The Influence of Organizational Culture on the outcome of IS Implementation

Mumin Abubakre
Nottingham Business School,
Nottingham Trent University, UK
mumin.abubakre@ntu.ac.uk

Crispin Coombs
School of Business and Economics,
Loughborough University, UK
c.r.coombs@lboro.ac.uk

M.N. Ravishankar
School of Business and Economics,
Loughborough University, UK
m.n.ravishankar@lboro.ac.uk

Abstract

A number of information system (IS) studies have adopted organizational culture (OC) theory to investigate IS implementations. The studies highlight that members will reach consensus or agreement in the use of an IS but also experience inevitable tensions and ambiguities in the use of the IS. However, literature related to IS implementation/OC has rarely examined the influence that the saliency of specific cultural practices may have on the success or failure of IS implementations. Using a case study approach, we adopted the "soft positivism" research philosophy to collect data, underpinned by Martin's (1992) integration and differentiation perspectives of OC to study organizational implementation of an IS. These perspectives served as interpretive lenses through which to explain how members' salient behaviors towards an IS evolved during the implementation process. Our study augments the IS implementation/OC literature by demonstrating how salient cultural practices influence the outcome of IS implementation.

Keywords: IT implementation outcome, IT success/failure, organizational culture

Introduction

In many cases, the failure of an information system (IS) is due not to technical deficiencies, but to organizational issues such as user resistance or resistance to new working practices (Rivard et al. 2011; Wagner and Newell 2011). Many IS implementation studies have adopted organizational culture (OC) theory (e.g. Alavi et al. 2006; Iivari and Huisman 2007) to explain how members respond to ISs in their everyday work, and how these responses lead to system success or failure. The aforementioned examples of IS-culture studies suggest that culture at the organizational level is delicate and has a strong influence on how organizations may cope with, and adapt to, organizational issues that emerge during the implementation of an IS. These studies have assumed that organizational groups/members will always have the same perceptions of, and behaviors toward, an implemented IS. Nonetheless, Reinecke and Bernestein (2013 p. 429) argue that "culture does not produce groups of people with uniform codes of behavior, but creates groups that share similar thinking to some extent," suggesting that culture is not always homogenous. Therefore, there is a need to address the likelihood of competing cultures, conflicts and opposing IS outcomes arising among organizational subgroups when an IS is implemented (Newell et al. 2001). Organizational subgroup members who have different job functions are likely to have different interpretations and attitudes towards an IS in their attempts to develop and use the technology (Koch et al. 2013; Ravishankar et al. 2011; Wagner and Newell 2011). Thus, a consideration culture that is limited to the organizational level may be insufficient to understand the outcome of IS implementation (Rivard et al. 2011). To facilitate richer interpretations of organizational implementations of IS, studies have investigated culture at the subgroup level to explain how IS development and use can be impacted by subgroups that are in conflicting relationships with one another (e.g. Huang et al. 2003; Ravishankar et al. 2011). Despite the extant literature indicating the clear strengths of adopting the organizational and subgroup perspectives of culture to investigate IS implementations, there still remains an important gap. The IS implementation/OC literature rarely examines the influence that the saliency of specific cultural practices (i.e. interpretations and behaviors) may have on the outcome – that is, the success or failure – of IS implementation outcomes (Rivard et al. 2011). Addressing this gap has the potential to provide fresh, in-depth explanations on IS implementation from the OC perspective. This would facilitate explanations of how and why members' interpretations and behaviors towards an IS are shaped and may change during implementation processes, and how OC influences implementation outcomes. This contributes to the emergent view identified by some IS-culture studies that the relationship between culture and IS efforts is continuously evolving and dynamic (e.g. Gallivan and Srite 2005; Leidner 2010; Iivari and Iivari 2011). We predict that taking the evolving and dynamic view of culture will help to advance our understanding of IS implementation, and explain how and why ISs fail or succeed. This will help organizations draw attention not only to organization-wide practices, but also to deviances among subgroups. In turn, organizations implementing IS can not only take a 'top-down' organizational-level approach, but also understand 'bottom-up' responses to the implementation process, consequently providing a better chance for IS success. Further, we argue that considering OC and organizational subcultures as firmly grounded concepts provides nuanced explanations of how members' values, beliefs and practices at the organizational and subgroup levels influence the development and usage of IS. Our main research question is: How do organization-wide cultures and subgroup cultures influence the outcome of IS implementation? To answer this question, we draw on Martin's (1992) perspectives of OC to examine the impact that integrated and differentiated cultures may have on the outcome of IS implementation.

The next sections provide an overview of the extant research on organizational implementations of IS, before briefly reviewing the OC literature with specific reference to the impact on IS implementations. Subsequently, we outline our methodology, followed by our results, discussion, and conclusion.

Organizational Implementations of IS

IS implementation studies focus on different implementation stages, including adoption decisions, and post-adoption activities, such as IS adaptation (pre-implementation), IS use (implementation) and continued use (post-implementation), to explain the challenges organizations face during attempts to achieve a successful implementation outcome (see Cooper and Zmud 1990; Zhu et al. 2006). Nonetheless, the IS literature highlights different conceptualizations of IS implementation outcomes. For example, Nelson (2005) argues that a successful IS implementation outcome equates to a new IS being delivered on

time, within budget and to the stipulated technical specifications. DeLone and McLean (2003) suggest that IS implementation success is dependent on six interrelated dimensions: information quality, system quality, service quality, intention to use, member satisfaction, and net benefits. Zhu et al. (2006) describe successful implementation outcome with relation to how well members' explore/use a new IS to achieve the expected organizational benefits – i.e. efficiencies and productivities. In this paper, we follow Zhu et al.'s (2006) definition of IS implementation outcome because it provides a comprehensive and organizational-level view of how an IS implementation can be a success or failure.

