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A Cultural Theory Analysis of Information Systems Adoption

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ABSTRACT

This paper examines the relationship between organizational culture and Information Systems (IS) adoption. Three major perspectives - *integration*, *differentiation* and *fragmentation* - for understanding the effect(s) of culture on IS adoption in organizations are reviewed. Using Cultural Theory to critique these three perspectives, it is argued that each perspective in isolation offers a restricted view of how culture impacts IS adoption. Instead, when the three perspectives are considered together they offer a more penetrating account. These arguments are illustrated using an in-depth case study of a Higher Education College (HEC) in the UK and its failed attempt to adopt a Virtual Learning Environment (VLE).

KEYWORDS

Organizational Culture, Cultural Theory, IS Adoption, Anthropology.

INTRODUCTION

In today's modern business environment, the effective adoption of IS is critical for all organizations. One enabler and/or barrier to successful IS uptake is organization culture. Numerous researchers (Kappos and Rivard, 2008; Leidner and Kayworth, 2006) have argued that a lack of effort in understanding organizational culture is a key reason for IS adoption failure. Despite this, our understanding of the dynamics of culture and how this affects IS adoption in organizations still remains unclear.

Against this background, this paper takes a critical review of past and present thinking on the subject. Using Cultural Theory, three prevailing perspectives (*integration*, *differentiation* and *fragmentation*) for understanding organizational culture and IS adoption are reviewed. An outline of the research method used in this study is then presented and this is followed by an analysis and discussion of the empirical evidence. Finally the paper ends with a summary of conclusions, practical implications and limitations.

CULTURAL THEORY

Cultural Theory was first introduced 40 years ago in a book entitled, "*Natural Symbols*" (1970) by anthropologist Mary Douglas. Douglas's primary concern at that time was the lack of frameworks for classifying different types of social relations, and how social relations espouse cultural values and beliefs. The focus of her research was on developing a

framework to categorize the dissimilar types of social relations which prevail in modern society. Douglas was predominantly interested in observing cultural values which individuals enacted toward religious ideologies and drinking habits. Her thesis reinstated Durkheim's (1915) dichotomies of mechanic and organic solidarity with new types of categorization, taken from the work of Bernstein's (1959) study on socio-cultural linguistics. Durkheim's work was on elementary forms of religious life and how societies held themselves together; however, his focus was on prehistoric societies.

Cultural Theory uses two dimensions to identify one's position in society. These dimensions include: *grid* and *group*. Thompson et al. (1990) refers to grid as the extent to which an individual's existence is conditioned by forced rules and regulations. The more obligatory the extent of rules forced on members, the more individuals will be compelled to conform to certain norms, fixing factors and expectations (*high grid*). In a low grid environment fixing factors are considered less important.

The group dimension determines to what extent an individual is restricted by the group in which they belong to. The greater the incorporation (*high group*), the more individuals are constrained to act in the interests of the group members, and the choices, decisions and actions which they can take. In low group environments, individuals will be less forced to conform to group pressures, and are free to relate and work with whom they desire. In the group dimension, individuals are free to choose if they want to join a group. The crossing of the two dimensions produces four ways of life. These include: *fatalism*, *hierarchism*, *individualism* and *egalitarianism* (Figure 1). Each way of life enacts different cultural values and beliefs.

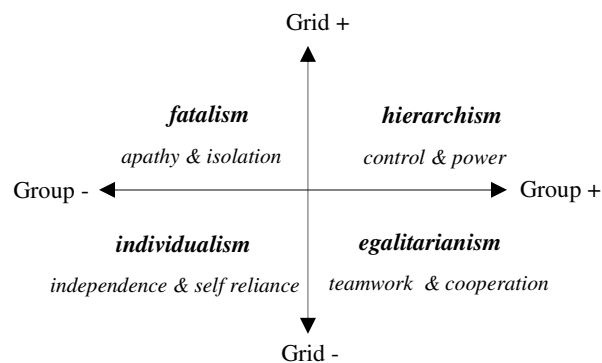


Figure 1. Cultural Theory (adopted from Thompson, 1990)

Fatalism is exemplified by strong grid and weak group. Values typical to this way of life include apathy and isolation. Individuals feel that their independence are constrained by other members and view themselves as peripheral members of society or as Douglas (1999) refers to as “*isolated individuals*”. Merely coping and surviving will be the norm adopted by this way of life. Typically, fatalism serves no useful purpose in society or organizations (Hendriks, 1999). Indeed, a domination of fatalism may create an impeding organizational environment which discourages IT adoption. Wong et al. (2009), for example, in a study of cultural issues surrounding the implementation of e-government initiatives found that an organization exhibiting a high degree of fatalism was less likely to adopt IT.

