific time the interviews were conducted with the various informants are highlighted in appendix 1.

Table 3-4: Summary of Interviews and Interviewees – December 2010 – October 2012

S/N	Group	Top Management	Middle Management	Lower Management	Total
1	Finance	5 (1)	11 (8)	6 (3)	22 (12)
2	Operations	3 (1)	7 (4)	7 (2)	17 (7)
3	Information Technology	3 (2)	3 (2)	2 (1)	8 (5)
	Total	11 (4)	21 (14)	15 (6)	47 (24)

(*) Follow-up interviews via telephone, e-mail or via BlackBerry messenger services within each interviewee category.

The interview process involved claims and narratives of Liga Bank members in their interactions with MAXIM. The interview schedule was developed based on existing literature on culture, control and IS diffusion. Although not rigid, a standard set of questions via an interview guide was asked across all interviewees in order to achieve consistency across the conducted interviews. This help gave direction and focus to the key aspects of the research

interests (Pettigrew, 1997). Interview questions were centred on each informant's background, involvement in, understanding of, and experience with MAXIM. Interview questions also focused on how informants perceived the history of the MAXIM project, senior management and members' roles and responsibilities, and control approaches. During the interview sessions, probing questions were asked to stimulate the interview sessions and there were slight modifications of the interview questions. Probing questions such as "please could you elaborate more on this...?" and "This is quite interesting; please could you tell me more about this..." were asked to explain the grey areas further for informants' responses. These allowed for greater depth and clarifications on informants' claims.

The interview questions were divided into sub-headings to allow a flow of the interview process: (1) Experience of MAXIM, (2) History of MAXIM, (3) Organisational Culture and Sub-Cultures, (4) Policies and Procedures ensuring the use of MAXIM and (5) Impacts of MAXIM on Liga Bank. See appendix 2 for interview questions. The interview questions allowed the informants to talk about their experiences and views on the interaction with the MIS in the context of working in a group and in the organisation as a whole. This enabled explore questions on what Liga bank members generally thought about MAXIM and how it related to their values and priorities. Senior representatives of the bank, i.e. top-, middle- and lower-level managers were interviewed, as they were assumed to be the most knowledgeable on the subject matter. Also, the rationale for interviewing informants across multiple levels was twofold. First, it provided representativeness and consistency in informants' descriptions of their experiences with MAXIM. Second, it allowed triangulation because it allowed the comparison of the viewpoints of the managers across the different levels. However, the conducted interviews followed a snowball sampling procedure (Patton, 2002). The

interviews provided the opportunity to follow up statements with informants in the canteen during their lunch breaks, in corridors, waiting for the lift or in the lift, and discreetly observe informants while they engaged with MAXIM. The interviews and unobtrusive observations were supplemented with other multiple qualitative data sources, i.e. sightings of relevant official documentation (project documentation, e-mails, internal memos and company website). These enabled the triangulation of the data to establish construct validity and enhance the richness of the findings (Yin, 2009). As suggested by Weber (2004), preconceptions were intentionally withheld when trying to understand the phenomenon (IS diffusion) from the adopted theoretical lenses (organisational culture and organisational control).

Data collection was between December 2010 and October 2012. As highlighted in table 3-5, the commencement of the data collection occurred when MAXIM was in the first phase of the routinization stage. A period that Liga Bank's senior management realised that MAXIM diffusion had not been successful due to the resistant behaviours of the diverging subgroups. The data collection activities from January 2011 to February 2011 (see table 3-5) captured the period when senior management began the application of strict formal control measures to ensure the diverging resistant behaviours interacted positively with MAXIM. This describes the commencement of the second phase of the MIS diffusion. Further data collection between March 2011 and June 2011 highlight that MAXIM had been successful routinized into Liga Bank's organisational settings. The data collection activities during the period July 2012 and September 2012 – October 2012 were to get clarifications on some of the conducted interviews and also collect more data to augment the research's findings (see 3-5).

Table 3-5: Time line of Data Collection – December 2010 – October 2012

Time	December 2010	January 2011 – February 2011	March 2011 – July 2011	June 2012, September 2012 – October 2012
Key Activities in Bank	<ul style="list-style-type: none"> • Only few staff could use MAXIM in a routine manner. • Senior Management realised that MAXIM diffusion had failed. 	<ul style="list-style-type: none"> • Senior Management commenced the application of strict formal control measures. • Start of second phase of MAXIM diffusion. • Many staff began engagements with MAXIM. 	<ul style="list-style-type: none"> • Senior Management continued with the application of the strict formal control measures. • Many staff could use MAXIM in a routine and enhanced manner. • There was realisation that MAXIM diffusion was successful. 	<ul style="list-style-type: none"> • Many staff continued to use MAXIM in a routine and enhanced manner. • Further, confirmation that MAXIM diffusion was successful.
Key Research Activities	<ul style="list-style-type: none"> • Conduction of 15 direct face-to-face interviews. • Observation of staff interactions with MAXIM and observation of non-MAXIM related activities. 	<ul style="list-style-type: none"> • Conduction of 32 direct face-to-face interviews. • Observation of staff interactions with MAXIM and observation of non-MAXIM related activities. • Sightings of relevant official documentation i.e. project documentation, e-mails, internal memos and company website. 	<ul style="list-style-type: none"> • Conduction of 17 follow-up interviews – telephone, email and blackberry chats based 	<ul style="list-style-type: none"> • Conduction of 7 follow-up interviews - telephone, email and blackberry chats based

During the analysis of the interviews, it became evident that Liga Bank's realisation of the need to acquire a suitable MIS (initiation stage) and the rational justifications considered in adopting the MIS (adoption stage) had occurred four years prior to the period of data collection. Therefore, to reduce the limitation of relying on retrospective interviews, the thesis decided to focus on the events and activities of MAXIM implementation still occurring and most recently completed. Moreover, a lot of studies focused on decisions and processes involved leading up to adoption. Therefore, including the initiation and adoption stages may not produce much contribution to literature. Also, at the time of data collection, MAXIM had not been fully utilised in a comprehensive way to enhance overall organisational efficiencies, so the infusion stage was not considered. Therefore, this study was focused on the "design", "use" and "extended use" of MAXIM which corresponds to the "adaptation", "acceptance" and "routinization" stages of the Cooper and Zmud's (1990) six-stage IT implementation model. The interpretations of the data were discussed at length at various meetings with my PhD supervisors; the discussions from the meetings were significantly helpful in gaining multiple interpretations of my data. These processes of multiple interpretations of the data also ensured reliability of my thesis, because as suggested by Golafshani (2003), involving other researchers in the data interpretation process enhances the reliability of the study. This study considered the time perspective of MAXIM diffusion via the combination of both retrospective and real time analysis.

3.5 Data Analysis

This thesis followed Miles and Huberman's (1994) methodology of data analysis. The data analysis followed the three concurrent activities identified by Miles and Huberman (1994) of data reduction, data display and conclusion drawing/verification. It is worthy to mention that

the three processes: data reduction, data displays and conclusion drawing/verification did not occur in a linear fashion, but in a cyclic manner. The analysis of the qualitative data was done in an iterative manner by going back and forth between the data to identify concepts of the adopted theories and emerging themes for the theoretical arguments (Miles and Huberman, 1994). The applications in the thesis of the three data analysis phases are described in the following sections.

3.5.1 Data Reduction

According to Miles and Huberman (1994), data reduction refers to the process of data transformation through selecting, summarising/paraphrasing and abstracting the fieldwork data, i.e. transcriptions and/or written-up field notes. Data reduction involves coding, teasing out themes, making clusters, making partitions and writing memos in order to support the drawing of conclusions (Miles and Huberman, 1994). They further suggested that coding of data, i.e. tags or labels to assign units of meaning to the descriptive or inferential information collated during the research, are the cores of data analysis. Coding of data could also be done with an interpretive label; this is done based on the researcher's understanding of the investigated phenomenon.

The coding approach of the data was based on codes related to the research questions and concepts being examined (data reduction). The interview transcripts were read several times to identify informants' perceptions of their culture (organisational and subgroup levels) and the resulting implications on the interactions with MAXIM. Also, coded were informants' perceptions of the policies and guidelines that were put in place to facilitate members'

interaction with MAXIM. From each transcript, similar statements were grouped together that best described informants' views, attitudes and relationship with MAXIM during the implementation process.

Two rounds of coding were undertaken at a broad level. This was due to studying IS diffusion from two broad theoretical lenses (organisational culture and organisational control). The first coding process was based on the implementation process of MAXIM from the two perspectives of organisational culture (integration and differentiation). Therefore, the coding analysis was focused on members' interpretations of their experiences of MAXIM during the implementation process from the perspectives of Liga's Bank culture at the organisational and subgroup levels. For the first round of coding, I created six categories: "stakeholder types", "implementation process", "Liga's organisational culture", "Liga's Subcultures", "implication of Liga's organisational culture on diffusion" and "implication of Liga's subcultures on diffusion". The resulting set of categories and codes are listed in table 3-6.

Table 3-6: Categories and Codes for Organisational Culture Construct

Category	Example Codes
Stakeholders Types	Senior Management, IT, Finance and Operations groups
Implementation process	Design & development of MAXIM, members' participation, use and extended use of MAXIM
Liga's Organisational Culture	Liga's organisation-wide beliefs, values and behaviours
Liga's subcultures	Finance, IT and Operations groups' beliefs, values and behaviours
Implication of Liga's Organisational Culture on diffusion	Salient, Latent
Implication of Liga's subcultures on diffusion	Salient, Latent

Informants were asked for examples on how the values they subscribed to at the organisational and subgroup levels influenced their level of interactions and usage of the system. The informants' claims were cross-referenced with the number of other participants that also made similar claims. Also, while coding each interview transcript, the degree of influence (saliency) of staff behaviours on the diffusion of the IT system was assessed. The degree of saliency was determined by rating particular employee' actions and behaviours that were highly significant, significant, less significant and insignificant as revealed from the collected data. The ratings were applied by reading transcripts. Informants' indications that

organisational/subgroup values had high significant or significant impact on the way they engaged with MAXIM were coded as salient. While informants suggestions that organisational/subgroup values had less significant or insignificant bearing on their engagements with MAXIM were coded as latent.

The second pass of coding was based on the implementation process of MAXIM from the perspectives of formal controls. Therefore, the second round of coding analysis was focused on identifying possible control measures influencing the development and usage of MAXIM. Also, in the second round of coding, the interview transcripts were read several times to identify categories in the informants' comments on the formal control mechanisms put in place by Liga Bank's senior management during the during the development, use and extended use of MAXIM. This was necessary to understand informants' feelings about the exercised control mechanisms to ensure staff engagements and usage of MAXIM. Five categories were created: "stakeholder types", "implementation process", "control policies and procedures while implementing MAXIM", "members' reactions to control policies and procedure" and "implication on MAXIM diffusion". Table 3-7, shows the resulting set of categories and codes.

Table 3-7: Categories and Codes for Organisational Control Construct

Category	Example Codes
Stakeholder Types	Senior Management, IT, Finance and Operations groups
Implementation process	Design & development of MAXIM, members participation, use and extended use of MAXIM
Control policies and procedures while implementing MAXIM	Training & awareness campaigns, specifying rules & procedures to use MAXIM, monitoring MAXIM usage, MAXIM implementation plan, system testing, specification of deliverables, timelines & deadlines, reward/sanction system
Members' reactions to control policies and procedure	Acceptance, resistance, conflict
Implication on MAXIM diffusion	Facilitated, hindered

The qualitative analysis software QSR NVivo was used as a data management tool to facilitate and improve the initial manual data coding process and as well as examining the interrelationships between the pre-identified phenomenon (IS diffusion) and theories (organisational culture and organisational control). The transcribed interview scripts were imported into QSR NVivo for coding. The coding was based on the manual-coding template developed for the pilot procedure. The QSR NVivo application was quite useful in coding

and identifications of relevant themes. As highlighted in the manual coding template the coding procedure that was followed in QSR Nvivo, was segmenting the transcribed texts into codes such as Management Level i.e. strategic, tactical and operational levels. Further coding categories were MAXIM diffusion (initiation, adoption, adaptation, acceptance, routinization and infusion stages) from organisational culture and organisational control perspectives (see appendices 3, 4, 5) for coding trees. The coding procedure also allowed the exclusion of unrelated data from further data analysis. Example, codes for the initiation and adoption stages were excluded to remove excessively retrospective data.

Upon completion of initial data coding, the coding scheme was reviewed by discussing the transformed data with my PhD supervisors. This was to ensure the data interpretations were accurate and to check for possible coding bias. The data was analysed in several iterations to establish if they supported the initial framework. This included the evaluation of the degree of agreement among informants on their perceptions of MAXIM implementation based on organisation-wide/subgroup values and implication of applied control mechanisms during the implementation process. Finally, the coding scheme provided the foundation to explore possible relationships between organisational culture and organisational control during MAXIM diffusion.

3.5.2 Data Display

According to Miles and Huberman (1994), data display involves an organised, compressed and assembly of information to assist us in making sense of what is happening for the purpose of drawing conclusions. Displays can include matrices, graphs, charts and

networks. Therefore, the second stage of my data analysis involved data display in matrix format highlighted in the results section of the thesis. This involved presentation of a series of conceptually ordered displays in order to study the themes in more depth. The matrix displays in summary each of the different aspects of the two broad theoretical lenses (Organisational Cultures and Organisational Control) on the explored phenomenon (IS diffusion). Similarly, a matrix display at a higher level of abstraction illustrates how these two different lenses are in causal relationship during the diffusion process. This helps to generate more explanatory power to facilitate the drawing of valid conclusions from the findings in the final stage of the analysis.

Having discussed the activities of the data display, the next section concludes the discussion of the data analysis, by describing the conclusion drawing and verification stage of the analysis.

3.5.3 Conclusions Drawing and Verification

Upon the completion of the earlier stages of data analysis, the goal was to identify common, unique and causal features in the data that would present fresh insights into the different interactive processes that occurred during the diffusion process of an IT system. To facilitate this process, the literature was revisited to synthesise the thesis's findings with existing studies, highlighting the iterative nature of data analysis. The revisiting of the literature was particularly necessary despite the undertaking of significant literature reviews prior to the data collection. There was a need to be updated with the relevant literature on IS diffusion, organisational culture and organisational control so as to be abreast of the latest findings in

the literature. These data analysis activities allow the contribution to the present understanding of organisational diffusion of an IT system. This task involved a significant amount of brainstorming activities and discussions with my PhD supervisors; their guidance was hugely helpful in drawing the conclusions from the study. To ensure external validity for the study, the findings from the case site are generalised to the adopted theories (organisational culture and organisational control). This kind of generalizability is termed as the principle of analytical generalizability (Yin, 2009), also referred to as generalising from empirical (Liga Bank's cultural and contextual situations of MAXIM diffusion) to theoretical statements (Lee and Baskerville, 2003). This is unlike statistical generalisation, which is typical in findings generated from conducting quantitative survey (Yin, 2009).

3.6 Ethical Issues

This study did not involve any sensitive ethical issues. However, because the conduction of the research involved in the direct personal inter-relationships, i.e. interviewing of informants, ethical issues needed to be considered (Walliman, 2008). Therefore, there was awareness of the need to adhere to the ethical standards required in conducting social research (see appendix 6) for conditions and guarantees presented to Liga Bank before the commencement of the fieldwork. The conditions and guarantees engendered a greater participation from informants. Also, prior to commencing the interviews, full informed consent was required from the informants by ensuring they signed informed consent forms provided by Loughborough University. This was to ensure that all rules, policies and guidelines were adhered to; all informants were also made aware of their rights while taking part in the research. They were informed that participation was voluntary, and they had the right to

withdraw from the research at any time if they wished so. This measure of ethical consideration was to ensure that data collected from the fieldwork were of accepted quality and met the required rigour expected from an academic research.

Having described the research methodology of the thesis, the next chapter presents the case description – MAXIM implementation history and results from the analysis of data from the organisational culture perspective.

Chapter 4 Diffusion of an MIS from an Organisational Culture

Perspective

4.1 Introduction

This chapter is guided by the study's overall research objective: understanding the organisational diffusion of an MIS. The diffusion process was analysed by drawing on the experiences of an initiative at Liga Bank to implement a Management Information System called MAXIM. This chapter is organised into six sections. The first section starts with a broad introduction to the case context and provides the history and timescales regarding the MAXIM project. Section two presents a general discussion regarding Liga Bank's organisational culture, i.e. the espoused organisational values shared widely by staff across the bank. Section three presents the analysis of the impact of these organisational values on the diffusion of MAXIM within the bank. The fourth section presents the findings concerning different subcultures that were identified at Liga bank. This is followed in the fifth section with a discussion of the impact of these subcultures on the diffusion of MAXIM. The chapter concludes with a brief summary of the key findings.

4.2 History of the MAXIM project

This section presents a summary of the MAXIM project and identifies the stages of diffusion that Liga bank experienced during the project as shown in (table 4-1).

In April 2008 the bank began the design, development and installation of MAXIM. This process involved mapping the existing processes and data and configuring some aspects of

MAXIM to ensure compatibility with existing legacy systems. During this stage staff from outside the IT development team collaborated with IT staff to ensure that specific functional requirements required by different departments were accommodated in MAXIM.

Table 4-1: Time line of MAXIM project diffusion from the organisational culture perspective – April 2008 – December 2010

Diffusion Stages	Adaptation	Acceptance	Routinization
Time	Apr 2008 – Jul 2009	Aug 2009 – Oct 2010	Nov 2010 – Dec 2010
Event	System integrated into the existing legacy systems (e.g. banking application, existing MIS). The system was integrated into Liga Bank’s organisational processes by July 2009.	System introduced to staff to replace existing methods of data analysis and information generation. Some user resistance to the system.	Few staff saw MAXIM as commonplace and many found the use of MAXIM as extraordinary.

Following completion of the adaptation activities in July 2009, user acceptance tests (UAT) were conducted. After the completion of these tests, the system was introduced to staff through a range of promotion campaigns to raise awareness of the new system and training sessions. MAXIM was rolled out to staff from August 2009. The objective of the MAXIM project was to replace outdated and manual methods of performing organisational tasks, such

as relying on Excel spread sheets and a legacy MIS called INFOPOOL. It was envisaged that the new system would reduce errors that could occur from individuals working on local versions of spreadsheets to generate more accurate, timely information for management. Staff at Liga Bank reported mixed views about having to abandon old methods of performing organisational tasks and there was evidence of user resistance to the new system. For example, Finance Group staff explained that when MAXIM was first introduced they found the system required more time and effort to retrieve information compared to the former MIS system. By contrast, Operations Group staff commented that they found MAXIM to be an improvement compared to their old work processes, allowing them to complete tasks more easily and efficiently.

Informants reported that MAXIM had been integrated into the organisation's governance systems and had become a normal activity for some staff by November 2010. For example, several informants commented that they were using MAXIM as a daily organisation tool for the analysis of financial data for information retrieval and report generation. These observations provided evidence to indicate that the MAXIM project had moved to the routinization stage of diffusion. However, this transition was not reported by all informants, suggesting that some parts of the bank were experiencing slower rates of diffusion. Informants commented that in some areas MAXIM required further adjustment and integration before it could be used on a regular basis. For example, at the time of the interviews, MAXIM was not able to retrieve the required data from the FREEDOM database used by the mobile banking unit. Similarly, informants in the stockbroking unit reported that MAXIM was not integrated with their subsidiaries' accounting software, which was limiting their use of the new system. Consequently, this lack of consistent routinization prevented

staff from utilising MAXIM to its full potential in a more comprehensive and integrated manner to support high-level operational activities and improve organisational effectiveness and efficiency.

Having summarised the case history of the MAXIM systems development project and the stages of diffusion that were apparent from the data, the following section examines the diffusion of the MAXIM MIS from an organisational culture perspective.

4.3 Organisational culture perspective and MAXIM diffusion

The following sections use organisational culture as an interpretive framework to examine and explain the process of diffusion of the MAXIM system at Liga bank. Two perspectives of organisational culture are utilised to interpret the data: an integration perspective and a differentiation perspective (Martin, 1992). This study adopts Martin's (1992, 2002) integration and differentiation perspectives of OC to explore the diffusion process of an IT system. This facilitates the in-depth investigation of the relationship of issues and values that are seen to cause organisation-wide consensus and consistency, and simultaneously other aspects of the OC that coalesces into subcultures sharing differing values to the overall OC.

Adopting the integration perspective helps explain the shared organisation-wide values and practices in Liga Bank while the differentiation perspective illuminates differences and unavoidable influence of conflicts of interests across Liga Bank's subgroups.

4.3.1 Integration perspective of organisational culture at Liga bank

Analysing the interview data revealed a number of shared perceptions, experience, beliefs and values that were clear and consistent among staff across the bank. In particular, informants at Liga bank talked about their subscription to the bank core values, namely encouraging integrity, facilitating resilience and fostering empathy.

Encouraging Integrity

In order to build and protect its reputation, Liga Bank encourages all staff to perform their duties with high levels of integrity. Senior Management (SM) provides direction on what standards of behaviour are associated with integrity and therefore expected of staff. For example, staff are expected not to cut corners in their work and staff are expected to exemplify best practice standards in terms of transparency and reliability when performing organisational work. To support adherence to the integrity value, the Head of the Finance Group explained that Liga Bank invested in regular staff training and development, customer service awareness campaigns and the monitoring of staff compliance to integrity standards.

A number of examples of behaviour that were considered as illustrating the integrity value were provided by informants and described in official documentation (HR policies and guidelines). Customer-facing staff are expected to be honest and truthful in their dealings with customers through offering the best possible bank rates (while also making a return for Liga Bank), not making empty promises and honouring meetings and commitments to develop and maintain excellent stakeholder relationships. Senior managers commented,

“A core value is integrity, whether a finance guy, IT guy or an Operations guy, integrity should be ensured at all levels. Your data must have integrity, it speaks volume about you,

ways and manners which you carry out your duties, your roles, responsibilities, meeting timelines...reporting and all those stuff, integrity must be demonstrated (...) this cannot be compromised.” Head of Liga Registrars (Finance Group)

“For us integrity is key, information is important and to be shared only with people who are upright. We are not looking for people who are good looking or ugly but people with honesty.” Head of Credit Admin & Portfolio Management (Finance Group)

In Liga Bank, irrespective of the department staff belong to, integrity is expected from everyone in their work procedures and techniques.

Facilitating Resilience

The second core value that informants identified was the need to be resilient. Staff are expected to think, communicate and be persistent when they face challenges in tasks assigned to them. This attitude is considered to be an important ingredient in the way assignments are executed in Liga Bank, with staff expected to embrace tasks regardless of the scale of the challenge presented. This attitude of ‘nothing is impossible’ was identified as being a defining feature of the bank’s recovery from an ailing bank in 2005 to be one of the top three banks in West Africa. The Head of Operations commented,

“Resilience is one of the core values of the bank, so what you find is that nothing is impossible (...) that is the way we are wired here. I mean this is a bank that has come from a restructured dead bank to being one of the top five banks in the country in less than five years. And after that, became the largest bank in the country (...) being close to

largest bank in West Africa (...) so it is a culture of absolutely nothing is impossible.”