The failure of IS to produce the anticipated benefits can be partly explained with reference to members' underutilization of the implemented systems (Jasperson et al. 2005; Peppard and Ward 2004). Jasperson et al. (2005) explicitly echo this point in their theoretical paper, which proposes a model by which to conceptualize post-adoptive behavior, and concludes that IS researchers and practitioners often overlook post-adoptive factors. In other words, in order for an organization to achieve the expected benefits from IS investments, its members must accept and use the IS in an effective and efficient manner so as to facilitate full implementation of the system into its organizational settings. Similarly, Cavusoglu et al. (2010) draw on empirical data to propose an IS implementation model to explain that members' interaction level can be influential on the implementation process of an IS. They suggest that amongst three studied groups of actors – "influentials," "opponents," and "imitators," the opponent group's behaviors (resisting IS usage) creates significant anti-implementation forces, since they stifle the positive behavior of the influential group towards the IS. This prompts imitators to copy the behavior of the opponents, which further hinders the implementation process. An empirical study by Mishra and Agarwal (2010) draws on managerial and organizational sensemaking and the organizational capabilities literature to develop and propose a model by which to understand the continued use of IS innovations. The results from their model testing suggest that organizations' sense and response capabilities significantly influence organizational decision-making about IS use. Unlike preceding studies, McMaster and Wastell (2005) highlight an explicit example of a successfully implemented IS; they adopt a case study method to investigate how IS members of a local government agency developed and deployed a Business Process Re-engineering (BPR) system. McMaster and Wastell (2005) point out that factors such as strong leadership, engagement of organizational members and the fortuitous occurrence of a series of local crises were vital antecedents for the successful implementation process.

Thus, all of the aforementioned studies are concerned with exploring IS success when the technology is implemented into the organization's structures and processes. Against this backdrop, the present study proposes that OC theory can be used to provide deeper insights into the complex and dynamic activities that ensue during IS implementation. OC can be vital for understanding IS implementation, especially in trying to achieve desirable behaviors during the post-adaptive and acceptance stages of IS because the activities in these implementation stages are distinct from each other. Therefore, users' interactions with an IS in the different implementation stages (Cooper and Zmud 1990) may result in users having different interpretations and attitudes when interacting with the technology during the implementation process.

Organizational Culture and IS Implementation

In their attempts to define and explain organizational culture (OC), scholars have drawn on ideas, metaphors, and theories from various disciplines, including anthropology, psychology and sociology. Broadly speaking, the literature identifies two distinct paradigms of OC: the functionalist paradigm and the interpretivist paradigm. Smircich (1983) argues that functional studies of OC suggest that culture is something an organization possesses based on agreed assumptions, beliefs and practices, and 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 organizations about how culture may be managed so as to ensure organizational success. This functionalist approach to the study of culture suggests that management can create a strong culture, i.e. create organization-wide consensus amongst its members to achieve anticipated outcomes, such as better productivity and efficiency. Schein (1992) takes a functionalist approach to describe OC as the shared beliefs, philosophies, values, rituals, and norms that influence organizational members' behaviors and actions. Schein's (1992) theory of OC argues that culture exists at three levels (assumptions/beliefs, values/norms and artifacts). Case study work by Alavi et al. (2006) applies Schein's (1992) perspective of cultural values to investigate how OC influences the use of knowledge management systems (KMS) to achieve successful knowledge management (KM) practices.

They apply the soft positivism approach to their case to suggest that there are discoverable relationships between organizational values and members' behaviors with respect to IS use. Alavi et al.'s (2006) results suggest that dominant local values related to embracing collaboration significantly facilitate organizational members' use of KM tools for more informal and unstructured sharing of tacit knowledge, engendering easy infusion of new members into the organization. Another IS implementation study that follows Schein's (1992) conceptualization of OC is that of Iivari and Huisman (2007). Their study develops hypotheses and a research model to analyze the relationship between OC and the deployment of systems-development methodologies. They surveyed a group of IS developers and IS 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 are largely linked to hierarchical cultural values that are oriented toward security, order, and routinization. A further significant finding from the study is that IS managers' critical attitudes of the deployment of methodologies in organizations are influenced by values such as productivity, efficiency, and goal achievement; that is, a strong rational culture. Iivari and Iivari (2011) build on Iivari and Huisman's (2007) work by applying the competing values model (Quinn and Rohrbaugh 1983) as a theoretical model of OC to develop 13 hypotheses by which to explore the relationship between OC and the deployment of agile methods. Their proposed hypotheses assume that OC is a set of independent variables that impact the deployment of agile methods. Two hypotheses highlight that a strong organizational hierarchical culture facilitates the mandatory deployment of agile systems-development methods, while a strong developmental culture makes organizations dysfunctional if a more formalized agile approach is taken. Nonetheless, they also interestingly highlight that less formal methods can easily be enacted in the hierarchical culture compared to the developmental culture, since, in the former, desired behaviors are more easily manifested than in the latter, where method improvisation is more expected. Iivari and Iivari's (2011) suggestion of the relationships between OC and agile system-development methods in the contexts of formal and informal settings echoes the functionalist perspective of OC that culture should be treated as a variable in order to create a link between culture and other variables so as to offer standard direction to organizations about how culture may be managed to ensure organizational success.

Meyerson and Martin (1987) and Smircich (1983) draw on the interpretivist perspective to claim that organizations are cultures, and treat culture as a metaphor for organizational life. This interpretivist/metaphorical approach argues that OC may not be managed in an integrative way, as functionalists would argue. Martin (1992) echoes this point by suggesting that organizations also consist of groups that are multiple, often oppose one another, and have ambiguous cultural indentities Therefore, she argues that OC studies should be interpretivist, so as to provide a comprehensive and thick description of a wide range of familiar and unfamiliar features of organizational life. Martin (1992, 2002) further suggests that OC should be studied from three different perspectives – integration, differentiation and fragmentation – as an approach to synthesize different competing conceptualizations of OC. Martin's (1992, 2002) perspectives of OC help to synthesize the functionalist and interpretivist paradigms of OC, and clearly capture the complex and multifaceted nature of culture (Jackson 2011).

