AN INVESTIGATION INTO THE ADOPTION OF CAMPUS PORTALS IN SAUDI AND UK UNIVERSITIES

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Abstract: Enterprise Information Portals (EIPs) have become crucial components in contemporary organisations, and universities and other higher education institutions are not exempt. While there are many studies concerning the adoption, implementation and utilisation of EIPs in organisations, there are few studies that touch this issue in the academic environment. The aim of this paper is to report initial findings from an in-progress research project on the adoption of campus portals in some Saudi and UK universities. This study adopts a qualitative research approach based on multiple case studies. A research methodology was designed to conduct the research and to collect data through semi-structured interviews and documentation, and then analysed using various qualitative data analysis techniques such as coding and categorising, cross-interview analysis and document analysis. The findings of the study show that there are many factors that affect the adoption of campus portals such as: organisational factors, innovation factors, economic factors, technical factors and environmental factors. Finally, the paper proposes an initial model and concludes with the main findings and provides some recommendations and suggestions for further research.

1   INTRODUCTION

The use of information and communication technology (ICT) in universities has become imperative to support business and organisational activities. With the massive advance of web technology, and especially the emergence of Internet technologies, a recent phenomenon that has spread throughout universities is what is called Enterprise Information Portals or Campus Portals. It can be said that there is a radical transformation taking place in the academic environment. For example, it has been reported that contemporary higher education institutions operate in complex and competitive environments. Enterprise portals are said to organise and provide information from a variety of sources and systems in ways personalised and customised to various groups of users in a cost-effective way (Etesse, 2003). Consequently, universities and other higher education institutions are rushing to develop Web-based information systems, called campus portals. Research shows that campus portals have received wide spread attention in the academic environment (e.g. Li and Wood, 2005; Klein, 2006; Bolton, 2008). The primary aim of this paper is to

present data from literature review and preliminary case studies on the adoption of campus portals in some Saudi and UK universities. There is lack of research that focuses specifically on the factors affecting the adoption of campus portals in the academic environment. The rest of this paper is organised as follows. First, it provides a literature review covering the portal technology in the academic environment. Then, the paper describes the research methodology used. Finally, the results and findings are presented and discussed in the light of the literature, and then the paper finishes with some conclusions and recommendations.

2   LITERATURE REVIEW

The concept "portal" is usually associated with internet, intranet and web technologies. It shares common characteristics with these technologies either technically or functionally. Since the development of internet, intranet and web technologies, new terms and concepts have emerged in the market and in the literature as well. This has made it quite difficult to identify the boundaries of

each term. Thus, each term is defined differently. For example, Fustes (2005) argues that enterprise portals in some ways can be seen as a development of intranet portals. Similarly, Gu and Salvendy (2002) point out that Enterprise Information Portals (EIPs) have evolved from intranet portals and as a new capacity for intranets. What is more Benbya et. al (2004) state that "the terms Employees Portals, Enterprise Intranet Portals, Corporate Portals, Business-to-Employees Portals, and Business-to-Employees systems are sometimes used interchangeably as synonyms". Other researchers have provided different definitions. For example, Smith (2004) defines an enterprise portal as "an infrastructure providing secure, customisable, personalisable, integrated access to dynamic content from a variety of sources, in a variety of source formats, wherever it is needed". In addition, Detlor (2000) defines it as "single-point Web browser interfaces used within organisations to promote the gathering, sharing and dissemination of information throughout the enterprise".

An examination of the literature on campus portals shows that the literature falls into two main categories: 1) the literature (which can be described as the intuitive literature) that discusses the promise of the technology, its advantages and applications, and 2) the research and studies that have highlighted some issues regarding the adoption, implementation and utilisation of campus portals technology (real case studies). With respect to the former, the applications and benefits of campus portals have been reported widely in the literature. These benefits and applications can be seen in terms of time, cost, speed, effort and efficiency. Franklin (2004) described some of these advantages such as cost reduction, improve efficiency, improve customer service, developing new systems, increase Return On Investment (ROI), systems integration and improve communication. In addition, the range of services and resources that can be provided via an institutional portal are varied. These include: institutional news, personal information and records, course materials, links to other services and resources, timetables and calendar (Pearce, 2003).

