

The Organisational Impact of Implementing Integrated IS in HE Institutions

A Case Study from a UK University

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Keywords: Integrated Information Systems (IS), Higher Education (HE), Case Study.

Abstract: This paper explores the implementation process of integrated Information Systems (IS) in Higher Education (HE) institutions. This is achieved through the analysis of a HE institution's strategy during the implementation process of the integrated IS and the impact that the new system had on the working practices of the HE institution. Through the use of interviews, the research indicates that there has been a growth of alternative power bases within the university, new roles and responsibilities for administrative staff and a different working environment for academics.

1 INTRODUCTION

In HE institutions, as in many other organisations Information Systems (IS) started as in house developments that tended to satisfy the immediate needs of the different departments and schools. As the universities continued to grow and become international organisations, incorporating students from all over the world, their needs changed and the need for integration intensified (Cornford and Pollock, 2003; Pollock and William, 2009). More specifically there is a recent push towards reconceptualising universities as informational and more integrated organisations.

Mutch (2008) suggests that despite the enormous expenditure on information technology, many organisations still feel uncertain whether they realise, much value, from their investment. This situation seems to have continued in recent years since organisations, in particular Higher Education institutions, seem to make huge investments on integrated information systems such as Enterprise Resource Planning (ERP) systems; however they do not seem to achieve the full potential of these systems (Pollock and Williams, 2009). Thus, the focus of this research is to further explore and understand the organisational impact that integrated IS have on HE institutions.

Previous research (Wainwright and Waring, 2004; Gajendran and Brewer, 2012) takes a holistic

view of information systems' integration and argues that it is beyond "technical" perspective but it is important to also include other perspectives such as organisational, strategic, operational, etc. Therefore, this research is using a theoretical framework that examines the implementation of an integrated IS from a variety of perspectives with an emphasis on organisational aspects.

This paper consists of four main sections. Section two provides a brief review of the pertinent literature in aspects related to universities as organisations and integrated IS implementation in HE institutions. Section three reviews a theoretical model for the implementation of integrated IS. Section four discusses the methodology underpinning this research while sections five and six present and discuss the findings of the HE case study. Finally section seven draws relevant conclusions and suggests future research in the area of integrated IS implementation in the HE sector.

2 LITERATURE REVIEW

Before exploring the current literature on the implementation of integrated IS in HE institutions it is important to understand the organisational aspects of universities in order to better understand the nature and complexity of the HE sector.

2.1 Universities as Organisations

Due to the increasing numbers of students in Higher Education, the formalization of universities has become inevitable and funding for mass Higher Education has brought increasing demand for accountability (McNaught and Vogel, 2006). Consequently this has increased the use of business models and methods by senior management in the HE sector which in turn has led some universities to identify themselves as corporate (McNaught and Vogel, 2006). However, can universities be solely corporate?

In some very insightful research McNay (1995) identified that the universities of the 21st Century are increasing in diversity and in an effort to shed light in this growing diversity, he classified universities into four types, the corporate, the collegium, the bureaucratic and the enterprise university. While universities tend to be a complex mix of all four organisational cultures, McNay (1995) argues that over the years universities have been progressing from a primarily collegial organisational structure through bureaucratic and corporate modes to a predominantly enterprise style.

The important differences between the types of university are not structural but relate more to relationships and values (McNaught and Vogel, 2006). However, the growth in size of the modern university has resulted in a growing emphasis on systems of budgeting and resource allocation, financial accounting, personnel management and infrastructure planning and all these are characteristics of a corporate university. Nowadays, universities also feel the emerging need to integrate all their disparate systems in order to be able to satisfy the students' needs more effectively and to utilise information to support a growing need for Government statistics in particular from HEFCE.

2.2 Integrated IS in the HE Sector

Researchers suggest that social and organisational issues are the most important aspects of integrated IS implementations (Kayas, 2008; Koh, et al. 2011; Elbana, 2007) and urge IS researchers to engage in more explicit research regarding the cultural and organisational presence of the information technology. Kallunki, Laitinen and Silvola (2011) argue that integrated IS can be seen as an umbrella which management use in order to gain a wider control across an organisation. Thus an integrated IS can be used either to centralise control of top management or to decentralise power to demonstrate

more visible management control throughout the organisation.

One growing area of integrated IS research is in the area of Higher Education (HE) (Cramer, 2006; Mutch, 2008; Fowler and Gilfillan, 2003; Wagner et al., 2006; Sabau et al., 2009; Pollock and Williams, 2009). Nevertheless there are few studies that explicitly use an organisational lens to explore the influence these systems have within the organisation.