The integration perspective of OC assumes that the organization has a consistent culture across all subgroups, and that basic assumptions, value symbols and ritualized practices are shared among members (Martin 2002). All members of the social system have the same interpretations of cultural manifestations, and view explanations of processes in the same way (Schein 2004). In this view, members share a common perspective on where the organization is heading, and are fully in tune with the underlying assumptions, beliefs and practices. Differentiation studies focus on variations within an organization, the unavoidable influence of power, and conflicts of interest, which leads to a differentiated culture (Pfeffer 1981). The differentiation perspective of OC, unlike the integration perspective, assumes that organizations are composed of overlapping, nested subgroups with certain cultural manifestations, i.e. subcultures that coexist in relationships that may be in harmony, conflict or indifferent to one another (Martin and Siehl 1983). The fragmentation perspective highlights ambiguity as the core of culture (Martin (2002). The paradigm of the fragmented perspective argues that culture shared in an organization will differ across organizational groups (Louis 1985), implying that culture can be as much a fragmenting force as a unifying one (Van Maanen and Barley 1985). Although organizational 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).

Martin (2002) highlights that there is an advantage to using multiple perspectives of OC in a study because multiple lenses can highlight relations between different organisational viewpoints, as opposed to the singular-lens approach characterized in most studies of OC (Alavi et al 2006; Huang et al., 2003; Iivari and Iivari 2011). Martin further argues that using multiple lenses will help reduce theoretical blind spots related to a single perspective, and allow the emergence of a more holistic understanding of the cultural dimensions of organizations. Each cultural perspective is an interpretive framework that is subjectively imposed by the researcher while in the process of collecting and analyzing cultural data; thus, no single perspective should be seen as more suitable than any other when adopted to investigate a research problem (Martin 1992). These abovementioned arguments have caused many IS scholars to adopt Martin's (1992, 2002) multiple perspectives of OC to interpret the dynamics of IS implementation as a political process. Within this process, the order and course of implementation activities are shaped by the conflicting and ambiguous interests of different user groups in organizations, which create user resistance to the organizational change embodied in the IS. In other words, Martin's (2002) perspectives on OC have been applied in IS literature to obtain a richer understanding of culture and the use of IS in organizations. In particular, the work of Rivard et al. (2011) adopts Martin's (1992) three perspectives of OC to investigate, at the organizational and subgroup levels, the antecedents of implementing clinical information systems (CIS). They identify four values – quality of care, and efficiency, of clinical practices (integration perspective analysis), professional status/autonomy and medical dominance (differentiation perspective analysis), which play vital roles in CIS implementation in hospitals. Their analysis from the fragmentation perspective reveals that hospital stakeholders occasionally have 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 also uses the three perspectives of OC to investigate the adoption and implementation of IS was conducted by Jackson (2011), who investigates the adoption and implementation of a virtual learning environment (VLE) in further- and higher-education establishments in the UK. His findings suggest that the organizations' VLE implementation failures were due to the conflicts, inconsistencies and ambiguities that arose during the implementation process. Dubé and Robe's (1999) IS implementation studies also adopt Martin's three conceptualization of OC.

Other IS implementation studies that adopt Martin's conceptualization of OC include that by Ravishankar et al. (2011), who highlight that three different subcultures – enhancing, countercultural, and chameleon –influence the alignment of implemented KMS with organizational strategy. The enhancing subculture was found to maintain a strong empathy with the strategic initiatives advocated by the senior management (SM), whereas the countercultural subgroup posed an obstruction to the SM initiative to align the implemented KMS with organizational strategy. More interesting in this case is the chameleon subculture: this subgroup was able to adapt to the subculture of the unit it was assigned to, and changed its subculture to integrate into different subcultures. Similarly, Huang et al. (2003) implicitly adopted Martin's (2002) differentiation perspective to obtain a richer understanding of the influence of OC on the implementation of an IS. Their research through the use of organizational metaphors acknowledges how conflicting values among subgroups; impede the information sharing and cooperation needed to integrate the technology effectively into the organizational settings. A more recent study that explores the relationship between an implemented IS (social media site) and OC is that of Koch et al. (2013). Although they do not explicitly adopt Martin's conceptualization of OC, they draw on the interpretivist paradigm of it. They highlight that conflicts can arise between members' workplace values and the values members ascribe to the implemented IS, leading to an Information Technology–Culture conflict they refer to as system conflict.

These aforementioned implementation studies, which follow Martin's (1992, 2002) interpretive perspective of OC, rather than Schein's (1992) functionalist view, typically fail to highlight causal relations between OC and IS. Instead, they focus on how ISs are enacted in particular cultural contexts from the cultural members' perspective to show how members manifest multiple and inconsistent interpretations of an IS, based on their different cultures. IS studies that adopt the interpretive perspective of OC suggest that conflicting outcomes of IS implementations should be expected, rather than seen as an anomaly. Therefore, adopting an organizational- and subgroup-level analysis in order to investigate IS implementation is vital for a better understanding of the role of OC on IS implementation, use and outcomes. Meanwhile, none of the above IS-culture studies clearly explore the implication possible salient cultural practices may have on the outcome of IS implementation (Rivard et al. 2011). We envisage that taking this approach will enable us to better explore the complexity and multi-dimensionality of members'

actions during the IS implementation process, so as to better understand why IS implementations fail. We conceptualize OC as organizational values; as argued by Martin (2002), organizational values are appropriate to understand OC because the interpretations of values reflect deep assumptions.

Methodology

We conducted an in-depth case study of a large, global Nigerian bank in order to understand the influence of organizational subcultures on the implementation outcome of a management information system (MIS). The case study strategy is beneficial because it enables the study of IS in its natural setting to obtain an understanding of the nature and complexity of the processes involving the IS artifact (Benbasat et al. 1987). Using the case study approach, we adopt the "soft positivism" research philosophy, which provides the opportunity to reveal pre-existing phenomena and relationships among them (Kirsch 2004). In our case, it allowed us to conduct the data analysis with certain expectations based on prior theory, but also to obtain some unexpected findings and explanations from our data, in the manner of the interpretivist approach (Ravishankar et al. 2011). We discuss our case study approach below.

Motivating Assumptions

Similar to the procedure of Ravishankar et al (2011), we conducted our fieldwork at Alpha Bank, with a premise that organizational subcultures exist, influence the outcome of MIS implementation, and are identifiable using an existing theoretical lens. This position captures the positivism inherent in our study. Accordingly, our study draws on Martin's (2002) integration and differentiation perspectives of organizational subcultures to objectively study the MIS implementation process in Alpha Bank. Nonetheless, we were open to the interpretivist position during the interviews, which allowed informants to describe, in their own words, their experiences and views of working in a group, and in the organization as a whole, thereby highlighting the subcultures and OC, respectively. This enabled us to explore questions on what Alpha Bank members generally thought about the MIS, and how it related to their values and priorities. Further, using the subjective mode of analysis helped us to identify themes that explain the degree of influence (i.e. saliency) of members' cultural practices on the MIS implementation, providing a deeper understanding of the IS implementation phenomenon.