Head of Operations Group

This core value was also manifested in other examples reported by informants. For example, Finance staff commented that they were often under pressure to meet reporting deadlines set by industry regulators to avoid penalties or fines. Despite these pressures staff were expected to be enthusiastic and show commitment to the job to meet these strict deadlines. A senior financial analyst stated,

“I would say staff are very resilient in the way they do their jobs. You find people at their desk very, very late when they have to solve problems to get the job done or meet crucial deadlines. That shows commitment to the job; they want to get things out, they want to beat deadlines, and you can see that resilience in them.” Senior Financial Analyst - African Subsidiaries (Finance Group)

Similar attitudes were also reported within the IT and Operation Groups. For example, a manager remarked,

“The IT Group like every other group in the bank are resilient in their ways, they tend to bend backwards to make sure that users are comfortable with their systems.” Business Operations Support (Operations Group)

The shared nature of the resilience value suggests that staff believed that they were united in their attitudes and response to any challenges and issues that they faced when completing

their work tasks. Informants claimed that there was a ‘can do’ approach to problem solving that all staff were expected to demonstrate in their work.

Fostering Empathy

The third core value reported by informants was that staff should conduct their work activities with an empathetic attitude. Senior managers within the bank heavily promoted this value, as they believed it to be central to successful working alliances with internal and external stakeholders. Consequently, staff were encouraged to be helpful to one another when undertaking tasks to build an open, friendly and pleasant working environment. For example a senior manager in the Finance Group commented,

“The empathy value is vital. You may [think] that this is more applicable to customer facing staff but no, it is applicable to everyone. We go extra miles to ensure we satisfy external and internal customers...every staff [member] must have that empathy. That is why we are here, we put ourselves in the customers’ shoes.” Head Liga Registrars (Finance Group)

An IT staff member added,

“Empathy in terms of Liga Bank, it really hinges on understanding of each other that is what it is. In terms of my experience, I would say most areas show empathy (...) the idea of empathy really is to put yourself in the shoes in the customer approaching you. And of course in the branch, the customer will mean the external customers. Internally, it will be the departments you interact with, who you need to get input from or who you give output to.” Database Administrator (IT Group)

In order to promote the empathy value, the senior management at the bank organised group sessions and meetings to promote understanding of staff needs and priorities across different departments and groups. A programmer explained,

“The bank does group bonding, i.e. bringing people together, enabling interactions between senior and junior member from the different departments (...) we do something called the executive member chat, where you can directly talk to the GMD, where you interact with member from different groups (...) Generally, what they are trying to promote is understanding and empathy towards the customer and amongst staff.”

Programmer (IT Group).

It appears from the interview data that the senior management at the bank were keen to create an appreciation and understanding of differences at group and management levels to encourage team working and effective communication. Also boldly highlighted on Liga bank’s intranet and website are the bank’s espoused core values of ‘empathy, ‘integrity’ and ‘resilience’. The bank website highlighted the following shared values. The statement, *“we always put ourselves in the positions of the customer”*, indicates the shared value of empathy. The statement, *“we are transparent in our relationships with our customers”*, helps describe the shared value of integrity highlights. Finally, the statement - *“we evoke our entrepreneurial spirits to excel in all challenging situations”*, highlights the banks espoused shared value of resilience.

The data suggest that senior management intended that establishing the core values of ‘empathy’, ‘integrity’ and ‘resilience’ would work as a glue, providing guidance to staff on expected behaviours and practices, thereby enabling the bank to implement its desired

business strategies. The following section investigates the extent to which these core values influenced the diffusion of the MAXIM system within the bank.

4.3.2 Integration perspective of organisational culture and diffusion of MAXIM

MIS

This section explores how the organisational values shared by Liga Bank staff influenced the diffusion of the MAXIM MIS. The section reports the findings concerning the three stages of diffusion that were identified at the bank, namely adaptation, acceptance and routinization.

Adaptation

The data showed that in April 2008 when Liga Bank began the design, development and installation of MAXIM, the bank's core values of resilience and empathy had a positive impact on the adaptation of MAXIM into its organisational setting. Staff at the bank identified a number of examples where their resilience to problems and challenges during the early stages of the MAXIM project ensured progress continued. These attitudes were demonstrated through problems being directly addressed and staff working hard to meet deadlines for requirements provision. There were also situations where although the standard functionality of MAXIM represented a reduction in quality compared to legacy systems, staff in both the Finance and IT teams were determined to work together to resolve the problems and recreate the necessary report outputs. This required additional meetings and considerable time demands for both teams, but their shared desire to overcome the challenge helped facilitate the functional changes to be made. Informants made the following observations,

“The bank’s organisational culture is based on empathy, integrity and resilience. That is the hallmark of the bank (...) I want to stress resilience, I mean the ability to get things done, execute assignments on time and deliver on time. So, in a way the culture has helped us because it would have been postponement and postponement of meetings to resolve issues, provision of our business requirements or we will say it is not possible, let’s not do it or take our time. But by the culture of the organisation that if you want something delivered first day, you want it delivered now (...) that has helped in the implementation of MAXIM.” Head Liga Insurance (Finance Group)

“At the initial stage of trying to develop MAXIM, it was very tough for us and the IT team (...) because some of our processes are not enhanced within MAXIM. We did not have ability to store some data (...) but we showed resilience, we kept on fighting. We kept on trying to align those reports until it was achieved (...) it is commendable.” Senior Credit Analyst (Finance Group)

“The way they [the MAXIM IT Team] are doing things, they have exhibited the values of the bank, being resilience, at times you want to design a template in MAXIM for report generation and MAXIM [IT] team’s timelines are tight but this report is very important (...) so they are spirited in their efforts to make sure that, you get report to meet your own deadline even when we had not provided our requirements for MAXIM at the time they had stipulated. They more or less imbibe the resilient culture of the bank.” Business Operations Support (Operations Group)

A number of comments from informants also indicated that the empathy attitudes exhibited by bank staff had helped with the adaptation stage of the MAXIM project. This was illustrated mainly through staff commenting that individuals in different teams were

sympathetic to alternative interpretations and priorities when developing functional requirements for the new MIS. The Head of Business Development observed that it had been particularly important for the members of the implementation team to have an open-minded approach when discussing requirements for the new MIS as otherwise there would have been high levels of conflict and disagreement across the bank. An informant commented,

“I will say the [MAXIM IT] team is actually a very good team to work with because for every different area, the requirements are different. I come from the mobile banking area payment space. The requirements are different, the philosophy is different, so what this means is that if you have someone in MAXIM [IT] team, the person must have a broad mind-set of being able to understand what the users want, being able to understand what the end result you set out to achieve is and how it plugs into the overall bank strategy. So you have a lot of people there who have that kind of mind-set because of the empathy culture of the bank (...) so if I give the IT guys a specification for my unit to be designed into MAXIM they manage to deliver despite the pressure across the entire bank.” Head of Business Development, m-Banking (Operations Group)

An informant from the Finance Group supported this view stating,

“Some of us non-IT staff were involved at the development stage of MAXIM (...) we were all trying to host all our products on MAXIM. IT had to call on all of us and we had to interact with the team, we gave them all the features of the products that we have in our departments so they could be inserted into MAXIM and mapped to our processes. We worked together. They developed some mapping codes, which we also helped out by providing what they needed. So I think it assists in that way, the empathy value made us have patience and understanding of one and another during the design of the system, when things were not going according to plan, because it was not an easy process at all.

Sharing empathy values helped us manage the situation.” Head of Liga Trustee (Finance Group)

The data suggest that the resilience and empathy values espoused by the bank's staff had a positive impact on the development and implementation of the MAXIM MIS. These values largely helped the support teamwork and the collaboration between different groups (IT, Finance and Operations) when capturing the requirements for the MIS, the design of required non-standard functionality, and work impacts of adopting the new system. These attitudes had a positive impact on the MAXIM project and appear to have helped the system move from the adaptation stage of diffusion to the acceptance stage.

Acceptance

The organisational value that was most frequently mentioned by informants when discussing the wider introduction and rollout of MAXIM in August 2009 to operational and financial group staff was the value of integrity. This value featured as a motivation for staff to use the new MIS and abandon their traditional methods of generating information from end-user-generated reports that carried a high risk of errors and inaccurate data. Senior managers felt the organisation-wide value of integrity was a powerful means of promoting a model of best practice amongst staff when undertaking organisational tasks. Informants made the following observations,

“Especially integrity because you [have] to be sure that the source of that data, you have to be sure of the integrity of that data. Because you can imagine where executive management want use that report for major decision-making. You [risk] producing

unreliable information because you have utilised manual methods to generate the figures instead of using the MIS system, which ensures you, generate trustworthy outputs. So this has made members embrace MAXIM to avoid embarrassing themselves.” Head of IT Group

“Because of our integrity values (...) anything that will increase the integrity of the report that we generate is welcome. Because at the end of the day, you know manual reporting comes with a lot of errors but with MAXIM the integrity of the report is to a large extent secured, so we embraced the system.” Head of Credit Admin & Portfolio Management (Finance Group)

“It is part of your deliverables to render management reports, and reporting is part of what we do and we seek to do it very well. We seek to give the most correct and adequate report we can lay our hands on, so management not need to fault it or doubt the authenticity (...) So in terms of the bank’s culture [integrity] impacting on MIS we tend to use MAXIM so as to give our best in giving the organisation or management reporting.” e-Product Administrator (Operations Group)

The interviews reveal that staff from different departmental subgroups espoused the bank’s core value of integrity when they were expected to employ MAXIM for organisational use. The Finance and Operation Group staff were positive towards MAXIM because they perceived and interpreted the use of MAXIM as consistent with the shared value of integrity. This encouraged MAXIM to be accepted by staff in the bank, having a positive influence on the MAXIM project progressing to the routinization stage of diffusion.

Routinization

By November 2010, fourteen months after the system was first introduced to the Operations/Finance Groups for organisational use, relatively few staff appeared to be using MAXIM in a routine way. However, although the MAXIM project was starting to encounter user resistance the shared values of resilience and empathy were still having a positive impact, encouraging a small number of staff to see MAXIM as commonplace and utilise it at a higher level. Informants commented that their resilient attitudes had helped when they found the MIS difficult to use to complete their organisational tasks, such as when the system returned inaccurate data or reports. Two senior managers explained,

“The resilience culture applies because, as an example, we were having challenges in using the system effectively in our unit. Because we had the ‘can do it’ attitude, it made us resilient and we kept trying till we got it right. This resilience culture (...) has made the use of MAXIM enjoyable to us now.” Head of Risk Management (Finance Group)

“Our resilience value was also displayed in our attempts to effectively use the new MIS. It was a serious battle using MAXIM for complex analysis because the figures MAXIM was generating, the data were wrong. Based on the output we were getting from it, the figures produced were not what they should be. But we never gave up until we were able to achieve accurate figures from the system (...) we achieved this by our continued exploration and use of the system.” Senior Credit Analyst (Finance Group)

There was also evidence of the influence of the empathy value. For example, an IT Group member highlighted that the emphatic attitudes of bank staff enabled them to train end-users on using MAXIM more effectively. This approach encouraged end-users to further engage

and explore the functionality of MAXIM and ultimately use the system in an effective and efficient way. A member of the IT Group commented,

“We have found that when we are empathetic to the end users, they turn out to be the better users of the MIS. We invest more time in training them how to use it and showing them things, which they might not have asked to use. We found that they actually come back and feedback to us and say ‘I found that useful’ or ‘can I get more information from the system?’ So, just going the extra mile really [seems to] help users use it and that’s like a ripple effect, once you get a set of users to use it. You spend less time on them because they now know how to use it and they also by word of mouth promote the system.”

Database Administrator (IT Group)

There was also evidence that the empathy value was demonstrated by senior managers when encouraging bank staff to engage with the new MIS system. They undertook a number of workshops with bank staff to emphasise why the new system was being introduced and recognising that this would be demanding for staff and require changes from them. A senior manager from the Finance Group stated:

“When the [senior management of the] bank gathered us for training, they said, ‘look, there must be a change because this is where the bank is looking at.’ The bank [senior management] needed to convince us first, so we should see the reason why we should be participants of MAXIM, why we should partake in it, why we should work for the success of this newly introduced application. The empathy culture is out there, they [senior managers] have demonstrated through their workshops that they understand our plight, the problems we would face in the use of this new system and they tried to provide the support as they would provide external customers. This resulted in some of us using

MAXIM in a very satisfactory way to perform our jobs.” Head of Liga Trustee (Finance Group)

The quotes above show some positive attitudes from some members toward MAXIM allowing them to see it as commonplace supported by the values of resilience and empathy. However, it appears that the positive impact of the core values that were evident in the adaptation and acceptance stages were not as beneficial in moving the MAXIM project to the routinization stage of diffusion. At this point, despite evidence of the core values still being present, the process of diffusion seems to have stalled, with higher levels of user resistance and disagreement becoming apparent among different groups in the bank. One possible explanation for this slowing of the diffusion of the MAXIM system within the bank was that the positive core values that were claimed to be supported throughout the bank were being countered by more negative attitudes held by some groups toward the MAXIM project. The Head of the Operations Group explained that in his view, several business areas of the bank operated a ‘silo mentality’ that resulted in their behaviour and views being heavily influenced by their own group’s agenda and priorities. The MAXIM project was increasing the level of visibility of individual and departmental performance and raising an expectation of increased levels of collaboration across the bank. This increased level of visibility appears to have triggered concerns among some groups of staff and required a change in individual working practices, from no longer just being concerned with their individual contribution to a process, but having a wider appreciation and openness to sharing information with other departments. The Head of Operations commented,

“One of the main issues was that people were not just used to having such level of openness, most people were just used to see what they were doing (...) so the first thing

that had to be managed was that people had to get used to the concept of compare and share (...) that was the culture the bank adopted (...) people were used to seeing what they were doing only in their silos.” Head of Operations Group

In addition, there were also comments from informants that indicated that the positive aspects of the banks shared values were undermined within particular teams or groups, either because of other pressures or personalities. For example, a database administrator explained that being empathetic to other individuals became difficult when he was under high levels of pressure to meet targets and avoid penalties. He stated,

“Despite the shared values across the bank, there are some pockets. I think the reason for that is probably because of pressure, there is a lot of pressure within each subgroup...You have deadlines, fines you get if you don’t conform (...) so all of that serves to make some experiences more pressured than others So in such pressured environment it would difficult to embrace values like empathy”. Database Administrator (IT Group)

A cards administrator who explained that their line manager had a very dominant and target-driven personality and was not interested in understanding the challenges that his staff could face in completing work tasks provided another example. He stated,

“We all work under an umbrella set of values but we have a boss that is very, very, very domineering. He uses words like “you must get it done”, “I am not here for stories, and you must get it done”. He does not care about your situation (...) so he is not empathetic to certain issues (...) and you could easily get into his bad books. So we may be different from other [groups].” Cards Administrator (Operations Group)

This observation suggests that not all senior managers were committed to the bank's core value of empathy when managing their subordinates, which may also influence how these staff behave toward other staff in the wider bank. Further, the comments suggest that there may be deeper levels of variation in the attitudes and beliefs held by individuals and teams across the bank, beyond the core values that this level of analysis has revealed. This variation may further help to explain the diffusion process of the MAXIM MIS at the bank. Consequently, a further perspective was applied to the interview data to investigate whether this would help explain the diffusion process of the MIS. The following section re-examines the data from a differentiation perspective of organisational culture, to explore whether this perspective can help provide a fuller explanation of the MIS diffusion process at Liga bank.

4.3.3 Differentiation perspective of organisational culture at Liga bank

The data suggest that while taking an integration perspective on organisational culture provided a partial explanation of how core organisational values influenced the diffusion of the new MIS at the bank, it did not provide a complete explanation. Therefore, when analysing the data, the researcher adopted an additional differentiation perspective of organisational culture. By contrast to the earlier analysis, rather than focusing on shared values that were consistently held across different departments, this analysis examined the data for evidence of differences in the beliefs and attitudes held by individuals within different departments or groups. The analysis revealed three groups that had distinct cultural attributes, or sub-cultures. These were Finance Group, IT Group and Operations Group. The following section describes the characteristics of each group's sub-culture.

Finance Group – cautious accuracy-driven sub-culture

The core characteristic of the sub-culture of the Finance Group members was their emphasis on accuracy in every task that was undertaken by the group. Staff members in this group felt that they had an important role to play within the bank as they provided the financial analysis that underpinned senior management decisions concerning the strategic direction of the bank. The members of the group believed that their standards of accuracy were higher than other parts of the bank and that their work outputs were the most thorough. The data also suggests that this belief led them to question the accuracy of outputs produced by other parts of the bank, and not to trust analysis completed by other teams. They were cautious about changing tried and tested methods and tended to work in a very formal and structured way. For example, informants made the following comments,

“The accuracy craze we have in here – cross all the Ts, dot all the I’s, make sure they are OK (...) I think we pay a lot of attention to details here more than other areas of the bank.” Head of Finance Group

“Different departments have ways of doing business. Here we might be a little rigid and trying to make sure that the numbers are accurate.” Market Risk and Balance Sheet Manager (Finance Group)

“We are focused on figures, on positions (...) the accuracy and the reliability of those figures is very important to our group, because we are held responsible for that. Even the Operations and IT groups, they rely on our section to ensure the figures are reliable and dependable. We are more focused on generating more accurate reports.” Head of Balance Sheet & Market Risk Management (Finance Group)

The above quotes indicate that the accuracy driven sub-culture of the finance group tended to be very formal and bureaucratic in their processes. The subgroup had an aversion to uncertainty and a low tolerance to inaccuracy.

IT Group – organised expertise sub-culture

The main sub-culture characteristics that were exhibited by this group were their specialist knowledge and expertise with a strong collective structure that enabled individuals to work independently on tasks. The specialist knowledge held by individuals meant that the group performance relied on individuals completing their tasks in a consistent and reliable way. The informants believed that this way of working was distinct from other groups within the bank. For example, the members of the IT group commented,

“It is a professional culture or I would say a more organised culture (...) everybody does their job and does not depend on others to do their job, so it is like all the four wheels are rotating in the same speed. In the [Liga] bank culture, some wheels are going faster, some wheels are going slow and some wheels are going in the reverse direction, that’s a difference in the culture.” Head MIS (IT Group)

“We work effectively, we are able to turn things around pretty quickly, all of us were picked because of certain skills that we have, so we know our functions very well. We know who should be doing what; we are efficient in that sense.” Database Administrator (IT Group)

The specialist knowledge and expertise appeared to be particularly important in maintaining this group's perceived value and identity within the bank. As the core functions of the

banking business were heavily reliant on complex IT systems, the IT team conducted a vital support function. However, this importance had to be emphasised to other parts of the bank, as it was recognised that IT was a mechanism that enabled the business to be profitable, rather than directly generating profits for the bank. This indirect relationship meant that there were some concerns within the IT group that the importance of their role was not always understood by other parts of the bank. A senior programmer explained,

“As long as you are a member in the IT department you have to do your best to prove your worth. We are technology people working in an organisation where the provision of technological products & services are not its main function; it is banking and finance. So we have no choice but to prove our worth.” Senior Programmer (IT Group)

Consequently, the data suggests that the IT Group had their own distinct sub-culture, based on the unique knowledge and expertise that was held by individuals within the group.

Operations Group – performance driven culture

The main sub-culture characteristic of a third group that was apparent from analysing the interview data was the performance focus of the operations group. The informants working in this group commented that they were target-orientated in completing their work activities and that individuals were expected to achieve the targets that were set. Informants explained that the group made use of an appraisal system that monitored and measured individual and group target performance. The appraisal system linked staff performance to group goals to identify individuals that were contributing or under-contributing to the group targets. These targets, which are normally negotiated between individual staff and their line managers, are

established at the beginning of each financial year in the form of sales and revenue, which are reviewed and monitored periodically. For example, a member of the operations group commented,

“The [performance] culture encourages people to go all out to get what they need. On a daily basis you see your performance against their target. Let’s say at the beginning of 2010, what the group was driving at a big balance sheet, get deposits (...) as an account officer or a marketing officer you already know every day these are my figures, these are my deposits, this is where I should be at the end of this year. So you are moving towards it [your target].” e-Products Administrator (Operations Group)

In addition, when the researcher observed the operations group staff in their working environment they seemed to be the less formal and structured in the way they completed tasks compared to other departments. The staff in this group were given more discretion to decide which method or processes to adopt in order to maximise their outputs and achieve target levels of performance. This discretion also applied to the use of information systems and technology with staff being allowed to decide whether to adopt information systems if they believed they would enable them to achieve high levels of performance and to ignore the systems if they did not. Some staff within the operations group highlighted this viewpoint,

“Compared to other units, we are open in the way we do things, we can decide which technology or methods best suit the job. We are quite flexible and it’s very helpful (...) this enable much better productivity”. Head of Card Operations (Operations Group)

“Well, delivery is important to us, so discretion is allowed to come into play, even in the use of IT. We cannot do otherwise because I mean we keep getting deadlines for this and that from management passed down to us every day so we like to get the job done in our preferred methods. That is how we work and get the job done”. Cards Administrator (Operations Group)

4.3.4 Differentiation perspective of organisational culture and diffusion of MAXIM

MIS

Having described the three sub-cultures that were identified from the interview data, the following sections examine how these sub-cultures influenced the different stages of MAXIM’s diffusion at the bank.

Adaptation

During the design and implementation stages of the MAXIM project, informants reported that there had been a number of situations where there had been conflicts between staff in the Finance and Operation groups and staff in the IT Group. These conflicts occurred during the design stage regarding the type of functionality that MAXIM could support. For example, a financial analyst in the Finance Group explained that they had struggled to get the IT Group to adapt MAXIM to the Finance Group’s existing processes. In addition, the Finance team were cautious in adopting the new MIS, as they were suspicious of the quality of the system and the level of accuracy that it could support. This suggests that the Finance Group’s sub-cultural assumptions not to trust other groups influenced the speed that this group adopted the new system. Informants made the following observations,

“We had problems in integrating MAXIM into our work processes, because of the sensitivity involved in our work and getting the account/figures right. We have a specific format, FINSTAT, designed by the Central Bank that must be followed, so we needed to map all the general ledgers to align with that. So it was going to take some time before we trusted MAXIM to be integrated into our systems.” Senior Financial Analyst (Finance Group)

“We had problems getting the MAXIM [IT] people to map the general ledgers properly. It was a matter of understanding how the present application will feed into MAXIM. The MAXIM IT Team had different understandings from ours. We are more careful.” Senior Financial Analyst - African Subsidiaries (Finance Group)

Similar disagreements also ensued between the IT Group and the Operations Group during the development of MAXIM. In this example, there was some confusion between the different groups with the reports that were being generated from the system not meeting the needs of the Operations team. This required several attempts to generate reports that were useful to the operations team and this delay and lack of availability of information was thought to be hindering the effective performance of the group. An informant commented,

“When they (MAXIM IT Team) did the query, it wasn’t what we wanted, so we went back and forth, it was difficult and it was affecting performance.” Business Operations Support (Operations Group)

These misunderstandings concerning user requirements regarding the development MAXIM caused delays in the design and implementation of the system in some parts of the bank. The

comments from informants indicate that in late 2008, several groups did not share common perceptions on how they could adapt MAXIM for their organisational use, resulting in uncertainty during the adaptation stage of diffusion. It appears that the different sub-cultures held by the three groups may have contributed to these misunderstandings, and therefore had a negative impact on the adaptation diffusion stage of the MAXIM project. However, the data also suggest that despite these negative impacts being evident, the positive shared values across the bank had a stronger influence at this stage and were beneficial for MAXIM progressing to the acceptance stage of diffusion.

