THE INFLUENCE OF ORGANISATIONAL CULTURE ACROSS THE STAGES OF ENTERPRISE SYSTEM IMPLEMENTATIONS

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Abstract

Enterprise systems (ES) are important business software which can be difficult to implement, while the failure to account for organisational culture can lead to projects that are expensive and late. However most of the existing research has focused on national level culture. As such little is known of how organisational culture influences the implementation of enterprise systems. This ongoing research aims to address this gap by identifying whether organisational culture affects ES implementations and whether the effect of culture varies across each implementation phase. To address the research aim, data will be collected from a case study of a university’s implementation of a student management system and analysed using Detert et al's framework on organisational culture. The preliminary results indicate that organisational culture impacts ES implementation projects and these impacts may differ for each phase of the implementation project.

Keywords: Enterprise systems, organisational culture, implementation.
1 INTRODUCTION

Enterprise systems (ES) are large scale commercial software packages that can promise a seamless integration of information flowing throughout a company and are thus important business software for organisations. ES can integrate diverse information into a single database which can serve different departments particular needs. To implement an ES system is a major undertaking (Somers & Nelson, 2004) and many ES implementations often end in failure due to the complex interrelationship of factors involved. One of these factors is culture. Researchers have suggested that different national and organisational cultures may be very important factors in ES implementations (Krumbholz et al, 2000), although little work has been done in this area (Leidner & Kayworth, 2006). In particular, the failure to account for organisational culture can lead to projects that are expensive and/or late (Krumbholz & Maiden, 2001).

Research suggests it is important that there is a fit between the ES and the organisation’s culture if there is to be a smooth implementation (Klein & Sorra, 1996; Krumbholz & Maiden, 2001; Wang et al, 2006). Thus, organisational culture is potentially a very important factor in ES implementations and deserves further study. However, existing research has largely focused on culture at the national level (Leidner & Kayworth, 2006) which has left gaps at the organisational level for work which can investigate how an organisation’s culture can affect ES implementations. The limited research to date also falls short of identifying what elements of culture are important in affecting ES implementations. Further, there has been no prior work which has examined the impact of organisational culture across different stages of ES implementations. This study seeks to address these gaps with a single case study which examines how organisational culture affects ES implementations and the effect of this on each implementation phase. Such findings could help practitioners’ better marshal resources towards managing such impacts.

2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The literature review considers organisational culture and enterprise systems. The first part examines organisational culture and identifies a cultural framework that may impact ES implementations. The second part then identifies a framework for examining each implementation stage.

2.1. Organisational Culture

Culture has been defined by Schein (1985) as the basic assumptions, values and artefacts which influence how people view the world and how they behave. Culture can further be distinguished at different levels such as national and organisational. Regardless of the level, a values based approach has tended to be used by researchers because values are more observable than beliefs, and more decipherable than symbols or artefacts (Schein, 1985; Leidner & Kayworth, 2006). In the literature, this values focus is evident in national level studies which have examined a select group of values (e.g. Hofstede, 2001). However, organisational level studies have found a much greater number of cultural values (Leidner & Kayworth, 2006). Following the quantitative traditions, there have been many efforts to develop cultural frameworks aimed at the organisational level (e.g. Hofstede, 2001). A qualitative alternative is work by Detert et al (2000) who integrated much of the existing cultural literature into eight dimensions of organisational culture (Table 1). This cultural framework has been widely used by researchers in information systems (e.g. Jones et al, 2006) because it can provide the basis for broad cultural analysis while being relatable to past work.