Other research and studies have also been reported in the literature. For example, Li and Wood (2005) found that portals have received wide spread attention in the academic environment. Similar findings have been reported by Klein (2006) and Bolton (2008). Furthermore, a number of published research studies have proposed various development methodologies suitable for campus portal adoption

and implementation, for example (Zhu et al. 2004; Fuangvut, 2005; Bahrami et al., 2007).

In order to have successful adoption and implementation of ICT in organisations, several factors need to be taken into consideration. According to Bouwman et al., (2005) such factors can be related to the organisational perspective, the technological perspective, the economic perspective and the user perspective. These factors could have positive or negative effects on ICT adoption and implementation. Concerning the portal technology, Franklin (2004) emphasises the importance of developing supporting institutional information technology infrastructure and architecture. A study by Li and Wood (2005) has identified several challenges associated with portal adoption. These include: the integration of the portal with other applications, implementation of a single-sign-on and security issues. Jafari and Sheehan (2003) stress the role of cooperation and coordination between campus units and departments, because campus portals bring together campus constituents who seldom interact and whose interests are often different. Other writers acknowledge the dominant role of establishing policies and strategies when developing a campus portal (Thomas, 2003; Bunt and Pennock, 2006). In addition, some authors emphasise the importance of understanding users' needs and requirements (Pearce, Carpenter and Martin, 2003; Frazee, Frazee and Sharpe, 2003). Rahim (2007) investigated the barriers to using business-to-employee portals in a university setting. He found that weak management support and a distributed model of responsibility for the portal were the main barriers. Finally, Bolton (2008) published a review of portal software in the UK Higher Education context. He found that the major challenges faced by UK universities when rolling out the campus portal were time, resources and business engagement.

3 RESEARCH METHODOLOGY

This study adopts a qualitative research approach based on multiple-case studies of the adoption of campus portals in some Saudi and UK universities. The qualitative approach was considered appropriate for various reasons. To begin with, the overall aim of this research is to study the adoption of campus portals in particular organisations. According to Hunter (2004) the main focus of qualitative researchers is the personnel involved in organisations. Thus, qualitative researchers try to

understand, interpret and explain research problems in terms of the words that people assign to them. Bryman (2008) mentions that in order to understand the outside world, researchers have to interact directly with its subject matter. This can be seen as an advantage in qualitative research as it allows researchers to probe more information and clarify any ambiguity to participants that may exist. What is more, it has been argued that qualitative research helps researchers to address and answer "how" and "what" questions, which in turn will help the researcher to understand the nature and complexity of the process taking place (Creswell, 2007). This study seeks to answer such questions, for instance: 1) how are campus portals being adopted in higher education institutions? 2) What are the factors that affect the adoption of campus portals in universities?

Before embarking on data collection, a pilot study was conducted as a part of this research in Saudi Arabia and the UK between October and November 2008. The feedback of the pilot study was used to modify and enhance the instruments and to develop some aspects of the interview questions and techniques. The fieldwork was conducted between January and June 2009. Data were collected through semi-structured interviews and analysis of some documents. Sixteen interviews were conducted with IT staff who were involved with portal adoption at five universities, three in Saudi Arabia and two in the UK.

Table 1: Methods of data collection.

1. Semi-structured interviews			
Uni	Country	No	Role
A	Saudi	4	Portal manager, IT staff.
B	Saudi	4	Project manager, system developers
C	Saudi	3	Project manager, IS designers.
D	UK	3	IT manger, system analysts
E	UK	2	Portal manager, web designer.
=		16	
2. Documentation			
Type of document		Number	
Portals policies and strategies.		4	
Reports.		7	
Official PowerPoint Presentations.		8	
Articles and memos		5	
Total		24	

These include: IT managers, systems developers, IS designers and webmasters. For confidentiality purposes, the researchers can not name the universities studied, instead, they are referred here as A, B, C, D and E. The average interview lasted for about 50 minutes. The interviews were recorded, transcribed and analysed individually using various qualitative data analysis techniques such as coding and categorising, cross-interview analysis and document analysis. Table 1 illustrates the methods of data collection in this study.