Acceptance

As the MIS was rolled out more widely to the Finance and Operations Groups for organisational use in August 2009, the level of resistance to using the system increased. For example, staff from the Finance Group questioned if the use of MAXIM was consistent with the group's accuracy-driven culture. Informants explained that they were not confident that the system would be able to generate the information required for the Finance group to produce accurate reports for senior management and regulatory bodies. Several staff in this group commented that they were more comfortable and had more confidence in their established methods of working and had been unwilling to engage with the new system. For example, informants stated,

“There was resistance when MAXIM was introduced mainly because people didn't know the system, so they did not trust it or the figures generated from it. We had to be careful we didn't send inaccurate information to top management or regulatory bodies because

of the use of MAXIM so we used the old manual system we were familiar with.” Head of Balance Sheet & Market Risk Management (Finance Group)

“No, we didn’t just do a cut over from our previous methods and started using MAXIM because the reliability of our numbers is key to us. IT can’t just instruct us to use MAXIM and abandon what we have previously being using, even though our methods may be old fashioned but they are tested.” Head of Liga Asset Management (Finance Group)

“No, we did not engage with MAXIM straight away because we did not have the level of confidence required to use a foreign ‘thing’ (...) because anything new coming from outside we want to know whether it will produce the same results with the previous methods we have been using.” Credit Analyst (Finance Group)

This mistrust of the new MIS was compounded by some negative experiences when attempting to use MAXIM. For example, informants reported that they found that the system did not have the expected levels of functionality, held inaccurate or incomplete data or was not configured to fit with the requirements of the finance groups’ calculations. Two managers commented,

“At first when we first started, we noticed that there are some things that are so basic that you thought MIS would do and you just noticed it is not working as expected (...) errors and omissions in the figures; you will be disappointed (...) so you can’t use the system.” Head of Liga Financial Subsidiaries (Finance Group)

“We had issues with balances. There were some definitional problems. So once the figures are not aligned, then there are issues. So at the beginning, because of various

definitional problems, e.g. what should add up and what should not add up, what should be added what should be subtracted... people did not initially buy into it [using MAXIM]”. Senior Credit Analyst (Finance Group)

Consequently, this group became reluctant to adopt MAXIM because it did not allow them to achieve their levels of reliability and accuracy that were seen as core values for this group. This meant that the Finance group were unwilling to use MAXIM more regularly to complete their work tasks, essentially taking every opportunity to revert to previous ways of working. The informants in the Operations Group reported similar experiences. These informants explained that there had been a lack of understanding in the MAXIM IT Group regarding the Operations Group’s business processes. In the view of informants from the Operations Group, MAXIM had been designed according to what the IT Group thought should be the best business processes for the Operations Group rather than fully consulting with what the Operations Group actually wanted. This lack of fit meant that the Operations Group felt the new MIS was not meeting their requirements and would prevent them from achieving efficiencies and high performance if they used it. Informants commented,

“Their [MAXIM IT Team] belief is that reports should not be based on a single product; it should be based on grouping the products but that’s not efficient. I made them understand that it will not work for us, so they have to look for a way around it. That is the reason why we have not started using it.” e-Retail Administrator (Operations Group)

“We were getting the report from FINACLE [a legacy system] before. So when you compare whatever MAXIM is giving us with the initial reports, there should be at least

similarities. But the variance is so wide and that would affect productivity. That is the reason why we have not started using it.” Head of e-Retail (Operations Group)

“We did not like MAXIM at the beginning when it was initially introduced to the organisation (...) reports weren’t coming as quickly as you want them (...) information that you need to do analysis were not forthcoming when trying to use MAXIM (...) the system did not seem to work (...) this affects performance (...) that could be frustrating.”

Head of Business Operations (Operations Group)

Therefore, it appears that because the new system did not support the finance group’s core values of accuracy or the operations group’s core value of achieving high performance, both these groups were reluctant to engage with the new system. This lack of engagement inhibited the MAXIM system from progressing to the routinization stage of diffusion within these groups.

Routinization

By November 2010 the MAXIM MIS had been fully rolled out across the bank and there was an expectation from senior management that bank staff should now be using the system on a regular basis. However, in practice, the lack of engagement and user resistance to the new system that had started since the rollout of the system had increased with many staff using MAXIM as little as possible. This was evident in comments from informants in both the finance and operations groups. For example, the finance group chose to run MAXIM in parallel with their existing systems and methods so that they had a trusted alternative to use if they had any doubts over the reliability of the data from MAXIM. This also enabled them to continue using their preferred established techniques and reduced the need to rely on the new

system. Consequently, there was little evidence from this group that they considered the use of MAXIM as a normal and everyday occurrence. Informants explained,

“The use of MAXIM was running in parallel with our existing methods of financial analysis (...) this may have affected our use of MAXIM but the accuracy of our work is more vital to us and that can only be guaranteed by the use of the methods we are already comfortable with it.” Head of Risk Management (Finance Group)

“Of course we use MAXIM but we may not have used it expansively in the way IT would expect. This is largely due to our own orientations. We are seriously concerned with the accuracy of our inputs and outputs...so we were still very reliant on the normal manual stuff. So from the finance end, we did a parallel run of using MAXIM and still engaged with our methods to work out the differences.” Financial Analyst (Finance Group)

As well as doubting the reliability of the information from the new MIS, staff in the Finance group also expressed concerns about the speed at which the IT Group had attempted to implement the new system. The Finance staff had been keen to conduct multiple replication tests of the system to confirm that it was producing the same results as their existing methods. However, the IT Group felt that this would have represented an excessive testing routine and delayed the project unnecessarily. The IT Group’s view prevailed with MAXIM being rolled out to all Finance staff. However, the more cautious Finance staff continued to work with their existing methods and refused to abandon their legacy systems. A member of the IT Group explained,

“Due to Finance's values of accuracy there was friction when initial concerns over the accuracy of the reports arose. Naturally in any project, the bringer of change needs to give a case for what value the change brings. Sure Finance wanted first to see a replication of what was on the ground before seeking improvements, whereas IT, because of efficiency, would want to skip the middle stage and go straight to improvements. That is where the conflicts arose and it discouraged Finance from using MAXIM in effective ways.” Database Administrator (IT Group)

Informants in the Operations group made similar observations. The Operations Group members revealed that many only used MAXIM for data extraction purposes and used the more familiar Microsoft Excel software for data analysis. These staff members decided not to rely on MAXIM but combine its use with other methods. They did not believe MAXIM alone would enable them improve their levels of performance. A senior manager explained,

“I may be able to do analysis in MAXIM but for my own performance, I prefer to export generated data from MAXIM to Excel for analysis because it is quicker.” Head of Operational Control (Operations Group)

A further example of resistance to the new MIS due to the subcultural assumptions of the operations group that MAXIM would not enable them achieve high level of performance was provided by the Head of the Mobile Unit. In order to use the new MIS in a routine manner, he expected to be able to use MAXIM for complex dynamic analysis. However, he found that the system could only perform a static analysis. He explained,

“MAXIM is more for extraction of data but MIS in many cases goes beyond that. We are doing mobile payments. It is going to be used for a lot of transfer of money. I want intelligence out of that information. I don’t see that in MAXIM, at least that is what I expect of an MIS.” Head of Mobile-Banking (Operations Group)

When the MAXIM IT team were approached to clarify the issues raised by the Operations Group, that MAXIM could not directly perform dynamic analysis calculations, the MAXIM IT team argued this was not the case. A senior programmer explained,

“I have been working with MAXIM for about three years. MAXIM is the only system in Liga Bank that can do multi-dimensional analysis and reporting and it can do that to any level you want.” Senior Programmer (IT Group)

However, comments from a database administrator in the IT group suggests that the problem was not a lack of functionality but that access to the relevant functionality had not been requested by the Operations Group. He stated,

“The data for all calculations and analysis are in MAXIM. It can be extracted. Just because it just hasn’t been requested doesn’t mean it isn’t doable. I am sure if it is requested, we can give them what they want.” Database Administrator (IT Group)

Consequently, it appears that a user-developer gap had emerged concerning required and available functionality and this was compounding the low levels of engagement with the new MIS from the Operations Group staff. The view of the IT Group was that MAXIM was easy to use and members needed to request traditional tasks they needed to be automated in

MAXIM. However, it appears this message was not effectively communicated to the Operations Group. Further, the expertise of staff within the IT Group may have clouded their view of what constituted a highly useable system for other staff within the bank. This example also suggests that the bank's core values of empathy and resilience were being ignored by the way these two groups interacted. There seems little empathy from the IT Group towards the Finance or Operations group's concerns and the Finance and Operations groups show little evidence of embracing the challenges of using the new MIS system. This breakdown between different groups was encapsulated by the comments of the Head of Card Operations, who said,

"The problem is that people that are sitting on MAXIM side, they know only coding, and they don't know what banking is all about. We need somebody who can understand both."

Head of Card Operations (Operations Group)

A review of the e-mail and memo correspondences confirms the discontent group members had during MAXIM implementation. For example an e-mail sent to the head of the MAXIM IT implementation project from a senior manager in the operations group indicate that non-IT staff did not appreciate MAXIM because they felt the IT group in their design and implementation of MAXIM did not fully put into consideration their work patterns and their business requirements in the design of MAXIM. Excerpts of the e-mail dated 11 August 2010, is stated below,

...We appreciate your efforts in implementing the new MIS (MAXIM) for the operations department. Nonetheless, our businesses processes and requirements were not fully considered whilst implementing MAXIM. We are not able on MAXIM, to perform some

dynamic customer/market analysis we are able to do on the previous tool (INFOPOOL). This seriously undermines the way we work and our ability to achieve the productivity the bank's expects from us. Head of Business Development, m-Banking (Operations Group)

In summary, the Bank's core values of resilience and empathy became less salient as the MAXIM project progressed. At the same time, the subcultural differences between IT, Finance and Operations groups became more salient and appear to have contributed to the MAXIM MIS not being used in a routine way by these groups.

4.4 Summary

Table 4-2 provides a summary of the findings from the analysis of Liga Bank's organisational culture and its influence on the diffusion of a new MIS, from an integration and differentiation perspective. Table 4-2 shows that shared values of resilience and empathy among staff had a positive influence on their commitment to the design and installation of MAXIM. However, even at this early adaptation stage there was some evidence of conflicts between the IT Group and the Finance/Operation Groups when configuring modules for MAXIM. The IT and Finance/Operations Group members had different interpretations of the business terms and functionality which led to confusion and disagreement between these teams. This disagreement had a negative influence on the adaptation stage of the diffusion of MAXIM. However, the wider consensus among informants was that the bank's core values impacted positively on the development of MAXIM, providing a positive force to kick-start the assimilation of MAXIM into Liga Bank's organisational setting.

Table 4-2. Summary of Analysis of MAXIM Diffusion from the Integration and Differentiation perspectives of Organisational Culture

	Stages of Diffusion					
	Adaptation		Acceptance		Routinization	
	Interpretation	Behaviour	Interpretation	Behaviour	Interpretation	Behaviour
Integration Perspective	Members' interpretations of design & integration of MAXIM into the existing bank's legacy systems facilitated by organisation-wide values (resilience & empathy).	Members were spirited when faced with design challenges of MAXIM. IT & end-users understanding of each other despite being from different occupational backgrounds.	Finance and Operations Group members' interpretations of MAXIM use facilitated by organisation-wide values (integrity).	Accepted to use the system.	Some Finance and Operations Group members' able to see MAXIM as commonplace, facilitated by organisation-wide values of resilience and empathy.	A few staff were able to engage in extended use of MAXIM.
Level of influence	High +++ (75% of informants)		Moderate ++ (50% of informants)		Low + (20% of informants)	
Differentiation Perspective	Finance did not trust integrating MAXIM into their processes and the Operations Group interpreted the implementation process of MAXIM as ineffective and affecting performance.	The IT Group's conflicts with Finance/Operations Groups hindered integration of systems and adaptation of MAXIM.	Finance and Operations Groups interpretations of the use of MAXIM respectively inconsistent with their accuracy and Operations Group's driven values.	Many Finance and Operations Group members refused to use MAXIM.	Differing interpretations between IT group and Finance Group that MAXIM could be used effectively to produce accurate results. Differing interpretations between IT group and Operations Group that MAXIM could perform dynamic analysis. IT Group interpret system can perform all analysis and members just needed to request for it.	Many staff found MAXIM difficult to use as a normal daily tool.
Level of influence	Low + (30% of informants)		Moderate ++ (55% of informants)		High+++ (70% of informants)	

When the MAXIM MIS system was rolled out (the acceptance stage), the data suggest that some staff interpreted using MAXIM as consistent with the bank's core value of integrity. This interpretation encouraged staff to use and accept MAXIM to enable them to produce reliable and trustworthy reports. However, during this period the data also indicate that subcultural differences in the bank also had a greater influence on the successful diffusion of the system into the organisation. Many staff in the Finance and Operations Groups interpreted the use of MAXIM as inconsistent with their subgroup values, resulting in these groups resisting the system. Staff within the Finance/Operation Groups believed the IT Group had not considered their requirements when designing and configuring MAXIM. As a result, many staff in the Finance Group did not believe using the system would be in line with the group's accuracy-driven culture because they believed MAXIM would not produce accurate reports. Similarly, the Operations staff perceived the use of MAXIM would not allow them to attain high levels of performance, the core value of this group's subculture. The negative interpretations of MAXIM by both the Finance and Operations groups led to many staff in these groups actively resisting the system, which had a negative impact at the acceptance stage of the project. Overall, the disagreement and resistance from the Finance and Operations Groups appear to have been more influential than the view that the MAXIM did produced reliable reports and restricted the system's diffusion.

The data indicated that by November 2010 there were only a few staff that were using the new MIS in a regular way and considered its use as part of their everyday work activity. The resistance from the Finance and Operations groups continued preventing the system from being diffused further into the bank. These members of staff were not interested in using the system in a routine way, as their core concerns regarding the reliability of the data held on the system had not been addressed. In addition, they were able to continue with their established

manual ways of working, which meant that they could still complete their work tasks. As both these groups were primarily concerned with their performance and producing accurate reports, they were content to disengage with using the new MIS in favour of old trusted ways of working. Consequently, it appears that the subcultural beliefs and values of the Finance and Operations groups led to high levels of user resistance resulting in the MIS organisational diffusion to stall at the routinization stage.

In response to the poor progress of the MAXIM project and high levels of resistance, from January 2011 the senior management implemented a series of formal control mechanisms to force the diverging cultural subgroups to engage with the new system. Therefore, the following chapter considers the data from a third perspective of organisational controls and considers these findings in relation to the process of an MIS's organisational diffusion.

Although latent, MAXIM diffusion during the period January 2011 – June 2011 would have experienced some effects of the diverging subcultures. The latency of the subcultural effects was due to Liga Bank's SM application of formal controls. The applied control helped transform the significant negative subcultural effects that hindered members' interactions and use of MAXIM into significant positive integrated behaviours towards MAXIM during the diffusion of the system. In other words, the applied formal controls ensured an increase of organisation-wide behaviours when attempts were made to ensure the successful routinization of MAXIM. This highlights a causal relationship between organisational culture and formal controls during MAXIM diffusion.

The next chapter highlights why the effects of the diverging subcultures during the period

Chapter 5 Diffusion of an MIS from an Organisational Control

Perspective

5.1 Introduction

The preceding chapter examined the diffusion of the MAXIM system from an organisational culture perspective. This analysis revealed that the progress of the diffusion of the MIS stalled at the adaptation stage with the system struggling to move to the routinization stage. The analysis suggests that the stalling of the diffusion process was due to underlying cultural differences between different groups that manifested themselves through user resistance to the new MIS system. At this point, the use of the system was patchy across the bank, with many staff resorting to familiar manual methods of analysis and report generation, effectively employing workarounds to avoid using the new MIS. In response to this resistance, the senior management at the bank chose to implement a series of organisational controls to attempt to overcome user resistance and continue the diffusion of the MIS. The goal of these controls was re-engage staff and motivate them to use the system on a regular basis so that its use became commonplace. Consequently, this chapter provides a further analysis of the data from an organisational control perspective to understand the effect of control mechanisms on the diffusion process.

There was no strong evidence of the application of the informal control mechanisms in the case site. The portfolio of informal controls which typically relies on norm-emphasizing relationships and self-motivation behaviours was difficult to enact because of the difference and conflicts that occurred amongst the subgroups during the attempts of Liga Bank to diffuse MAXIM. This is in similar lines to work of (Newell et al 2004). Further, Nigeria with a cultural dimension - a high power distance of 77 (Hofstede, 1980), suggests the case site

will prefer to apply formal controls that rely on top management valuing formality to exercise direct application of command and authority during the MAXIM implementation. Also, as noted by Kirsch (1997) and Jaworski (1988), formal control modes would be more fitting for larger projects while the informal control modes are more suited to smaller sized projects. The MAXIM implementation project for this study cost the bank the large sum of \$3.25 million and may therefore be classified as a relatively big project. Thus senior management of Liga would be keener to use formal control mechanisms rather than informal control modes.

The chapter is structured into four sections. The first section presents the formal control mechanisms applied by senior management of Liga Bank during the diffusion of the MAXIM system. The second section explains in more detail how the formal control mechanisms influenced the diverging cultural subgroup members during the adaptation, acceptance and routinization stages of MAXIM's diffusion in the bank. The third section discusses the implications of these formal control mechanisms before the chapter concludes with a summary of the key findings from this chapter.

5.2 Formal control mechanisms applied during MAXIM diffusion

When examining the data to identify the control mechanisms that were applied at Liga Bank, the criteria and definitions provided by Kirsch (1997) and Ouchi (1979) were used to guide the analysis. In particular, two types of formal control mode (behaviour and outcome) were investigated. The following criteria were applied to identify examples of behaviour controls:

- Mechanisms that clearly specified rules, procedures, or processes to obey and adhere to through the sole use of MAXIM.

- Mechanisms that clarified roles to subgroup members when engaging with MAXIM.

The following criteria were applied to identify examples of outcome controls:

- Mechanisms that were issued to test and validate the quality of MAXIM outputs.
- Mechanisms that applied timelines and milestones during the MAXIM implementation.
- Mechanisms that monitored MAXIM usage.
- Mechanisms that explicitly specified desired outcomes and the evaluation of these outcomes.

5.2.1 Adaptation

The main form of control that was reported by informants during the adaptation stage of diffusion (August 2008 – July 2009) was outcome controls. These outcome controls involved the monitoring and reviewing of progress against agreed milestones and testing procedures. For example, the IT group had timelines and milestones to meet to ensure the MIS was rolled out to staff at the stipulated time. The IT Group had weekly meetings with relevant stakeholders chaired by the Group Managing Director of the bank to discuss issues raised during the previous week regarding the implementation of MAXIM. During these meetings each milestone set during the implementation of MAXIM was reviewed to ensure the project was on track and to respond to any deviations from the target. A database administrator in the IT group commented:

“The Group Management Director (GMD) that just left made MAXIM very high priority, he was really on top of things ensuring MAXIM was rolled out within a specific time and that’s continued now with the current GMD.” Database Administrator, MAXIM Unit (IT Group)

She added that as well as reviewing progress, the IT group conducted extensive testing and validation of report templates that they had designed for staff. These tests were to ensure that staff expectations and requirements for the reports were met. She stated:

“We actually do validation processes whenever we create a template in MAXIM for information and reports, like a quality check to make sure that the content is according to what the members want.” Database Administrator (IT Group)

A senior programmer added:

“There was a first validation when the bank started using it [MAXIM] in August 2009. There were two sets of user acceptance tests [UAT]. It was the second one that people really recognized because this is financial data. You cannot just be giving people data like that, it needs to be validated. It was around August 2009 we did the first UAT.”
Senior Programmer (IT Group)

The tests to evaluate the output of MAXIM were examples of outcome control measures that were applied between August 2008 and December 2010. These served as outcome control mechanisms to ensure the MAXIM implementation went to plan and served as motivations for the IT group to ensure that MAXIM was implemented successfully and met the requirements of the Finance/Operations Group staff.

5.2.2 Acceptance

During the acceptance stage informants highlighted reported examples of behaviour control mechanisms. These behaviour control mechanisms mainly concerned existing policies regarding the use of IT systems and through the delivery of training. Informants explained

that there were general policies and procedures in place in Liga Bank when MAXIM was first introduced in August 2009, specifying and encouraging the use of IT systems. Senior management used these policies and procedures to guide staff behaviour toward using the new MIS. Informants made the following observations:

“It is very clear in Liga Bank’s IT policies and guidelines that it is expected for staff to use IT applications like MAXIM and other databases introduced to them to perform their work.” Head MIS Projects (IT Group)

“MAXIM is just one of many IT applications we make use of. There is really no ambiguity whether staff must use the bank’s technologies or not. It is clearly highlighted in the policy (...) so they know that MAXIM exists and they must use it.” Head IT Control (Operations Group)

Sightings of Liga Bank’s policies and guidelines on IT implementations support the comments made above that suggests Liga bank had measures in place to ensure staff engaged with MAXIM. Excerpts from the document highlight,

...The bank will always provide required resources (related infrastructures) and extensive supports (training) that are required to develop IT applications and use of IT systems. Thus, staff are required to always use deployed IT systems for organisational work...

To reinforce the need to engage with the use of MAXIM, senior managers attended several of the staff training sessions on the use of MAXIM. The informants believed that having senior managers present emphasised their expectation that staff would use the new MIS. This

approach also enabled senior managers to gauge the experiences of staff using MAXIM for the first time and any problems that they were encountering. Informants commented:

“It was stressed in the training we need MAXIM for our business and so if we have to produce reports you have to use MAXIM.” Head of Balance Sheet & Market Risk Management (Finance Group)

“The Group Managing Director came to scheduled training sessions to check users’ view of MAXIM. It was [showing] that management was behind it [MAXIM] to make sure that users were using MAXIM.” Database Administrator, MAXIM Unit (IT Group)

The data suggests that senior managers understood that to ensure end-users engaged with MAXIM, they had to make sure that user requirements were met. Attending training sessions acted as a form of behaviour control to monitor and review the organisational activities of the MAXIM project, so as to understand the events and activities as MAXIM diffused into the organisation.

5.2.3 Routinization

Although there was some evidence of formal control mechanisms in the adaptation and acceptance stages prior to January 2011, there was no evidence of the application of these control mechanisms during the routinization stage that occurred between November 2010 and December 2010. Perhaps the reason for this is that senior managers did not envisage such high levels of resistance to the use of MAXIM when the system was first implemented.

