IDENTIFYING BARRIERS AND CHALLENGES ASSOCIATED WITH CAMPUS PORTALS ADOPTION

A Comparative Case Study of Saudi and U.K. Universities

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Abstract: Enterprise Information Portals 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 findings on the challenges associated with the adoption of campus portals. This study adopts a comparative qualitative research approach based on multiple case studies in Saudi and UK universities. 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 show that there are many barriers and challenges that may arise as a result of campus portals adoption including: organisational, technical, users, innovation, and financial related challenges. To overcome such challenges, we argue that a strong business case must be established from the outset of the project to drive the portal agendas and to address all aspects related to the project. Finally, the paper concludes with the main findings and provides some recommendations.

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 are called Enterprise Information Portals (EIPs) or Campus Portals. In a growing number of countries, academics, students and other staff are using the web to find information they need to support their daily needs and activities including teaching, research and administration. Campus Portals (CPs) have been adopted by many universities in the past few years. These technologies have revolutionised campus computing by facilitating communication and collaboration, improving access to services and resources and integrating different systems and applications. Although some studies have identified several key factors that may contribute to a successful CP adoption in universities, most of this research has been conducted from a quantitative perspective in the form of questionnaires and experiments. This study extends this line of research and contributes to literature by reporting a qualitative investigation based on multiple-case studies of the adoption of campus portals in some Saudi and UK universities. In particular, it seeks to identify the barriers and challenges associated with campus portal adoption. There is a lack of research that focuses specifically on this issue. Determining the challenges and barriers associated with campus portal adoption could provide solutions for overcoming such challenges and barriers. The rest of this paper is organised as follows. First, it provides some definitions of 'portals' and related terms. After that, a literature review is presented covering 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 considered to be associated with internet, intranet and other web technologies. It

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shares common characteristics with these technologies either technically or functionally. To clarify what is meant by portals, some definitions are needed. 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 from a different perspective. Shilakes and Tylman (1998) coined the term 'Enterprise Information Portals' and define EIPs as "applications that enable companies to unlock internally and externally stored information, and provide users a single gateway to personalised information needed to make business decisions". Smith (2004) defines a 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) uses the term "corporate portal" as an alternative to enterprise portal and defines it as "single-point Web browser interfaces used within organisations to promote the gathering, sharing and dissemination of information throughout the enterprise". Finally, the term 'campus portal' has been defined by Fuangvut (2005) as "a user-centric campus-wide Web-based Information System that incorporates all types of enterprise and third party information, activities, and services for providing its stakeholders with a secured personalised and customised single point of access regardless of the original resources by using a standard Web browser". Having reviewed some definitions of portals, it can be said that up to now there is no consensus about the definition of portal, thus, the term is defined from different perspectives. We define a campus portal as: "an intelligent and interactive web-based information system that provides personalised and customised view and access to academic and business information, services and resources for different stakeholders based on their role at the university through secure single sign on for different systems and applications.

In order to have successful adoption and implementation of ICTs in organisations and to overcome the main barriers and challenges associated with adoption and implementation processes, 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. Previous research and studies on campus portal adoption and implementation showed that universities are likely to encounter several challenges and barriers that are related to the organisational, technological, environmental and users perspectives. Organisational factors are primarily concerned with the people involved in the adoption in organisations such as management support, the availability of resources and change management (Rahim 2007; Remus 2007). Concerning the technological factors, Eisler (2003) and Franklin (2004) emphasise 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 development and implementation. These include: the integration of the portal with other applications, implementation of a single-sign-on and security issues. Thomas (2003) reported that the largest technical challenge associated with portal development was systems integration. 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, for example (Eilser, 2003; Thomas, 2003; Bunt and Pennock, 2006). In addition, other research and studies emphasise the importance of understanding users' needs and requirements including training and education (Zazelenchuk and Boling, 2003; Pearce, 2003; 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. The study found that there were two key factors that contributed to the low usage of the campus portal: perceived limited usefulness of the portal's functionalities and low awareness of both the portal's capabilities and its role. In addition, these factors were influenced by two organisational factors: weak management support and a distributed model of responsibility for the portal. Finally, a study by Bolton (2008) showed that the major challenges faced by UK universities when rolling out campus portals were time, resources and business engagement.