2.2. ES implementation process models

The process view of ES implementation sees implementation as a sequence of stages where the outcome of each stage can be examined, as well as the cumulative outcome across all of the stages (Markus & Tanis, 1999; Somers & Nelson, 2004). Markus and Tanis (1999) developed a four phase process model to examine ES implementations which consisted of the stages of project chartering.
The purpose of this framework was to explain ES success, which makes it very useful for practitioners and researchers alike in trying to understand actions and effects in each stage. This model also recognises the holistic nature of implementations, such that the actions and decisions made in one stage can generate outcomes which provide the starting points for the following stage. Next, this paper turns to examining what each of these stages is, and how organisational culture may affect these stages.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Orientation to change</td>
<td>Extent to which organisations have a propensity to maintain a stable level of performance that is ‘good enough’ or to seek to always do better through innovation and change.</td>
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<tr>
<td>(stability vs change)</td>
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<td>2. Control, coordination and</td>
<td>Extent to which organisations have decision making structures centred around a few vs. decision making structures centred around dissemination of decision making responsibilities throughout the organisation.</td>
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<tr>
<td>responsibility</td>
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<tr>
<td>(concentrated vs. autonomous</td>
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<tr>
<td>decision making)</td>
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<td>3. Orientation to collaboration</td>
<td>Extent to which organisations encourage collaboration among individuals and across tasks or encourage individual efforts over team-based efforts.</td>
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<td>(isolation vs. collaboration)</td>
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<tr>
<td>4. Basis of truth and rationality</td>
<td>Extent to which organisations seek truth through systemic, scientific study using hard data or through personal experience and intuition.</td>
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<td>(hard data vs. personal experience)</td>
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<tr>
<td>5. Motivation</td>
<td>Extent to which organisations deem that individuals are motivated by an internal desire to perform well or by external rewards and encouragement.</td>
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<td>(external vs. internal)</td>
<td></td>
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<tr>
<td>6. Orientation to work</td>
<td>Extent to which individuals in organisations focus on work as an end (results) or to which they focus on the process by which work is done as a means to achieve other ends.</td>
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<td>(process vs. results)</td>
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<tr>
<td>7. Orientation and focus</td>
<td>Extent to which organisational improvements are driven by a focus on internal process improvements or by external stakeholder desires.</td>
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<td>(internal vs. external)</td>
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<td>8. Nature of time horizon</td>
<td>Extent to which organisations focus on the long-term of the short-term.</td>
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<td>(short term vs. long term)</td>
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Table 1. Detert et al’s Cultural Dimensions (Detert et al, 2000; Jones et al, 2006)

2.2.1.  Chartering Stage

The chartering stage includes decisions and activities leading up to the funding of an ES system and the project to implement it. This is the planning stage for the implementation where the ES is selected and the budget and timeline is organised (Markus & Tanis, 1999). Nah and Delgado (2006) conducted a study examining the temporal importance of ES factors across different stages. They found that top management support and championship (TMSC) was the most important activity during this phase where TMSC is the support and approval of top managers for a project. These findings reflect earlier work by Parr and Shanks (2000) which also found that TMSC was important in the early stages of ES implementations. Other researchers have also stressed the importance of resource allocation in the chartering stage as being salient to project success (Nah & Delgado, 2006; Somers & Nelson, 2004). Top managers can help with resource allocation so it is important that they are willing and able to provide resources to the project.

Organisational culture may affect the chartering stage and past research provides some evidence of this effect. Studies have shown that the resource allocation behaviour of top managers could be
affected by cultural factors. Top managers must be critical in how they allocate resources because the escalation of resources into failing projects has poor outcomes (Keil et al., 2000). Further, escalation is likely to occur in organisational cultures where confrontation is avoided by toning down negative messages (Keil et al., 2000). Organisational culture may also affect the selection of the system to implement. Wang et al. (2006) found that there were less initial misfits in implementing local ES than with alternative international systems. Likewise, Wagner and Newell (2004) also found that where organisations had a diverse organisational culture, then the selection of a system to fit such a culture would also be important for implementation success. So, resource allocation and system selection are important tasks in the chartering stage that may be affected by organisational culture.

2.2.2. Project Stage

The project phase includes all those tasks and activities that are necessary in order to fit the ES to the organisation and get it up and running (Markus & Tanis, 1999). The important activities in this stage involve configuration and customisation tasks as well as more technical tasks like testing, data conversion, modelling and integration (Markus & Tanis, 1999; Nah & Delgado, 2006; Parr & Shanks, 2000). Parr and Shanks (2000) found that it was crucial to have a balanced project team and the best people available in this phase. This stage is marked by its focus on the hard, technical tasks of installing the system rather than softer social tasks such as change management.

As with the previous stage, there is also evidence to support the notion that organisational culture can affect this stage too. One way is in how it may influence decision making. Wagner and Newell (2004) argue that the best practices configured into an ES tend only to meet the needs of the dominant group involved in decision making. This means that the system is likely to be configured towards the needs of the project team, who make most of the implementation decisions. This is very important because when implementing ES systems in China, Reimers (2003) found that positive results in implementing ES were associated with the delegation of decision making to the project team. Thus, it is important that the composition of the project team reflect the dominant organisational culture, so that the system can be shaped towards the needs of general users, rather than that of any particular subculture. As with the chartering stage, it is also very important to develop a cultural fit between the ES and the organisation, such that the ES is adapted to fit the organisation’s culture (Krumholz & Maiden, 2001). This cultural fit can be achieved by decisions regarding the configuration and customisation of the system. In such ways, organisational culture can affect ES implementations in the project stage.