Case Access and Data Collection

The case study focuses on a Nigerian Bank, Alpha Bank (a pseudonym), which operates in major financial centers including London, New York and Paris. The above-described research focus guided the selection of the case study site; consequently, we selected Alpha Bank as it had recently implemented a robust enterprise MIS, and showed evidence of members manifesting different interpretations of the technology. This provided an opportunity to understand the implementation of an IS from the OC perspective. The first author conducted intensive fieldwork at Alpha Bank in the form of 71 semi-structured interviews with 47 key informants in the bank's headquarters in Lagos, Nigeria (see Table 1).

Table 1. Summary of Interviews and Interviewees' Positions at Alpha Bank				
Group	Senior-level managers	Middle-level managers	Low-level managers	Total
Finance	6	19	9	34
Information Technology	5	5	3	13
Operations	4	11	9	24
Total	15	35	21	71

Table 1. Summary of Interviews and Interviewees' Positions at Alpha Bank

The interviews used a snowball approach (Patton 2002) based on members' recommendations when asked "Which other senior members use the MIS system?". The interviewees were from the Finance, Information Technology (IT) and Operations groups of the bank. The sample consisted of people from diverse backgrounds (West and South Africa, Southern Asia and Western Europe). We tape-recorded and

transcribed 68 interviews. Three interviewees refused to be tape-recorded; therefore, recording of these interviews involved taking notes and expanding these into field notes immediately after the interviews. The informants were asked to provide examples of how the values they subscribed to at the organizational and subgroup levels influenced their interactions with, and usage of, the system, and the implementation outcome. The informants' claims were cross-referenced with a number of other participants that also made similar claims. The interviews were supplemented with unobtrusive observations of members in their settings, and, in some instances, observations of members in their interactions with the MIS. Formal documents in the form of the business case for the MIS, and memos and e-mail correspondence regarding policies for use of the MIS, were used as multiple sources of evidence and for triangulation purposes. The research data was collected over a seven-month period.

Data Analysis

The data analysis followed the three concurrent activities identified by Miles and Huberman's (1994): data reduction, data display and conclusion drawing/verification. The data reduction stage involved carefully reading all the interview transcripts and field notes several times in order to interpret and code the informants' perceptions of Alpha's culture (at the organizational and subgroup levels), and the resulting implications of their interactions with the MIS. The coding was based on similar statements that best described the informants' views, attitudes and relationship with the MIS during the implementation process from the perspectives of Alpha's OC (integration) and subcultures (differentiation). Six coding categories were created: "stakeholder types," "implementation process," "Alpha's organizational culture," Alpha's subcultures," "implication of Alpha's organizational culture on the implementation outcome," and "implication of Alpha's subcultures on the implementation outcome." In addition, while coding each interview transcript, the degree of influence (saliency) of members' cultural practices on the implementation of the IS was determined by rating particular employee actions and behaviors as highly significant, significant, less significant and insignificant, as revealed from the collected data. The ratings were applied by reading transcripts. Informants' indications that organizational/subgroup values had highly significant or significant impacts on the way they engaged with the MIS and the implementation outcome were coded as salient. Informants' suggestions that organizational/subgroup values had a less significant or insignificant bearing on their engagements with the MIS and the implementation outcome were coded as latent. The resulting set of categories and codes are listed in Table 2.

Table 2. Categories and Codes for Organizational Culture Construct	
Category	Example Codes
Stakeholders types	IT, finance, and operations groups
Implementation process	Design and development of the MIS (pre-implementation), members' participation, use (implementation) and extended use of the MIS (post-implementation)
Alpha's organizational culture	Alpha's organization-wide interpretations, values and behaviors
Alpha's subcultures	IT, finance, and operations groups' interpretations, values and behaviors
Implication of Alpha's organizational culture on the implementation outcome	Salient, latent
Implication of Alpha's subcultures on the implementation outcome	Salient, latent

Table 2. Categories and Codes for Organizational Culture Construct

The second stage of the data analysis involved displaying the data in matrix format. This involved creating of a series of conceptually ordered displays in order to study the themes in more depth. The matrix summarizes each of the different aspects of the two broad theoretical lenses (integration and differentiation perspectives of OC) on the explored phenomenon (IS implementation outcome) (see Table

3 in the Discussion section). This helped to generate more explanatory power to facilitate the drawing of valid conclusions from the findings in the final stage of the analysis. Upon completion of the second stage of data analysis, we conducted a conclusion/verification stage. 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 IS implementation process. To facilitate this procedure, the literature was revisited to synthesize our findings with existing studies. This synthesis helped us to develop our theoretical insights (see Pan and Tan 2011) into the impact of organizational/subcultures on IS implementation outcome. This ensured the external validity of the study, and allows us to generalize from empirical (Alpha Bank's cultural and contextual situations related to the MIS implementation) to theoretical statements – i.e. provided analytical generalizability (see Lee and Baskerville 2003; Yin 2009).

Case Description

The studied MIS is a three-tiered software architecture that was developed internally to speed up the process of complex data analysis in order to generate sophisticated management information and reports to facilitate timely strategic decisions. Some members of the finance and operation groups worked with the IT group to ensure that the specific functional requirements of different departments were accommodated in the MIS. The introduction of the MIS was intended to replace outdated and manual methods of performing organizational tasks, such as relying on Excel spreadsheets and existing legacy systems. Prior to the implementation of the MIS, user acceptance tests were conducted. After the completion of these tests, the system was introduced to members through a range of promotional campaigns to raise awareness of the new system and training sessions. Alpha Bank expected all members who had participated in the training sessions to use the MIS for their daily organizational tasks.

