An Investigation into the Adoption, Implementation and Utilisation of Campus Portals:

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

By

Mohammed Saleh Altayar

A Doctoral Thesis submitted in Partial Fulfilment of the Award of Doctor of Philosophy

Faculty of Technology, CCSR

De Montfort University

September 2011

Abstract

Enterprise Information Portals (EIPs) have become crucial components in contemporary organisations, including universities. Campus portals (CPs) have found their way into the academic environment and universities are increasingly implementing these technologies. While there are many studies concerning EIPs in organisations, there are few studies that touch this issue in the academic environment. This study investigates factors affecting the adoption, implementation and utilisation of CPs from the implementers' and users' perspectives. It adopts a comparative approach based on multiple case studies in some Saudi and UK universities. Data was collected through semi-structured interviews and documentation, which was analysed using hermeneutics and other qualitative data analysis techniques.

Findings show that adoption and implementation of CPs are affected by factors including: technological, organisational, environmental, financial, innovation and user-related factors. Results from the users perspective reveal that although CPs are perceived to be useful in terms of accessing information and services, there are many concerns related to system, content and service quality. Moreover, the study has identified two main gaps between users and the implementers: a communication gap and an expectations gap. Consequently, users complained about a lack of user involvement and poor communication.

Findings are interpreted using elements from institutional theory. Development of CPs is affected by many institutional factors such as coercive, mimetic, normative and competitive pressures. Furthermore, the introduction of CPs could lead to a clash of institutional logics among various stakeholders. Institutional arguments are likely to arise between portal teams and other campus constituents such as service providers and users.

This study has three major contributions. First, it used institutional theory to investigate CPs adoption and implementation. As a result, it extends the line of research on the use of this theory to study IS in organisations. Second, it responds to calls from other IS researchers to study portals by conducting in-depth field investigation using qualitative research. Third, it addresses issues related to the development of bilingual portals in universities.

Acknowledgements

Dedication

To my parents, Saleh Altayar and Hessa Alromi, who were always encouraging and supporting me for lifelong learning. Thank you for your inspiration, unlimited support and confidence in creating a family atmosphere that is based on care, love, co-operation, mutual respect and responsibility. Also thank you very much for your patient and endurance for being away from you for many years.

To my loyal wife Hessa Alghannam, who has been a constant source of encouragement, support and sacrifice throughout my studies. She was with me all the way and always pushing me forward, and devoted much of her time to our lovely twin Zeyad and Reema. Thank you very much for that.

Also my thanks are extended to my brothers, sisters and friends who were always asking about me.

TABLE OF CONTENTS

List of Figures

List of Tables

List of Abbreviations

B2B	Business to Business
B2E	Business to Employees
BPR	Business Process Reengineering
CPs	Campus Portals
CRM	Customer Relationships Management
CSFs	Critical Success Factors
E-commerce	Electronic Commerce
EIPs	Enterprise Information Portals
EISs	Enterprise Information Systems
ERP	Enterprise Resource Planning
E-services	Electronic Services
E-transactions	Electronic Transactions
HE	Higher Education
HECB	The Higher Education Coordinating Board (USA)
HR	Human Resources
ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
JISC	Joint Information Systems Committee
MCIT	Ministry of Communications and Information Technology (Saudi)
MLE	Managed Learning Environment
MPs	Mobile Portals
NCEDL	National Centre for E-learning and Distance Learning (Saudi)
PDA	Personal Digital Assistance
ROI	Return on Investment
SA	Saudi Arabia
ServQual	Service quality
SMS	Short Message Service
SRS	Student Record Systems
SSO	Single Sign-On
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
UK	United Kingdom
VLE	Virtual Learning Environment
WBIS	Web-Based Information Systems
WebCT	Web Course Tools
QAA	The Quality Assurance Agency for Higher Education (UK)

Chapter 1: Introduction

1.1 Introduction

Enterprise Information Portals (EIPs), or institutional portals, have become a trend in organisations. According to a report by Gartner (2009,p.2) despite the negative outcomes of the financial crisis, the portal market has experienced strong growth in recent years. It has been estimated that the total market opportunity of EIPs will rise to $9.9 billion by 2012 (Morgan, 2006).