2.2.3. Shakedown Stage

The shakedown phase includes all those activities which can help the organisation come to terms with the new system (Markus & Tanis, 1999) and ends when the organisation can resume normal operations. This stage may also mark the passing of control from the project team on to the organisational managers who will then take charge of the new system. This stage includes many of the softer, social tasks such as training and change management which are necessary to get people using the new system. Change management is also very important in these stages and consists of those tasks that are necessary to reduce resistance, confusion, redundancies and errors that are caused by the large-scale change of the implementation (Somers & Nelson, 2004).

As with previous stages, an important theme in this stage is the necessity of cultural fit. In the shakedown phase, cultural fit is achieved by developing a fit between the inherent values of the ES and those of the organisation’s users. For instance, researchers have argued that there will be conflict where there are disparities between the organisational culture and the system being implemented (Klein & Sorra, 1996), which stresses the need for effective change management (Cooper, 1994). Further, Elbanna (2003) found that social integration was not automatically achieved in ES implementations and that this integration had to be built within the organisation. Thus, organisational culture can be expected to influence the shakedown phase because the difference between organisation values and the values embedded in the ES, will determine how much change management is necessary.
2.2.4. **Onward and Upwards Stage**

Finally, the onwards and upwards stage includes everything after normal operations resume, such as ES updates and upgrades, and continues until the system is replaced in the future (Markus & Tanis, 1999). In this phase the organisation will be able to determine what benefits have been realised, which will be reflected, in part, in the success of cultural fit activities throughout the implementation. As Cooper (1994) found, too much IT adaptation during implementations can reduce the extent to which an IT can bring organisational change. Further, if there is too little IT adaptation then the ES might not mesh with user values resulting in a system which users resist using (Cooper, 1994; Klein & Sorra, 1996). Therefore, in this phase the organisation will bear the brunt of implementation decisions made throughout the project which in turn, will determine the success of the implementation and the benefits realised from it.

The preceding discussion has examined each implementation stage and highlighted research that has shown how organisational culture could affect ES implementations. A key theme which has emerged is the importance of cultural fit between the ES and the organisation. Cultural fit reflects the importance for organisations to balance the need to change their culture with the need to change the ES to suit the organisation. This discussion has also identified a number of activities and tasks for each implementation stage which may be affected by the organisation’s culture. This literature provides the foundation for this study to further examine how organisational culture affects ES implementations.

3 **METHOD**

To investigate the effect of organisational culture on ES implementation, an exploratory case study was used which involved the inductive development of theory (Eisenhardt, 1989). This is an approach that has been used in IS by other researchers where the phenomenon under question is not fully understood, and where novel theory can be developed from the data (Eisenhardt, 1989; Kirsch, 2004). This approach is intended to reveal existing phenomena and relationships while also being open to new constructs which might surface over the course of the study (Kirsch, 2004). Thus, case studies are a suitable methodology because there has been limited research in organisational culture and ES and this study was aimed at examining the relationship between the two. The study’s methodology was supplemented with procedures from Yin (2003), particularly in the use of a case protocol to guide data collection in order to standardise data collection and collect consistent data from the interviews.

3.1. **Research Site**

The research case selected for this study is a university’s implementation of a student management system (SMS). The SMS was deemed a central system for the university and involved an organisation wide implementation effort. In 2002, the university recognised the need to replace its existing legacy system because this was no longer able to meet the needs of the university. For example, the Vice-Chancellor felt that he did not have the financial information he needed to run the university effectively. A steering committee was therefore established to investigate possible information systems which could address this need. The committee then evaluated several different information systems before selecting the Omega SMS as the preferred system. The proposal to implement the Omega SMS was then drawn up and in 2004, the decision was made to go ahead and implement the SMS. System implementation began in late 2004 and the system went live in October 2005 for the new semester’s enrolment. Once the implementation project was wrapped up in 2006, the system was passed over to a support team in the Student Administration department who were responsible for its ongoing management.