Hierarchism is characterized by strong grid and strong group. Such orientations share a strong inclination for power and control, typically at the senior level. In this way of life, every member will know one's position within the organizational hierarchy – as illustrated by a high power distance between upper and lower levels. Members can act audaciously, but such behavior is only tolerated up to certain limits. However, too much power and control in the hands of the elite can suppress IT adoption. Hasan and Ditsa (1999), for example, in studying the relationship between culture and IT adoption found that cultures exhibiting a high degree of power and control will less readily accept IT. They also argued that successful IT implementation is more likely to be facilitated by a low-power distance between managers and staff at lower levels.

Individualism is supported by both weak grid and weak group. Individuals will have a disposition favoring personal independence. Members of this way of life do not feel forced to conform to the expectations of group norms; instead they view themselves as self-reliant. Nevertheless, a domination of individualism can lead to egotism. Organizational members can distance themselves and be disinclined to share information with other members. Tsohou et al (2006, p. 205) in their study of IS risk management strategies highlighted that individualism often has a dark side and is “associated with corner cutting, rule breaking and convert materials to their own use”.

Egalitarianism is exemplified by weak grid and strong group. Members share a preference for teamwork and knowledge sharing. Trust and loyalty to the group will be of utmost importance. Egalitarianism, because it is devoid of power relations (hierarchy), can lead to a situation of groupthink. Organizational members attempt to minimize intra-group feuds by engaging in consensus thinking, in fear that they might disturb the group’s dynamics. Schiano and Weiss, (2006) vividly demonstrates how the consequences of groupthink can greatly curtail IS adoption and uptake.

THREE PERSPECTIVES

In order to synthesis conceptualizations of culture, Martin’s (2002) three perspectives on organizational culture are adopted for this study. These include: *integration*, *differentiation* and *fragmentation*. Each perspective is now examined in further detail. A summary of the three perspectives is presented in table 1.

Integration

This perspective views culture as unified and consensus consists among organizational members. At any one time a society or organization can embrace one (and only one) of the four ways of life. If change occurs, it brings about a *collective* transformational shift from one way of life to another, for example, from hierarchism to egalitarianism as shown in figure 2a below. Change gives rise to a process of stability as illustrated by the unbroken lines in figure 2a. The advantage of such an approach is its usefulness for understanding the types of forces acting against the dominant culture when a new IS is introduced into an organization. One major criticism with this approach is that organizational culture is considered in fairly basic terms - as something collectively shared and changes in a one-dimensional fashion. For example, Meier’s (1999) in examining the cultural differences which existed between operators and engineers towards technology process innovation, argued that cultural pluralism cannot simply be neglected.

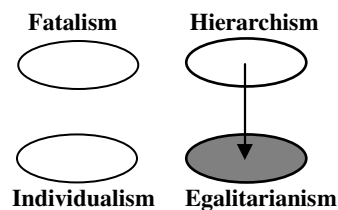


Figure 2a. Integration

Differentiation

Other researchers (Altman and Baruch, 1998; Philip and McKeown, 2004) using Cultural Theory have found that societies and organizations typically embrace subcultures (subgroups) simultaneously. Using figure 2b below, perhaps an organization may consist of the subgroups fatalism, hierarchism and individualism (represented by the bold color). Altman and Baruch (1998), for instance, who used Cultural Theory to investigate the culture of two organizational settings (Israeli Armed Forces and a Hi-tech organization), revealed that both organizations consisted of many subgroups (*fatalism*, *hierarchism*, *individualism* and *egalitarianism*) when mapped against the typologies of Cultural Theory. Inconsistencies between subgroups are often deep-rooted in the organization, and can give rise to situations of conflict during IS adoption. Huang et al