4 FINDINGS AND DISCUSSION

This section reports the findings of the study which are interpreted and discussed in the light of the literature and related work.

4.1 Factors Affecting the Adoption Process

According to Bouwman et al. (2005) there are many factors that can affect the adoption of information systems in organisations. These include organisational perspective, the technological perspective, the economic perspective and the user perspective. It seems that these factors play a dominant role in the adoption and implementation processes. An analysis of the empirical evidence suggests that organisational factors, innovation factors, economic factors, technical factors and environmental factors were the most important factors that affected portals adoption in the universities studied.

4.1.1 Organisational Factors

Regarding the organisational factors, top management support was seen as an important issue. Top management support is a very critical factor in ensuring IS success adoption and implementation. Many researchers have acknowledged the importance of top management support (for example Bajwa, Rai, and Brennan, 1998; Remus, 2007). Our study shows that top management support is a very important factor. A difference between the two countries can be observed. For instance, it is interesting to know that Chancellors in Saudi universities are involved directly with portal development by chairing the portal committee. This is seen as being good for the IT departments in the universities. A vice president of the portal development appreciated the Chancellor's

involvement when he said "*we have got top management support to establish and develop the campus portal. This support is represented by the Chancellor who was/is so enthusiastic about the project and he is chairing the portal committee. He provided us with unlimited support, financially, strategically or otherwise depending upon our needs*". With respect to the UK universities, top management support was seen as an important factor. However, the level of involvement of top management is less than in the Saudi cases. Furthermore, it is noteworthy that when top management do not see the portal as priority, it is unlikely that the portal project will be given special attention by the top management. This issue was raised by one of the interviewees. He mentioned that "*we did not get top management support because the portal is not seen yet as a priority to the university*". From this perspective it can be argued that inadequate management commitment and support towards the portal could have a negative effect on the portal adoption. This agrees with the findings from other studies on campus portals including (Rahim, Sugianto and Shameem, 2005 and Rahim, 2007).

Another interesting issue raised by some of the interviewees in both countries is the issue of who owns and is responsible for data and information when an institution adopts a portal? A participant at a UK university expressed his view as the following: "*the portal brings stuff together and across organisational boundaries in the university and that sometimes is complicated. Sometimes people think that you will take some work and responsibility from them. Also, there is the issue of who is responsible for the data when you bring the data in one place? Who in charge of it? Who manages it?*". Another participant at a Saudi university has mentioned a similar view and said "*the fact that the historical approach used in developing IT in our university was a critical barrier for us especially when it comes to put the content in the portal. For example, the library system developed their IT and content, the registry department would look for their IT and content etc... Then we had to deal with various issues like who has the right over the content, who manages it etc...*". It is interesting to observe such claims, and as we have argued earlier in order to ensure a successful portal project, and to minimise tensions that may arise regarding data and information ownership between organisational units and members, all parties in the university should be involved in portal adoption. It can be said that the role of cooperation and coordination between all

parties and constituents in the university could be very significant here. In this regard, Jafari and Sheehan (2003) stress the role and importance of coordination between campus units and departments, because campus portals bring together campus constituents who seldom interact with each other and whose interests are often different. This is because the nature of the portal, as it is a cross-functional project and it touches all parties in the campus. This agrees with the view of Bunt and Pennock (2006) who claim that "the fact that a portal cuts across many sectors of the campus delivering services and information that transcend organisational boundaries, means that implementing a portal raises important questions about jurisdiction, responsibility and authority".