3 RESEARCH METHODOLOGY

This study adopts a comparative qualitative research approach based on multiple-case studies of the

adoption of campus portals in some Saudi and UK universities. The rationale behind choosing this approach can be justified as follows. First, this study aims to compare the adoption of campus portals in two countries and cultures: Saudi Arabia and the UK. According to Hantrais (1996) cross-cultural studies aim to identify, analyse and explain similarities and differences across societies. In addition, one of the benefits to be gained from cross-national work includes a deeper understanding of other cultures and of their research processes. Second, 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. This notion suggests that people and their institutions in society represent a crucial aspect of qualitative research. In addition, 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, 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) What are the barriers and challenges associated with campus portal adoption in Saudi and UK universities? What are the similarities and differences in the different contexts?

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 aim of the pilot study was to make sure that the relevant data can be obtained from the respondents and the interview' questions can be understood easily. The feedback of the pilot study was used to modify and enhance the clarity of the instruments and to develop some aspects of the interview questions and techniques. The substantive 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 employees who were involved with portal adoption and implementation at five universities, three in Saudi Arabia and two in the UK. These include: IT managers, systems developers, IS designers and webmasters. To respect the promise of anonymity, the researchers cannot 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. The raw data were analysed using various qualitative data analysis techniques such as coding and categorising, cross-interview analysis and document analysis. This has resulted in identifying a number of themes that were mentioned by the participants. Table 1 illustrates the data sources in this study.

Table 1: Data sources.

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 Presentations.	8
Articles and memos	5
Total	24

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. The results of our study revealed that there are many challenges and barriers that have been reported by the respondents, and they are grouped into five main categories: organisational-, technical-, user-, innovation-, and finance- related challenges and barriers. Table 2 presents and compares the main challenges and barriers associated with portal adoption. As can be seen from the table, those seeking portal adoption in both countries face barriers, and there are notable similarities and differences between the two countries. Overall, however, it could be said that Saudi universities experience more challenges than

their counterparts in the UK, especially with the technical issues.

Table 2: Challenges and barriers associated with portal adoption.

Challenges and Barriers	Saudi Uni	U.K. Uni
Organisational		
Inadequate top management support	×	√
Lack of in-house expertise	√	×
Cooperation /coordination	√	√
Change management	√	√
Technical		
Deficient IT infrastructure	√	×
Systems integration	√	√
Low speed of network	√	×
Incompatibility	√	×
Lack of identity management systems	√	√
Users		
Resistance to change	√	√
Technology acceptance	√	√
Training	√	×
Users' requirements	√	√
Users' expectations	√	√
Innovation		
Uncertainty of portal technology	√	√
Conflict with other systems	√	√
Content management	√	√
Content ownership	√	√
Financial		
Funding	×	√
Lack of resources	√	√
Running cost	√	√

4.1 Organisational Barriers

According to the findings, many organisational factors have been identified. These include inadequate top management support, lack of in-house expertise, cooperation and coordination and change management.

4.1.1 Inadequate Top Management Support

Inadequate top management support was reported in both of the UK cases. The participants reported that top management have not seen the portal as priority to the university, so that it is not on the agenda. A project manager mentioned that "*we did not get top management support because the portal is not seen yet as a priority to the university*". In contrast, respondents from Saudi universities reported that they had significant top management support, represented by the chancellors chairing the portal committees. One of the participants said that "*the most important one was the unlimited support from the top management and especially from the Chancellor. His direct involvement into the project facilitated many things and barriers. The top management played a key role through financial support, incentives, encouragement and help"*. 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).

4.1.2 Lack of In-house Expertise

Another issue reported was the lack of IT qualified staff that are well trained and specialised in the development of portal technologies. This applies specifically to the Saudi cases. This issue 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*". Another interviewee stated that "*We suffered from finding qualified people to work on the project... As a result this has led us to buy ready made solutions"*. In a recent study, Altayar, Fairweather and Mcbride (2010) reported that Saudi universities tend to buy ready made solution portals. This is because there is a shortage of skilful and qualified people (internal expertise). In contrast, the respondents in the UK did not mention such reasons and they were confident about their IT skills and internal expertise. A project manager stated that "*we are fortunate that the university has a lot of technical expertise to develop the portal. We have technical staff who involve with portal development and they are very experience in portal applications*". 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.