Universities have responded to this phenomenon. Campus Portals (CPs), which have been described as "a wonderful fit for universities" (Bunt and Pennock 2006,p.47) have gained significant importance in recent years and have attracted the attention of many universities worldwide (Zazelenchuk and Boling 2003,p.35; Li and Wood 2005,p.50; Klein 2006,p.167; Bolton 2008,p.22; Lee et al 2009,p.2; Presley and Presley 2009,p.168). For example, a study by Bolton (2008,p.26) of sixty-nine universities from the UK, the United States, South Africa and Australia showed that "none of the universities had rejected the idea of a portal and even those without a portal had it listed as a project". Furthermore, Klein (2006,p.167) studied 45 universities in the UK and found that all have developed or were developing portals. Similar findings about the USA and Canada were reported by Li and Wood (2005,p.50; 2008,p.165) and HECB (2009,p.22). All of these studies reflect the greatly increased interest in portal technology in the academic environment.

The interest in the development of CPs is driven by many factors, which can be described, using the term of Meyer and Rowan (1991,p.41) as "rationalised myths". According to Svejvig (2009,p.10) when different techniques, practices, and products have institutionalised, they act as powerful myths and exert institutional pressures on organisations in different ways. Portals are seen as technologies that can solve various business problems by improving access to services and information, providing systems integration, offering personalisation and customisation, and improving communication. Portals offer universities several advantages. First, according to Etesse (2003,p.229) and Bunt and

Pennock (2006,p.41), in the complex information environment of universities, portals can help organise and provide information, delivering campus services from various sources and systems in ways personalised and customised to various groups of users in a cost-effective way. Second, by utilising modern portal technologies, universities are able to meet the rising expectations of the academic community. According to Thomas (2003,p.104) students, faculty and staff, have become familiar with the concept of self-service, and are no longer interested in the use of traditional campus applications lacking flexibility, convenience and efficiency. Current needs demand a new approach to delivering IT services, based on self-service, convenient and immediate access, flexibility and timeliness.

Third, portals offer systems integration. Universities have been implementing different systems and applications such as learning systems, administrative systems, the library, human resources (HR), Student Record Systems (SRS), Customer Relationships Management (CRM), and finance systems. The growth of these systems has resulted in the emergence of software islands that have little or no connection with each other and which have created several challenges for universities to handle daily base business (Dolphin and Sherratt 2003,p.9; Sullivan 2004,p.55; Bajec 2005,p.254; Bunt and Pennock 2006,p.42; Alves and Uhomoibhi 2010,p.80). Portals, however, can provide users with single sign-on (SSO) access to various corporate systems via a consistent interface.

However, the development of technology in higher education institutions is a complex process (Oliver and Harvey 2002,p.18) and portals might not deliver all that they promise if they are not properly implemented (Franklin 2004,p.2). This is because implementing a portal is complex, challenging (Dolphin and Sherratt 2003,p.10; Green 2003,p.2; Scheepers 2006,p.637), and has major implications for both systems and individuals across the institution (Murray 2003,p.147). Portal development requires the co-operation and commitment of various campus constituents and service providers, all of which can be difficult in such large and complex organisations where there are different interests and wishes. Furthermore, a project like the portal can raise questions about management,

ownership and control as it brings together different groups who do not normally work together, who rarely interact and whose interests are often different (Sheehan and Jafari 2003,p.1; Bunt and Pennock 2006,p.42).

The research on this topic has shown some disappointing results. For example, Strauss (2002,p.33) stated that many IT professionals had developed portals without thoroughly understanding the scope and the nature of the technology and how it could serve an organisation. Similarly, Eisler (2003,p.73) claimed that many universities attempt to implement portal technologies with developers whose experience in this area is very limited or non-existent. Furthermore, other research has concluded that CPs are being adopted and implemented in an ad hoc manner without careful planning and without strategic alignment to the organisational business needs. In other words, many universities are entering portal projects without detailed and integrated strategies (Green 2003,p.4; Klein 2006,p.179; Rahim 2007,p.8). Moreover, a study by Li and Wood (2005,p.54) concluded that users requirements and needs were ignored and the universities did not evaluate their portals. Another study by Presley and Presley (2009,p.168) reported that while much effort has been spent on developing and maintaining CPs, their adoption by users can be disappointing. Several issues related to portal adoption and implementation are discussed in Chapter 2.