Another organisational factor that affects the decision whether to build the portal in house or to buy a ready made product is the availability of qualified personnel that are well trained and specialised in the development of ICT. For example, the Saudi universities studied tend to outsource the portal development to a third party, whereas the UK ones tend to develop portals in-house. With respect to the Saudi side, it was clear that the shortage of skilful and qualified people was a main issue. This was explicitly mentioned by the respondents. For example, one of the interviewees stated that "*we do not have enough manpower and qualified personnel such as programmers, technical staff and other knowledgeable people to develop the portal in-house*". In contrast, the respondents in the UK did not mention such reasons and they were confident about their IT skills. In sum, one explanation of this difference between Saudi and UK universities might be due to the fact that the developing countries lag behind their counterparts in the developed world in terms of technology advancement, experience and skills, and they do not have much in-house technical expertise. Therefore, this could affect the decision on how the technology is adopted.

4.1.2 Innovation Factors

According to McGowan & Madey (1998) innovation factors include perceived benefits and compatibility. Many researchers have identified the benefits associated with enterprise portal adoption and implementation (Looney and Lyman, 2000; Daigle and Cuocco, 2002; Frazee et al., 2003; Graves and Hale, 2003; Franklin, 2004; Li and Wood, 2005). These include: cost reduction, improve efficiency, improve customer service, developing new systems, increase Return On Investment (ROI), systems

integration and improve communication. Our study shows that universities studied perceive many benefits associated with portal adoption. Although the benefits perceived are varied, most interviewees agree that a campus portal is a great technology for improving access to information and services, providing single sign-on to a wide range of systems and applications and enhancing the communication process. One of the interviewees mentioned that "*the main two reasons that motivated us to develop the portal were: to provide a unified gateway to the University's Web-based services, and to improve communication process within the University.*" Another respondent appreciated the single sign-on feature in the portal, when he said "*one main advantage of the portal is to provide a single sign-on logging that provides access to information and services from one place*". It can be argued that these advantages, benefits and outputs of enterprise portals are important to the academic institutions since contemporary higher education institutions operate in a complex information environment. This tends to confirm the view of Etesse (2003) reported earlier that campus portals are great technologies for academic institutions to organise and provide information from a variety of sources and systems in ways personalised and customised to various groups of users in a cost-effective way.

With respect to managing the content, there are several issues that have been reported such as managing, supporting and updating content. For example, providing a campus portal with two languages (a bilingual portal) represents a key challenge to universities, and this issue is found in all Saudi cases studied. Saudi universities provide campus portals into two languages: Arabic and English. This is because The English language is the second most widely used language in the country and some universities teach some courses and modules in English. This requires many resources to be allocated. For instance, qualified staff speaking two languages, translation policies, standards and strategies, tools and applications, money to pay for personnel doing the job. These issues and others have been explicitly mentioned by many participants in the Saudi context. For example, a webmaster described this issue as follows "*we provide our portal in two languages: Arabic and English... Having English as a second language requires resources, qualified people for translation, mechanism and policies for the translation process. It is very challenging.* Another interviewee at a different university mentioned that "*we have the portal in two languages Arabic and English, and this

is not an easy task and is very labour intensive process. In fact, it is not like that if we have to provide the portal with one language." In contrast, this issue does not apply to most UK universities because they provide the portal in English only. To some extent, it can be said that universities in general who provide a campus portal with more than one language will find it difficult to manage, support and handle the content. This is a significant finding and it raises two important issues. First, universities that provide a portal with more than one language especially in the developing countries should address this issue and pay attention to it from the outset of the project. Second, effective mechanisms should be put in place to address this issue. As the content within the portal will grow over time, this issue becomes more and more significant. This requires the establishment of translation policies, standards and strategies, tools and applications, qualified staff speaking two languages, money, and other resources.