(2003), for example, used an exploratory case study to examine how culture impacts component-based development (CBD) found that sub cultural differences greatly hindered IS adoption. Their study highlighted that resistance to IS can be minimized, or significantly improved, by reducing subgroup differences. Although, this perspective is beneficial for understanding cultural pluralism, one major criticism (Jackson and Philip, 2005) is the assumption that subgroups are fixed and predictable in organizations. This is illustrated by the unbroken lines in figure 2b.

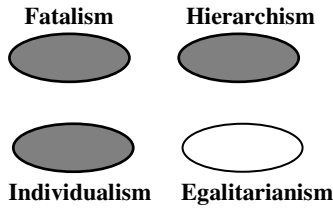


Figure 2b. Differentiation

Fragmentation

The fragmentation perspective considers ambiguity and paradox as emblematic of organizational reality. Sub cultural boundaries may not be clear-cut and do not always stabilize over time. Douglas (1999), for example, argues “*there is no assumption of fixity, on the contrary, the four types are represented in any community and social life is in permanent tension and flux*” (Douglas, 1999, p. 411). If we examine figure 2c below, an organization, for example, may experience the unexpected emergence of hierarchism and/or individualism at the subgroup or individual level. This is represented by the bold colors and broken lines. A number of IS researchers (Avison and Myers, 1995; Dube and Robey, 1999) have similarly highlighted the importance of understanding culture from a fragmented perspective. Dube and Robey (1999), for example, in using the fragmented perspective to study software development practices (SDP), found the introduction of new SDP - designed to foster teamwork and cooperation - brought about a number of unexpected cultural orientations, fostering a climate which did not support SDP. Their study highlighted that management should be aware of fragmented cultural differences when implementing SDP.

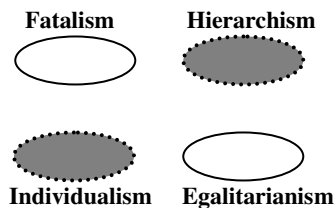


Figure 2c. Fragmentation

RESEARCH QUESTIONS

For the current study, a number of research questions can be raised: Are the three perspectives (*integration, differentiation and fragmentation*) outlined in Cultural Theory reflected in IS adoption within organizations? If so, which perspective (*if any*) can help us to understand the relationship between organizational culture and IS adoption?

	Integration	Differentiation	Fragmentation
View of culture	Integrated	Pluralistic	Ambiguous
Level of analysis	Organizational	Subgroups	Subgroups/individual
Benefit	Useful for understanding the forces acting against the dominant (collective) culture	Can bring to light deep-rooted subgroups existing within an organization	Practical for understanding the unanticipated and paradoxical nature of culture
Drawback	One-dimensional/view that culture is unified	Assumption that subgroups are fixed and predictable	Difficult to conceptualize and study

Table 1. Summary of the three perspectives

RESEARCH METHOD AND DATA ANALYSIS

Increasingly, researchers (Avison and Myers, 1995; Weisinger and Salipante, 2000) have recognized the need to take a more contemporary anthropological view of culture. Culture should be studied through the use of interpretative methods, which is generally the case with anthropologists. However, insufficient attention has been given by researchers in studying the usefulness of theoretical frameworks and research methods developed by anthropologists in studying and analyzing IS-culture (Avison and Myers, 1995). This is also surprising given that the study of culture has its roots in Social Anthropology.

The strategy employed for this study is an in-depth case study using multiple methods (in-depth interviews, documentary analysis and observations). The tactic taken was to examine how events emerged. In other words, the research study was retrospective in nature. Interviews were unstructured/semi-structured to allow for emergent themes to be explored (Myers and Newman, 2007). In total, 24 respondents were interviewed and included those directly involved in the IS adoption (i.e., directors, senior management, middle management, user champions, and users from different departments). Each interview lasted for approximately one to one and a half hours. Maximum variation sampling (Patton, 2002), that is, purposefully choosing an array of individuals to investigate cultural differences, was used for this research study.