As Alt and Auth (2010) argue research and theory building in the area of implementation of integrated IS in HE institutions is still in its infancy. However, Lechtchinskaia, Uffen and Breitner (2011) identified a number of CSF for the implementation of integrated IS which are specific to the HE sector. Through a comprehensive literature review they found that change management and organizational culture were two factors that draw most attention and they suggest that due to the fragmented organizational nature of HE institutions a different approach is needed to research compared to ERP implementations in private companies and cultural issues should be at the forefront of this.

Within the UK HE there have been two major studies on ES implementations that did to a small extent explore culture (Pollock and Cornford, 2004 and Fowler and Gilfillan, 2003). Their work focused on research intensive organisations and took a strategic, higher level management view of the organisations under investigation. Insight into cultural change was limited and did not provide empirical evidence into how the culture changed over time or how it impacted the individual front line staff.

In addition, Wagner et al.'s (2006) study illustrates how a best practice ERP system was actually created for the HE sector in the USA. Their research reveals that although the creation of new software-based best practices is assumed to be a thorough, exhaustive, investigative process they may have been determined by a relatively small interest group and when considering the early progress of ES for HE this was surrounded by controversy. Sabau et al. (2009) who conducted their research in the Romania HE sector concluded that at the end of the day an ES does not provide an institution with a competitive advantage. Instead this comes from the type of services it provides to its students with an ES being a facilitator and not a driver in a university's processes. However, this integrated, whole institution approach is intended to require all parts of a university to use a standardised format and moves it towards a highly coupled centralised organisation

no matter how decentralised it is and how autonomous are its faculties (Pollock and Williams 2009). The next section discusses the theoretical framework used in this research in order to gain a deeper understanding of the organisational aspects involved in an integrated IS implementation.

3 A THEORETICAL MODEL FOR THE IMPLEMENTATION OF INTEGRATED SYSTEM

Wainwright and Waring (2004) developed a model for the implementation of integrated IS based on the literature and empirical work which proposes that three major domains should be taken into consideration while implementing integrated IS. These three domains are technical, strategic and organizational. The technical domain sees integration mainly from a technical perspective but fail to recognise the importance of organizational issues. The strategic domain views integration as a way to achieve competitive advantage and mainly concentrates on strategic issues. Finally, the organizational domain concentrates on issues such as structure, power and politics, social and historical and finally cultural issues. This research is based on the work of Waring and Wainwright (2004) and by using their theoretical model will specifically investigate the implementation process of an integrated IS in a HE institution.

The framework for integration by Wainwright and Waring (2004) presents a systematic framework discussing IS integration issues and stresses the need for soft (organizational and strategic) issues to be studied in a proactive manner while implementing integrated Information Systems. This is in line with this research since it seeks to gain a better understanding of the organisational impact that the implementation of integrated IS have on an organisation.

For the purpose of this research we are focusing on the organisational domain and we therefore seek to gain a better understanding of the implementation of an integrated IS by exploring soft issues such as structural, cultural, political and power analysis as well as the social and historical context of the implementation.

4 METHODOLOGY

The study of the SITS (Strategic Information

Technology Services) implementation began in 2006 as an ethnographic study after what had been a very challenging year for many of the academics at EducationCom. Watson (2011) argues that ethnography should involve participant observation, content analysis of documents, stories, myths, rituals, symbols and other artefacts. This may be supplemented and strengthened by interviews, statistical analysis and even small surveys. The research began with an in-depth critical analysis of the documentation leading up to the SITS implementation. This was followed during 2008 by twenty two interviews, averaging one hour each, with university staff who had been in the university for no less than five years.

Interviewees were taken from the five largest faculties (Business, Arts and Humanities, Health and Education, Computing and Engineering, Design) where student business was more complex as well as staff from the postgraduate research department. A non-directive interviewing technique was used which allowed respondents to express their own views about organizational life in their own words rather than force them into predetermined categories (Hirschheim and Newman, 1991). The interviews involved a discussion of issues surrounding the participants' prior experience of student information systems, the implementation of SITS, life in the organization and change during and after SITS went live. Interviews were audio taped with permission, transcribed and returned to the interviewees for verification.

Participant observation took place throughout the research study and was recorded using a diary. As a member of staff one of the authors was able to participate in the activities which contributed to the academic role in providing student data. Working alongside other colleagues she was able to observe the action of various individuals and interpret them in order to gain insight into the cultural manifestations of the organization. Waddington (2004) suggests that being part of day to day activities or important events can provide valuable understanding of organizational practice which can become ritualised over time.