4.1.3 Economic Factors

The economic aspect of ICT is mainly concerned with cost and benefits that are associated with the adoption of ICT (Bouwman et al. 2005). Our study shows that there are many economic factors that are associated with campus portals adoption. These include: cost reductions, increase Return On Investment (ROI), project funding, resources, maintenance and running cost. All interviewees agreed that a portal technology is a great solution for saving money and cutting cost. A project officer at a UK university pointed out that "*the portal saves the university money. Take for example the university regulations. Before the portal, every student was given a copy of the regulations. But now it can be accessed online. So, for 7 years we saved about 50000 copies every year which is a half million pound*". Another participant at a Saudi university described this issue as follows "*in the adoption phase, we did a business case and evaluated how much the portal would save us money. After the portal went live, we saw many benefits, include reduced printing and distribution costs, cut in communication cost and decrease in the cost of how people find information*". Another issue identified is the funding and resources allocated to the project. This issue applies specifically to UK universities. A portal manager reflected on this "*the portal project is a huge investment. Top management in the university have not seen it yet as priority, and we didn't get enough funding and resources. I've got

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only three staff and they are busy doing other things and we have small amount of time and money to spend on the project". In contrast, participants from Saudi universities did not mention project funding issues during the adoption and implementation phases. As we mentioned early top management support in Saudi universities was a key enabler and the direct involvement of Chancellors had facilitated many aspects of the project including funding and resources. However, some participants expressed concerns about the cost of maintenance and support for long term. A system developer mentioned that "*because we bought a ready made solution, we had to sign a contract with the vendor to do the maintenance and support and we have to pay for this. If the funding stops, I don't know what the situation will be*".

4.1.4 Technical Factors

Concerning the technical factor, many issues have been identified. These include: the existing IT infrastructure, systems integration, compatibility and IT vision and strategy. It was found that the existing IT infrastructure has affected the project development, especially in the Saudi context. For instance, a web designer commented "*regarding IT infrastructure, we had to make many changes so that we got to the new system. We had to get new hardware and software because the previous equipment was not compatible with the portal*". In addition, this issue is also acknowledged by an IT manager at another university when he mentioned "*the IT infrastructure in the university was not good enough when we developed the portal. We had to buy some new software and hardware or at least replace them with new stuff*". With respect to UK universities, IT infrastructure was an important issue to them and contributed positively to the portal development. A portal manager pointed out that "*I think the IT infrastructure plays a key role in any organisation when a new system is introduced. We were very fortunate that we have a very good and very fast internet connection and the network in the campus is first class*". One reason that can explain the variation around this issue might be the generally poorer information infrastructure in the developing world compared with the developed world.

Systems integration was one of the common issues, recognised by all interviewees. This agrees with the findings from other studies, for example the study by Li and Wood (2005). A project manager at a UK university stated that "*the systems that work in the university have evolved over time separately, so*

they have different standards and models. It took us long time and a lot of work to unify the data between various systems". A similar answer has been reported by a web designer at a Saudi university when he said "*we were having different products and systems and at the same time we were dealing with different vendors. When we were planning to adopt the portal this was a critical issue: I mean the integration*". This is not surprising given the fact that systems and applications integration is a common problem and could be found in many organisations. In addition, Li and Wood (2005) point to the fact that portals are in their infancy in terms of evolution and development and there are still immature portal software products. Thus, it is not surprising that organisations could find integration is problematic. Therefore, particular attention should be devoted to this issue.

4.1.5 Environmental Factors

Environmental factors are those factors that are present in the outside environment of organisations. An analysis of the findings has shown that the competitiveness between universities influences the decision to adopt a campus portal. This issue was mentioned by all interviewees in both countries. This agrees with the fact that campus portals have become commonplace in the academic environment. (Li and Wood, 2005; Klein, 2006; Bolton, 2008). A project manager at a Saudi university claims that "*nowadays portals have become a key technology in universities' IT infrastructure and from my experience it is now difficult to operate without it. Universities around the world are investing a great deal of money and resources to develop portals, so that you have to go with the stream*" Another participant from a UK university said "*one reason that motivated us to develop the portal was the fact that the rest of the world liked the portal too. Most universities have developed or are currently planning to have one. Today's tech-savvy students are looking for places to study where they can have good technology to enhance their educational experiences*". It can be said that responding to the external environment could be seen as a motivation for developing a campus portal to attract students and enhance customer satisfaction. In addition, the presence of competition in the local environment can be seen as a significant motivation of technological innovation in organisations. Meanwhile, it has been claimed that "portal services are competitively critical in the context of higher education institutions...and they are a keystone in any