Analyzing the data from the integration perspective of OC revealed a number of shared interpretations, experiences, beliefs and values that were clear and consistent among members across the bank. In particular, informants at Alpha Bank talked about their subscription to the bank's core values of resilience. Members of the bank are expected to think, communicate and be persistent when they face challenges in tasks assigned to them. This attitude is considered an important ingredient in the way assignments are executed at Alpha Bank, with members required to embrace tasks regardless of the scale of the challenge presented. This attitude of "nothing is impossible" was identified as a defining feature of the bank's recovery from an ailing organization in 2005, to currently one of the top three banks in West Africa. The shared nature of the resilience values suggests that members believed that they were united in their attitudes and responses to any challenges and issues faced when completing their work tasks. Nonetheless, analyzing the data from the differentiation perspective of OC revealed that the finance, IT and operations groups had their own distinct subcultures. The core characteristic of the finance group's subculture was their emphasis on accuracy in every task undertaken by the group. The group members believed that their standards of accuracy were higher than other parts of the bank, and that their work outputs were the most thorough. The IT group perceived themselves as doing things in practical and technical ways in order to attain organizational effectiveness; i.e. they manifested a "pragmatic"-driven subculture. The operations group responsible for the re-engineering of any and all of the business groups/subsidiaries in Alpha Bank felt that they were the engine of the bank's progress, and consequently had an ego-driven attitude. They manifested a "superstar" culture, and had an air of arrogance, feeling that they should have been given discretion to select which methods or processes to adopt in achieving their tasks. These identified organizational subcultures were the only cultures many of the informants consistently spoke about when asked about the values they subscribed to at the organizational and subgroup levels, and appeared to be consistent with Martin's (1992, 2002) classification of OC. The results section, below, examines how Alpha Bank's OC (integration and differentiation) influenced implementation of the MIS.

Results

This section reports the findings concerning how saliencies of organizational subcultures in Alpha Bank impacted the implementation outcome of its MIS.

Impact of Organization-Wide Value (Resilience) on the Implementation Outcome

The data showed that when Alpha Bank began to develop and install the MIS, the bank's core values of resilience had a positive impact on the adaptation of the MIS into its organizational setting. Members identified a number of examples in which their resilience to problems and challenges during the early stages of the MIS project ensured that progress continued. These attitudes were demonstrated through problems being directly addressed and members working hard to meet deadlines. This required additional meetings and considerable time demands on both teams, but their shared desire to overcome the challenge helped to facilitate the functional changes to be made. One informant made the following observations: *"The way they [the MIS IT team] are doing things, they have exhibited the values of the bank, being resilient, at times you want to design a template in the MIS for report generation and the MIS [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 [a] report to meet your own deadline, even when we had not provided our requirements for the MIS at the time they had stipulated. They more or less [embody] the resilient culture of the bank."* Business Operations Support (operations group)

There were also situations in which, although the standard functionality of the MIS represented a reduction in quality compared to the legacy systems, the finance and IT group members were determined to work together to resolve the problems and recreate the necessary report outputs. "*At the initial stage of trying to develop the MIS, it was very tough for us and the IT team (…) because some of our processes are not enhanced within the MIS. We did not have [the] 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 resilience value helped greatly to support teamwork and collaboration between the different groups (IT, finance and operations) when capturing the requirements of the MIS, and designing required non-standard functionality in order to adapt the new system into Alpha Bank's organizational settings. When the MIS system was rolled out, the informants commented that their resilient attitudes had helped when they found the MIS difficult to use to complete their organizational tasks, such as when the system returned inaccurate data or reports: *"Our resilience value was displayed in our attempts to use the new MIS. It was a serious battle using the MIS for complex analysis because the figures the system was generating were wrong. 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)

Similar attitudes were also reported within the Operation Group. For example, one manager remarked: *"The IT Group like every other group in the bank are resilient in their ways, they tend to bend [over] backwards to make sure that users are comfortable with their systems, especially the MIS, which helped us to engage with it."* Business Operations Support (operations group)

The positive behavior towards the MIS due to the shared resilience value encouraged members to overcome the challenges and issues faced when using the MIS for their organizational work. This positive behavior ("can-do" approach to problem solving) had a positive influence on the implementation process.

Upon the MIS being fully rolled out across the bank, there was an expectation from SM that members would use the system on a regular basis. However, in practice, the lack of engagement with and user resistance to the new system that had started since the rollout of the system increased, with many members using the MIS as little as possible. The organization-wide value of resilience (integration) was very latent due to the high saliency of the subcultural effects (differentiation); this is discussed in the subsequent section.

Impact of Subcultural (Accuracy- and Superstar-Driven) Values on the Implementation Outcome

As the MIS was rolled out more widely to the finance and operations groups for organizational use, the data also indicated that subcultural differences in the bank had a greater influence on the implementation of the system into the organization; i.e. differentiated subcultures were salient regarding the integrated organization-wide culture of resilience. During the early adaptation activities there was some evidence of conflicts between the IT and finance/operation groups when configuring modules for the MIS. These

conflicts occurred during the design stage with respect to the type of functionality that the MIS could support. For example, some finance group members were cautious about adopting the 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 subcultural assumptions of accuracy influenced the speed with which they adopted the new system. *"We had problems in integrating the MIS into our work processes, because of the sensitivity involved in our work and getting the account/figures right. We have a specific format, financial statistics, designed by the Central Bank that must be followed, so we needed to map all the general ledgers to align with that. So we [did not] trust the MIS to be integrated into our systems."* Senior Financial Analyst (finance group)

The comment above indicates that some members did not share common perceptions regarding how they could adapt the MIS for their organizational use. In many ways, this is in line with Wagner and Newell's (2004) suggestion that differentiation between teams has a negative effect on IS implementation. However, the wider consensus among the informants was that the bank's resilience value impacted positively on the development of the MIS, providing a positive force to continue the MIS implementation into Alpha Bank's organizational setting. In other words, the organization-wide values were more salient than the subcultural values.