4.1.3 Cooperation and Coordination

Another issue acknowledged by most of interviewees in both countries was the lack of

cooperation and coordination between the portal team and different campus constituents. Although there was some kind of cooperation, it was of limited scope. To many participants, co-operation and coordination are considered to be a necessary task for the success of the project, especially when it comes to bringing content into the portal. This is because of the nature of the portal technology, as it is a cross-functional project and it touches all parties in the campus, therefore, this requires the co-operation of different campus constituents. In addition, some participants mentioned that the lack of co-operation and coordination was caused by the absence of policies and strategies that address this issue. One of the respondents from a Saudi university mentioned that "*we had some situations where some departments and people in the University were not fully willing to cooperate".* Another participant from a UK university reported that *"one of the most challenges that we faced was the lack of co-operation and coordination within the university. This due to the fact that some departments and units in the university are not aware of the benefits that the portal might bring them and the absence of policies that address this issue".* It is interesting to observe such claims and the findings suggest that co-operation and coordination are crucial for portal adoption. 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.

4.1.4 Change Management

Another challenge identified that is related to the organisations was change management. This issue was mentioned as a crucial requirement for campus portal adoption. To some participants, change management is difficult to deal with in a university environment, but it is not impossible. It requires the investment in many resources such as establishing strategies and policies, dedicated staff, money, time and effort. A project manager at a Saudi University described change in universities in the following way: "*change management is not an easy task, especially when you talk about universities. In general, universities do not like change and that there are not much changes in universities, and this is due to universities culture. Change comes very slow in universities. Universities are frozen organisations, that what I call them… and to change something, it takes long time. Your model of business does not change frequently".* These findings suggest that the introduction of a campus portal requires a comprehensive change management strategy that addresses both the individual and the organisational perspectives. According to Remus (2007) change management is one of the most important critical success factors for portal implementation. He argues that the introduction of enterprise portals can cause resistance, confusion, redundancies, and errors. This is due to the fact that portals provide a completely new work environment based on new user interfaces, structuring content, services and application in a very different manner.

4.2 Technical Barriers

The findings show that Saudi universities experience more technical challenges and barriers than do their counterparts in the UK.

4.2.1 Deficient IT Infrastructure

Deficient IT infrastructure was reported by many participants as a main issue. One of the interviewees mentioned that "*I can say that the IT infrastructure in the university wasn't good when we developed the portal. The network was weak and not very fast and there was frequent downtime especially at peak times".* 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. This finding suggests that technical readiness is one of the most important factors that needs to be considered when a university contemplates a campus portal. In this regard, Eisler (2003) and Franklin (2004) emphasise the importance of developing supporting institutional information technology infrastructure and architecture.

4.2.2 Systems Integration

Systems integration was one of the common problems, recognised by most of the interviewees in both countries. This agrees with the findings from other studies, for example the study by Thomas (2003) and 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 different data models and exchange. 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 implement 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 around the world. 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 would find integration to be problematic. Therefore, particular attention should be devoted to this issue.

4.2.3 Lack of Identity and Access Management Systems

Another issue reported by the participants was the lack of identity and access management systems. Users in the universities studied have different roles: students, academics and staff. The nature of each group is different from the other, therefore; it requires different resources and services. The portal services and resources are offered according to users' roles: whether as an academic, a student or a member of staff. The aim of identity and access management systems is to connect the right people with the resources to which they are entitled in a secure, controlled way. It involves the processes of authentication, i.e. determining that a user is who he or she claims to be, and authorisation, i.e. determining what resources that user is allowed to access (Joint Information Systems Committee 2009). According to the participants the absence of such systems affects the portal management, especially in terms of personalisation. As it is known, portals are based on personalisation. In a University context there are two issues to identity management. First, knowing if the person has the right to see something, and second, knowing if the person has the authority to have administrative rights over something. A project manager described this issue in the following way. *"we can currently develop content to be seen by a student by year of study and department. It then gets complicated to deliver content based on to joint honours student role or if we want to relate their involvement with a Union society or membership of the sports centre. So as soon as we want to deliver content or messages that are a little more complex / subtle than simply 'first year politics students' for example it isn't possible. So a message to all 'first year politics students, in halls of residence and members of the sports centre' is currently impossible (or at least very hard to find)".* It can be said that having an effective University identity management structure would allow universities to add extra 'granularity' in terms of developing content, showing content and allowing other to edit that content.