A number of documents were used. These included: minutes of project meetings, progress reports, internal documents, project plans and company literature. Observation was also used to study the day-to-day work practices. Approximately three months were spent in the organization, from August – October 2005. The role of “*observer-as-participant*” (Gold, 1969) was adopted for this study. This approach was considered viable as it facilitates close interaction with subjects, but also maintains an outsider perspective at all times.

In analyzing the data it was important that all the sources of evidence were brought together to find common research themes. HyperRESEARCH 2.6 (a qualitative software package) was used for coding and data analysis. Data analysis involved using the case material engendered from this study and charting it against the three perspectives as outlined in Cultural Theory over the period/time of the IS adoption. Similar to Elisberg and Baskerville’s (2006) interpretative study, content analysis was performed on the collected data. Content analysis involved coding the text on a variety of levels - words, sentences, phrases, metaphors and themes.

CASE STUDY BACKGROUND AND DISCUSSION

In order to address the research questions, an in-depth case study of a Higher Education College (HEC) in the UK and its failed attempt to adopt a Virtual Learning Environment (VLE) is used for this study. The name of the college will be referred as “*organization A*” to preserve its identity. The college was established prior to 1910 and offers over 270 courses. It presently operates from three campuses. The total number of student enrolments at the time of study was approximately

8000. Overall staff levels have remained fairly stable over the last 5 years at around 220, of whom, 108 are full time lecturing staff. On the whole, the college had a high staff retention rate. All organizational members were affected by IS adoption. The organizational structure of the organization A is illustrated in figure 3.

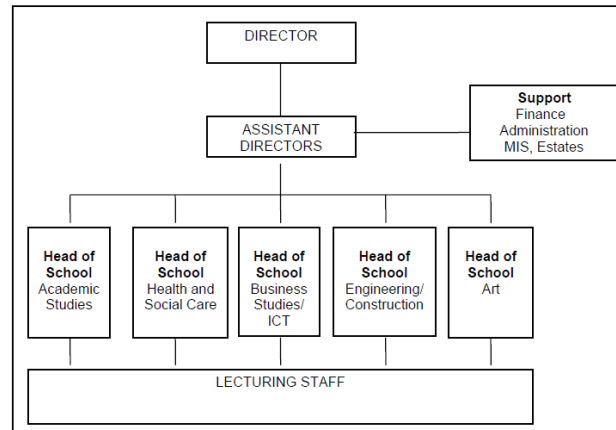


Figure 3. Structure of organization A

The IS system introduced was a Virtual Learning System (VLE). It has only been recently that the organization has attempted to introduce an integrated IT/IS system like a VLE. The implementation cut across all departments and levels. Use of VLE's is becoming increasingly popular across colleges for delivering learning content, streamlining administration and performance management. The aim of the project was to holistically transform the organization through the use of technology. Project initiation began in 2003, and was ongoing at the time of study.

Project initiation

Project initiation commenced in early 2003. The college underwent a change in director in 2000-2001, who brought with him a vision to transform the college into a more forward-thinking and IT-driven college. Prior to implementation of the new system, the college relied on a variety of disparate systems and manual processes for gathering data and transferring between systems. However, the use of old mundane technology created a number of problems across the college. Departments, for example, were unable to communicate effectively with one another. This made reporting difficult, including the production of documentation and statistics on courses and the accuracy of information was becoming a major concern.

Groups involved in the IS adoption

To overcome these problems, a number of groups were set-up to oversee the VLE implementation. This included a steering group, project team and user champions. A summary of the composition of the groups/individuals involved in the IT implementation is shown in table 2.

In this organization, several distinct subgroups were evident. Directors and managers represented the hierarchists and were commonly referred to as *"the hierarchy"*, *"upper management"* or *"higher management"*. System users (often lecturers from traditional subjects) symbolized the fatalists and this subgroup was often known as *"the neanderthals"*, *"ordinary ranking staff"* and *"people on the ground"*. Historically, the *dominant* subgroup within this organization was hierarchism. Managers also highlighted how fatalistic values among certain departments gave rise to a highly resistant orientation when introducing both IT and non-IT related change initiatives in the past.