Upon introducing the system for organizational use, the finance group members questioned whether use of the MIS 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 SM and regulatory bodies. Several group members commented that they were more comfortable with, and had more confidence in, their established methods of working, and had been unwilling to engage with the new system: "*There was resistance when the MIS 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 the MIS so we used the old manual system we were familiar with."* Head of Balance Sheet and Market Risk Management (finance group)

This mistrust of the new MIS was compounded by some negative experiences when attempting to use it. 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: *"We noticed that there are some things that are so basic that you thought [the] MIS would do and you just noticed it is not working as expected (…) [such as] errors and omissions in the figures; you will be disappointed (…) so you can't use the system."* Head of Financial Subsidiaries (finance group)

Thus, this group became reluctant to adopt the MIS because it did not allow them to achieve levels of reliability and accuracy that were seen as core values for their group. The informants in the operations group reported similar experiences, explaining that their department was less formal and structured in the way they completed tasks compared to other departments. The operations group felt they had discretion to decide which method or processes to adopt, including use of an IS in order to maximize their outputs and achieve target levels of performance. Thus, they felt the introduction of the MIS undermined their discretional approach: *"Well, delivery is important to us, so discretion is allowed to come into play, even in the use of IS. We cannot do otherwise because (…) 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. The use of the MIS was not allowing us discretion, [so] we did not use it*." Cards Administrator (operations group)

After introducing the MIS to users, SM expected members to continue to use the system on a routine basis (i.e. post-implementation). However, in practice many members rarely used the MIS as the lack of engagement and user resistance to the system that had started since its rollout had increased. This was evident in comments from informants in both the finance and operations groups. The finance group, who were highly concerned with "accuracy efficiency," chose to run the MIS in parallel with their existing systems and methods so that they had a trusted alternative if any doubts arose over the reliability of the data from the MIS. This also enabled them to continue using their preferred established techniques and reduced the need to rely on the new system. Therefore, there was little evidence from this group that they considered the use of the MIS as a normal and everyday occurrence. One informant explained: *"The use of the MIS was running in parallel with our existing methods of financial analysis (…) this may have*

affected our use of the MIS and the failure of the project 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." Head of Risk Management (finance group)

As well as doubting the reliability of the information from the MIS, finance group members also expressed concerns about the speed at which the IT group had attempted to implement the new system. The finance group 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 pragmatically felt that this would have represented an excessive testing routine and delayed the project unnecessarily. A member of the IT group explained: *"Due to finance [group's] value 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. (…) 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 the MIS in effective ways, leading to the failure of the system."* Database Administrator (IT group)

Informants in the operations group made similar observations. They had different perceptions of the MIS capabilities, and felt it was not easy to use. Many in this group only used the MIS for data extraction purposes, and used the more familiar Microsoft Excel software for data analysis. These members decided not to rely on the MIS, feeling that the MIS alone would not enable them to achieve effectiveness in their work, and thus combined its use with other methods, further highlighting the group's discretionary style. One senior manager explained: *"I may be able to do analysis in the MIS but for my own performance, I prefer to export generated data from the MIS to Excel for analysis because it is quicker."* Head of Operational Control (operations group)

This attitude of the operations group caused conflict with the IT group. The operations group stated that sole use of the MIS was not quick enough; however, the IT team argued against this. A senior programmer explained: *"The data for all calculations and analysis are in the MIS. It can be extracted. Just because it (…) 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."* Senior Programmer (IT group)

The above comments suggest that the problem related not to a lack of functionality, but to a lack of access to the relevant functionality, which the operations group had not requested. The operations group's ego-driven attitude and preference for their discretionary style prevented them from fully engaging with the pragmatic IT group (who were practical but reactive) to request traditional tasks to be automated in the MIS. The operations group's ego-driven and superstar mentality may have clouded their view of what constituted a highly useable system. Therefore, 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 MIS from the operations group. The conflicts between the IT and operations groups originated from the latter's view that the MIS would not allow them to be effective, and the former's expectations that the MIS could be continuously adapted to meet the expected level of sophistication as long as the operations group made such requests known to them. This breakdown between the different groups is encapsulated in the following comment: *"The problem is that people that are sitting on the MIS side, they know only coding, and they don't know what banking is all about. We need somebody who can understand both, [and this is the] reason why the implementation outcome was unfavorable."* Head of Card Operations (Operations Group)

The above quotes highlight the negative impact the very salient disagreements had on the usage of the MIS, which is consistent with Martin's (1992, 2002) differentiation perspective of OC. It appears that the new system did not support the finance group's core value of accuracy, or the operations group's way of working via discretionary/unconventional methods. These differences and conflicts hindered the communication and interaction between the subgroups when the MIS was implemented and used in a routine manner. These factors prevented the system from being integrated further into the bank, and was consequently unbeneficial for the MIS implementation. Similar to findings by Ravishankar et al. (2011) and Rivard et al. (2011), the differences in cultures between the IT and finance/operations groups was the reason for the conflict. These members were not interested in using the system in a routine and comprehensive manner to support higher-level tasks in the organization.

Our analysis also indicates that although the organization-wide value of resilience was consistent across the three subgroups, the subgroups existed in relative isolation to one another. The subgroups in the bank operated a "silo mentality" that resulted in their behaviors and views being heavily influenced by their own group's agenda and priorities, as highlighted by the Head of the Operations Group: *"One of the main issues was that people were not just use to having such [a high] level of openness, most people were just (…) used to seeing what they are doing only in their silos."* A *Database Administrator* added: *"Despite the shared values across the bank, there are routines within each subgroup, [which are] significantly different from the rest, so there are different working practices in each [of] the groups."*

This lack of engagement between the subgroups highlights how subcultures can coexist in a conflict-type relationship to one another (Martin and Siehl 1983), and the significant impact contrasting cultural traditions can play during IS implementations.

Discussion

Our case study reveals a clear pattern that the task characteristics in the preceding stage of the MIS implementation had an impact on the subsequent stages. The integrated organization-wide value of resilience was salient in the pre-implementation stage. The shared value of resilience among members had a vital positive influence on their commitment to the design and installation of the system. In the pre-implementation stage when the MIS adaptation started, many members across the IT, finance and operation subgroups displayed integrative positive behavior in handling the issues that arose during the design, development and installation of the MIS. Because many organization-wide members interpreted the tasks and activities of the MIS adaptation in terms of its consistency with Alpha Bank's culture of resilience, consensus was reached across and within subgroups (i.e. Martin's (1992) integration perspective of OC). Alpha Bank's organization-wide culture of resilience may be described as having a high influence on its members' positive behavior towards successful adaptation of the MIS into the bank's organizational settings. This finding is similar to those of McMaster and Wastell (2005), who pointed out that factors such as commitment of organizational members were vital antecedents in the development and deployment of a business process re-engineering system. However, even at this early pre-implementation stage there was some evidence of conflicts between the IT and finance groups when configuring modules for the MIS. Their interpretations of the business terms and functionalities differed, leading to disagreement between these subgroups. Despite the evidence of differentiated subcultures engendering resisting behaviors towards the MIS, during the pre-implementation stage they remained latent most of the time, providing a positive force by which to push the MIS to the implementation stage. Perhaps the reason for the high saliency of the organization-wide value (resilience) during the pre-implementation was because the majority of members involved in the pre-implementation activities were IT group members who had traditionally championed such activities (i.e. design, development and installation of the MIS).