Using a general inductive approach informed by grounded theory (Crabtree and Miller 1999; King 2004) the interviews, documentation and diary data were coded according to theoretical concepts suggested by the data rather than imposed by the researcher. The approach used involved a process of developing initial categories, grouping data, identifying patterns and then making comparisons to uncover shared elements and properties. The

documentation and transcripts were also read critically to identify statements which reflected values, beliefs and assumptions about SITS as well as for evidence of organizational stories, myths and rituals which may have arisen over the period of the research. The analysis of the case study is presented in a form of narrative taking into consideration the improvisations which took place and the elements of each circuit.

5 FINDINGS

It is impossible within this paper to explore the extensive rich data captured during the research process. Therefore we have focussed on data that provides insight into the implementation and how it has not just delivered an integrated administration system but also other unforeseen challenges for the organization. Nevertheless it is important to understand some of the background to the implementation and why the new system was deemed necessary.

EducationCom has always had computerised administrative systems and these have been distributed, located within academic departments and developed by academic users. Prior to 2006 EducationCom had attempted to install and use an Oracle system to undertake a centralised approach to the university administrative business. A decision was taken by the CEO of the university to abandon the Oracle system and purchase a new integrated IS, SITS. There was no consultation with academic staff and limited discussions with senior administrative managers. The system went live just before the autumn term started in 2006 without the general knowledge of academics which resulted in chaos for students and staff. Since then much has changed in the university and this will be discussed in greater detail below. We have grouped and presented our findings based on the organisational domain aspects of the Wainwright and Waring (2004) framework discussed above. Therefore we explored the social and historical context of the implementation, we examined the organisational structures and culture involved with the implementation as well as any power and politics issues which arose because of the introduction of the new system.

5.1 Social and Historical Context – The Rise of Uncertainty

The failure in implementing the Oracle system prior to SITS as well as the pressure from central government and funding bodies for more detailed

statistics meant that the implementation of a 'system' was imperative. However, this led to the selection and implementation of SITS to be done in a very rushed way and a senior academic said:

"There was communication but the communication however, was 'this is what is happening'! Without really much opportunity to feedback so it was very much a driven project and it was not really a consultation project ... They got themselves into a mess ..." (P10, June 2008)

The implementation team had to implement the new system in a limited time frame and there was no room for delays. This had a negative impact on how people perceived the new system and because staff were not involved, they could not understand how to use or appreciate the new system.

Most importantly the fact that SITS was implemented so quickly caused initially stress, tension and chaos across schools. Perhaps if the implementation team had spent some time to involve, inform and educate people around the university about the new system, what is suppose to do and why they need to implement it, then people might have not had such high expectations and life after SITS might have been smoother. Interviewees dealing with standard taught undergraduate programmes believe that the system is working. Nevertheless EducationCom has seen a big turnover of administrative staff since the introduction of the new system because it requires attention to detail and familiarity with a system that is not intuitive.

Although the new system should have automated the institution's processes and make things easier, it seems that in certain cases it causes extra confusion and still some processes are paper based rather than automated and more flexible. It appears that SITS is not adaptable or flexible and on top of that creates a lot of frustration to people because they do not know how the system works, thus employees blame the system since they do not know who else to blame.

5.2 New Structures – The Loss of Trust

When SITS was introduced academics could see that administration staff were not familiar with the system and therefore this led to some concerns about whether administrators knew what they were doing. Although academics were trying to be sympathetic to some administration staff, they were very annoyed and it was a period of increased tension. However, the culture of an organisation can determine how its members will deal with a crisis situation. EducationCom went through a crisis period and there was a lot of tension among its employees which appears to have caused not only lack of trust in the new system but also in academics

and administrators.

A senior academic discusses how people do not trust SITS but also how SITS seems to be the easy target for employees to blame when things do not go as planned:

“It is the frustration that the system can be blamed for everything ... blaming the system is the best place to hide and I think that this culture is greater than this respect!”. (P1, July 2008)

The loss of trust between the various university staff members meant that often people were reluctant to take responsibilities and admit that something was wrong. It is clear that relationships have changed between academics and administrators – some might argue not for the better:

“it has to do with power, but it is more than that. It is the defensiveness, paranoia of being criticised and there is the habit of witch-hunting in the administration department certainly...” (P5, May 2008)

The highly rigid structure and formal ways of operating imposed by SITS does not work for all academic schools. A number of schools were required to undertake a re-structure in order to align their work with SITS. The evidence seems to indicate that administrators have control of SITS data and make decisions about when marks should come in, set the dates for exam boards and when the graduation should take place. They argue that the administrative burden has been lifted from academics. Yet with this has come a new authority and political power – much of which has bypassed many academics.