Studying portal adoption and implementation has attracted the attention of many IS researchers, (Detlor 2004,p.185; Li and Wood 2005,p.51; Daniel and Ward 2006,p.121; Scheepers 2006,p.637; Rahim 2007,pp.1-9; Remus 2007,p.540; Li and Wood 2008,p.164; Lee at al 2009,p.13; Presley and Presley 2009,p.180; Al-Busaidi 2010,p.5; Al-Mudimigh et al 2011,p.42). A common conclusion is that the literature on portals is still evolving, a systematic theoretical base has not yet been built, and there are still many issues that need to be addressed. In this regard, Daniel and Ward (2006,p.121) reported that the rapid diffusion of portals in organisations offers IS researchers a new opportunity to develop theory and influence practice. Furthermore, Currie (2009,p.66) noted that most research on IS has focused on the micro level (individual and organisational levels) and neglected the important role of the macro level (the wider environment). This study links the macro with the micro

levels and uses elements from institutional theory as a theoretical lens to provide some understanding about the role of the institutional context in the adoption and implementation of CPs. Moreover, as most of the research on portals has been conducted within a single country and culture, so several researchers have called for comparative research (Daniel and Ward 2006,p.121; Sugianto and Tajib 2006,p.249; Cox and Emmott 2007,p.324). In particular, there is little research that compares portal adoption and implementation in institutions (universities) between developing countries and their counterparts in the developed world. Such comparative research could provide useful insights into similarities or differences that exist. Finally, previous research has focused only on one perspective, either implementers or users, whereas this research combines the views of implementers and users. Combining the two perspectives together in a single study allows the researcher to understand the topic under investigation from both perspectives and could provide interesting results and conclusions.

These facts stimulated the researcher to conduct this research and to compare CPs adoption and implementation in some Saudi and UK universities.

1.2 Research Aim and Objectives

This study aims to investigate the factors affecting adoption, implementation and utilisation of CPs in Saudi and UK universities.

The current research aims to accomplish the following objectives:

- To understand the factors affecting the adoption, implementation and use of CPs in universities.
- To identify reasons why universities invest in establishing and developing CPs.
- To assess the barriers and enablers associated with the adoption and implementation of portals in Saudi and UK universities.
- To explore the attitudes and perceptions of students, academics and staff towards the adoption and use of CPs, and to assess whether the current use and practice of portals meets their needs and expectations.
- To conduct a comparison between UK and Saudi universities with respect to portal adoption and implementation.

- And finally, to develop a framework for the factors that affect the adoption, implementation and utilisation of CPs.

1.3 Research Questions

This study seeks to answer the following research questions:

RQ1: What are the key factors that affect the adoption, implementation and utilisation of CPs?

RQ2: How are campus portals being adopted and implemented in higher education institutions?

RQ3: What are the barriers and enablers associated with the adoption and implementation of CPs in Saudi and UK universities?

RQ4: Why do universities and academic institutions invest in establishing and developing CPs?

RQ5: What are the similarities and differences between and among UK and Saudi universities in terms of adoption and implementation of CPs?

RQ6: What are the attitudes and perceptions of students, academics and support staff towards the adoption and utilisation of CPs?

1.4 Organisation of the Thesis

The subsequent chapters of this thesis are organised as follows.

Chapter 2: provides a literature review and presents the theoretical foundation for this research. It discusses the factors that affect the adoption and implementation of IS in general but focuses in particular on portal technologies. Then, previous contributions on this topic are discussed and the current investigation is put into context with the extant literature.

Chapter 3: describes the context of Saudi Arabia. It begins with some general information about the country and goes on to concentrate on aspects related to ICT and the higher education system. Then, it describes the three universities (case studies) that participated in this study.

Chapter 4: presents the context of the UK. It starts with general information about the country before highlighting aspects concerning ICT and the higher education system. Then, it provides a description of the two universities (case studies) that participated in this research.

Chapter 5: outlines the research methodology used. It provides a thorough examination of different research perspectives and methods, and justifies the selection of the research methodology and strategy. It details the fieldwork that the researcher has undertaken. Then, it describes how the empirical data were analysed.

Chapter 6: reports the findings of three case studies from SA. These are presented in two main sections: the implementers' perspective, and the end users' perspective.