When the MIS was introduced for organizational use (implementation stage) the integrated organization-wide value of resilience became less salient as differentiation in Alpha's subgroups emerged (conflicts and disagreements). Many members in the finance and operations groups interpreted the use of the MIS as inconsistent with their subgroup value of accuracy and their discretionary approach, respectively, resulting in these groups resisting the system, allowing the differentiated subcultural values to be more salient. The increased saliency of the differentiation effects in Alpha Bank during the MIS implementation were to be expected, because as the MIS was implemented the members perceived the new system as a complex technology compared to the previous methods members utilized to manage data and information in Alpha Bank. The differentiation effects were most salient during the post-implementation stage, highlighting that very few members used the MIS in a regular way or considered its use as part of their everyday work activity, implying that the integrated organization-wide value of resilience became very latent. The resistance from the finance and operations groups continued to prevent the system from being assimilated further into the bank. These members 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 (finance group) and the MIS prevented the use of discretionary processes (operations group). Therefore, the salient differentiation in Alpha Bank led to high levels of user resistance, resulting in the failure of the MIS. The interpretations and behaviors during the MIS implementation are summarized in Table 3.

Table 3. MIS Implementation from the Integration and Differentiation Perspectives of Organizational Culture						
	Implementation Stages					
	Pre- Implementation		Implementation		Post-Implementation	
	Interpretation	Behavior	Interpretation	Behavior	Interpretation	Behavior
Organization -wide culture	Members' interpretations of design and integration of the MIS into the existing bank's legacy systems facilitated by organization-wide value (resilience).	Members showed resilience when faced with design challenges of the MIS.	Some members' interpretations of the MIS use were facilitated by an organization-wide value (resilience).	Accepted use of the system.	Based on the organization-wide value of resilience, very few members' saw the MIS as commonplace.	Very few members were able to engage in extended use of the MIS.
Level of influence	High +++		Moderate ++		Low +	
Subcultures	Some finance group members were uncomfortable integrating the MIS into their processes due to their accuracy-driven subculture.	The IT group's conflicts with some finance group members' hindered integration of systems and adaptation of the MIS.	Many subgroups' interpretations of the use of the MIS were inconsistent with their accuracy- and superstar-driven values.	Many finance and operations group members refused to use the MIS.	Highly differing interpretations between the subgroups that the MIS could be used effectively to produce accurate results and perform dynamic analysis, respectively.	Many members found it difficult to use the MIS as a normal daily tool.
Level of influence	Low +		High+++		Very High ++++	

Table 3. MIS Implementation from the Integration and Differentiation Perspectives of Organizational Culture

The empirical data shows how the members' attitudes and behaviors dynamically changed, shaped by the forces that were manifested due to their interactions with the MIS in the implementation stages of the system. The members' manifestations of the organization-wide value of resilience towards the MIS were most salient in the pre-implementation stage, when the "can do" attitude seemed to be less forthcoming. They should have manifested the resilience value especially in the later stages of the post-implementation process in order to overcome the complexities and difficulties related to embracing the MIS. The subcultural elements took precedence in the implementation and grew in saliency in the post-implementation stage, while the members' manifestations of organization-wide value became latent. The increased saliency of the subcultural effects were to be expected as the MIS implementation progressed, because members normally perceive the use of a new technology as too complex to appreciate the extent of the system's functions (Von Meier 1999). Further, implementation of the MIS was not part of their jobs – it was supposed to support them to complete their jobs and overcome work challenges. Therefore, it is possible that when the members did not consider something to be a certain type of work challenge, the resilience value became less strong. The change in the members' cultural value during their interactions with the MIS contrasts with Schein's (1999) argument that culture is fairly stable and difficult to change.

It may be that the organization-wide value of resilience became latent to the salient subgroups' values because their invisible values came to the fore with the introduction of the MIS, thereby changing their work patterns. For example, the operations group members normally had discretion to decide on which methods or processes to adopt in their work. Thus, the expectation that the MIS should be the only tool for producing management information was contradictory to the operations group's norm. This description mirrors Leidner and Kayworth's (2006) explanation of how the introduction of an IS can cause conflict between cultures; i.e. how cultural conflicts are manifested. Ravishankar et al. (2011), also highlight the potential for cultures to change; they identified a "chameleon" subculture during organizational attempts to align an implemented KMS with organizational strategy. This subculture did not identify strongly with the organization's values or their own subgroup values; they only adapted the values of the subgroup they were temporarily seconded to; i.e. they changed their subculture to integrate into different subcultures. This is contrary to the majority of IS implementation/culture studies, which adopt only the integration perspective (e.g. Alavi et al. 2006; Hoffman and Klepper 2000; Iivari and Huisman 2007). Similar to Huang et al. (2003), the results from our subcultural analysis reveal that MIS implementation failure was largely due to decisions made at the subgroup level. The subcultural analysis explores the multiple meanings of Alpha Bank members in their interactions with the MIS, paying attention to absence of consensus (and presence of conflict and power struggle) in the use of the system, engendering an unfavorable atmosphere for the MIS implementation.