competitive strategy today portals inject immediate customer satisfaction, the basis for reputation into the competitive equation affecting long-term prestige" (Graves and Hale, 2003, p. 39). In Saudi cases, the general trend in Saudi Arabia towards the adoption and implementation of ICT projects was seen by some interviewees as a key enabler. A manager of systems development mentions that "*the general trend in the country and the orientation of the government toward the transformation of e-government has a positive impact. This helped us convincing some key ministries such as The Ministry of Finance to allocate money, funding and resources toward the portal project and we were very fortunate to witness this period*". A recent report by Ministry of Communication and Information Technology (2008) has revealed that the total IT market in Saudi Arabia in 2008 was $3 billion and is expected to grow to nearly $5 billion by 2012. This finding suggests that there is a strong trend in the country towards IT projects especially given the falling costs of hardware which can have an impact on organisations in terms of allocating money and resources.

5 THE PROPOSED MODEL

Figure 1 presents the proposed model for the factors affecting the adoption of campus portals in universities.

Based on the findings of this investigation and after reviewing the literature, the researchers were able to identify several factors that influence the adoption of portal technology.

The researchers believe that many of these factors should be taken into consideration when universities contemplate a campus portal. Due to the limitation of the space in this paper, we have not presented the full details of the model; however, most of these factors were discussed in the findings and discussion section. The proposed model will be revised and improved according to the findings in later stages.

6 CONCLUSIONS

As with any research, this study is subject to a number of limitations. First, the current study is bounded and situated in a specific context: the academic context. Therefore, it would be interesting to study other contexts and sectors. Second, this
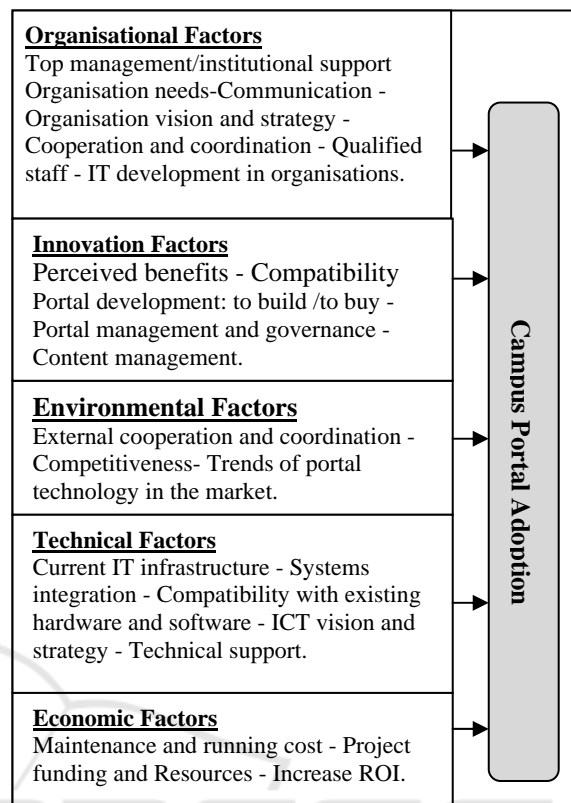

Figure 1: Factors affecting the adoption of campus portals.

research is restricted to two countries and cultures: the UK and Saudi Arabia. It can be said that the nature of case study research is not intended to provide results that can be generalised, rather it aims to explore a particular issue in a given situation. Thus, it would be interesting to study other countries. This paper has provided an insight into the adoption of campus portals. Many conclusions can be drawn from the analysed data. First, the paper has reviewed some definitions of 'portal' and it was found that up to now there is no consensus about the definition of portal. In addition, the paper has reviewed some related work with respect to portal technology in the academic context. The review has shown that campus portals have received widespread attention in the academic environment. Furthermore, the paper has provided some useful information and highlighted some interesting common issues and differences in approach between UK and Saudi adoptions. Finally, the main factors that have been identified are: organisational factors, innovation factors, economic factors, technical factors and environmental factors.

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