3.2. **Data collection**

The study began with a series of fact-finding interviews conducted with project staff and the head of the Student Administration department. These helped provide background information on the Omega project and introductions that were invaluable for setting up the focal study. Following these
preliminary interviews, a case study protocol was developed to provide an interview plan, schedule of questions, and a framework to organise the collection of data (Yin, 2003). The interview schedule included a set of questions aimed at eliciting information about each ES implementation stage and the eight Detert et al (1999) cultural dimensions. The questions were adapted from schedules used by Jones et al (2006) in a previous study also situated in the context of ES implementations. Nine semi-structured interviews were conducted with project staff involved with each of the implementation stages. The interview schedule was used as a guide for these interviews but the semi-structured nature of the interviews allowed each interview to follow its own course where additional insights into organisational culture were revealed. Project notes were also collected to supplement interview data and some project documentation also examined.

3.3. Coding Procedure

Once the interview data was collected each interview was transcribed and uploaded into NVIVO8 in preparation for coding. An open coding approach was then used to identify the important dimensions that emerged from the data (Kirsch, 2004). A secondary analysis was also conducted to gain a better handle on the data. These cultural values were then assimilated into the Detert et al cultural dimensions, which have shown the effect of organisational culture in each implementation stage.

4 RESULTS

As this research is ongoing, a full analysis of all eight cultural dimensions is not yet available for dissemination. This study instead presents a sample of these results which shows how the cultural dimension of change and stability affected each stage of the SMS implementation.

4.1. The effect of orientation to change on the SMS implementation

The orientation to change dimension (Table 1) concerns whether the organisation is oriented towards change and innovation or whether a stable level of performance is preferred (Detert et al, 2000). The previous Vice Chancellor had adopted a policy of stability during his 21 year tenure where he prioritised teaching and research at the expense of administration. The result was an organisational culture which was oriented towards stability and very resistant to change. This affected all four implementation stages as described below:

- In the chartering stage, it was evident that staff were not used to change. As such, they engaged in a very slow, cautious and methodological process. The chartering group spent three years (2002-2004) debating the issues and working out specifications before arriving at a recommendation for a new SMS.

- Change resistance further influenced the project phase as some project staff were not willing to let go of their existing knowledge and embrace new ways of doing things.

- In the shakedown phase, change resistance had its biggest impact as staff heavily resisted the new system. Many were reluctant to embrace new and unfamiliar administrative processes while others were not computer literate and unwilling to move towards a computer-based process. Altogether, it was difficult for staff who were entrenched in the familiarity of the existing SMS, to give this up in favour of a new system which seemed a lot less attractive to them.

- Resistance continued into the onwards and upwards phase, but has gradually decreased over time as staff are replaced and new staff accept the system as part of their jobs.

Altogether, these preliminary findings highlighted the impact that a stability culture, which was a legacy of an earlier period of management, had on the SMS implementation. The university had been exposed to such little change before the implementation that they did not know how to deal with the changes that they were exposed to with the new SMS. The effect of this was felt in every implementation stage and this has been an important factor in the user resistance of later stages.
User resistance has long been identified as a critical factor for information system success and ES implementations success (Lapointe & Rivard, 2005; Kwak & Lee, 2008; Kim & Kankanhalli, 2009). Such research has found that user resistance can occur because of the perceived threats to users because of change (Lapointe & Rivard, 2005) and the switching costs of moving to a new system (Kim & Kankanhalli, 2009). In this study, users may have resisted the SMS because they recognised that it would lead to more administration (a perceived threat) and they would also have to invest considerable time in learning a new system (high switching costs). Further, Kwak and Lee (2008) argue that it is important that there is a readiness to change and an organisational commitment towards such change as being important factors for successful ES implementations. In this study, the stability culture meant that users were not prepared for change. Further, users didn’t understand the need for the new system and so there was no commitment from them towards the SMS either.

5 IMPLICATIONS AND NEXT STEPS

The next steps for this research are to analyse the remaining organisational cultural dimensions and their cumulative effect across each implementation stage. So far, the preliminary results indicate that the cultural dimensions have a significant impact on ES implementation success and further analysis should identify what those impacts are. The preliminary results also demonstrate the usefulness of Detert et al.’s framework for examining ES implementations and show how it can provide a more fine-grained approach to studying the effects of organisational culture. Further, this study showed how an organisation’s stability culture impacted the SMS implementation through the user resistance that has occurred as a result of the change. This indicates that practitioners should examine an organisation’s culture before implementing ES to determine the effect that culture could have and plan for it. In this case study, the early identification of the organisation's stability culture, and it’s likely effect, could have led to more resources and time being spent in building up staff’s readiness to change (Kwak & Lee, 2008) which could then have reduced the user resistance that did occur. This shows how an awareness of culture can improve planning and lead to better ES implementations.

References