Overall, the data analysis suggests that no dedicated control mechanisms were deployed during the development and implementation stages of the MAXIM project. The main forms

of control that were evident during these stages were outcome controls in the form of measuring project performance against milestones and user acceptance testing procedures. These were supplemented by behavioural controls that were evident once the MIS went live and was rolled out to the rest of the bank. These behavioural controls comprised of existing policies and procedures that stated expectations of staff engagement with new technology. However, these policies and procedures were written in general terms and designed for application across all forms of technology across the bank, not just for the MAXIM project. The absence of dedicated controls for the MAXIM project suggests that senior management anticipated that their existing policies would be sufficient to ensure engagement with, and adoption of, the new MIS. The absence also suggests that senior management did not anticipate high levels of user resistance to the new system, which could be offset by stronger control mechanisms. It may be that this relative freedom and lack of strict control in accepting the new MIS allowed the different sub-cultures to undermine the implementation and diffusion of the bank. This user resistance led to low levels of uptake and few examples of users adopting the system in a routine way. By the end of 2010 the MAXIM project had stalled within the bank and there seemed little prospect of attitudes and behaviours changing toward the system without a new catalyst for change. Consequently, senior management decided to implement a number of new control mechanisms in an effort to overcome user resistance and the following sections discusses the mechanisms that were adopted.

5.3 Application of behavioural controls in the MAXIM MIS project

A series of behaviour and outcome controls were applied by senior management to the MAXIM project from January 2011 to respond to the user resistance to using the new MIS that had become established. Two behavioural control mechanisms were applied. Firstly, the

different occupational groups that were acting in silos, namely the IT Group, the Operations Group and the Finance Group were required to work together to resolve their conflicts. Secondly, senior managers in the bank issued a dictat that staff must start using the new MIS system and abandon their previous ways of working.

In order to address the disagreements between the three staff groups a meeting of the managers of the three groups was arranged for January 2011. The main objective of the meeting was to overcome the different attitudes toward MAXIM held by the different subgroup members to establish the need for more positive integrative behaviours. In the meeting it was specified to all stakeholders that senior management wanted the groups to show a united engagement with the new MIS. The senior management emphasised in the meeting that differences, egos and different work procedures had to be set aside. Instead they were required to work together as a cohesive team to ensure that MAXIM could be fully adopted for organisational use. Informants made the following comments:

“We had a stakeholder meeting at the very top and management told them [the Operations Group and Finance Group] to work with MAXIM. Nobody can say 'no' to management. The management decided that they wanted to see everything from MAXIM and [nothing else].” Senior Programmer (IT Group)

“The intervention of the headship, they said, 'Guys, sit down together [IT and Finance and Operations Group], align these figures, what are your gaps, bring it out.' Now I can say we are not less than 95% in agreement. The fact that we are using [MAXIM] for one month that means it's working. We are using it fully for a second month now.” Senior Credit Analyst (Finance Group)

As well as stipulating that different staff groups were required to work together to overcome their differences and resolve technical problems with the MIS, senior management also made it mandatory to use the new MIS to produce management reports. For example, informants commented:

“It is mandatory that MAXIM is used. For instance, let’s take my section. We have the asset and liability committee every two weeks and we have to produce reports that show the performance of asset and liability, that means whether you like it or not, you must use MAXIM.” Head of Balance Sheet & Market Risk Management (Finance Group)

“Now it is not a matter of choice. It is a matter of what the bank wants [us] to do. Now we have to use it [MAXIM].” Senior Credit Analyst (Finance Group)

“Now there are no more alternatives but only the use of MAXIM to analyse the bank’s data, so you are more or less forced to go to MAXIM.” Financial Analyst (Finance Group)

To reinforce the mandatory use of MAXIM, senior management also specified via internal memos and e-mails to staff that former working practices and procedures should be abandoned. To avoid any ambiguity these emails referred to specific practices such as using the legacy MIS or using Excel spreadsheets. They also stopped the IT group from responding to report requests that required the generation of reports from the bank's legacy financial systems. The only bespoke report requests that would be actioned were reports taken from the new MIS system. Reading through some of the copies of the e-mails and memos sent by senior management, it was clear that staff were expected to solely employ MAXIM for analysing and generating information. Informants made the following observations.

“It’s a directive through e-mails and memos that all other source of other applications like INFOPOOL [legacy system] and Excel used for financials should be stopped, that nobody should use it again and they should all be using MAXIM (...) since you are going to prepare your reports and that’s only the acceptable source, then you have to use it.”

Head of Liga Financial Subsidiaries (Finance Group)

“Basically, the other areas or the other avenues and resources where people get their reports were all shut off. For example, we used to get our reports from FINNACLE [legacy system] but then senior management started enforcing that MAXIM should be the sole source. So if you want to generate management reports and you try to utilise the old ways, you can’t. So you have to go to MAXIM, you have no other choice.”

Head of Business Operations (Operations Group)

“IT will not generate that report for you and if IT does not generate that report for you to able to do it manually, then you don’t have a have a choice than go to MAXIM. Because in the process, if you want to do something manually you have to request for IT people to send you data, to spool and send to you before you can do manual. But nobody will authorise that because it is a process. If you want to request something from IT, your boss will have to authorise it, so invariably you cannot even do it manually on what you can get on the MAXIM module because your boss will just ask you 'Why are you requesting for this report when you can sit by your desk and get this report yourself?' So you have no choice but to use MAXIM.”

Financial Analyst - Balance Sheet & Market Risk Management (Finance Group)

5.4 Application of outcome controls in the MAXIM MIS project

Having established that the different sub-groups were required to work together through behavioural control mechanisms, a number of related outcome controls were also applied. These controls involved the undertaking of a second round of user-acceptance testing to ensure that the areas of complaint that had triggered some of the divisions between groups could be resolved. There were also strict timetables applied for the complete handover of all activity to the new MAXIM system and the monitoring of staff activity to check that they were using the new MIS.

As part of the second round of user-acceptance testing, senior management instructed the Finance Group to work with the IT Group to re-evaluate the modules created for them on MAXIM to resolve their problems using the new system. This re-evaluation to ensure that MAXIM delivered the requirements that the Finance Group gave staff in this group-renewed confidence in the data integrity and reliability of MAXIM. Informants made the following comments

“They [Finance group] had no issue using the set of information they were given after the test was done again; it was like 95 percent clean (...) we believe in having accurate and correct figures for analysis. When that threw up almost perfect – 100%, they took it up and it was good.” Database Administrator (IT Group)

“After so many complaints about the initial results generated from MAXIM, we did a user acceptance test again in January 2011. After the test, you find the system is faster and neater. It is better because it is accurate and reduces the time you sleep in the office!”
Head Credit Management (Finance Group)

“The test run we did again (...) people have now mastered the system. So the repeated process with the IT team has actually paid off. The quality of data that we retrieved from MAXIM is now very clean (...) instead of having data from 15 countries showing stupid numbers because the system wasn’t tested well enough. So the system, the work, the investment in time in testing the system has produced very good results.” Chief Financial Controller - African Subsidiaries (Financial Group)

A further outcome control was the application of a clear timetable set by senior management for the cut-over from existing data analysis processes to using MAXIM. This timetable helped motivate staff in the Finance and Operations groups to work with the IT Group to resolve all issues in the design and implementation of MAXIM successfully, before the stipulated cut-off deadline. It was made clear to bank staff that after the cut-off period, they would no longer have access to alternative systems and that only MAXIM would be available for the analysis of data to generate management reports. Informants made the following comments:

“What our bosses did was to put a stipulated timeline for using MAXIM. They fixed the deadline and they insisted that everyone must cut over on the deadline date. It wasn’t negotiable. So what everyone had to do then was to work with the MAXIM team to ensure that MAXIM was working very well before the cut-over date. Since the cut-over date, we have been using MAXIM. All information, financial data are sourced from MAXIM.” Senior Financial Analyst (Finance Group)

“We were given a timeline to stop the use of other processes and there was a cut-off [date] for other applications that we previously used to provide that kind of information. So you had no choice but to follow the prescribed order so as to be able to use MAXIM

effectively to produce your reports. Otherwise your KPI would be affected.” Product Manager (Operations Group)

The deadlines helped to motivate staff in the finance and operations groups to engage with the IT group and ensure that they would have MAXIM working in the way they wanted by the cut-off date. Emphasising the removal of access to alternative systems essentially forced staff to realise and accept that they had to engage with the new MIS in order to fulfil their work tasks and performance measures.

The third type of outcome control applied to the MAXIM project was the monitoring of staff usage of the MAXIM system. Senior management scrutinised audit trails and usage reports on MAXIM to investigate if staff were actually using MAXIM for organisational use as stipulated by the bank. The Head of the IT group highlighted that this monitoring approach ensured staff embraced the use of MAXIM for their organisational tasks. This was indicated by the increased requests from bank staff to the IT group demanding traditional organisational functions and tasks be automated on MAXIM. Informants commented:

“The monthly dashboard report that comes out of MAXIM, management are making use of it. This shows that people are really using it [MAXIM]. We have the audit people, an independent group within Liga that monitor not only the MIS, but also other applications that we use in the group. Periodically they could come and review (...) then we have the risk group that reviews all the logs especially for critical applications to review all the logs to see whether people are not just using it but also not doing some funny things within the system.” Group Head IT Group

“You have to use MAXIM; it is part of your work requirements. You do not have a choice; usage is being monitored to ensure MAXIM is used.” Head of Balance Sheet & Market Risk Management (Finance Group)

“I think so because it helps us to know that we are being monitored. The fact that we know that somebody somewhere is monitoring our activities on MAXIM prompts us to use the system.” Business Operations Support (Operations Group)

Senior managers also monitored the outputs that were presented to them and required all reports to be generated from the new MIS. They stipulated through emails and memos the exact specification for presentation of management reports, which could only be achieved using MAXIM. The Head of Liga Trustees in the Finance Group highlighted that their superiors emphasised that they were only going to accept management reports generated from MAXIM and reports produced contrary to what was instructed would not be accepted. However, it was left to the staff to work out the specifics of using MAXIM to produce these reports. They felt they had to comply with the use of MAXIM as directed by their manager because they did not want to be subjected to queries for non-compliance. He said,

“Just a memo from the financial controller forced us. [It said] ‘this is the format I want this report from MAXIM in and any report rendered that is not in line with it will be rejected.’ Nobody wanted his name to be flying over the place for non-compliance.”
Head of Liga Trustees (Finance Group)

The head of the operations group agreed. He said,

“Well the issue is that there are no other manual reports that are accepted, so staff don’t have any choice but to utilise MAXIM to produce their reports. Top management has made it clear it would only accept reports generated from MAXIM.” Head of Operations Group

The resolve of senior management to stick to the ‘MAXIM-only’ policy was demonstrated from an example provided by the Head of Liga’s Financial Subsidiaries. He recalled trying to produce a report from MAXIM to a tight deadline and eventually switching back to old methods in an attempt to meet the deadline. However, despite generating the report it was not accepted and his team was required to complete the task using MAXIM despite missing the deadline. These examples helped confirm to bank staff that even if processes now took longer using MAXIM they would not be allowed to return to old ways of working. He stated:

“It was forced. There was a time that we produced a report for the Executive Director of Finance He rejected the manual account because he had mandated we use MIS for that month. We were trying, but by the month end we couldn’t finish it and so we switched to the use of Excel. But the Executive Director refused to take it from us. Eventually we got it done [using MAXIM]. When we were through with it he said, this is one is OK, next month I want to see another, progress further. I want it further like this, still on the same MIS.’ So we went back and continued until we got to the stage we are today. So I will say it is like a force but now people are now enjoying it but we needed that force.” Head of Liga’s Financial Subsidiaries (Finance Group)

It was also made to clear to staff that if they did not use the new MIS as directed they would be reprimanded for it. Staff explained that mechanisms were put in place to discipline staff if they did not adhere to the stipulated policies and guidelines ensuring the use of MAXIM. The

bank evaluated the use of the system based on on-time delivery of unit reports. Informants commented that senior management implemented a system of penalties to drive changes in staff behaviour to use MAXIM to produce management information and reports. They stated:

“Oh yes, serious sanctions, yeah there are sanctions. In fact one can be given various substantial measures like query and in extreme cases, it affects your deliverables, it affects your appraisals and ultimately it can affect your employment.” Head of Liga Stock Broking (Finance Group)

“You will be sanctioned according to policy (...) suspension or even dismissal for lack of productivity.” Senior Credit Analyst (Finance Group)

“So you have to follow the prescribed guide to process your transaction, which can only be done on MAXIM. So there are sanctions if you do not use MAXIM, sanctions such as queries, suspension, etc.” Business Operations Support (Operations Group)

Despite SM having a sanction system in place to ensure staff adhered to the use of MAXIM, they did not implement a clear reward system. SM made it clear to staff that there would be no explicit linkage between the development and use of MAXIM as specified by the formal control mechanisms with rewards. Therefore, staff were made to understand that appropriate interactions and usage were part of their job functions, thus there was no need to acknowledge or appreciate the implementation or use of the system.

“I was not given any reward (...) Most technical guys like me appreciate recognition as much as (or more than) monetary reward. Although, I won't mind if they give me financial /promotion”. Senior Programmer (IT Group)

“No there is no reward, since I have started using it nothing has changed, my status has not changed, so what kind of reward except for the fact that it simplifies my work.” Head of Liga Trustees (Finance Group)

“No special rewards for adhering to the use of MAXIM.” Head of IT Control (Operations Group)

These comments highlight that there were no extrinsic motivations or incentives for staff to utilise MAXIM despite them adhering to the specifications prescribed by SM to utilise MAXIM. SM still did not seem to reward staff after evaluating they had obeyed the laid down policies and guidelines to use MAXIM. However, staff did not seem to be angry or hurt by a policy that appeared punitive towards them but just carried on with the interaction of MAXIM as specified. Perhaps the reason for this is because staff suggested that rewards and sanctions were implicitly tied to the use of MAXIM. It was assumed that if staff engaged with the system as prescribed by SM, they would be rewarded because it would make them more efficient in their job functions. These were described by comments highlighted below.

“No defined reward but the use of MAXIM enhances your performance appraisal as a member (...) everybody relies on you in terms of integrity of data and that’s what financial reporting is all about. If your data does not convey the right message people make wrong decisions. Once you are able to ensure the integrity and accuracy of your data, it makes people have confidence in you (...) part of our performance measure involves these (...) so of course it enhances your appraisal.” Senior Financial Analyst – African Subsidiaries (Finance Group)

“No reward, maybe the only reward for using MAXIM, there is creative efficiency in your work (...) indirectly it is affecting your KPI. That means you can meet your SLA on time, you can do so many things on time (...) in terms of your work, it is making your life much easier.” Head of IT Group

“There may be indirect rewards (...) for instance you are giving a TAT, you have a fixed TAT to get something done (...) you will be appraised as an efficient member that gets things done on time (...) instead of spending six hours, you spend six minutes (...) I mean you are a star at the end of the day you will get appraised higher and you will get your reward.” e-Channels Administrator (Operations Group)

The above comments suggest that after staff engaged with MAXIM, they saw benefits in using the system for organisational work, consequently a tacit reward for engaging with it. This contributed to staff having a continued and sustained engagement with MAXIM, which was vital for the successful diffusion of the new system.

The data analysis has provided evidence of a number of examples of formal controls (behaviour and outcome) influencing the acceptance and use of MAXIM by bank staff. These strict controls were applied consistently and without deviance and helped to overcome the user resistance to using the system. Between January 2011 and June 2011 the update of MAXIM considerably increased with many staff using the system to complete their day-to-day work activities. Their renewed engagement with the new MIS suggested that there were greater levels of acceptance of the new system across the bank and that staff were now beginning to use the system in a routine way. The analysis also suggests that through the application of formal controls, the diffusion of the MIS was restarted, with user resistance being countered and staff gradually recognising that they had to engage with the system.

5.5 Impact of formal controls on the MIS diffusion

The data analysis suggests that deploying formal controls to overcome user resistance to the new MIS had considerable success. The comments from informants indicate that having a clear mandate to only use the new MIS gave staff the motivation to re-engage with using the system. This mandate and associated risk of sanction, combined with the decommissioning of legacy systems, and senior managers only accepting reports generated from the new MIS, forced staff to use MAXIM to complete their work tasks. Interestingly, several staff acknowledged that this push from senior management had been necessary in order to get the system fully accepted and embedded in work practices. Rather than resenting the control measures, several staff recognised that while initially uncomfortable, the measures had ultimately proved beneficial to both staff and the bank as a whole. The staff had got more used to using the new MIS and through this increased use, were finding additional benefits and opportunities. For example, informants commented:

“We were forced to use the system and we were told how reports could be generated from the MAXIM module. So we are using that module presently. We now accept it because it reduces the number of hours we put into producing reports and it enhances accuracy of work compared with the previous methods.” Financial Analyst - Balance Sheet & Market Risk Management (Finance Group)

“Well I am happy to use MAXIM now. Earlier on we didn’t appreciate MAXIM. We were not comfortable using it for our work until we were forced to start using it. Despite the fact that it was enforced it now works well for me. It makes my work flexible and that’s why I say I am happy to use it.” Head of Liga Trustee (Finance Group)

“Since the senior management made their position clear [that staff had to use MAXIM] and we know the benefits that accrue from using it [MAXIM], everybody decided to get their heads down and learn this thing. Now we use it [MAXIM] to our benefit and today everybody uses it. After the [control] policies put in place by management, everybody used it [MAXIM] and adopted it to achieve higher accuracies.” Head Liga Registrars (Finance Group)

“The measures have worked well. I believe it was an effective way and also a good way of doing things because it is making members use the system to perform their daily functions to achieve a high level of performance.” e-Channels Administrator (Operations Group)

Applying the formal control mechanisms appears to have forced staff to begin the process of accepting the system. This acceptance has gathered momentum since January 2011 when the measures were first introduced, and by June 2011 there was evidence from informants that staff were beginning to use the MIS in a routine manner. Several informants explained that they now considered the use of MAXIM as part of their daily routine and had grown accustomed to using the system to generate reports and queries. Consequently, it appears that the application of formal controls was effective in overcoming the user resistance that had emerged as a result of sub-culture differences between groups. These controls enabled the diffusion process for the MIS to re-start. The data suggest that by June 2011, the MIS was progressing from the acceptance to routinization stages of diffusion.

5.6 Summary

The findings have highlighted how formal control mechanisms were applied to overcome resistance to the new MIS as a result of conflicting group sub-cultures. Formal controls were applied throughout the MAXIM project (August 2008 – June 2011). However, although formal controls such as deadlines, policies and procedures, training guidance were applied between August 2008 and December 2010 they were not rigorously enforced and monitored for the MAXIM project. When the MIS project stalled in late 2010, the senior management decided to introduce several new policies specifically to address the lack of engagement from staff with the MAXIM system. The creation and enforcement of stricter controls regarding staff use of the new MIS system forced staff to re-engage with the system. This enforcement was supported by remedial action to improve some areas of system functionality and a second process of user acceptance testing to ensure that there was a better fit with user requirements.

It was also observed that staff were not rewarded when they adhered to the guidelines prescribed to use MAXIM but sanctioned if they did not; sanctions put in place included queries, suspension or dismissal from the bank. However, rewards in an implicit way were evident because there was a strong perception that the use of MAXIM will enhance productivity levels and vice versa if the system was not engaged with. By the end of data collection in June 2011 it was evident that these new measures had been successful, increasing use of the system, and appear to have helped overcome the reservations that staff had held towards the project. The findings have demonstrated the influence of organisational culture and control on the organisational diffusion of the MIS in Liga Bank. The findings also suggest that there may be a degree of iteration in the IS diffusion process, with some activities that would characterise early stages, such as user acceptance testing, requiring revisiting in order to ensure the continued diffusion of the MIS. These observations are

considered in more detail in the following chapter, by comparing the findings to the existing literature and examining the research questions of this study.

Chapter 6 Discussions of Results

6.1 Introduction

The preceding two chapters studied the diffusion process of MAXIM in Liga Bank from the perspectives of organisational culture (in chapter four) and organisational control (in chapter five). In this chapter, the aim is to discuss the case results in light of the thesis's research questions. The questions were:

1. How do subcultural elements influence the organisational diffusion of an MIS?
2. How and why are formal control mechanisms applied during the organisational diffusion of an MIS?
3. How do formal control mechanisms align conflicting cultures to achieve organisational diffusion of an MIS?

This chapter further introduces the theoretical perspectives (organisational culture and organisational control) and the studied phenomenon (IS diffusion) to explain how the theories and the fieldwork informed one another. This facilitated the unpacking of the theoretical perspectives and phenomenon to explain the case results. The chapter is separated into two main parts. The first and second parts discuss the MAXIM diffusion process - the adaptation stage, acceptance and routinization stages from the organisational culture and control perspectives respectively, as shown in the thesis's framework. I conclude the chapter with a summary.

6.2 The Theory-Fieldwork Interaction

I critically analyse the IS diffusion phenomenon studied at the case site in the light of the organisational culture and organisational control theories drawn from the literature review. The analysis of MAXIM diffusion from these perspectives allows the identification of the contextual factors – characteristics of the organisation and subgroups, characteristics of the tasks and characteristics of MAXIM that served as antecedents to the diffusion of the system. Following the procedure of Cooper and Zmud (1990), the characteristics of organisation and subgroups highlight Liga Bank's organisational culture, structure, formalisation and its staff resistance to change, i.e. implementation of MAXIM. The characteristics of the task describe task variety, the autonomy and responsibility of staff performing the tasks to which MAXIM was applied. MAXIM characteristics highlight the perceived complexity of the system.

6.3 On How MAXIM Diffusion was unsuccessful during the period August 2008 to December 2010 – Organisational Culture Perspective.

This section discussing from the organisational culture perspective, explains why MAXIM diffusion was not successful as the system progressed from the adaptation to the routinization stages during the period of August 2008 to December 2010.

6.3.1 Adaptation stage

In August 2008, when MAXIM adaptation started, some staff across Liga Bank, i.e. IT, Finance and Operation subgroups displayed integrative positive behaviour in handling the issues that may have arisen during the design, development and installation of MAXIM of MAXIM. Because many organisation-wide staff interpreted the tasks and activities of

MAXIM adaptation in terms of its consistency with Liga's Bank's values – resilience and empathy, consensus was reached across and within subgroups. The organisation-wide behaviour towards MAXIM relates to Martin's (1992) integration perspective of organisation culture (OC). Martin (2002) claims that the integration perspective highlights interpretations that reflect consensus and agreement across a social system. Similar to the work of Rivard et al. (2011), a good number of Liga Bank staff were clear and viewed the interpretations of the adaptation of the new MIS in the same way. This helped reduce potential conflicts and ambiguities that could exist among members attempting to implement an IS (Wagner and Newell, 2011, Ravishankar et al., 2011). Rivard et al.'s (2011) multi-case study of three hospitals explored the antecedents of implementing a Clinical Information System. They have adopted Martin's (1992) integration perspective of OC to analyse their data to show that organisational values - quality of care and efficiency of clinical practices held by staff were vital antecedents to the implementation of the technology. Liga Bank's staff's organisation-wide culture of resilience and empathy may be described as having a high influence on the staff's positive behaviour towards the adaptation of MAXIM into Liga Bank's organisational settings. This finding is similar to the findings of McMaster and Wastell (2005). They pointed out that factors such as commitment of organisational members were vital antecedents in the development and deployment of a Business Process Re-engineering system.