Chapter 7: presents the findings of two case studies from the UK. Again, these are reported in two main sections: the implementers' perspective, and the end users' perspective.

Chapter 8: compares, contrasts and discusses the findings of the research in the light of the literature and related work. It identifies the commonalities and differences between the five cases.

Chapter 9: discusses and interprets the findings from an institutional theory perspective in order to understand how different institutional contexts and factors affect the adoption and implementation of CPs.

Chapter 10: summarises the main findings and describes the research contributions to the body of knowledge. It provides the final outcome of the research, which is presented in a framework that describes the factors affecting the adoption, implementation and utilisation of CPs from both the implementers and the users' perspectives. It then provides recommendations, before highlighting the limitations of the study. Finally, it provides suggestions for further research.

Chapter 2: Literature Review

2.1 Introduction

The research proposed in this thesis is to investigate the adoption and implementation of CPs. This chapter provides a literature review and discussion of the relevant contributions. It starts with a general introduction about Web applications in the academic environment and provides some definitions. Then, it discusses the factors that affect the adoption and implementation of IS including CPs. Next, it considers previous contributions on CPs and then the current investigation is put into context with the extant literature. It concludes with a summary of the findings.

2.2 Web Applications in the Academic Environment

Information and Communication Technology (ICT) in general and the Internet in particular, is having a strong impact on business activities and operations (DeLone and McLean 2003,p.24). In universities, the use of ICT and the Internet has become imperative to support business and organisational activities. Universities worldwide have invested heavily in the development of Web-Based Information Systems (WBIS) and are using the Web intensively to provide information and communicate with users (Cox and Emmott 2007,p.308). Dynamic and individualised WBIS have become essential for universities and, as customer expectations grow, they must be further developed to distinguish themselves from their competitors (Connolly 2000,p.43). Universities have benefited from WBIS in many ways including: the implementation of brochure websites, development of online registration systems, offering WBIS courses, distance learning courses, putting administrative functions online, and giving students and staff access to various services and resources. Consequently, the Web is increasingly becoming the norm rather than the exception (Bishop 2003,p.200; Campbell and Aucion 2003,p.166).

According to Jafari (2003,p.7) the Web was introduced in universities in the mid of 1990s when the aim was to "create campus homepages as gateways to the institution's few and generally disparate websites". At that time, many institutions developed different models of websites to have a presence on the

Web. Furthermore, the early applications of WBIS were very limited regarding interaction and administrative functionality, that the content was very static and that there was lack of interaction between the user and the system (Etesse 2003,p.224). During the 1990s different modes of Web applications emerged such as university websites, intranets and extranets. The beginning of 2000 witnessed a new horizon, which was the emergence of CPs. These technologies have been adopted by many universities and have revolutionised campus computing by facilitating communication and collaboration, improving access to services and resources, and integrating different systems and applications. Table 2.1 presents WBIS applications in the academic environment.

Table 2.1: WBIS in the Academic Environment.

Web Applications	Key Features
University website	General information. Static content. No interaction with users. Content is intended for public consumption.
Faculty WebPages	General information. Static content. No interaction with users.
Intranets	Provide access to internal resources and content. Restricted to internal users.
Extranets	Provide access to different services, resources and content. Restricted to the university's partners and suppliers.
Portals	Personalisation and customisation. Role-based applications. Systems integration.

2.3 Portal Technology: Concept, History, Components and Architecture

The development of CPs was subsequent to various WBIS applications such as the university website and intranets. In order to understand what is meant by portals, some definitions are needed. The Longman Dictionary defines a portal as "a website that helps you find other websites" (2003,p.1271). Oxford Dictionary (2011), defines it as "an internet site providing access or links to other sites". These definitions suggest that portals are used as a starting point

to find information and locate other websites. However, they seem to have missed two important features of portals: personalisation and customisation.

Regarding the evolution of portals, many researchers reported that portals go back to the late 1990s when they developed from search engines and consumer websites such as Yahoo, AOL, and Excite, which can be regarded as the first generation of portals (Detlor 2000,p.92; Rao 2001,p.325; Kakumanu and Mezzacca 2005,p.128; Tatnall 2005,p.4; Daniel and Ward 2006,p.115). These sites evolved to provide additional services such as email, news, shopping, community building and were not restricted to search capabilities. After the successful adoption of web portals by Internet users, organisations realised that such technologies could be utilised at an organisational level to develop a similar service (Detlor 2000,p.92).