Group	Composition	Role
Steering group	Consisted of director, assistant directors and IT manager (project manager)	To plan, evaluate and provide resources for the IT/IS implementation
Project team	Consisted of project team managers i.e. managers from different schools	To oversee, give advice and take part in introducing the IT system within each department
User champions	Three members of staff selected internally (consisted of lecturing staff)	To champion the change, bolster up user support and interact closely with users to solve technical problems and also to report any problems to the project team

Table 2. Composition of groups/ individuals involved in IS adoption

Systems adoption

In late 2003, a speech was given to users by the steering group to ensure organizational backing for the VLE system. There was little opportunity provided to allow users to voice their concerns and issues. Users were not given ownership to partake in the change efforts; rather they were told what to do. The steering group did little to mobilize support for IS adoption. Little attention was given to communicate/sell the proposed benefits of the VLE to users or to win their commitment to the new system. Users felt that communication was one-sided. From the perspective of one lecturer (system user): *“management can appear very high-handed, like tablets of stone, this is what has been decided and it is then communicated”*.

A high power distance existed between higher and lower levels and this orientation was confirmed by reviewing project documentation. There is unbridled dependence on hierarchical customs, which fostered an environment of power domination and a management style favoring rules and regulations. Consequently, this orientation reappeared in the adoption of the VLE. Too much trust was placed in directors and managers to introduce the VLE, and lacked discussion from individuals falling outside the inner circle. Little interaction occurred between the steering group and project team members.

Management reinforced a strong sense of cynicism to cascade throughout the organization. Users became uninspired and uninterested from the outset of the VLE adoption. This was partly due to the fact that management came from industrial rather than academic backgrounds, and this created a lost sense of integrity among higher and lower levels. From the perspective of one steering group member (assistant director): *“management don’t teach you see, this is the problem, and therefore we have no credibility among teaching staff... staff will take the view that management are seen as bureaucratic- as exercising power and influence!”*

As the VLE became deployed into the organization in 2004, values of fatalism (apathy and isolation) reappeared among system users. Users typically viewed IS adoption to be ultimately determined by management over which they had no control. Members valued the prospect of migrating to the VLE as an occurrence of fate.

One user shared: *“it’s coming whether you like it or not. There’s no point worrying about it. I can just do what I can do and anything I can’t, I just don’t bother!”* Que sera sera

A major goal of the research study was to examine the word sentiments embedded in the text to come to a fuller understanding of the cultural situation. In examining the words from the interview transcripts, it became clear that specific *military* word sentiments were presented. These word sentiments help support the conflict which occurred between the fatalists (system users) and the hierarchists (steering group members) throughout the VLE implementation. Military connotations included: *“battle”*, *“old regime”*, *“old hands”*, *“rank and file staff”*, and *“inferior”*. The term *“battle”* symbolizes the hostility and conflicts observed between system users and the steering group. *“Old regime”* and *“old hands”* refers to the command and control orientation enacted by management and not wanting to relinquish their power base and authoritative role. The illustration of *“rank and file”* symbolizes how users felt like enlisted troops, where rank

refers to soldiers standing behind one another, with clear lines of authority between higher and lower ranks. In the context of this study the term “inferior” illustrates the perceived distance existing between management and users on the ground, and how users felt of lower rank of importance.

Viewing the VLE adoption from a differentiation perspective, it is evident that two *distinct* cultural orientations existed initially in this college. This included a *domination* of hierarchism (enacted from the steering group) and fatalism (exemplified by system users) (see figure 4).

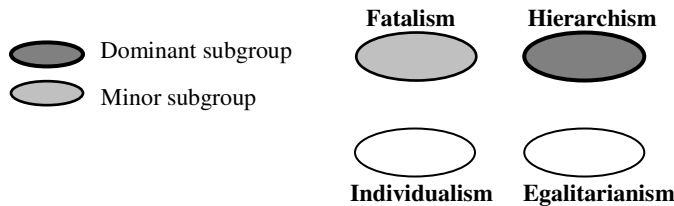


Figure 4. Differentiation in organization A

The inactive role of the user champions

One unexpected cultural orientation which surfaced throughout IS adoption in late 2004/early 2005 was the constraining individualistic tendencies of user champions (figure 5). According to one IT manager/project manager:

“They [user champions] were looking out for their own jobs, saying well look a second here, I am down in hours, and my job could be under threat. I know a bit about IT... well I will take those hours, and hide basically for the rest of the year - they were not proactive!”