Although many staff members shared the organisation-wide values during the design and development of MAXIM at this stage of MAXIM diffusion (August 2008 – July 2009), rivalry and conflicts were also rife among the subgroups. This was due to the each subgroup having its own subculture. The identification of subcultures in Liga Bank specifically draws attention to a silo mentality existing in the Bank. This silo mentality is consistent with Martin (1992) differentiation perspective of OC. The evidence of the silo mentality in Liga Bank

manifested along the lines of what Martin (2005) suggests as being functional and occupational. Martin (1992) gave an example of a differentiation study that explains subcultures in functional and occupational terms. She highlighted that subcultures in a technological firm reacted differently to organisational issues. The engineering and marketing subgroups were in regular disagreement because the marketing subgroup felt the engineers were developing products in 'play' without their considerations. The silo mentality prevented some of Liga bank's staff collaborating and working together. The different subcultural assumptions resulted in staff having multiple interpretations of the implementation tasks of MAXIM. In another study, Huang et al. (2003) adopted Martin's (1992) differentiation perspective to get a richer understanding of the influence of organisational culture on the implementation of an IS. Their research highlighted that conflicting values among subgroups impeded the information sharing and cooperation needed to integrate effectively the technology into a bank's organisational settings. Consistent with this thesis result, staff from the IT, Finance and Operations subgroups had different interpretations of MAXIM when trying to create the Finance and Operations subgroups' modules in MAXIM. The multiple manifestations the differentiation perspective reveals staff had negative influences on the behaviours of staff towards MAXIM. Nonetheless, these negative actions were not as high as the positive actions the integration perspective reveals, i.e. organisation-wide values of resilience and empathy had a high influence on staff behaviour towards MAXIM in the adaptation stage. However, the effects of differentiation would have hindered the progression of MAXIM into the acceptance stage.

6.3.2 Acceptance Stage

In August 2009, when the system was introduced to staff to employ for organisational use, the manifestations the differentiation perspective reveals, i.e. the subcultures effects, had increased. Staff were struggling to accommodate the organisational change brought about by the introduction of MAXIM. Consistent with IS research concerned with IT resistance (e.g. Robey et al., 2002; Wagner and Newell, 2011), the introduction of MAXIM caused tension and clashes amongst the diverging subgroups, consequently in staff resisting the use of the system. Wagner and Newell (2011) explain that user resistance to IT implementation was mainly due conflict among different organisational subgroups with different interpretation of the use of an IT system because of their different assumptions and practices. The different subgroups in Liga Bank's cultural assumptions caused the misunderstanding of the technical and cultural knowledge required to employ MAXIM for organisational use. For example, the Finance and Operations Groups could not interpret how the use of MAXIM would allow them achieve accuracy and facilitate the attainment of a high level of performance respectively in their work. Similar to work of Bartis and Mitev (2008), some staff in the Operations Group suggested that the IT Group were being too rigid in the way MAXIM was designed and not necessarily considering their requirements. They felt the IT Group were too imposing in their ways, thus did not make them perceive the usefulness of MAXIM. The IT Group saw themselves possessing the expert knowledge the other group lacked. They had an assumption that they had the exclusive say over the provision of IT applications and services. This highlights the IT Group taking a 'task approach' rather than a 'people approach' (Schein, 1985). This resulted in a power struggle between the two subgroups during the implementation of MAXIM. McMaster and Wastell (2005) suggest that this kind of relationship between IT and end-users during an IS diffusion process highlights the IT Group to be seen as colonialist, a perception that would generate a barrier to MAXIM diffusion.

Other studies have also highlighted the negative effective of power differential between groups being unfavourable for achieving successful IT implementations (e.g. Huang et al., 2003; Ruppel and Harrington, 2001). The perceived power displayed by the IT Group by self-declaring the possession of expert knowledge of MAXIM implementation needed to be balanced by embracing some of the social knowledge provided by the Operations Group on how MAXIM should be implemented for them. The differences in knowledge, methods and interests espoused by the diverging subgroups highlights the division that occurred during MAXIM implementation, which negatively affected the acceptance stage of MAXIM diffusion in Liga Bank. This is consistent with Cooper and Zmud's (1990) argument of the importance of examining the interaction of organisation and task for achieving successful IT diffusion.

Also, from the data, there was evidence of staff across the subgroups espousing the organisation-wide values of integrity in the acceptance tasks of MAXIM. This was vital for staff employing MAXIM for organisational work. Some of the staff felt the use of MAXIM would allow consistency in the generation and analysis of data required to produce reliable management reports. However, the saliency of the organisation-wide values of integrity as revealed by the integration perspective was lower when compared to the saliency of the subcultural effects as revealed by the differentiation perspective. This suggests that the effects of subcultures took precedence over the organisation-wide values, but not in isolation to each other when MAXIM progressed from the adaptation stage to acceptance stage. The majority of inconsistent interpretations and behaviours during acceptance stage as described by the differentiation perspective would create a fraught process while trying to diffuse MAXIM, i.e. the progression to the routinization stage from the acceptance stage due to the diminishing influence of positive organisation-wide behaviour towards MAXIM.

6.3.3 Routinization Stage

In November 2010, the objective was for staff to be able to see MAXIM as commonplace and be used in an extended and efficient manner in generating and analysing the bank's data for the quick and reliable productions of management information. However, the saliency of the subcultural effects prevented majority of staff to use MAXIM in a routine manner. Only a few applied the organisation-wide values in their attempts to use MAXIM in a routine manner. The three different ways of life identified in Liga bank – organised expert knowledge (IT Group), cautious accuracy (Finance) and performance-driven (Operations), which hindered MAXIM acceptance, also significantly hindered the routine use of MAXIM. This highlights the fact that despite MAXIM attaining the routinization stage in November 2010, the system did not work well in practice, because the subgroups' disagreements led to the majority of the staff not using MAXIM in a way to allow the embedment of the system into Liga Bank settings. Therefore, end-users continued to resist the use of MAXIM, thereby significantly impeding MAXIM routinization. It could be argued by December 2010 that MAXIM was an example of an IT system not meeting its planned objectives. Findings similar to the work of Jackson (2011) highlight that by the end of December 2010, the majority of the staff did not use MAXIM effectively to generate and analyse data for management information. Only a few had used MAXIM effectively for their work functions, their efforts masked by the majority of staff who perceived the complexity of MAXIM, resulting in staff interpreting the use of MAXIM as burdensome and inconvenient. Therefore, they still engaged in manual and traditional processes resulting in non-use or scant use of MAXIM. This led to MAXIM diffusion to be unsuccessfully implemented by the end of December 2010. This is similar to Bartis and Miteve's (2008) results, which pointed out that different subgroups with different subcultures attributed different meanings to the introduction of a new IS. User groups felt the IT group and top management did not take into

consideration their work practices when implementing the technology. This resulted in staff not utilising the system in a manner that would facilitate organisational productivities. This non-routine usage resulted in the failure of the implemented MAXIM because the system was not used in way that could achieve organisational goals.

Burton-Jones and Gallivan (2007) argue that multiple interpretations during the interactions and use of an IT system can explain why the usage of a system may differ between groups. The inconsistencies witnessed in the use of MAXIM across the diverging sub-cultural groups through the adaptation, acceptance and routinization stages of MAXIM diffusion provide insights on how the collective system usage varied across the staff in the different groups of Liga Bank. This is similar to what Burton-Jones and Gallivan (2007) conceptualise as configural usage of the system where members of a group use an IT system differently, resulting in a heterogeneous pattern. This was evident in Liga bank by the different staff behaviours towards MAXIM as revealed by the integration and differentiation perspectives. The integration perspective shows that organisation-wide values of resilience and empathy were salient in the adaptation stage. Saliency changes, the differentiation perspective show that subcultural effects were more salient in the acceptance stage, and the subcultural effects became most salient in the routinization, resulting to many staff not seeing value from use of the system. They found it a nuisance and thus reject its use, causing the unsuccessful outcome for MAXIM diffusion.

6.4 Implication of MAXIM Diffusion on Liga Bank's Organisation Culture

This case study reveals a clear pattern that the characteristics of tasks in the preceding stage of MAXIM diffusion had an impact on the subsequent stages. The organisation-wide values

of resilience and empathy manifested by staff towards MAXIM were the more salient in the adaptation, but the subcultural elements took precedence in the acceptance and grew in saliency in the routinization stage, while the staff manifestations of organisation-wide values became latent. This highlighted that the different manifestations of the integration and differentiation perspectives reveal, although isolated from each other, each came to the fore with different salience during MAXIM diffusion. This is similar to Jackson's (2011) work that adopts Martin's (1992) three perspectives of organisational culture in studying the adoption lifecycle of an IT system in a college. He found out that the revelations of each perspective overlapped, but were more prevalent at certain points in time. For example, in 2003, subgroup conflict (differentiation) was evident but in 2004/2005, subgroup conflict continued and coexisted with ambiguities and contradictions (fragmentation). Dubé and Robey (1999) explain the overlapping of the manifestations that these different perspectives reveal can evolve in a rather sequential manner. They explain from their results that irrespective of a manager's attempt to build an organisation-wide value of teamwork (integration), there was an emergence of dissimilar subgroups (differentiation) and ambiguity manifested when there were dealings with an outsourcing partner (fragmentation). Martin (2005) argues that it is usually easy for cultural staff and researchers to see one theoretical perspective and label it as the home viewpoint, while the other two perspectives can be more difficult to access. She further argues that it does not mean the other perspectives will not be visible, if the researcher looks hard and in depth.

This thesis argues that perhaps the reason why the saliency of the different manifested cultural dimensions of Liga Bank emerged and shifted over time during MAXIM diffusion was because as MAXIM progressed from the adaptation stage to the acceptance and routinization stages, the level of interactions with MAXIM is expected to increase. Staff had

to use MAXIM in a continued and enhanced manner. This expected increase in MAXIM interactions caused staff to further perceive the use of MAXIM as complex and difficult. These put them in a situation where they had to restructure their organisational processes. These changes did not match but conflicted with the existing subgroup values held by many of the staff, causing situations of resistance to the diffusion of MAXIM. Unfortunately, because differentiation behaviours prevailed when compared to integration behaviours as the implementations of MAXIM progressed, the salient subcultural behaviours and practices stifled the integrated behaviours, which consequently led to many users rejecting use of the system. The increased saliency of staff resistance to MAXIM as described by the application of the differentiation perspective, resulted in the unsuccessful diffusion of MAXIM by the end of 2010. This helps answer the call to explore the impact the saliency of a given cultural perspective may reveal, and may have on the final outcome of the implementation of an IT system (Rivard et al., 2011).

In summary, this study shares and contrasts with the vast body of literature that has adopted social cognitive theories to explain IT usage and diffusions in organisations. For example, the Unified Theory of Acceptance and Use of Technology (UTAUT) and Theory of Planned Behaviour (TPB) developed by Venkatesh et al. (2003) and Ajzen (1991) respectively. These theories have served as antecedents explaining the use and diffusion of technological innovations. They have assumed that manifested behaviours and practices that come alive during the interactions of a technological innovation are quite stable during the implementation and usage cycle (Leidner, 2010). The adoption of organisational culture from the integration and differentiation perspectives and Cooper and Zmud's (1990) IT implementation model helps better understanding of the social cognitive models that explain the behaviour of individuals in the diffusion of a complex and multifaceted IT system. The

results have highlighted how attitudes and behaviour of staff dynamically change, shaped by the forces that were manifested due to their interactions with an IT system during the diffusion of the system. Also, the Diffusion of Innovation (DOI) model developed by Rogers (1962), which examines factors that influence the decisions to adopt and implement a technological innovation, has been heavily criticised by IS scholars for assuming that individuals and organisations behave in the same way and are subjected to the same kind of market forces (Tornatzky and Fleischer, 1990). The results from this analysis reveal that the failure of the diffusion of MAXIM was largely dependent on decisions made at the subgroup levels. Different group staff' attitudes and behaviours during MAXIM diffusion should be expected as the IT system is being diffused – MAXIM was perceived as a complex technology compared to the previous methods staff utilised to manage data and information in Liga Bank. This importantly reveals how the different manifested cultural dimensions affected the diffusion process of the IT system.

Due to the failure of staff to engage with MAXIM in a manner to meet Senior Management expectations, i.e. successful diffusion of MAXIM, senior management decided in January 2011 to exercise formal control mechanisms. The large investment made in MAXIM, motivated Liga Bank's senior management to ensure the system was successfully assimilated and diffused into Liga Bank organisational settings by the application of stringent formal controls. Nonetheless, as indicated in the preceding chapter, senior management did apply some general form of controls during the period August 2008 – December 2010 to encourage staff to engage with MAXIM. Therefore, the application of formal controls during the diffusion of MAXIM, i.e. August 2008 – June 2011 will be discussed in the second part of the discussion chapter.

6.5 On how successful MAXIM Diffusion was achieved during the period

January 2011 to June 2011 – Control Perspective

To resolve the unsuccessful diffusion of MAXIM that occurred by the end of December 2010, senior management decided in January 2001 to apply some strict formal controls as examples of behaviour and outcome control mechanisms to break down subgroup boundaries in the bank to create a more integrated organisation. This was to ensure that during the implementations of MAXIM, staff were aligned to the engagement with MAXIM in a manner that would facilitate a successful diffusion of the system. Nonetheless, senior management also exercised formal controls during the period August 2008 – December 2010 but they were general control mechanisms to ensure users engaged with MAXIM.

6.5.1 Re-Adaptation Stage

The inability of many staff at the end of December 2010 to undertake complex routine and non-routine tasks with MAXIM was because of the perceived complexity of MAXIM. This prompted senior management to force staff to go back to the adaptation stage, i.e. to work with the IT Group to resolve the issues in the design of staff' module in MAXIM. This highlights iteration and a loopback in the diffusion process of MAXIM, i.e. routinization stage back to the adaptation stage. The iteration highlights finance and operations groups going back to the IT Group to ensure the system was implemented appropriately. In January 2010, senior management applied forms of behaviour and outcome control mechanisms to kick-start the diffusion of MAXIM thus began phase two of the adaptation stage of MAXIM. For example, senior management arranged a stakeholder meeting as an example of behaviour control (Kirsch, 1996) to issue strict rules and guidelines instruct the different subgroups that were working in silos to work together. How control was exercised in the thesis case study

can be related to previous studies. For example, Kirsch's (1996) study highlighted that during the development of a complex IS, an IS development manager used regular meetings with an IS project manager as an example of behaviour control. This was to ensure the IS project manager manifested behaviour that could produce the required functionality to be built into an IS. In Liga Bank, the stakeholder meeting provided the opportunity to specify procedures that could help shape and align the wary relationship between the diverging subgroups to integrated behaviours towards MAXIM. The stakeholder meetings created an environment for all the subgroups to understand one another's goals, values and work practices. Also, the meeting provided an opportunity for end-users to clearly express to the IT Group their requirements on MAXIM. Also, consistent with the work of Kirsch et al (2002), the stakeholder meeting was effective in reiterating the aim and specifying procedures that would ensure the conflicting groups with different cultural assumptions were able to work together to successfully implement MAXIM for organisational use. This underlines the need to have applied the controls to make the salient effects of subcultures latent, highlighting the causal relationship between of culture and control. Another example from Kirsch (2004) compares with this thesis's results. She highlighted in her study the application of controls across three phases of an IT project, i.e. requirements determinations, system development and system implementation. Kirsch (2004) points out that formal controls such as detailed project plans were utilised by IS and business stakeholders to ensure the successful modifications of the business process changes and installations of the technology. These explanations from Kirsch (2004) are consistent with the application of behaviour controls during the re-adaptation activities of MAXIM. Unlike my study they do not provide insights into what occurred at the later stages of an IS implementation process, e.g. acceptance and routinization stages. Kirsch's (2004) studied IT project phases - requirements determinations arguably correspond with the initiation and adoption stages of Cooper and Zmud's (1990) IT implementation

model, while system development and system implementation stages correspond with the adaptation stages of Cooper and Zmud's (1990) IT implementation model.

The applications of outcome controls mechanisms, such as issuing an implementation timetable/schedule and system testing (Choudhury and Sabherwal, 2003; Kirsch, 1996) were also applied during the adaptation stages of MAXIM. Kirsch et al. (2002) highlighted that clients used outcome-control mechanisms, such as scheduling, to specify to project leaders how to achieve systems developments but also permitted them to choose how they completed the IT project. This thesis results highlight that during the period August 2008 – July 2009, i.e. phase one of MAXIM adaptation, the IT Group had a clear implementation timetable/schedule as an example of outcome control mechanisms (Kirsch, 1996). From the analysis it can be argued this form of outcome control, i.e. timetable/schedule, served as implementation plans, which were general guidelines and instructions put in place by senior management to ensure the IT Group developed and installed MAXIM at the stipulated time. This mechanism to apply outcome control allowed the IT Group to follow a process through (behaviour control) which MAXIM was designed and developed to allow adaptation into Liga Bank's functional requirements and meet the specific deadlines for introducing the system to the end-users in August 2009.

Validation in the form of User Acceptance Tests (UATs), i.e. system testing, was also an example of outcome controls (Choudhury and Sabherwal, 2003; Kirsch, 1997) implemented to ensure MAXIM was deployed. Choudhury and Sabherwal (2003) highlighted from their study how controllers measured controllees' performance against specified outcomes of an IS project. Clients serving as controllers tested vendors' implemented software as a mechanism to exercise outcome control to ensure the deployed technology met set criteria. In Liga Bank,

the UATs were done twice, the first in August 2009, which was due to general guidelines and policies to ensure MAXIM was implemented for organisational use. Nonetheless, due to the issues raised in the MAXIM diffusion period – August 2008 – December 2010, there was realisation that the first UATs were not stringent. Thus, the second UATs in January 2011 were more forceful and strict compared to the first UATs. The second UATs also provided the opportunity for the end-users to severely test all their modules designed on MAXIM by the IT Group as a form of quality assurance to determine whether the system met users' business requirements and to uncover any possible defects in the system. Senior management wanted to modify the initial implementation practice adopted, i.e. the first UAT, so as to enable achieving the objective of implementing MAXIM. Upon the completion of more stringent testing measures done on MAXM, the end-users felt the implementation of MAXIM was modified to suit their specific needs, thus were pleased with the effort made by the IT Group and this led to in late January 2011 to the reintroduction of MAXIM to users to employ for organisational use. The thesis's data suggests that the nature of the outcome control (second UATs and implementation timelines) during the design and development stage of MAXIM allowed the applied controls achieve a successful MAXIM adaptation. This highlights the argument of Choudhury and Sabherwal, (2003) that the nature of applied control mechanisms, i.e. outcome, can be helpful in achieving the precision with which the desired outputs are specified, and the rigor necessary to make the applied control be effective. It can be argued as evident from the case data that there was a direct relationship between behaviour controls and outcome controls. The behaviour control mechanism – senior management via stakeholder meetings issuing strict instructions to Finance/Operations Groups to work with IT Group, engendered the reason for the outcome control mechanism (system testing - second UATs). For example, in the second phase of MAXIM adaptation, IT staff and end-users were instructed to work together to redesign MAXIM, highlighting

behaviour control mechanism. Upon the redesign of MAXIM, end-users as well as the IT Group tested their modules on MAXIM to ensure end-users were satisfied, i.e. system testing as an example of outcome control. This is consistent with Choudhury and Sabherwal's (2003) and Kirsch's (1997) arguments that the application of a mechanism to exercise a specific control mode could lead to the application of another mechanism to exercise a different control mode. Choudhury and Sabherwal (2003) observed in the context of an outsourced IS development project that the application of behaviour control mechanisms (monitoring) by a controller led to the evolvment of a strong sense of shared values and goals between the controller and the controllers highlighting a form of clan control. The form of causal relationship between behaviour controls and outcome controls in this thesis was only evident in the adaptation stage. Perhaps a plausible reason for this is because the adaptation stage involves a lot of collaboration of technical and non-technical staff to implement MAXIM. Many of the non-IT staff were not in their natural working environment, consequently leading to the mechanisms from different control modes engendering each other. This highlights the interdependency of the behaviour and outcome controls ensuring the effectiveness of the applied formal controls during the adaptation of MAXIM.

It can be argued that the stricter and forceful controls applied in the diffusion period of January 2011 to June 2011 compared to the control mechanisms applied pre-January 2011, were helpful in aligning the diverging cultural subgroups to more positive integrative behaviour towards MAXIM, thus making the effects of control salient. Cooper and Zmud (1990) argue that the successful adaptation of an IT innovation is vital for the long-term success of the diffusion process. This thesis highlights that the strict behaviour and outcome control mechanisms were significant to facilitate appropriate end-users and IT staff interactions and understanding, resulting to good design of MAXIM. These facilitated the

successful adaptation of MAXIM into Liga Bank's existing legacy systems and its progression to the acceptance stage, i.e. implementation of MAXIM for organisational use.

6.5.2 Re-Acceptance Stage

Prior to the re-acceptance stage of MAXIM, senior management in August 2009 put in place some behaviour-control mechanisms, e.g. issuing of general policies and procedures manuals, and training sessions, when MAXIM was introduced to staff for organisational use. These control mechanisms were to urge staff to engage MAXIM for their organisational work. During the training sessions the Group Managing Director utilised the opportunity to get users' feedback to determine if their requirements were met and the feedback was utilised to review and monitor the implementation progress of MAXIM. However, the saliency of effects of subcultural differences during the MAXIM diffusion period of August 2008 to December 2010 made these controls mechanisms quite latent. To ensure staff employed MAXIM for organisational work, in late January 2011 senior management applied a variety of mechanisms to exercise behaviour and outcome controls.

In exercising behaviour controls to ensure staff employed MAXIM for organisational work, senior management applied control mechanisms such as instructing and specifying a strict set of rules (Ouchi, 1979). Senior management clarified the bank's goals and objectives by instructed staff to solely use MAXIM for the production of management information/reports. Liga Bank's senior management enforced rules and guidelines to alter staff behaviours (Orlikowski, 1991; Ouchi, 1979). Senior management was working within a well-defined set of rules, which prescribed the behaviour staff should have towards MAXIM. The virtue of senior management leadership positions allowed them the formal authority to wield the control mechanisms (Henderson and Lee, 1992), to ensure staff solely employed MAXIM for

the data generation and analysis for quick production of management information. The formal authority and power were clear and explicit, which had to be documented in black and white, i.e. e-mails and internal memos sent to staff, to make them aware of the rules (Ouchi, 1979). The applied behaviour controls reflect Liga Bank's senior management ability to substantially influence the acceptance of MAXIM. These actions made staff begin to focus to the sole use of MAXIM for the production of management information, which was beneficial for the diffusion of MAXIM.