4.3 Users Related Barriers

This addresses the challenges that are related to the users. This includes: resistance to change, technology acceptance, training, users' requirements and users' expectations.

4.3.1 Resistance to Change

Resistance to change and accepting the new system were human issues that the universities encountered in both countries. It was described as the following "*resistant to change was a key human issue. We have different people with different backgrounds, ages, perceptions, attitudes and experience. We saw some kind of resistance when we introduced the system. This is because the system was new to users who were not familiar with it, especially for those with little knowledge in computer and ICTs experience, so that you have to change hearts and minds".* Another participant from a UK university described this issue as the following: "*there is an apathy, people would say I find information somewhere else, so I don't have really to use this, why should I do this. I am a busy academic or a busy member of staff and you got to tell why should I be bothered".* This issue should be taken into consideration and responded to properly. According to Sullivan (2004) resistance to change is probably the single most difficult problem to overcome with respect to portal adoption. In this regard and as we claim early, the introduction of a campus portal requires a comprehensive change management strategy that addresses both the individual and the organisational perspectives.

4.3.2 Training

Users' training and education was another challenge. It was identified in the Saudi cases. In contrast, participants from UK universities did not mention this issue. According to the results, training has two facets: training the people who are involved with

portal development and management such as service owners or providers, and the second is the training of end users. A webmaster stated that "*we have a large population of students, academics and staff and to provide training for these people is a very tough task. It took us a lot of time, cost us money and effort and required many resources"*. Another participant mentioned that "*at the beginning of the portal launch we had a problem that users were not able to understand a little bit of how to log on and how to use other services in the portal, so we had to provide training."* One explanation of this difference between the two countries might be due to the fact that the relatively low level of information literacy among users in the developing countries comparing with their counterparts in the developed world. However, this does not mean training is not important. Many researchers have acknowledged the importance of providing training on how to use campus portals, for example (Zazelenchuk and Boling 2003; Pearce 2003; Pearce, Carpenter and Martin, 2003; Frazee, Frazee and Sharpe, 2003). According to Remus (2007) since portals provide a completely new user interface together with changed or new processes, it is crucial to train potential users or users who are less computer literate on how the portal works and how the new functionality relates to the 'business processes' of the university.

4.3.3 Users' Requirements

Collecting users' requirements and needs and transferring these requirements and needs into products and services was reported as a main challenge. Users in the universities studied have different roles: students, academics and staff. The nature of each group is different from the other, therefore; it requires different resources and services. According to the findings, conducting information to identify users' requirements and needs requires many resources to be allocated such as money, qualified people, time and effort. A manager of systems development mentioned that "*the process of collecting data and information is a tiring and exhausted processes as we had to collect users requirements from more than 60 units and departments around the campus*". Another participant mentioned that "*collecting users requirements was a difficult task for us especially those that are related to analysing requirements, prototyping designs and conducting usability test and evaluations*".

4.3.4 Users' Expectations

Another challenge identified was meeting users' expectations. The use of the Internet and web-based applications has become very popular among students and academics. Consequently, they would expect a similar environment and web-based tools and applications being available for their use to support learning and communication in their universities. In addition, some participants reported that campus portals are being compared with commercial portals and some students and academics have good experience, knowledge and awareness about web portals such as Yahoo, Excite, MSN, Amazon, and so forth. This has an impact on their perceptions towards campus portals. They compare their experience using these portals with their campus portals. They like the features that web portals provide such as excellent services and interactive interfaces, usability, using rich media such as videos, dynamic and interactive features, high level of personalisation and customisation that are based on their needs and preferences. According to some participants, meeting such expectations with limited resources of money and staff is very challenging and there is an expectations gap. One of the participants mentioned that "*students and some academics and staff are familiar with some Internet applications like IGoogle and other advance services on the web which I can describe as the cutting edge technology in terms of interactivity, capabilities, functionality and design. The question that we expect: can you compete with that in a university environment? We can't do it with limited resources with only two staff. We are not Google"*.

4.4 Innovation Related Barriers

This issue addresses the barriers that are related to the innovation that is being adopted, which is portal technology. It includes: uncertainty of portal technology, conflict with other systems, content management and content ownership.