The assumption that SITS will make life better seems like a dream that might still need a few years to come true. SITS could perhaps make life easier for staff members but how could it improve university life when many academics do not know the capabilities of the new system. Some people’s perception is that life is not better with SITS since it did not deliver what it was promised and consequently it did not meet many staff expectations.

5.3 Power and Politics – The Power Game

The perception of senior academic staff is that none of the schools have been consulted about the new system. The Academic Registrar did point out that the schools were consulted, but the consultation was done through the administrative staff and not through the academic faculty (P11, June 2008). The main focus of an administration system such as SITS which has been implemented in a HE institution

should aim to facilitate the role of an academic and not primarily that of an administrator. Most academic research in IS would suggest that stakeholders involvement is essential and should not be put aside as happened in the case of EducationCom.

During the initial implementation an interesting finding was the fact that Academic Registry and the implementation team sent messages that SITS implementation was going very well and there were no problems. They were trying to convince people that SITS was going fine and that if there was a problem, then the problem is with the school, although at the end of the day every school was facing the same problems (P10, June 2008; P14, June 2008).

“... the message came back from the centre was always that SITS implementation is going well. The feedback from individual departments was that there were tremendous problems” (P10, June 2008)

An academic (P5, May 2008) stated that EducationCom is an extremely bureaucratic institution and that this bureaucracy existed before SITS. However, there has been a missed opportunity to improve the system. Consequently even after implementing such a big system they still use many paper based processes e.g. for the marks entry. In fact it appears to have become even more bureaucratic.

A senior member of staff from the central department suggested that often academics do not treat administrators in an appropriate manner which consequently nurtures tension and rivalry in their professional contact.

“I think there has been a general culture throughout the school where I don’t think academics treat administrators necessarily in a very helpful way.” (P11, June 2008)

In addition, the implementation of SITS brought the introduction of the SITS helpline, and the introduction of a new role; that of the “good housekeeper” which brought to the surface a new power that of the administrators. This new role appears to have first changed the identity of administrators who have more power and second the identity of the academics. After SITS academics are required to comply with the requirements of the new system when prior to SITS academics seemed to determine what kind of systems they needed and in some cases they were the ones designing these systems. Finally, it could also be argued that organisational politics played a significant role in this major shift in the locus of control.

6 DISCUSSION

The discussion of the findings is based on the framework by Wainwright and Waring (2004). We discuss how the new system had an impact on the organisational life of the University by looking into the aspects of the social and historical context of the implementation, new structures that developed as part of the implementation, power and politics involved with the introduction of the new systems and finally how the overall culture of the HE institution was influenced by SITS.

Taking into consideration the changing HE cultural environment and the analysis of the primary data, what appears to emerge are a number of themes which are indicative of possible organisational changes within EducationCom. While analysing the transcripts the authors extracted coded texts from participants' interviews. The authors were looking for statements that show beliefs, emotions, disagreement, stories or other evidence that indicated organisational changes in relation to implementation. Each of these texts was numbered from 1 to 122, and links between them were made by identifying any similarities in these text extracts. From the coded pieces of texts extracted from the interviews, the themes became evident (social and historical context, structural analysis, power and politics analysis and cultural analysis).

6.1 Social and Historical Context – The Rise of Uncertainty

From the outset of the project it was not clear to academics why they were not involved during the implementation of SITS. This caused uncertainty to the academic members of staff since they were not sure how the new system will affect their jobs. Administrators are the sole users of SITS which often makes academics uncertain what can or cannot be done, thus relying heavily on administrators for tasks that prior to SITS was performed equally by academics and administrators. Agee and Holisky (2003) suggest that the key to highly effective organisations is to build relationships while they also argue that successful collaboration opens up new possibilities for achievements that are not available when people are working alone.

Another issue that increased uncertainty was the fact that no proper training was given. Although training is an issue frequently mentioned in the IS field (Gupta, 2000) as a major contributing factor when a new information system is implemented, and everybody is aware of its significance and necessity, EducationCom is another example where the

implementation team underestimated the importance of training the right people. Therefore employees, in particular administrative staff, were not sure about the role they will play after the implementation of SITS or how their role might change.

6.2 New Structures – The Loss of Trust

Writing in the early 1980s Dill (1982) foresaw that the strength of the academic culture is declining and almost thirty years later it appears that he was right. Considering the academics' position after the implementation of SITS in the EducationCom case study it can perhaps be argued that the influence of the academics is at its lowest' with administrators holding major control of university processes and policies around academic programmes.