Interestingly, management did not make the mistake of choosing IT champions who were deemed individualistic; rather, this cultural orientation gradually emerged over time. No attention was given to managing the champions throughout the period of change. The reaction of the user champions had various effects on the VLE adoption. Firstly, the user champion’s short-term interests dominated over the long term interests of the organization. Secondly, the champions did not encourage users to become accustomed to the new system; and thirdly, the futility of the champions led to increased values of disillusionment among users.

Here we have a situation of fragmentation; sub cultural types were not stable. Indeed, a person could be associated with several ways of life simultaneously or migrate between them. Thus a system user could be part of fatalism, while at the same time exhibit individualistic tendencies (as a user champion). In other words, culture should not always be regard as fixed; instead culture is emergent and paradoxical as illustrated by the dotted lines in figure 5 below.

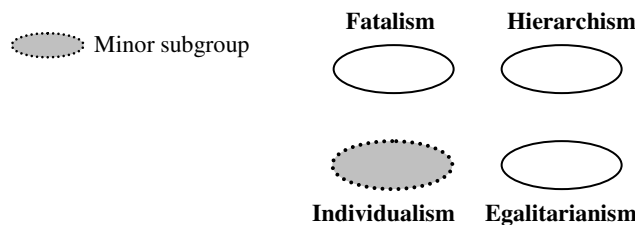


Figure 5. Fragmentation in organization A

Non-adoption of the VLE system

The overwhelming power and control exerted by steering group members, the fatalistic tendencies of systems users, and the individualistic tendencies of the user champions led to a very unresponsive “*gridlocked*” organization – an orientation which did not favor the adoption of the VLE system. The component subgroups of the college - steering group, user champions, project team managers and system users - are like an open struggle between opposing forces, more often, clanking and clashing resulting in an exhausting battle to introduce the VLE.

As an outcome, there was non-adoption of the VLE system and the organization reverted back to using manual/traditional processes. The introduction of the VLE did not bring about any organizational improvements. In many ways, its introduction brought about new associated problems and challenges. If we view the IS adoption from an integration perspective, it is evident that the subsequent chain of events transformed the *dominant* culture from one favoring hierarchism (power and control) to a cultural orientation enveloped in fatalism - apathy and isolation (figure 6). Fatalism gave way to a hampering orientation which made the adoption of the VLE extremely difficult. Firstly, uptake of the system was very poor; secondly, users took a very insular role in adopting to change; and thirdly, management came up against confrontation and hostility from users. From the perspective of one user: “*because of that top way of organization and things happening within the college, people lost their optimism!*”

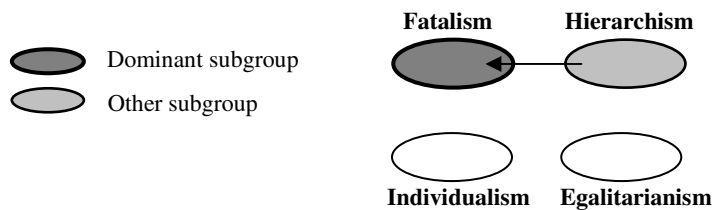


Figure 6. Integration in organization A

DISCUSSION

This research study demonstrates that all three perspectives as outlined in Cultural Theory are reflected in IT adoption within an organization. Viewing the college from the *differentiation perspective* revealed the fatalistic tendencies enacted by system users and the constraining hierarchical values enacted by management (steering group). The problems associated with hierarchism at organization A led to a number of negative effects. The control driven orientation of directors and managers created little user interest and enthusiasm and acted as a strong deterrent to IT adoption. Similarly, Tolsby (1998) in studying the effects of organizational culture on a large scale IT project at a Norwegian army unit found that a high command and control environment was very much a hindrance to successful IT acceptance. Fatalism fostered resistance throughout the organization and an unwillingness of users to abandon their traditional/manual processes. This is not surprising given the fact that highly resistant cultures involving inertia and fear have been linked to change failure, IT abandonment and poor IT uptake (Kaarst-Brown and Robey, 1999; Leidner and Kayworth, 2006).