4.4.1 Uncertainty of Portal Technology

The findings show that there is some degree of uncertainty about the portal technology and its benefits to the university and its members. Consequently, this has led to another issue, that is how will the portal interface with other systems such as the university website, faculty web pages and, in particular, departmental intranets. These issues were common among most of the interviewees in both countries. A project manager at a Saudi university

mentioned that "*the portal technology is a new technology in universities, so that you have to learn more about it… we had some situations where people did not know what a portal is, what does it mean? So we had to tell them, convince them about its benefits and advantages"*. Another participant commented on this issue when he said "*we found some departments and people who did not understand the range of our work and didn't realise what we want to achieve or what the project is about*." From the UK side, a similar view was reported. A portal manager mentioned that "*when I go to meetings, people ask me what to put on the portal, we have a website, departmental intranets and other web pages and most information and services can be found in other systems… so what new on the portal"*. This is an interesting finding and it raises two crucial issues. First, it seems that some campus constituents are not aware of the added value that the portal can bring them such as the personlisation, customisation, functionality, interactivity and other unique features and characteristics of portal technology. Second, it suggests that there wasn't strong internal communication between the portal team and other campus constituents. Ensuring strong communication inwards and outwards is of particular importance in the portal development and it is considered to be one of the most important critical success factors for portal implementations (Remus 2007). Internal communication is a crucial aspect to convey the message of the portal, its objectives, scope and most importantly the added value that it can bring to the university.

4.4.2 Content Management

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 in 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, therefore they provide students, academics and support staff with services and information 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 and updating the content on a regular basis. These issues and others have been explicitly mentioned by many participants in the Saudi context at all universities. For example a webmaster has 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. …and this in its own is very challenging. All of these cost us money, effort, time, resources ... etc. It will remain problematic for us"*. In contrast, the issue of providing a portal with two languages 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 developing countries should address this issue and pay particular attention to it from the outset of the project. Secondly, 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 resources.

4.4.3 Content Ownership

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, so it brings stuff across organisational boundaries in the university and that sometimes is complicated. Sometimes people in your organisation 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? Who owns it? It is a controversial issue*". 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 on the portal, who*

manages it, who is responsible for it. It is a critical issue". It is interesting to observe such claims and 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 and constituents in the university should be involved in portal adoption, implementation, development and management. 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 is different from other information technologies and systems. 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". Therefore, a sensible data and information strategy and policy should be developed to address several issues such as data and information ownership and content management. It is a vital element in portal adoption and implementation.

4.5 Financial Barriers

This is related to the financial aspects of portal adoption. Many participants raised concerns about the financial support given to portal development. In the Saudi cases, the participants appreciated the financial support that was provided from the outset of the project. This is because 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 on-going cost, maintenance and support in the long term. This because the portal project is not a short term investment and it never ends. This requires long investment of resources such as money, staff and time. A systems developer mentioned that "*since 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 do not know what the situation will be*". Another participant pointed out that "*at the beginning of the project we got good support including financial support, and it is going so far. However, I believe that a project like the portal is never ends, and if it succeeds and is adopted by users, it will be something that needs continuous financial support for the long run, for example to cover the cost of maintenance, upgrades"*. With respect to UK universities, getting funding from the outset of the project was a major concern. As reported earlier, top management have not seen the portal as a priority to the university, so that it is not on the agenda. This has an impact on the resources allocated to the project. Lack of resources was reported as a challenge for portal development. It includes the lack of resources in people, money and time. One of the participants mentioned that "*I have small grant budget for promotion and I have the equivalent of 0.8 of a full time member of staff working on the project*". Another interviewee reported that "*there is really a very small amount of resources being allocated to the project…we have only three staff and they are busy doing other things, we have a small amount of money and time to spend*". With the consequences of the credit crunch, universities are facing cuts in their budgets, and this could affect many projects. The UK Government has announced that universities will face about £400 million cuts from 2010. (Stenvens, 2009).