Also, to ensure staff employed MAXIM for organisation use, senior management specified desired outputs and evaluated such outputs as a mechanism to exercise outcome control (Choudhury and Sabherwal, 2003). Senior management used this mechanism to instruct staff to produce reports that could only be generated via the use of MAXIM. Senior management explicitly specified to staff the desired output they wanted from MAXIM, but unlike the process of behaviour control, left it to staff to determine the more detailed aspects of producing the specified reports via MAXIM. Senior management's earlier application of behaviour controls would have given senior management the confidence that staff would have understood the detailed aspects required using MAXIM to produce the required reports. As argued by Ouchi (1979), senior management were able to apply the outcome control because their desired outcomes (management reports) could be established and tracked, i.e. outcome measurability as an example of task characteristic, serving as an antecedent to the choice of controls (Choudhury and Sabherwal, 2003). Further, senior management ability to specify a desirable outcome, i.e. staff producing reports that could only be generated via the use of MAXIM was because they could evaluate and take corrective actions in form of sanctions if the completed outcome did not meet the task specifications. Senior management evaluated staff usage on MAXIM - outcome control (Ouchi, 1979; Jaworski, 1988) more

closely on the MAXIM central database to review usage logs of MAXIM, i.e. technical infrastructure. Senior management of Liga Bank was able to use the technical infrastructure to ensure staff used MAXIM because they understood the diffusion process of MAXIM from both the technical and social perspectives. The monitoring of staff usage of MAXIM was a mechanism to formulate a standard criterion to compare usage across Liga Bank subgroups. Orlikowski (1991) argues that when monitoring is done via direct observation of staff actions or outputs, it is normally stressful to implement such a control mechanism. Thus, the use of MAXIM's database as an IT tool to monitor staff usage of MAXIM that is dispersed across the different subgroups would be more conducive and effective to implement to allow for the effectiveness of the control mechanism. The thesis results highlight that senior management used the monitoring control mechanism to evaluate the extent to which staff were adhering to the production of management reports via the use of MAXIM, so as to take corrective actions in an explicit manner if it were discovered that staff were not engaging with the system. This is consistent with Orlikowski's (1991) suggestion that the application of control would be futile without the capability to question and modify undesirable behaviour.

It was evident that the combination of the applied behaviour and outcome control mechanisms significantly facilitated the successful acceptance of MAXIM and progression of the system to the routinization stage of the diffusion process.

6.5.3 Re-Routinization

Consistent with Von Meir (1999), as the expectations for Liga Bank's staff to use MAXIM increased, i.e. use MAXIM in a sophisticated and routine manner, the increase complexity staff perceived of MAXIM, thus affecting level of MAXIM use. Von Meir's (1999) argument

is similar to Cooper and Zmud's (1990) viewpoint that the interaction of the task and technology characteristics may produce different effects on different diffusion stages. The increased difficulty and complexity Liga Bank staff perceived of MAXIM resulted in some staff still trying to use the prohibited manual processes and blaming MAXIM for not meeting their expectations. This raised concerns at Liga Bank, leading to senior management to increase the intensity and variety of formal control mechanisms implemented in the acceptance stage to ensure staff used MAXIM in a fashion that would allow an enhanced and continued use of the system.

In deploying behaviour controls, senior management continued with the use of instructions and specifications of a strict set of rules (Ouchi, 1979) as mechanisms to exercise behaviour control mechanisms. Senior management reiterated to staff that MAXIM was the only tool to be used to generate and analyse the bank's data for management reports. Unlike in the acceptance stage where staff could send requests to the IT Group to help them produce the reports or the use of Excel spread-sheets and the other system (INFOPOOL), senior management, in attempts to routinize MAXIM made it clear that it was part of the staff's job responsibilities to engage with MAXIM fully. This forced staff to use MAXIM solely for the generation of management reports. Senior management application of controls served as a conflict-resolution strategy to reduce the effects of the diverging subcultures hindering the diffusion of MAXIM, to more integrative behaviours that would be beneficial for the successful diffusion of the system, i.e. the causal relationship between organisational culture and organisational control impacting positively on the effective use of MAXIM. The behaviour controls were not only vital in mediating a shared reality across the diverging subgroups, facilitating integrated behaviours towards MAXIM, but they also helped the staff realise the benefits of using MAXIM. The Finance and Operations Groups came to recognise

that the use of MAXIM could allow them respectively achieve 'accuracy' and improved levels of performance in their work. This was instrumental in coordinating the implementation tasks and activities of MAXIM to a successful diffusion outcome. It could be argued that during the implementation of MAXIM, senior management prescribed the required behaviour, i.e. development, use and extended use of MAXIM because it believed that its knowledge was superior to the staff. In other words, senior management perceived that if staff used MAXIM in a deep and continued manner, they would achieve the effective generation of information for quick and reliable management decisions.

Senior management felt they had the knowledge to implement the monitoring control mechanism, i.e. project-related knowledge of participants as a factor influencing the selection of behaviour control mechanisms (Choudhury and Sabherwal, 2003; Eisenhardt, 1985; Kirsch et al., 2002). Based on the thesis results, it could be argued that it was convenient for Liga Bank's SM to implement behaviour controls because the implementation of MAXIM was in-house rather than an outsourced project. Thus senior management had a greater understanding of not just the appropriate behaviour it wanted during the tasks and activities of implementing MAXIM but also the understanding behaviour of its staff that were involved in MAXIM implementation. This result is in contrast with work of Choudhury and Sabherwal (2003), which highlights implementation of controls in the context of an outsourced project. In their outsourced context, they point knowledge of appropriate behaviour was lacking, consequently leading to difficulties in exercising behaviour controls.

To ensure staff used MAXIM in a routine manner, senior management also exercised examples of outcome controls. Consistent with the results narrated in the IS literature that discusses outcome control, senior management applied two examples of mechanisms that

enabled outcome control to ensure staff used MAXIM: issuing strict fixed timeline/deadline, and specifications/evaluation of the desired output and monitoring of outputs (Choudhury and Sabherwal, 2003). Senior management gave a strict fixed deadline instructing staff on rules and procedures to cut over from previous methods to the use of MAXIM. This control mechanism gave staff no choice but to engage with MAXIM. They realised that after the cut-over date there would be no workaround to circumvent the use of MAXIM. This was vital to encourage the use of MAXIM, because all the previous methods had been cut off via the mechanisms of instructing and specifying the strict set of rules (Ouchi, 1979).

Senior management gave strict specification on the quality and type of management reports they expected staff to produce. Therefore, staff had to be able see MAXIM as commonplace to enable them use the system at a level that would allow the achievement of the specified quality/type of management reports. This outcome control mechanism, specifications of the desired output, was particularly applied in the Finance Group. The Head of the Finance Group focused on the interim and final reports staff produced from MAXIM without necessarily being concerned with the processes (Choudhury and Sabherwal, 2003), to produce the reports. Thus, staff had some latitude in interpreting and applying the specifications required to produce the reports. Nonetheless, this resulted in staff not producing the expected output when the Head of Finance inspected the reports. He made it clear that the reports presented would not be accepted and they had to intensify their efforts to ensure they could use MAXIM in a routine way to allow the generation of the expected reports. This made the Finance Group, who were naturally wary of using MAXIM because of their cultural assumption not to trust other processes for their work, with no choice but feel obligated to familiarise themselves on how to engage with MAXIM in a manner that would allow them produce accurate reports and with the level of quality that senior management

expected from them. This view is consistent with the results discussed in the IS/control literature, i.e. evaluating project outcome against specified outcome. The Head of Finance was able to apply the specifications of the desired output mechanism because he possessed the skills and capabilities to influence staff producing the desired management reports. The Head of Finance had previously worked in an organisation (Citibank UK) that had also implemented MAXIM.

Unlike in the application of behaviour control where project-related knowledge of the controllers served as an antecedent for selection of control mode, the outcome control is dependent more on the knowledge of the contreee (Choudhury and Sabherwal, 2003; Kirsch, 1996). In this case, senior management felt its staff were mainly resisting the use of MAXIM because of the perceptions they had of the system, perceptions, which were shaped by their subcultures. Therefore, management expected staff to have the required knowledge to use MAXIM in a routine manner because user training and awareness campaigns had been organised to facilitate the use of MAXIM. Thus, senior management felt confident applying the outcome controls to ensure staff used MAXIM in a manner that could facilitate a successful diffusion outcome.

Liga Bank's senior management application of formal controls during the implementation of MAXIM helped resolve the tension and clashes amongst the diverging subgroups that manifested staff' resistance to the implemented MAXIM. The controls allowed staff manifest more positive integrative behaviour towards MAXIM, thus making the salient negative effects of the subcultures latent, i.e. MAXIM resistance. The applied controls facilitated staff to assimilate MAXIM into their work processes. This was vital for the successful diffusion of MAXIM within the period senior management applied the strict control mechanisms: January

2011 – June 2011, compared to the period of August 2008 – December 2010 when the controls were ordinary and lax. Consistent with the IS/Control literature, senior management in Liga bank were able to resolve the problem of goals incompatibility and achieve suitable behaviour towards MAXIM during the diffusion process, because of the bureaucratic mechanisms put in place, e.g. rules and specifications, but these in turn required monitoring and evaluation of the outputs. It can be argued that due to the hierarchical authority and leadership approach of Liga Bank, senior management were able to prescribe to its diverging subcultural staff, an explicit set of rules about expected behaviour and outcomes that would nullify staff resistance to MAXIM implementation.

This study highlights the importance of investigating the relationship between organisational culture and organisational control for understanding organisational diffusion of an IT system. The range of formal control mechanisms has facilitated subcultural alignment in the different subgroups in Liga Bank during attempts to diffuse MAXIM into its organisational settings. The application of the controls upon the unsuccessful outcome of MAXIM diffusion caused a loopback from the routinization stage to the adaptation stage. This has a significant implication for our understanding of an IT diffusion process. This highlights that organisational diffusion of an IT is not necessarily a sequential process as previously highlighted in literature on IS diffusion (e.g. Cooper and Zmud, 1990; Rothwell 1994) but iterative. The IT staff and end-users re-participated in phase two of MAXIM adaptation, and subsequent re-acceptance and re-routinization stages. Therefore, from February 2011, Liga Bank staff were happy to engage fully with MAXIM to generate and analyse data for management information, and this facilitated the extended the use of the system to a more effective and routinized manner, usage levels which led to the successful diffusion of MAXIM.

It would have been expected that as MAXIM progressed along the diffusion stages, the well-ordered prescribed relationship between the controllers and controlees would have evolved into a more cordial and trustworthy nature, prompting a possible change from formal control mechanisms into informal ones. Along similar lines, Kirsch (2004) argues that as the implementation process of an IT project evolved, trust developed among the different stakeholders, resulting in supplanting formal control mechanisms with informal controls. These descriptions do not mirror what happened during the diffusion of MAXIM. There are two plausible reasons for this different result. First, because Liga bank staff had not engaged with MAXIM in the expected manner the first time it was implemented (August 2008 – December 2010), senior management did not trust that without strict formal controls, staff would use the system in the manner that would facilitate successful diffusion of the system. Second, due to the power distance cultural structure that would be evident in a Nigerian bank, a top-down approach would be seen as the appropriate approach and not senior management and staff having a cordial relationship during the undertakings of a vital IS project.

6.6 On why the applications of Organisational Controls were effective for successful Diffusion of MAXIM

6.6.1 Reward – Sanction System

According to the control literature (e.g. Eisenhardt, 1985; Kirsch, 2004), the effectiveness of applied controls relies heavily on the implementation of a reward-sanction system. They argue that to ensure controlee compliance there is an explicit relationship between the reward-sanction system and the formal modes of controls – behaviour and outcome. This thesis highlights that senior management put in place a sanction system to ensure staff adhered to the applied behaviour and outcome control mechanisms. This was to ensure the

applied formal control mechanisms were effective in ensuring staff engaged with MAXIM as required. Senior management made it clear to staff that they would be punished for non-compliance to the use of MAXIM. Although there was no evidence that staff were actually punished for non-compliance, the fear of being punished for non-compliance was sufficient (Xue et al., 2011), to ensure staff engaged with MAXIM. However, Xue et al. (2011), further argue that punishment expectancy may not be effective, as actual punishment/sanction to ensure IT usage. Nonetheless, the certainty of Liga Bank's senior management applying sanctions if staff did not comply with the implementation of MAXIM was quite high because of the bank's reputation of previously applying the aforementioned sanctions if staff did not adhere to organisational policies and procedures. Straub's (1990) IS research based on deterrence theory highlights that the certainty of applications of sanctions significantly decreases the likelihood of noncompliant IT behaviours. Therefore, Liga Bank staff had a high-perceived fear of being punished if they did not comply with the use of MAXIM. This gave staff no choice but to engage with MAXIM in a manner that allowed a successful diffusion of MAXIM.

However, contrary to the control literature (e.g. Eisenhardt, 1985; Kirsch, 1996; Kirsch et al., 2002), Liga Bank's senior management did not implement an explicit reward system to encourage staff that followed and adhered to the stipulated procedures. Senior Management expected staff to use MAXIM as instructed without any reward. Liga Bank's senior management felt that staff should be rewarded in implicit ways (Eisenhardt, 1985; Kirsch et al., 2002), if they used MAXIM, because it would make them more effective and efficient in their work, which could improve key performance indicators leading to job promotions or bonuses. However, implicitness of rewards are normally applicable to the clan control because unlike the behaviour and outcome controls there is no need for explicit incentives to

align the goals of controllers and controlees because of the existence of shared goals in the clan control situation (Kirsch et al., 2002). The evidence that Liga Bank's senior management did not explicitly state specific rewards whilst applying behaviour and outcomes controls and were still effective in achieving successful diffusion of MAXIM, contradicts existing research on controls that suggests that controls are not merely aligning behaviours and assessing outcomes but also stated rewards that define the controls (Kirsch, 1997, Kirsch, 2004). The reward-sanction dimension in the control literature was not observed in the study of Choudhury and Sabherwal (2003). Their study (2003) did not observe controllers directly relating rewards or sanctions to applied controls, thus making controls ineffective. Unlike Choudhury and Sabherwal's (2003) study, this thesis specifically asked informants about rewards-sanctions during the interviews and it was observed that only sanctions were applied, still making the applied controllers effective during the diffusion of MAXIM.

Table 6-1 overleaf, presents a summary of the case analysis (evidence and examples) that also contains the key theory-driven factors underpinning the analysis of the results on controls and MAXIM diffusion.

Table 6-1: Evidence from the Case - Summary of Formal Control Mechanisms impacting on the successful Diffusion of MAXIM

Control Mode	Adaptation	Acceptance	Routinization	
Formal Controls	Behaviour	. Senior Management specified strict instructions and guidelines to ensure the wary subgroups worked together and prepared MAXIM for organisational use. This engendered the diverging groups collaborate in designing and developing MAXIM.	. Senior management specified strict instructions and guidelines to ensure the wary subgroups only use MAXIM for producing management information.	
	Outcome	. Senior management applied mechanisms such as timelines/schedules and the undertaking of User Acceptance Tests (UATs). This allowed the implementation of MAXIM to go according to plan.	. Senior management specified that desired outputs (only reports generated from MAXIM use) would be accepted. . Senior management evaluated MAXIM outputs to ensure they met the required standards, these forced staff to use MAXIM.	
	Rewards	. No rewards, staff were expected to be intrinsically motivated to engage with MAXIM because they realised that engagements with MAXIM would make their daily work easier compared to using the manual processes.		
	Sanctions	. Sanctions such as query, suspension or termination of employment were put in place in case staff breached the stipulated policies and guidelines for using MAXIM.		

6.7 On how Behaviour and Outcome controls were deployed during MAXIM

Diffusion

Table 6-2, presents an overview of how the controls were exercised in Liga Bank during the diffusion of MAXIM and a conceptualisation of the underpinning concepts of the exercised controls. The information contained in the table is expanded when discussing the implication of the findings to theory and practice.

Table 6-2: How Controls were exercised during the Diffusion Process

	Adaptation		Acceptance		Routinization	
	Intrinsic	Extrinsic	Intrinsic	Extrinsic	Intrinsic	Extrinsic
Behaviour Control Mechanisms						
Strict set of rules and guidelines to engage with MAXIM during stakeholder meetings		✓				
Strict set of rules and guidelines to use MAXIM via e-mails/memos				✓		✓
Outcome Control Mechanisms						
Implementation Plans	✓					
System Testing (Phases 1 & 2)	✓ (Phase1)	✓ (Phase2)				
Clear timetable/schedule for staff to cut over to MAXIM usage.				✓		✓
Specification and evaluation of desired outputs				✓		✓

As displayed in table 6-2, all the forms of behaviour control mechanisms exercised during the adaptation, acceptance and routinization stages arose from extrinsic motivations. In other words, they were control measures deployed via identified and integrated measures to ensure MAXIM was interacted with accordance to the policies and guidelines laid down by the bank. It can be suggested that these were a more forceful kind of control (Chua et al., 2012; Henderson and Lee, 1992; Kirsch, 2004). The behaviour controls forced the rivalry amongst the subgroups to implement MAXIM; staff were forced to accept and use MAXIM effectively. As highlighted in table 6-2, the exercising of behaviour controls correlates with the nature of task/activity the controls were trying to achieve, i.e. the complexity of the task. This is consistent with Kirsch's (1997) findings suggesting that the exercising of any mode of control may be linked with the nature of the task. As highlighted by Cooper and Zmud (1990), characteristics of the implemented technology (complexity) and characteristics of the task to which the technology is being applied are vital antecedents for the diffusion process. This analysis indicates as the expectation to use MAXIM increased, the complexity faced by the staff made them see MAXIM as commonplace. This is not unnatural as the routinization of a technological innovation dictates organisational changes in processes and structures (Cooper and Zmud, 1990). The complexity staff faced in MAXIM usage inhibited their ability to routinize MAXIM; they were not able to use the system in an effective manner for the analysis and generation of management reports. Therefore, senior management had to implement measures like the stoppage of old methods for information generation and specifying non-negotiable deadlines to cut over to the use of MAXIM. All these behaviour control mechanisms were external to the environment of staff, and they seemed punitive, but with the fear of perceived sanctions and punishment, staff had no choice but to comply.

The outcome controls exercised in the case site were also based on extrinsic motivations, also salient in the acceptance and routinization stages (table 6-2). Control mechanisms such as implementation plans/milestones, system testing and specification/monitoring of desired outputs were examples of outcome control mechanisms deployed. This also reiterates the consequence of the complexity of the task (Kirsch, 1997). Senior management had to enforce these strict measures to make staff overcome the interpretations in difficulty to use MAXIM for organisational work and in an effective manner (acceptance and routinization stages respectively). The adaptation stage also revealed the form of outcome control – second phase system testing based on extrinsic motivation. This was necessary because staff had been complaining about the difficulty they faced in using MAXIM, highlighting errors and issues not enabling them to use MAXIM, as they would have liked to use it. Therefore, senior management insisted the staff had to go back to the IT Group, i.e. loopback from routinization stage to adaptation stage. This was to resolve all definitional and mapping issues of organisational processes to MAXIM, before the set deadline to cut over to the sole use of MAXIM for the managing of data and information. However, in the adaptation stage, the forms of control mechanisms of the outcome control were mainly exercised within the environment of the IT Group utilising the controls, i.e. intrinsic motivations (table 6-2). This was evident in the implementation plan (adhering to timelines and milestones) and first UAT conducted by the IT Group (table 6-2) to ensure MAXIM was successfully developed and installed for the staff. It can be argued these forms of outcome control mechanisms were intrinsic because the IT Group perceived it as part of their job role and expectations to implement MAXIM, it was expected for them to ensure the system was successfully implemented. Therefore, they did not need extra pressure from senior management or the staff but they felt it was within the IT Group to set and achieve measurable objectives.

Choudhury and Sabherwal (2003) and Kirsch (2004) argue 'role expectations' as a factor influencing choice of control mode. It was evident from the thesis results that senior management exercised control mechanisms because they believed that it was their responsibility to ensure staff used MAXIM in a manner that would facilitate a successful diffusion of the system. However, it's worthy of mention that despite the control mechanisms facilitating the diffusion process by the attainment of the routinization stage at the time of the study, the control mechanisms may also have slowed down the diffusion process, i.e. not being able to reach the infusion stage after almost two years of introducing MAXIM for organisational use. This may have constrained the innovative capabilities of some of the staff. The suggested constraint in the innovation capabilities of the staff were not because they stopped the interaction with the system as directed, but it seemed that most staff were just happy to use the system as instructed by senior management. This may have prevented them taking full ownership of the system to facilitate the use of the system in more productive ways in achieving usage in a more comprehensive and integrated manner (infusion). This is in line with Kirsch's (1996) suggestion that constant application of controls across IS processes could have negative implications, such as failing to identify exceptional member skills. Nonetheless, the exercised control measures may have just been the best strategy for the diffusion of a sophisticated IT system in a Nigerian bank, a setting normally characterised with low technological maturity.

This chapter has critically discussed and compared the thesis results to existing studies on IS diffusion, organisational culture and organisational control. This has facilitated the answering of the thesis's research questions and provides fresh insights into our understanding of organisational diffusion of an IT system. The next chapter provides summary and concluding comments to the study by highlighting the implications of the results for research, theory and

practice. Also, the chapter discuss the limitations to the study and recommendation for future research.

Chapter 7 Conclusions

7.1 Introduction

This chapter summarises the thesis results that focused on diffusion of a Management Information System (August 2008 – June 2011), namely MAXIM, from the twin perspectives of organisation culture and organisational control. The study was undertaken in the Nigerian Operations of a Global Bank (Liga Bank, a pseudonym). The study of the diffusion process of MAXIM was fitting because it is an example of a sophisticated system that can support different interpretations and levels of utilisation (Orlikowski, 1993). The cultural behaviours of different groups within Liga Bank influenced the interpretations of MAXIM. Also, Liga Bank was a suitable case site because the bank had recently implemented MAXIM for the efficient generation and analysis of its data for production of quick, reliable management information.

This research has undertaken a critical review and synthesis of the existing literature on IS Diffusion, Organisational Culture and Organisational Controls. This allowed the discussion of the existing theoretical understanding of the implementation and diffusion of an IT system from a symbolic point of view (Leidner and Kayworth, 2006). In other words, organisational culture and organisational control impacted the diffusion of MAXIM in Liga Bank. Emphasis was given to the gaps in previous IS Diffusion studies: the relationship of organisational subcultures and control during the implementations of MAXIM and how the interactions of these twin theoretical concepts enhance our understanding of organisational diffusion of an IT system and the organisational culture-organisational control perspectives. These relevant literatures were usefully synthesised to identify the research gaps, formulation of the research questions and development of the thesis's conceptual framework, which all formed the basis

for the empirical research. The review used Cooper and Zmud's (1990) framework of IT implementations as a suitable model to conceptualise the diffusion process of MAXIM, while organisational culture and organisational control served as theoretical lenses to the diffusion process. Martin's (1992) conceptualisation of organisational culture (Integration and Differentiation) was adopted, while Kirsch's (1996, 1997) and Ouchi's (1979) conceptualisations of formal controls (behaviour and outcome) were found fitting for this thesis.