From a WBIS perspective, the concept "portal" has been defined differently and there is no universally accepted definition of portals (Brakel 2003,p.593; Tatnall 2005,p.2; Burgess and Tatnall 2007,p.664). Shilakes and Tylman (1998,p.1) coined the term EIPs and defined them 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". Detlor (2000,p.91) stressed the information management aspect of the technology and defined corporate portals as "single-point Web browser interfaces used within organisations to promote the gathering, sharing and dissemination of information throughout the enterprise". Furthermore, Dias (2001,p.269) reviewed several definitions and concluded that the term was not settled. Several writers claimed that EIPs evolved from intranet portals and are the logical extension of these technologies (Gu and Salvendy 2002,p.525; Clarke III and Flaherty 2003,p.18; Fustes 2005). Therefore; different terms such as employees' portals, enterprise intranet portals, corporate portals, and business-to-employees portals are sometimes used interchangeably as synonyms (Benbya et. al 2004,p.205).

Smith (2004,p.94) emphasised several aspects of a portal and described it 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". This definition seems to make sense taking into account important features such as personalisation, customisation, integration, security, and the dynamic nature of the technology.

Many researchers provided definitions in the context of the academic environment which seem to share some common characteristics with the previous definitions. For example, Fuangvut (2005,p.25) defined a CP 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". Presley and Presley (2009,p.168) used 'academic portals' and described them as systems that are designed to organise and provide access to a wide range of information, resources and services, and to connect the university with its constituents.

Following the proposed definitions and for the purposes of this study, a CP is defined as "an intelligent, interactive and dynamic WBIS that provides personalised and customised views 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 summary, it can be said that up to now there is no consensus about the definition of a portal. Many of these definitions, however, are similar and emphasise two crucial aspects of portals: the technical and functional dimensions. Important features of portals include: personalisation, customisation, integration and SSO. Figure 2.1 illustrates a typical key services and components of portal architecture.

Figure 2.1: Key Services and Components of Portal Architecture.
Source: Terra and Gordon 2003,p.97.
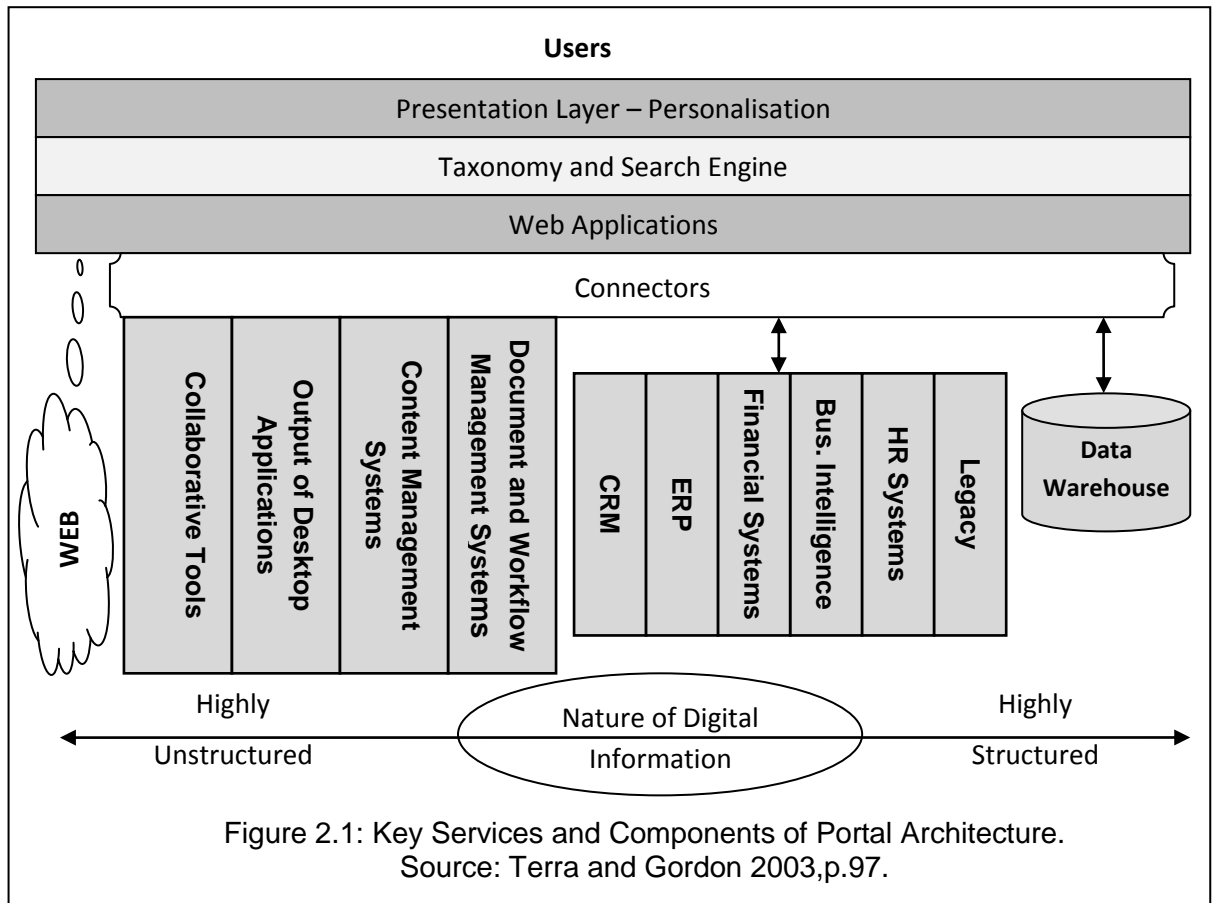
2.4   Portal Implementation Strategies