5 A SYNTHESIS OF THE FINDINGS

Figure 1 presents and synthesises the challenges and barriers associated with campus portals adoption. Based on the findings of this investigation and after reviewing the literature, the researchers were able to identify many barriers and challenges that may arise as a result of campus portals adoption including: organisational, technical, users, innovation, an financial related challenges. The researchers believe that most of these issues should be taken into consideration and responded to properly when universities contemplate a campus portal. Based on our findings and in order to overcome such challenges and barriers, we provide the following recommendations. First, a strong business case must be established from the outset of the project to drive the portal agendas and to address all aspects related to the project. Second, it is important that universities have a clear and defined policy and strategy for portal adoption and development. Third, it is a good idea to start the project with the early adopters, those people and other campus constituents

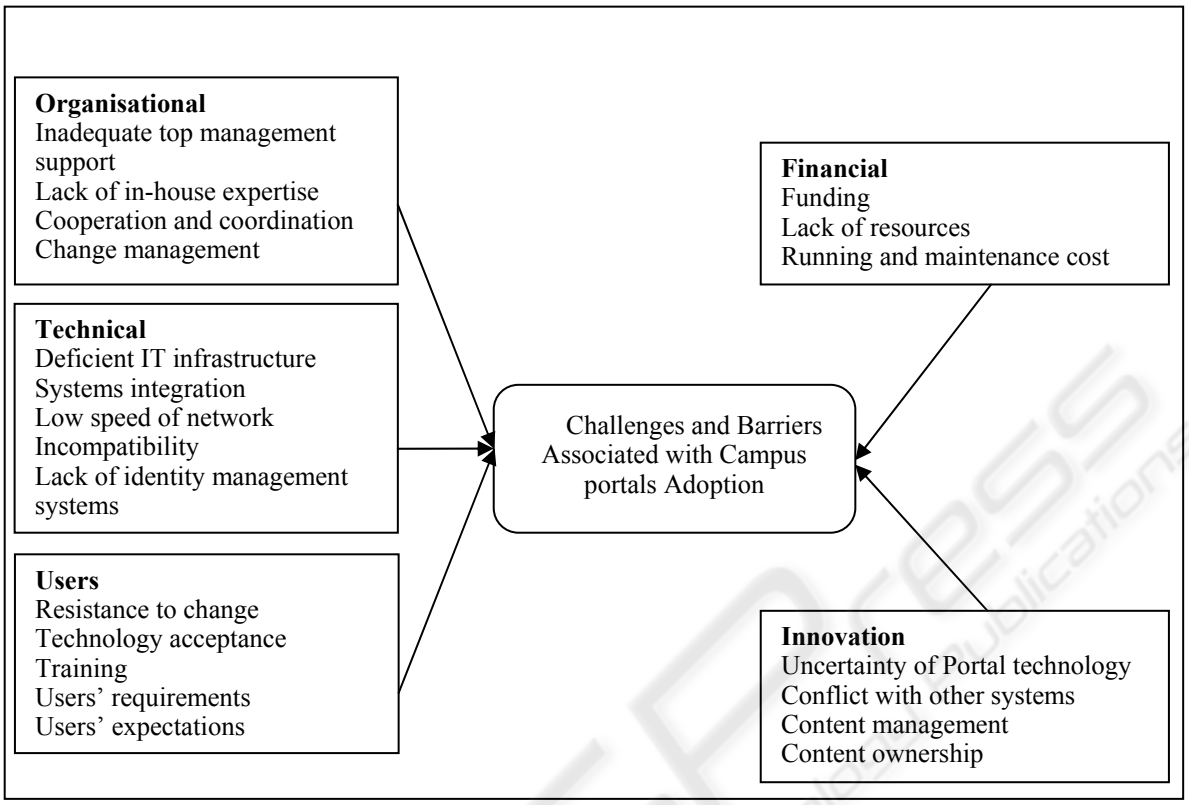

Figure 1: A synthesis of the challenges and barriers associated with campus portal adoption.

who are keen on the project. In addition, internal communication is a crucial aspect to convey the message of the project and to convince service owners to co-operate and coordinate in providing and supporting the content. Furthermore, there should be a lot of emphasis on the added value of the portal to all campus constituents such as the personlisation, customisation, functionality, interactivity and other unique features and characteristics of portal technology. What is more, content ownership is a major issue in portal adoption. Therefore, a sensible data and information strategy and policy should be developed to address several issues related to this matter. Finally, a comprehensive change management strategy must be established to overcome various issues such as user acceptance, and resistance to change.

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 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 barriers and challenges associated with campus portal adoption. Many conclusions can be drawn from the analysed data. First, the main challenges and barriers that have been identified are: organisational- technical-, user-, innovation-, and finance- related challenges and barriers. In addition, Saudi universities experience more challenges than their counterparts in the UK, especially with the technical issues. Furthermore, there are some similarities and differences between the two countries.

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