Similarly, Noble (1998) argues that rather than providing academics with greater freedom and control over their work, the introduction of network technology into universities has instead contributed to the commoditisation of education. With the introduction of new technologies the role of academics is being restructured, via the technology, in order to reduce their autonomy, independence and control over their work and to place workplace knowledge and control as much as possible into the hands of the administration (Noble, 1998, p. 7).

In the case of EducationCom the identity of the academic and the administrator has significantly changed. More specifically, SITS has enabled the reconstitution of formal management structures and processes within the university and has led to identity change with some groups of staff being winners and others possibly losers. These groups are the central finance department, the registry department, academics and administrators.

6.3 Power and Politics – The Power Game

Power relations have been strongly impacted and in some cases completely reversed. In a university whose core competence is education it can be seen that administrators and administrative managers are now determining policies, procedures and by implication the strategy of the university. Administrators decide on the academic calendar, recruitment criteria (now an automated points based system), examination boards, quality audit, staff performance management, to name but a few. Many of these areas used to be under the direct control of the academic faculty members and the head of department.

Additionally, the literature suggests that information systems implementations should be seen as cultural shifts and the different stakeholders involved in the project should realise that the new system is not a co-mingling of people but an appreciation and combination of cultures (Agee and Holisky, 2003; Ayers, 2004). Nevertheless, in EducationCom they excluded the academic culture from the implementation causing a lot of tension, mistrust between academics and administrators and consequently difficulties for them in working together. For example academics cannot develop new degrees easily or innovative ways of running them because the system struggles to cope. In particular certain senior administrators it appears are assuming authority they never had before and they are using it on academics which consequently cause problems and difficulties in working relationships.

One of the most pertinent findings of Fowler and Gilfillan (2003) which was also apparent in EducationCom is that an informal network often evolves to “get things done” outside of the formal role and responsibility structure in institutions where an ERP system was implemented.

6.4 The Emerging Organisational Culture

It is often evident that beliefs and values that might be shared most keenly by individuals and groups within an institution may not be those most equally supported by the institution itself. Ali et al. (2008) claim that when there is a focus in analysing an institution's culture the interpretations generally have a theoretical and observational basis, but only rarely encompass the perceptions of the actors themselves. They suggest that Becher's (1989) research is perhaps the only exception. Becher (1989) conducted early research in Britain and focused his study on the various departments in an academic institution, in order to identify their central beliefs and values. Pursuing the “cultural identity” of groups, he examined their features and those of the knowledge territory they inhabit. He found that the characteristics of the various departments were parallel within as well as between departments (Becher, 1989).

This research found that there is a gap between the various departments and schools, even between the various roles (academics, administrators and central departments) and that their differences are greater than their similarities. Since academics were not involved during implementation and are not aware of how to use the system, they are therefore

fully reliant on the administrators.

The implementation of a complex IS such as SITS can have a major impact on an organisation and it was evident in EducationCom that there was some miscommunication between the SITS team and the academic schools in that they wanted the SITS implementation to be seen as running smoothly. Although SITS was seen as a solution to the increasing numbers of students and demands of government reporting the new system seems to have caused more problems than it actually solved. Prior research on the implementation of integrated IS in academia has reported that systems such as ERP systems have helped universities to realise a number of advantages (e.g Cornford and Pollock, 2003). However, this might not always be the case because the HE sector environment is a complex one and in constant flux. The introduction of a major organisational change such as SITS can affect unanticipated change that may not be for the best as it was evident in the case of EducationCom.

7 CONCLUSIONS

This research has followed a fairly structured approach and tried to be more analytical in order to make sense of the impact that integrated IS such as SITS can have on an institution's culture.

More specifically at EducationCom a HE institution there has been a re-constitution of management which has reified the SITS system and subjugated all other forms of management. The new management agenda has become firmly cemented within the new technology which has then become an agent and an enforcer of strict instrumental policy and power. This has enabled a significant power shift to central non-academic departments at the expense of academics who directly support the core competence of the University, teaching and research, without which the university would fail. Academics become wedded to formal inflexible processes and form filling and are unable to think outside the “black box” which is SITS. Well qualified and experienced administrators fight on a daily basis to enter data into a system that is unfriendly and non-intuitive, relying on an elite group of staff (Good housekeepers) to solve their problems.

The themes identified in this research can be further explored in the context of another HE institution in order to examine whether the same themes apply or if there are more themes to be added. Additionally each of the themes identified can be explored in more detail in a different context

and from a different perspective. For example, our interpretations being academics might differ if an administrator or a member of the academic registry or a SITS expert was conducting the same research. Thus, this can be the topic of further research which will shed more light into the impact that integrated information systems have specifically on an organisation's culture.

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