The conceptual framework subsequently guided the data collection and analysis of the collected data. The data was collected using forty-seven semi structured field interviews of key interviewees in Liga Bank's headquarters in Lagos, Nigeria. I supplemented the interviews with unobtrusive observations and with other multiple qualitative data sources (project documentation, e-mails, internal memos and the company website) to allow for data triangulation. The data collection took place between December 2010 and June 2011. The study, using an in-depth case study, explored how MAXIM and the system's stakeholders (Senior Management & Staff) evolved through implementations, policies and guidelines, encountering resistance, low usage, applying stricter policies and guidelines, acceptance and enhanced usage, which were all encapsulated in the adaptation, acceptance and routinization stages of MAXIM diffusion. The analysis followed the three concurrent activities identified by Miles and Huberman (1994) of data reduction, data display and conclusion drawing/verification. The analysis and coding of the data were done both deductively and inductively. A deductive approach was used to initially code the data using codes related to the research questions and concepts being examined (data reduction). The exploratory nature of the research also meant that an element of inductive analysis was also appropriate, to allow unexpected findings to emerge from the data. Thus, the initial coding framework was revised

and adapted through a process of inductive analysis. The QSR N'Vivo software was used to facilitate the data coding process. The data was then presented in a series of conceptually ordered displays (data display) in order to study the themes and concepts in more depth to generate more explanatory power. Upon the data analysis, a rich narrative of how the identified organisation-wide values and diverging subcultures in Liga Bank manifested integration, conflicts and power based relationships during the implementations of MAXIM, thus impacted MAXIM diffusion. Similarly, a rich narrative was presented on how senior management of Liga Bank exercised behaviour and outcome controls to align the diverging subcultures during MAXIM implementations, thus facilitating a successful MAXIM diffusion. Further, the results were summarised and presented via the development of a revised conceptual framework to highlight the influence of organisational culture and organisational controls on the diffusion of an MIS.

The conclusions from this thesis make contributions to theory and to practice. Overall, the thesis's aim was to produce interpretive generalisations (Lee and Baskerville, 2003; Walsham, 1995) about organisational diffusion of an IT system, which may inform other research contexts, and some critical review about the organisational and social implications of implementing and diffusing IT systems.

The remainder of the chapter is divided into three broad sections. The first section is the discussion of the thesis contributions to knowledge, i.e. research, theoretical and practical contributions. The limitations and future research are presented in the second section. Finally, the chapter ends with some concluding remarks.

7.2 Thesis Contributions - Fieldwork informing theory

This study attempts to provide a meaningful contribution towards the understanding of organisational diffusion of a Management Information Systems (MIS) from the twin perspectives of organisational culture and organisational control. More broadly, most of the existing literature on organisational culture, organisational control and IS diffusion have either examined the effect of organisation culture on IS diffusion, or effects of organisational controls on single stages of executing IT projects or IT implementations. In contrast, this thesis has examined the application of culture and controls in different stages of IS diffusion. To the best of my knowledge, this approach has not been used in previous studies.

The following section is structured to respond to each of the research questions:

1. How do subcultural elements influence the organisational diffusion of an MIS?
2. How and why are formal control mechanisms applied during the organisational diffusion of an MIS?
3. How do formal control mechanisms align conflicting cultures to achieve organisational diffusion of an MIS?

7.2.1 Implications for Theory

This study's implication for theory is two-fold - implications for the organisational culture and organisational control theories.

To discuss the study's implication for organisational culture theory, focused will be on the first research question:

- How do subcultural elements influence the organisational diffusion of an MIS?

The adoption of the dual perspectives of organisational culture i.e. integration and differentiation as posited by Martin (1992) provided an interpretive lens to guide the analysis of MAXIM diffusion from the organisational culture perspective and provided a rich account for how the agreements and disagreements during staff interaction and use of MAXIM could influence the diffusion of an MIS. The thesis results have highlighted how attitudes and behaviours of staff dynamically changed, shaped by the forces that were manifested due to their interactions with MAXIM in the diffusion stages of the system. This was highlighted by the core value - resilience espoused by Liga Bank's staff. Many staff shared the resilience value but when it came to implementing MAXIM this 'can do' attitude seemed to be less forthcoming - they should have manifested the resilience values especially in the later stages of the diffusion process (acceptance and routinization) to overcome the complexities and difficulties to embrace MAXIM, but did not. Perhaps a reason for this was because the implementation of the MAXIM system was not part of their job - it was supposed to support them to complete their job and overcome work challenges. Therefore, maybe when the staff did not consider something to be a certain type of work challenge, the resilience value became less strong. This change in the cultural values of staff in their interactions with MAXIM contrasts with Schein's (1999) argument that culture is fairly stable and difficult to change. Ravishankar et al. (2011), also highlight in their paper, the potential for culture to change. They stated that during organisational attempt to align an implemented knowledge-management system with organisational strategy, a 'chameleon' subculture was identified. This subculture did not identify strongly with the organisation values or their own subgroup values; they only adapted the values of the subgroup they were temporarily seconded to, i.e. change its subculture to integrate into different subcultures.

This thesis provides explicit insights on how differences and conflicts between and within subculture groups hindered the successful diffusion of an MIS. It has been able to adopt the organisational culture lens in exploring organisational diffusion of an MIS. The study has enabled the identification and explanation of the complexities in behaviours that ensued beyond dichotomous initial usage of IS to a more sophisticated and effective usage of the technology in a routinized manner. The thesis results enhance our understanding of IS diffusion research, an aspect that has limited exploration in the IS diffusion/Organisational Culture literature (Leidner and Kayworth, 2006). The thesis results suggest that identifying cultural values of an organisation from an integration and differentiation perspective can serve as a guide for stakeholders involved in the dynamic social-processual activities of diffusing an IS.

To discuss the study's implication for organisational control theory, focused will be on the second research question:

- How and why are formal control mechanisms applied during the organisational diffusion of an MIS?

A deeper look at the results helps conceptualise the reasons how and why the 'portfolio of controls' were deployed during the adaptation, acceptance and routinization of MAXIM. It highlights that the reasons for the forms of control that were based on extrinsic or intrinsic motivations. Controls based on extrinsic motivations were controls exercised outside the environment of the individual or group utilising the control; they were implemented via identified and integrated measures to ensure the staff complied with the use of MAXIM. Organisational controls from intrinsic motivations were controls exercised within the realm of the individual or group utilising the controls; they had complied to interact and use

MAXIM based on motivations to discover and know the system. This makes us understand how the stakeholders deployed the various formal controls, i.e. behaviour and outcome, during the diffusion process of MAXIM.

Examining the reasons why the behaviour and outcome controls were implemented during the diffusion process of MAXIM provides fresh insights into how control modes and mechanisms were exercised. The various control modes were deployed from a different level or within the same level the control mechanisms were exercised and utilised. Kirsch et al. (2002) argue that formal controls – behaviour and outcome controls are required because the controllers and controlees have contrasting goals that need to be aligned (Kirsch et al., 2002). In other words, it can be argued that controllers and controlees were on different levels. This may be applicable to the exercising of behaviour controls, which are described as deliberate and forceful measures that are undertaken by controllers at a higher level to influence staff behaviour at a lower level (Henderson and Lee, 1992; Kirsch, 1996; Kirsch, 2004). However, results of this study provide a shift from the existing typology of formal controls by indicating that outcome controls, which are also primarily deliberate and forceful, could also, unlike the behaviour controls, be exercised in mechanisms that are unintentional, unforceful and on the same level with the controllers and controlees. This was evident when the IT group had implementation plans/timetable and the first User Acceptance Tests (UATs) during MAXIM implementation as mechanisms to exercise outcome control. These control mechanisms were applied due to the nature and expectations from the job, i.e. intrinsic motivations; the IT group did not need to be coerced or extrinsically motivated to apply these outcome control mechanisms. They were both the controller and controlee, thus did not have contrasting goals and objectives. This helps refine our knowledge of the conceptualisation of formal controls; the thesis results suggest that outcome controls do not always have to rely on

the direct exertion of formal command or organisational influence to control, a theoretical implication that contradicts prior research on control (e.g. Chua et al., 2012; Kirsch et al., 2002).

Also, I theorise that in the application of the behaviour and outcome controls during the diffusion of MAXIM, the fear of sanctions and not rewards were more vital in ensuring the effectiveness of the controls. It can be argued that the adherence to the enforced usage was because staff had perceived fear of been sanctioned. This is consistent with findings of Xue et al. (2011), which indicate that IT compliance intention is strongly influenced by perceived punishment. Depending on severity of staff' non-compliance to the use of MAXIM, senior management specified the application of sanctions such as official queries, suspensions and dismissals. The positive impact of the control measures on the diffusion of MAXIM was despite the fact that there was little or no evidence explicitly linking formal rewards to compliance of staff to the specified polices on the required interaction with MAXIM, they still adhered to the policies and complied with the use of MAXIM. This helps expand upon existing conceptualisation of organisational control archetypes. Existing literature highlights that formal controls use clear reward and sanction procedures to motivate controlees to comply with laid down polices and guidelines (Kirsch, 2004). However, this thesis study indicates that despite the increased formal controls, no clear formal reward system, only formal sanctions were in place. Staff still adhered to and appreciated the control measures. This mandatory circumstance made staff become familiar with MAXIM.

To discuss the study's implication for research, focused will be on the final research question:

- How do formal control mechanisms align conflicting cultures to achieve organisational diffusion of an MIS?

The analysis reveals that senior management deployed behaviour and outcome control mechanisms to ensure staff successfully implemented and used MAXIM in an effective and enhanced manner. Studies have highlighted that exercised formal controls that are inconsistent with organisation social standards may lead to tension and resistance to the controls (Jaworski, 1998; Orlikowski, 1991; Ouchi, 1979). This study highlights that although Liga Bank staff viewed the applied control mechanisms as inconsistent with the way they did things, but the clear, consistent procedure of the bank's position in deploying the control measures positively influenced the diffusion of MAXIM. It helped overcome the resistance staff had towards the system when it was prepared for use, employed for organisational use and to be used in an effective manner. The effectiveness of controls in facilitating MAXIM diffusion in Liga bank contradicts documentation in organization and IS literature, which suggest controls inhibits organisational innovation. Adler and Borys (1996) argue that control mechanisms exercised by managers to ensure staff achieve set tasks stifles creativity and encourage staff dissatisfaction. Thus, affects the ability of staff to master or engage with organizational tasks or functions. Liga Bank's senior management utilised the exercised formal controls to shape the different cognitive structures enacted by staff to the use of the technology, which resulted to the behavioural outcome of staff accepting to continue to use the system in an effective manner. This suggests that Liga Bank's staff were forced to use MAXIM despite not mentally accepting to use it. However, their initial mental rejections and attitudes towards MAXIM did not have a negative impact on the system's diffusion after the controls were enforced, as they were mandated to accept and use the system in an effective way. Past studies have highlighted that conflict in mental acceptance and actual behaviour, a term called 'innovation dissonance', may lead to tensions inhibiting a higher level of IS use (Hsieh and Wang, 2007). It can be argued from this thesis results that the earlier rejections and resistance by Liga Bank's staff to MAXIM and subsequent usage of

the system upon the application of formal controls relates to conflict in mental acceptance and actual behaviour. Therefore, this study has been able to highlight that ‘innovation dissonance’ has not negatively impacted the diffusion of MAXIM, as the applied control mechanisms enabled staff not to just accept to use the system but no longer to perceive use as extraordinary. The application of controls was unlike in a voluntary setting where staff could have been able to control their own behaviour, resulting in them rarely using the system and leading to them not possessing the required knowledge to utilise the system in an effective and efficient way (Hsieh and Wang, 2007). This thesis results helps respond to call to study IT usage in a mandatory setting, the resulting effect of mental acceptance of a technology and the impact it can have on individual usage (Hsieh and Wang, 2007).

Drawing upon theoretical perspectives on the process/contexts of IS diffusion and from the case study results, an integrative process model is proposed to examine the influence of behaviour and outcome controls on the diffusion of an MIS (figure 7-1).

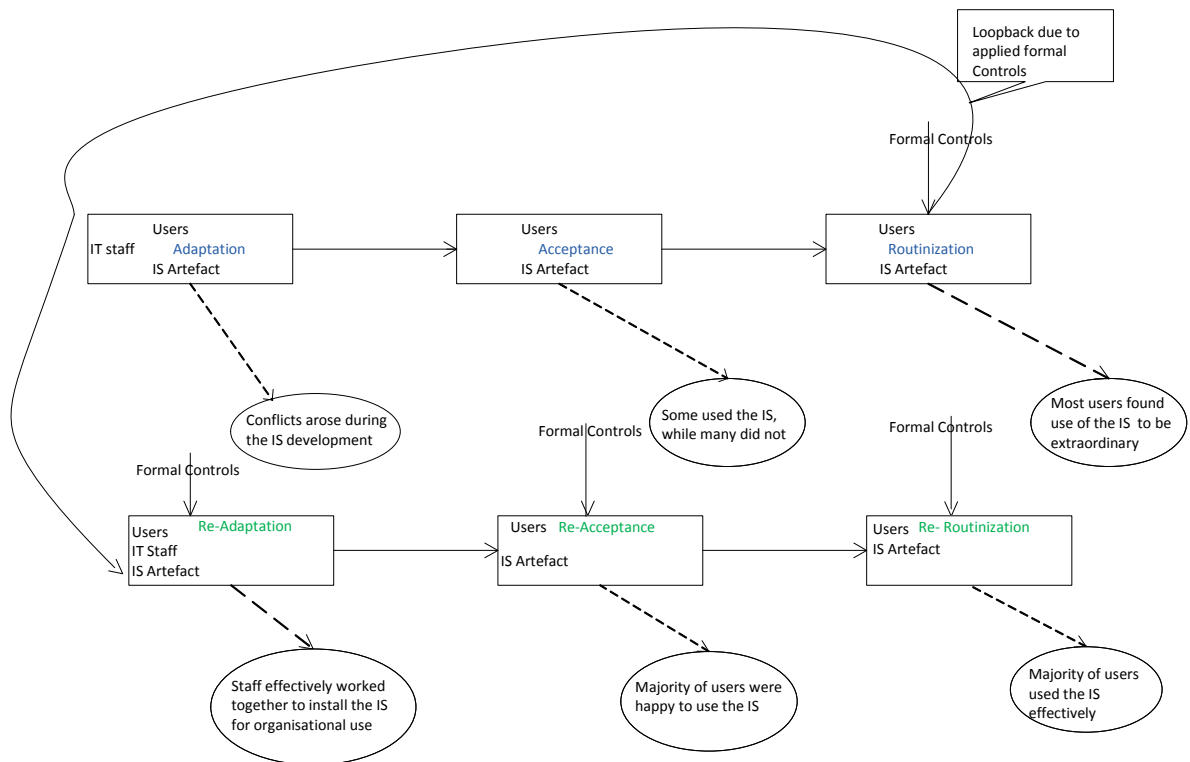


Figure 7-1: Revised Conceptual Process Model – Non-Linear IS Diffusion Process

This thesis examining how various exercised formal control mechanisms aligned diverging behaviours of subgroups members for successful diffusion of an MIS, highlights that in reality the successful diffusion of an IT system may not actually be sequential but a non-linear phenomenon (see figure 7-1). In the IS implementation and IS diffusion studies so far, the conceptualisation of IS diffusion is perceived to evolve in a process that is linear and sequential (Cooper and Zmud, 1990; Huang et al., 2003; Rivard et al., 2011). Rothwell (1994) specifically argues in his paper that diffusion of innovation occurs in a process that is logically sequential, interacting, and stages are interdependent. Similarly, Delone and Mclean's (2003) model has been widely used by IS researchers for understanding and measuring the dimensions of IS success. However, unlike the proposed revised conceptual

model (see figure 7-1), the Delone and Mclean (2003) model does not take into account the likely improvement of the IT implementation and usage process. It also assumes the process of achieving IS success is direct or straightforward in nature. The likelihood for achieving IS success in organisations first time without any problem might be a difficult feat considering that the social implications relating to the development and usage of IT are normally a complicated and complex process. This is consistent with Galliers and Swan's (1999) argument that innovation can be a complex, iterative, and continuous process. However, their work being a conceptual study does not provide the opportunity to give explicit empirical evidence for explaining why the IS diffusion process might be a non-sequential and iterative phenomenon. This study provides empirical evidence to explain how and why this happens. This is indicated by how some of the tasks and activities during the implementation process had to be repeated so that the continued effective use of MAXIM could be achieved. This highlights that the tasks and activities during MAXIM diffusion were parallel and iterative due to the complexity end-users faced while trying to use MAXIM; which is clearly highlighted in the thesis conceptual model (see figure 7-1). The model depicts a loopback that occurred from the routinization stage to re-adaptation, re-acceptance and re-routinization stages. The model encapsulates how top management could exercise combinations of formal controls to ensure a smoother participative process between an IT group and end-users during the diffusion attempts of an IT system.

Newman and Robey (1992) suggest that a social process model tries to elaborate the relationship between different stakeholders. This thesis's conceptual model integrates an understanding of the history of the adaptation, acceptance, routinization, re- adaptation, re-acceptance and re-routinization events/activities of an MIS, which evolved from an unsuccessful period (August 2008 – December 2010) to a successful period (January 2011 –

June 2011). This thesis process approach to study IS diffusion leading to the development of the conceptual model is consistent with McMaster and Wastell (2005 p. 398) suggestions that theorising of the IS diffusion phenomenon “should move beyond simplistic factor models that reduce innovation to static configurations of abstract correlations between independent and dependent variables”. The thesis’s adoption of the organisational culture and organisational control theories provided valuable theoretical lenses for studying the temporal change-processes of the adaptation, acceptance and routinization stages of an IS diffusion process. In similar lines to this, work of Bob-Jones et al. (2008) adopted the actor-network theory as a lens to explain the relationship between different network of stakeholders in an IS development project. Nonetheless, Bob-Jones et al. (2008) do not provide insights on post implementation activities of an IS e.g. acceptance and routinization stages. Their study of an IS development project arguably corresponds with the adaptation stage of Cooper and Zmud’s (1990) IT implementation model. My study’s consideration of the post implementation activities i.e. acceptance and routinization stages, allows the provision of fresh insights on the later stages of IS implementations and how organisational diffusion of technology can be achieved.

7.2.2 Implications for Practice

Also, another contribution of the thesis from the culture perspective is the focus of organisational culture from the differentiation perspective in trying to understand the nature of the diffusion process of an IT system. The subcultural analysis explores the multiple meanings of Liga bank staff in their interactions with MAXIM, paying attention to absence of consensus in the use of the system. This is unlike the majority of IT implementations/culture studies that adopt only the integration perspective (e.g. Alavi et al., 2006; Hoffman and

Klepper, 2000; Livari and Huisman, 2007). The differentiation perspective interprets the different subcultures in Liga bank to be in conflict and in a power struggle due to their different interpretations of MAXIM, engendering an unfavourable atmosphere for MAXIM diffusion. These different subcultures resulted in conflicts and power struggles that grew in saliency as MAXIM progressed from the adaptation to the acceptance and routinization stages. The increased saliency of the subcultural effects were to be expected as MAXIM progressed the diffusion process because staff would normally perceive the use of a technology as too complex to appreciate the entire functions of the system (Von Meier, 1999). This makes us better understand the dynamics of subgroup staff behaviour in relation to the use of an IT system that can facilitate or inhibit the process of diffusion of IT in organisations. This mode of thinking makes us understand the variations across the subgroups and how it influences the interpretations of the usage and subsequent diffusion of MAXIM. Understanding this process offers a practical contribution, which should help organisations better manage the behaviour and actions of subgroups during the development, implementation and use of a new IS. This highlights an important contribution for practice. It demonstrates the need for a better appreciation by IS practitioners of the cultural variations across subgroups, as these differences may have an important influence on the usage and subsequent diffusion of an IS. Taking a more proactive approach to managing these different subcultures may help to improve the behaviours and actions of subgroups during the development, implementation and use of a new IS. In turn, this should help bridge the gap between IS acceptance and efficient IS usage, thereby increasing the likelihood of getting the best return from IS investments.

This study does not develop a theoretical model for multilevel analysis of the diffusion process, but some insights from this thesis help to answer the calls for multilevel IS research

(Rivard et al., 2011). Liga Bank's senior management's diktat, designed to drive through the successful implementations of an MIS, describes the concept of a multi-level/hierarchical process i.e. higher-level actions influencing lower-level actions. Senior management's non-negotiable formal control measures were deployed from a higher level (strategic level) to align the different subcultural behaviours at lower levels (tactical and operational levels) for the acceptance and continued effective use of the MIS. This highlights a causal relationship between organisational culture and organisational control during the diffusion process of an MIS. Cooper and Zmud (1990) suggest that at the organisational level, the success of an IT system is the extent to which the IT system has been assimilated within the organisation's operational and/or managerial work system. It was evident that the exercised control measures made by the bank were successful in incorporating the new MIS within the organisation's operational and managerial work system and allowed its staff to be at ease with the system (routinization). This highlights the importance of organisational controls influencing the diffusion success of an implemented IT system.

It is fair to highlight that the implementation of IT systems in most organisations are not always in a voluntary settings but they are also not always in mandatory settings. It is normally up to staff to determine whether they would use the system and how they would integrate the technology into their work functions (Fichman, 2000). This suggests that staff are normally encouraged to accept the use of IT systems via social subtle means, e.g. training, awareness campaigns, stakeholder engagements and consultation panels, but not forced to use them, especially when usage is expected to be appropriated to a higher level. This makes a noteworthy contribution to IS practice. It demonstrates that the implementation and usage of IT in mandatory settings by the exercising of organisational control measures can facilitate the assimilation and diffusion of the technology into an organisational setting. Senior

management of Liga bank enforcing the usage of MAXIM provided staff with no option but to use the system to undertake their organisational tasks.

Furthermore, from an organisational control perspective, this study proposes that organisations that intend to facilitate the diffusion of an adopted technology should have strict policies in place to circumvent and sanction discretionary usage of the systems that could result to the inhibition of the diffusion of the technology. However, it is worthy of note that if sanctions are actually administered, senior management should use the opportunity to endeavour to explain clearly to staff the reasons why such actions are taken and provide advice how the use of the IT system is expected, to avoid future sanctions or punishments. A failure to take this into consideration might only make strict sanction polices ineffective (Xue et al., 2011). Also, senior management should be aware that for exercised controls to achieve the expected results in IT usage from staff, they do not necessarily always have to be forceful or extrinsically motivated, but controls can also be intrinsically motivated from staff themselves (e.g. self-control or outcome control). This can facilitate using the system by taking ownership of it to deal with the complexities involved in interacting with system. Therefore, staff would be able to understand and use more of the features of the technology to achieve higher usage levels and correspondingly attain higher efficiencies in the organisation's value chain activities.

7.3 Limitations and Future Research

There are several limitations that I acknowledge in my study. Firstly, the inability of the study to adopt the fragmentation perspective of organisational culture to investigate IS diffusion. According to Martin (1992; 2002) the fragmentation perspective helps illuminate

groups beliefs and behaviours that may be ambiguous i.e. chaos underlying culture (Martin 1992). Adopting the fragmentation perspective, as a further theoretical lens to explore the diffusion process of an MIS may have allowed the capture of the ambiguities staff face in the daily use of a sophisticated IT system and provide a better understanding the role of organisational culture in the diffusion of IT systems. Although, this thesis adoption of the integration and differentiation perspectives enabled the use of dual lenses that were at interplay to provide rich insights on IS diffusion, an interplay of the integration, differentiation and fragmentation perspectives may have provide richer insights in the understanding of IS diffusions. Thus, further studies could adopt the three perspectives to investigate the diffusion of an IT system.