Looking at organization A from the *fragmentation perspective*, it is evident that one unforeseen cultural issue which emerged throughout the VLE implementation was the individualistic tendencies of the user champions. This acted as a major reason for non-adoption of the new system. The user champions did little to encourage a climate of support and enthusiasm, and greatly restricted uptake of the VLE system. Jackson and Philip (2005), similarly, highlighted that egotistic behavior can greatly impede IT/IS adoption. Organizational members can put their interest before the interests of others, resulting in an orientation which does not favor IT uptake. The case study also showed evidence of the *integration perspective*. The various happenings throughout 2003-2005, brought about a collective shift from hierarchism to an orientation entrenched in fatalism.

The case study illustrates the importance of viewing IS adoption from all three perspectives simultaneously. The adoption of the VLE brought about a number of deep-rooted subgroup differences (*differentiation*); a series of temporal and emergent responses (*fragmentation*), which in turn transformed the shared organizational culture (*integration*). Each perspective, when examined in isolation, gives a limited outlook on IS adoption. Instead, by scrutinizing the same problem from different cultural lens gives a richer account of the occurrence under investigation. In other words, each perspective seizes some ethos of awareness and insight which the other perspectives cannot.

Why use Cultural Theory for this study?

One obvious question is: why was this framework chosen rather than a different framework? Indeed, a number of other frameworks were considered for this investigation most notably Hofstede's multi-dimensional framework (Hofstede, 1980) and Schwartz's Value Inventory (1999). Schwartz's Value Inventory and Hofstede's framework are often used to analyze culture across nations and are less suitable for understanding change and the internal dynamics occurring within business organizations (Philip and McKeown, 2004). Furthermore, Ford et al (2003) highlighted three major concerns with Hofstede's framework. Firstly, it views culture as fixed over time; secondly, culture is assumed to be collectively shared; and thirdly, it disregards sub-cultural differences. Cultural theory is useful for understanding interaction both within and between sub-groups. Hendry (1999, p. 563) notes "*because [the] theory works at the individual level, it is well able to account for changes both within and between [cosmologies]...and should have no problem dealing with dynamism*".

CONCLUSIONS, PRACTICAL IMPLICATIONS AND LIMITATIONS

The overall purpose of this study was to investigate the role and influence of organisational culture in IS adoption. Using Cultural Theory, this paper presented three perspectives (*integration*, *differentiation* and *fragmentation*) for understanding the relationship between organizational culture and IS adoption. The key argument raised is that by viewing culture from all three perspectives concurrently, rather than in isolation, it can offer important insights to understand the consequences and effects of culture when adopting IS in organizations. Cultural Theory is an appropriate framework for understanding and studying culture from all three perspectives.

This study highlights a number of practical implications. An important point raised in this study is that organizational culture at the group/individual level can strongly influence IS adoption. Managers and practitioners should be aware that IS adoption can consist of emergent cultural issues. Managers should understand the groups/individuals affected by the IT/IS implementation and cultural awareness should become part and parcel of the management process. Cultural theory can act as a useful framework which can be used by managers to deal with cultural issues.

However, a number of limitations can be identified from this study. The Cultural Theory framework and the three perspectives, although applicable to other organizations, has been applied to just one organization. Further studies in other organizational settings are needed to further test the framework. A longer-term study could also have been carried out to scrutinize if the cultural cosmologies transform over time. Further studies would be useful to examine if any of the perspectives are likely to be more critical or have a greater impact on IS adoption than the other perspectives. While this study has attempted to bridge an understanding between organizational culture and IS adoption, these two areas continue to be researched in isolation. Further research is needed to examine other inconsistencies, challenges and opportunities which may have been overlooked in this study.

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