Our study highlights that the different manifestations of the integration and differentiation perspectives, although isolated from each other, each came to the fore with different salience during the MIS implementation. Dubé and Robey (1999) explain that the overlapping manifestations that these different perspectives reveal can evolve in a rather sequential manner. Our paper argues that the reason why the saliency of the different manifested cultural dimensions of Alpha Bank emerged and shifted over time during the implementation processes of the MIS may have been that as the MIS progressed from the pre-implementation stage to the implementation and post-implementation stages, the level of interaction with the MIS was expected to increase. Members had to use the MIS in a continuous and enhanced manner; consequently, based on their subcultures, they had to interpret and reinterpret the implementation process. This is similar to Iivari and Iivari's (2011) argument that cultural members always socially construct the meanings and purposes of their activities. Due to the perceived complexity of the MIS, Alpha Bank members were not able to fully gain an implicit sense of how to use the system in a routine manner to achieve higher organizational performance. The expected increase in MIS interactions caused members to further perceive the MIS as complex and difficult. This led to a situation where they had to restructure their organizational processes; these changes did not match, but rather conflicted with many of the members' subgroup values, causing resistance to implementation of the MIS. In other words, when the majority of members engaged with the system, they found it to display unfavorable attributes – i.e. they perceived the value of the system as contradicting their subgroup values, which Leidner and Kayworth (2006) refer to as "system conflict." This caused the members to further resist using the system, and led to disengagements with it. Unfortunately, as implementation of the MIS progressed, the differentiated culture prevailed over the integrated one; that is, the salient subcultural practices stifled the organization-wide display of resilience. This provides better understanding of the dynamics of subgroup members' behaviors in relation to use of an IS, which can facilitate or inhibit the outcome of IS implementation.

It is worth pointing out that the organizational subcultures identified in Alpha Bank may also have been catalyzed from outside the organization; i.e. by the influence of Nigeria's culture at the national level. Hofstede's (1983) taxonomy, which describes national culture along the dimensions of pragmatism–normative, individualism–collectivism, and masculinity–femininity, could help to provide more insights on how these subcultures were manifested in Alpha Bank. Nigeria scores very low (13) on a scale of 100 regarding the pragmatism–normative dimension, suggesting a normative culture (The Hofstede Centre 2014). This may explain why the finance (emphasis on accuracy) and operations (superstar attitude) groups were entrenched in their ideas and ways. These respective group members exhibited great respect for their traditions, and were consequently unwilling to adapt to the implemented MIS. On the individualism–collectivism dimension, Nigeria scores 30, meaning it is a collectivistic-oriented society (i.e. long-term commitment to the member "group" is key, and overrides external rules and regulations) (The Hofstede Centre 2014). This may also explain why the subcultures were relative isolated and group members were hesitant to change their practices when the MIS was implemented. Finally, for the

masculinity–femininity dimension, Nigeria scores 60, highlighting a competitive society in which conflicts are typically resolved by fighting them out (The Hofstede Centre 2014), which may explain the strong disagreements and battles between the IT group and the finance/operations groups during the MIS implementation process. Thus, our case despite being a multinational bank with a global mindset and with several foreign members may be generalizable to Nigeria. Thus, our case highlights that within the context of today's multinational companies there may still be strong links between elements of a local national culture and deep-seated shared cultural assumptions at the subgroup level.

Conclusion

Our adoption of the dual perspectives of OC (i.e. integration and differentiation, as posited by Martin (1992, 2002)) provided an interpretive lens to guide the analysis of MIS implementation from the OC perspective. It also provided a rich account of how the agreements and disagreements that arise within member interactions and use of an MIS can influence the implementation outcome of it. This paper provides explicit insights on how differences and conflicts between subculture groups hindered the successful implementation of an MIS. The results enhance our understanding of IS implementation research from the dual perspective of OC, an aspect that has received limited attention in the IS implementation/OC literature (Leidner and Kayworth 2006).

The contributions of our paper are as follows. Firstly, our study of MIS implementation in Alpha Bank suggests that the increased saliency of members' subscription to an organization-wide value facilitated the successful adaptation of the MIS (pre-implementation stage), but in subsequent stages of the implementation process (implementation and pre-implementation) the increase in saliency of the subcultural values resulted in members' resistance to the MIS, as described via application of the differentiation perspective. This highlights that members did not use the system in a routine and comprehensive manner, but rather only superficially, leading to unsuccessful implementation of the MIS. This provides fresh insights on how salient subcultural practices can lead to IS failures despite the existence of a strong organization-wide value. This helps answer our research question: How do organization-wide cultures and subgroup cultures influence the outcome of IS implementation? In addition, it answers the call to explore the impact the saliency of a given cultural perspective may have on the outcome of an IS implementation (Rivard et al. 2011).

Secondly, our study builds on and contrasts with the vast body of literature that has adopted social cognitive theories to explain IS implementations in organizations. For example, the Unified Theory of Acceptance and Use of Technology and Theory of Planned Behavior developed by Venkatesh et al. (2003) and Ajzen (1991), respectively. These theories serve as antecedents for explaining the use and implementation of technological innovations. They assume that manifested behaviors and practices that come into play during interactions with a technological innovation are quite stable during the implementation process (Leidner 2010). Our adoption of OC from the integration and differentiation perspectives further understanding of these social cognitive models by highlighting how and why members' interpretations and behaviors towards an IS may change during the implementation process.

Thirdly, our study makes an important contribution to practice by demonstrating the need for IS practitioners to better appreciate cultural variations across subgroups, as these differences may have an important influence on the usage and subsequent implementation of an IS. A more proactive approach should be taken to alter the salient negative cultural practices that can cause IS failures into more positive organization-wide practices during the development and use of a new IS to achieve successful implementation; this will increase organizations' likelihood of getting the best return on IS investments.

We acknowledge three limitations of our in-depth study. First, the study was unable to adopt the fragmentation perspective of OC as a further theoretical lens to explore the implementation process of the MIS. Adopting this perspective may have allowed us to capture the ambiguities members face in the daily use of a sophisticated IS, and improve understanding of the role of OC in IS implementation outcomes. Therefore, further studies could adopt the three perspectives to help provide richer insights into IS implementations. Secondly, future research could explore the deeper role of the IS artifact during the implementation process. IS artifacts have their own objective properties and behaviors (Orlikowski and Iacono 2001), to provide fresh insights into the nature of the relationship they have with the actors and the organizational tasks during the implementation process. Finally, because the study was built upon a

single case, we cannot generalize the results to a wider sample. However, we 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 IS implementations. Therefore, we are able to generalize from empirical statements to theoretical statements, i.e. analytical generalizability (Lee and Baskerville 2003).

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