Secondly, because the study was built upon a single case, I cannot generalise the results to a wider sample, i.e. statistical generalisation. However, I argue that the empirical results from an in-depth single case study provides deep insights and increases the representativeness of the views of the informants regarding the diffusion of an IT system. Therefore, I am able to generalise from empirical statements to theoretical statements, i.e. analytical generalizability (Lee and Baskerville, 2003). Future research could adopt the quantitative methods to propose hypotheses and test on a wider scale how the twin perspectives of culture and control can serve as antecedents to IT usage and diffusion.

The third limitation in the study is that, considering the dynamic process of MAXIM diffusion, there might be a need to consider the application of the informal mode of controls – self and clan, especially in the later stages of diffusion. As the expectation for staff to increase their level of interaction with the system, their level of resistance towards system also increased. Future studies could try to determine if the combination of the formal controls

with the informal controls, and how this could be applied for a more efficient impact on the diffusion process.

It is important to acknowledge when interpreting the data from the control perspective is to recognise the imbalance in the reward-sanction policy in Liga Bank not negatively impacting the diffusion of MAXIM. This may be linked to Hofstede's (1980) cultural scale index, indicating that Nigeria has a high power distance, 77. This may explain why staff could easily have accepted a policy that did not reward adherence but could apply sanctions heavily if staff did not comply. Future research may take the opportunity to explore the impact exercised control mechanisms may have on IS diffusion in a research context with a different cultural orientation.

Finally, a research opportunity is the exploration of the deeper role of the IT artefact during the diffusion process. IT artefacts have their own objective properties and behaviours (Orlikowski and Iacono 2001) and could provide fresh insights on the nature of the relationship they have with the actors and the organisational tasks during the diffusion process.

Despite the aforementioned limitations, this thesis highlights that the application of control mechanisms significantly altered the characteristics of Liga Bank (diverging subcultures) facilitated the successful acceptance of MAXIM and progression of the system to the routinization stage of the diffusion process. Therefore, this provides a better chance for Liga Bank of getting the best return from the huge investments made in MAXIM.

7.4 Concluding Remarks

The aim of this research was to present the results of an interpretive case study research on the diffusion of a Management Information Systems (MIS) from the twin perspectives of organisational culture and organisational control. It was discussed that the diffusion of an MIS as conceptualised by Cooper and Zmud's (1990) IT implementation model depended on contextual factors - organisation and subgroups characteristics, tasks characteristics and MAXIM characteristics. These contextual factors were brought to the fore by the application of the organisational culture and organisational control theories. The contextual factors serving as antecedents to the diffusion of the system highlights that the development, use and continued use of an MIS depended on the interactions of stakeholders' behaviour towards the system. The interacting behaviours were manifested in rejections of the system, partial use, enforcing use, accepting to use and continued usage.

The study was able to collect rich data, underpinned by Martin's (1992) conceptualisation of organisational culture (OC), i.e. integration and differentiation, and Kirsch's (1997), and Ouchi's (1979), conceptualisation of organisational controls as interpretive lenses to unearth the dynamic relationship of how the application of formal controls were necessary to make MAXIM diffusion successful after the diverging subcultures in Liga initially made MAXIM diffusion unsuccessful. This shows that understanding OC from the multiple perspectives is vital and that when the cultural dynamics identified are not helping the diffusion process, the application of formal controls can ensure a successful diffusion outcome. Thus, no study of organisational culture in relation to IT projects is sufficient unless it includes the consideration of the applications of organisational controls.

The conceptualisation of IS diffusion as a non-linear phenomenon was developed and presented based on this thesis's results but underpinned by the IS diffusion phenomenon and the identified theoretical concepts, i.e. organisational culture and organisational control. The implications of this study for research, theory and practice have also been discussed.

More broadly, the thesis results can help inform future studies of IS diffusion by taking into account the thesis-developed conceptualisations, so as to investigate the implications of organisational behaviour towards an implemented IT system and the consequent effect on the overall diffusion of the technology.

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Appendices

Appendix 1: Interviews conducted at Liga Bank

Interview Date	Position	Group	Duration (Minutes)	Type	Remarks
31 st January 2011 & 27 th April 2011	Head of Balance Sheet & Market Risk Management	Finance	53	Face-to-face & Telephone interviews	Recorded
21 st January 2011, 11 th May 2011 & 17 th September 2012	Market Risk and Balance Sheet Manager	Finance	60	Face-to-face, Telephone & e-mail interviews	Recorded
28 th January 2011 & 13 th May 2011	Balance Sheet Manager	Finance	50	Face-to-face & Telephone interviews	Recorded
6 th January 2011 & 20 th May 2011	Head Credit Admin & Portfolio Management	Finance	55	Face-to-face & Telephone interviews	Not recorded
21 st of January 2011	Senior Credit Analyst	Finance	60	Face-to-face interview	Recorded
2 nd February 2011, 7 th May 2011 & 5 th October 2012	Credit Analyst	Finance	63	Face-to-face, & e-mail interviews	
2 nd February 2011	Head Liga Registrars	Finance	71	Face-to-face interview	
14 th January 2011 & 19 th April 2011	Head Liga Insurance	Finance	55	Face-to-face & Telephone interviews	
18 th January 2011 & 30 th March 2011	Head Liga Trustee	Finance	59	Face-to-face & Telephone interviews	
18 th December 2010	Head Liga Asset Management	Finance	35	Face-to-face interview	Not recorded
12 th January 2011 & 27 th April 2011	Head Liga Stock Broking	Finance	47	Face-to-face & Telephone interviews	Recorded
10 th February 2011	Head of Finance Group	Finance	55	Face-to-face interview	Recorded
16 th December 2010 & 19 th June 2012	Head Liga's Financial Subsidiaries	Finance	61	Face-to-face & Telephone interviews	Recorded
14 th of December 2010 & 27 th April 2011	Financial Analyst	Finance	30	Face-to-face & Telephone interviews	Recorded
2 nd February 2011 & 20 th May 2011	Financial Analyst	Finance	43	Face-to-face & Telephone interviews	Recorded
18 th January 2011 & 5 th July 2011	Financial Analyst - African Subsidiaries	Finance	53	Face-to-face & Telephone interviews	Recorded

4 th February 2011 & 14 th June 2011	Chief Financial Controller - African Subsidiaries	Finance	75	Face-to-face & Telephone interviews	Recorded
10 th February 2011 & 30 th May 2011	Senior Financial Analyst - African Subsidiaries	Finance	53	Face-to-face & Telephone interviews	Recorded
15 th January 2011 & 20 th June 2011	Financial Analyst - African Subsidiaries	Finance	50	Face-to-face & Telephone interviews	Recorded
26 th January 2011 & 20 th May 2011	Head Risk Management	Finance	60	Face-to-face & Telephone interviews	Recorded
28 th January 2011 & 21 April 2011	Senior Risk Analyst	Finance	43	Face-to-face & Telephone interviews	Recorded
26 th January 2011 & 20 th May 2011	Risk Analyst	Finance	39	Face-to-face & Telephone interviews	Recorded
16 th December 2010 & 5 th May 2011	Head of Operations	Operations	52	Face-to-face & Telephone interviews	Recorded
17 th December 2010 & 24 th May 2011	Head Product Management and Performance Reporting	Operations	40	Face-to-face & Telephone interviews	Recorded
15 th December 2010	Head E-Products	Operations	34	Face-to-face interview	Recorded
14 th December 2010 & 30 th May 2011	Head Card Operations	Operations	62	Face-to-face & Telephone interviews	Recorded
15 th December 2010 & 16 th June 2011	Cards Administrator	Operations	58	Face-to-face & Telephone interviews	Recorded
21 st January 2011 & 27 th June 2011	Head e-channels	Operations	51	Face-to-face & Telephone interviews	Recorded
16 th January 2011	e-channels administrator	Operations	34	Face-to-face interview	Recorded
11 st January 2011	e-channels administrator	Operations	41	Face-to-face interview	Recorded
16 th December 2010	e-channels analyst	Operations	30	Face-to-face interview	Recorded
2 nd February 2011	Head e-retail	Operations	30	Face-to-face interview	Recorded
2 nd February 2011 and 17 th of June 2011	e-retail administrator	Operations	30	Face-to-face, Telephone & e-mail interviews	Recorded
20 th January 2011	Head M-Banking	Operations	30	Face-to-face interview	Recorded
14 th January 2011 & 20 th May 2011	m-Banking Administrator	Operations	36	Face-to-face & Telephone interviews	Recorded
10 th February 2011	Head IT Control	Operations	43	Face-to-face &	Recorded

& 5 th April 2011				Telephone interviews	
February 9 th 2011	Head Operational Control	Operations	35	Face-to-face interview	Not Recorded
02 nd February 2011 & 13 th June 2011	Head Business Operations	Operations	54	Face-to-face & Telephone interviews	Recorded
2 nd February 2011 & 31 st April 2011	Business Operations Support	Operations	51	Face-to-face & Telephone interviews	Recorded
2 nd February 2011	Business Operations Support	Operations	30	Face-to-face interview	Not Recorded
9 th December 2010	Head of IT	IT	36	Face-to-face interview	Recorded
9 th December 2010 & 11 th May 2011	Head MIS	IT	43	Face-to-face, & e-mail interviews	Recorded
15 th December 2010, 20 th April 2011 & 19 th June 2012	Head MIS Projects	IT	55	Face-to-face, Telephone & e-mail interviews	Recorded
9 th December 2010, 27 th April 2011, 18 th June 2012 & 10 th October 2012	Senior Programmer	IT	73	Face-to-face, Telephone & e-mail interviews	Recorded
17 th December 2010 & 10 th September 2012	Senior Database Administrator, INFOPOOL Unit	IT	67	Face-to-face, & e-mail interviews	Recorded
13 th December 2010, 16 th June 2011 & 10 th October 2012	Database Administrator, MAXIM Unit	IT	75	Face-to-face, & e-mail & Blackberry instant messaging interviews	Recorded
21 st January 2011	Programmer	IT	30	Face-to-face interview	Recorded
Number of Informants: 47					
Total Number of Interviews: 83					
Total Interviews Duration: 38 hours 17 minutes					

Appendix 2: Interview Guide

Experience of MIS

1. Can you describe your current job role?
2. How do you interact with the MIS?
3. Are you required to use the MIS?
4. Do you feel you have the right skills to access the MIS in the way you wish to use it?
5. Do you feel you have sufficient access rights to get the best out of the system?
6. Are you comfortable using the MIS as a daily organizational tool?

History of MIS

7. How did you promote the use of the MIS when it was first launched? And how well do you promote it now?
8. Did staff used and engaged the MIS straightaway when it was implemented?
 - What were the main problems? What worked well?
9. When did you start using the MIS?

Organisational Culture and Sub-Cultures

10. How would you describe the bank's organizational culture?
11. How do you think the bank's OC impacts the way the MIS is used by staff?
12. How would you describe your group's culture?
13. Do you think your group has a distinctiveness in terms of OC that makes it sort of different to the organization as a whole but possibly sharing some similarity?

14. How do you think your group's culture impacts the way the MIS is used by your group?
15. Can you describe any resistance to the use of the MIS that you may have noticed in your business unit and/or any other unit?
 - If there was, how were such resistance resolved?

Policies and Procedures ensuring the use of the MIS

16. What measures were put in place to ensure that staff used MIS when it was first introduced?
 - Are these still the same?
17. Do you think the measures deployed to ensure the use of MIS are understandable to users?
 - Do you think they work?
18. How does the use of MIS get monitored using these measures?
19. Do you feel the deployments of these measures to use MIS are in line with your work values?
20. How much freedom do you feel you have in your choice to use or not to use the MIS?
21. Are there rewards for adhering to these measures in the use of MIS?
 - What might they be?
22. Are there any potential sanctions for not following these measures?
 - What might they be?

Impacts of the MIS

23. What do you think has changed in the bank after the deployment of the MIS?

24. What would you say is the main purpose of the MIS? Do you think the purpose of the MIS has been achieved? Why do you think so?
25. Do you think staff in your group share the same understanding in terms of use and purpose of the MIS?
26. How useful is the MIS to you? Do you think it has been useful to the group?
And the bank as a whole?

General Comments

27. We have talked about a lot of topics, do you think there is anything that I missed that is important that we haven't discussed?
28. Would you like to make any further comments on anything else?

Appendix 3: Coding Tree – IS Diffusion and Organisational Culture

The screenshot shows the NVivo software interface with the following components:

- Menu Bar:** File, Home, Create, External Data, Analyze, Explore, Layout, View.
- Toolbar:** Includes icons for Go, Refresh, Open, Properties, Edit, Paste, Copy, Merge, Bold, Italic, Underline, Paragraph, Styles, Select, Text, Region, Find, Replace, and Delete.
- Nodes Panel (Left):** Shows a tree structure with folders for Nodes, Free Code, Tree Code, Relationships, and Matrices.
- Search Bar:** Look for: [] Search In: Nodes Find Now Clear Advanced Find
- Main Table:** A table listing nodes with columns for Name, Sources, References, Created On, and Created By.

Name	Sources	References	Created On	Created By
Diffusion and Controls	0	0	13/08/2011 23:58	A
Diffusion and OC	0	0	13/08/2011 15:36	A
Acceptance Stage	0	0	14/08/2011 12:04	A
MIS use for Organizational process - Differentiation (+ve)	0	0	14/08/2011 12:06	A
MIS use for Organizational process - Differentiation (-ve)	1	1	14/08/2011 12:06	A
MIS use for Organizational process - Integration (+ve)	12	15	14/08/2011 12:05	A
MIS use for Organizational process - Integration (-ve)	1	1	14/08/2011 12:06	A
Adaptation Stage	0	0	14/08/2011 11:53	A
MIS Development - Differentiation (+ve)	1	1	14/08/2011 11:59	A
MIS Development - Differentiation (-ve)	0	0	14/08/2011 11:59	A
MIS Development - Integration (+ve)	9	9	14/08/2011 11:55	A
MIS Development - Integration (-ve)	0	0	14/08/2011 11:56	A
MIS Installation - Differentiation (+ve)	1	1	14/08/2011 12:00	A
MIS Installation - Differentiation (-ve)	0	0	14/08/2011 12:00	A
MIS Installation - Integration (+ve)	6	6	14/08/2011 11:56	A
MIS Installation - Integration (-ve)	0	0	14/08/2011 11:57	A
Adoption Stage	0	0	13/08/2011 15:47	A
Infusion Stage	0	0	14/08/2011 12:10	A
Initiation Stage	0	0	13/08/2011 15:38	A
Routinization Stage	0	0	14/08/2011 12:08	A
MIS use as normal activity - Differentiation (+ve)	1	1	14/08/2011 12:09	A
MIS use as normal activity - Differentiation (-ve)	3	3	14/08/2011 12:09	A
MIS use as normal activity - Integration (+ve)	9	10	14/08/2011 12:08	A
MIS use as normal activity - Integration (-ve)	0	0	14/08/2011 12:09	A

Appendix 4: Coding Tree – IS Diffusion and Subcultures

The screenshot displays the NVivo software interface with a coding tree for 'IS Diffusion and Subcultures'. The tree is organized into several stages, each with sub-nodes. The main table below shows the data for these nodes, including the number of sources and references associated with each.

Name	Sources	References	Created On	Created By
Diffusion and Controls	0	0	13/08/2011 23:58	A
Diffusion and OC	0	0	13/08/2011 15:36	A
Diffusion and Subcultures	0	0	13/08/2011 23:56	A
Acceptance Stage	0	0	14/08/2011 12:18	A
MIS use for Organizational process - Differentiation (-ve)	14	19	14/08/2011 12:18	A
MIS use for Organizational process - Integration (+ve)	1	1	14/08/2011 12:18	A
MIS use for Organizational process - Integration (-ve)	0	0	14/08/2011 12:18	A
Adaptation Stage	0	0	14/08/2011 12:18	A
MIS Development - Integration (+ve)	1	1	14/08/2011 12:18	A
MIS Development - Integration (-ve)	0	0	14/08/2011 12:18	A
MIS Installation - Differentiation (-ve)	8	8	14/08/2011 12:18	A
MIS Installation - Integration (+ve)	0	0	14/08/2011 12:18	A
MIS Installation - Integration (-ve)	0	0	14/08/2011 12:18	A
Adoption Stage	0	0	14/08/2011 12:18	A
Infusion Stage	0	0	14/08/2011 12:19	A
Initiation Stage	0	0	14/08/2011 12:18	A
Routinization Stage	0	0	14/08/2011 12:18	A
MIS use as normal activity - Differentiation (-ve)	16	26	14/08/2011 12:18	A
MIS use as normal activity - Integration (+ve)	2	2	14/08/2011 12:18	A
MIS use as normal activity - Integration (-ve)	0	0	14/08/2011 12:18	A

Appendix 5: Coding Tree – IS Diffusion and Organisational Control

The screenshot displays the NVivo software interface with a coding tree for 'IS Diffusion and Organisational Control'. The interface includes a menu bar (File, Home, Create, External Data, Analyze, Explore, Layout, View), a toolbar with various editing and navigation tools, and a main workspace. The workspace is divided into a left sidebar for navigation and a main area for the coding tree. The coding tree is structured as follows:

- Nodes
 - Free Code
 - Tree Code
 - Relationships
 - Matrices
- Sources
- Nodes (selected)
 - Diffusion and Controls
 - Acceptance Stage
 - MIS use for Organizational process - Formal Controls (+ve)
 - MIS use for Organizational process - Formal Controls (-ve)
 - MIS use for Organizational process - Informal Controls (+ve)
 - MIS use for Organizational process - Informal Controls (-ve)
 - Adaptation Stage
 - MIS Development - Formal Controls (+ve)
 - MIS Development - Formal Controls (-ve)
 - MIS Installation - Formal Controls (+ve)
 - MIS Installation - Formal Controls (-ve)
 - MIS Maintenance - Formal Controls (+ve)
 - MIS Maintenance - Formal Controls (-ve)
 - MIS Development - Informal Controls (+ve)
 - MIS Development - Informal Controls (-ve)
 - MIS Installation - Informal Controls (+ve)
 - MIS Installation - Informal Controls (-ve)
 - MIS Maintenance - Informal Controls (+ve)
 - MIS Maintenance - Informal Controls (-ve)
 - Adoption Stage
 - Infusion Stage
 - Initiation Stage
 - Routinization Stage
 - MIS use as normal activity - Formal Controls (+ve)
 - MIS use as normal activity - Formal Controls (-ve)
 - MIS use as normal activity - Informal Controls (+ve)
 - MIS use as normal activity - Informal Controls (-ve)
- Classifications
- Collections

The main workspace displays a table of nodes with the following columns: Name, Sources, References, Created On, and Created By.

Name	Sources	References	Created On	Created By
Diffusion and Controls	0	0	13/08/2011 23:58	A
Acceptance Stage	1	1	14/08/2011 12:44	A
MIS use for Organizational process - Formal Controls (+ve)	36	56	14/08/2011 12:44	A
MIS use for Organizational process - Formal Controls (-ve)	0	0	14/08/2011 12:44	A
MIS use for Organizational process - Informal Controls (+ve)	0	0	14/08/2011 12:45	A
MIS use for Organizational process - Informal Controls (-ve)	0	0	14/08/2011 12:45	A
Adaptation Stage	0	0	14/08/2011 12:33	A
MIS Development - Formal Controls (+ve)	9	10	14/08/2011 12:33	A
MIS Development - Formal Controls (-ve)	0	0	14/08/2011 12:33	A
MIS Installation - Formal Controls (+ve)	8	8	14/08/2011 12:34	A
MIS Installation - Formal Controls (-ve)	0	0	14/08/2011 12:34	A
MIS Maintenance - Formal Controls (+ve)	0	0	14/08/2011 12:40	A
MIS Maintenance - Formal Controls (-ve)	0	0	14/08/2011 12:40	A
MIS Development - Informal Controls (+ve)	0	0	14/08/2011 12:41	A
MIS Development - Informal Controls (-ve)	0	0	14/08/2011 12:42	A
MIS Installation - Informal Controls (+ve)	0	0	14/08/2011 12:43	A
MIS Installation - Informal Controls (-ve)	0	0	14/08/2011 12:43	A
MIS Maintenance - Informal Controls (+ve)	0	0	14/08/2011 12:43	A
MIS Maintenance - Informal Controls (-ve)	0	0	14/08/2011 12:44	A
Adoption Stage	0	0	14/08/2011 12:27	A
Infusion Stage	0	0	14/08/2011 12:54	A
Initiation Stage	0	0	14/08/2011 12:20	A
Routinization Stage	1	1	14/08/2011 12:47	A
MIS use as normal activity - Formal Controls (+ve)	29	41	14/08/2011 12:48	A
MIS use as normal activity - Formal Controls (-ve)	0	0	14/08/2011 12:48	A
MIS use as normal activity - Informal Controls (+ve)	2	3	14/08/2011 12:53	A
MIS use as normal activity - Informal Controls (-ve)	0	0	14/08/2011 12:53	A

Appendix 6: Conditions and Guarantees for PhD Research

Mumin Abubakre, Doctoral Researcher, Business School, Loughborough University, UK

Email: M.A.Abubakre@lboro.ac.uk

Title: The Influence of Organisational Culture and Organisational Control on the Diffusion of a Management Information System (MIS) – A Case Study of Liga Bank PLC (Pseudonym)

1 Research Aim

The aim of this research is to investigate the implementation and assimilation of an MIS into an organisation setting.

2 Research Method

The case-study method is proposed to undertake the study. I strongly believe that Liga Bank PLC as a case site to undertake my fieldwork will help generate rich insightful data to explore the implementation process of an MIS.

The proposed case study research will require me to conduct face to face interviews with key informants in the IT, Finance, and Operations groups of the Bank so as to understand the bank's views and actions in the implementation of an MIS.

If possible, I intend to start the fieldwork by 6th December 2010.

3 Ethical Considerations

The following conditions and guarantees will be presented to Liga Bank PLC to ensure that a high ethical standard is met and data collected will be dealt with in the utmost professional way:

1. Liga Bank PLC and the participants are assured of strict confidentiality and anonymity.
2. Permissions will be sought from participants before being recorded and/or observed.
3. Participants have the right to withdraw from the investigation at any time and to require their own data to be destroyed.
4. Interviewees would be given the opportunity to verify transcribed data and if required the banks will be offered a copy of a summary report at the end of research.
5. Assurance to participants that the research is solely for partial fulfilment for the award of a doctoral degree examination and the research will be assessed by an independent examiner from a university nominated by Loughborough University UK.
6. The research will attempt to investigate the implementation process of an MIS so as to understand how an organisation can derive strategic benefits from IT implementations. It is hoped that the key findings will be of benefit to the bank and to those who participate.

Mumin Abubakre

~~M.A. Abubakre~~