One of the issues that organisations may face is how to implement a portal. Organisations may choose a number of strategies (Jafari 2003,p.16; Thomas 2003,p.111; Eisler 2003,p.78) and the choice of any method depends on the organisational circumstances and the availability of the resources. There are four options: to build from scratch, to use open source frameworks, to buy ready-made solutions, and to outsource to a third party. Table 2.2 illustrates the implementation strategies.

Table 2.2: Implementation Strategies.

Portal Implementation Strategies	In-house Development	Outsourcing
	To build from scratch (Type 1)	To buy ready-made solutions (Type 3)
	To use open source frameworks (Type 2)	To outsource to a third party (Type 4)

2.4.1 In-house Development

In-house development has two main types: to build from scratch or to use open source frameworks.

2.4.1.1 Type 1: To Build from Scratch

Adopting this approach, organisations build their portals from scratch by using some programming languages such as Perl, C++ or Java. The advantages of this method are varied. First, it allows organisations to have full control over the system and to design and customise it according to organisational needs, systems and culture (Eisler 2003,p.78; Franklin 2004,p.14). Second, it provides organisations with full flexibility regarding future development. Third, it helps organisations to avoid ongoing cost including maintenance and annual licenses that are associated with buying ready-made solutions.

However, this method has several disadvantages. Homegrown portals require significant technical expertise and high IT competence such as qualified programmers, systems analysts and developers (Eisler, 2003,p.78). Many portal projects require a minimum of two-to-three dedicated full-time developers while many require 10 or more (Thomas 2003,p.111). Furthermore, it takes a lot of time and effort to build, as it requires different activities such as planning, designing, testing and evaluating. Moreover, this method may make organisations lag behind their counterparts regarding portal development and they will not keep up with innovations in the portal market. This could lead to a

situation requiring a transition from a homegrown to a vendor-based solution (Daigle and Cuocco 2002,p.122; Eisler, 2003,p.79).

2.4.1.2 Type 2: To Use Open Source Frameworks

This option shares some of the advantages reported in type 1 such as allowing organisations to design a portal according to their needs, avoiding ongoing cost and providing full flexibility regarding future development. However, there are two unique features of this strategy. First, it provides organisations with a shared approach to portals as other organisations have developed the same software (Eisler 2003,p.79). As a result, it provides a community of developers, so that knowledge can be shared. An example of an open source framework in HE institutions is the uPortal framework, used by many universities worldwide. Institutions implementing uPortal framework could expect considerable levels of support from wider communities facing similar problems and issues (Dolphin and Sherratt 2003,p.20; Franklin 2004,p.14). Furthermore, this method seeks to reduce development costs in comparison with other methods.

This method shares some disadvantages with those reported in type 1. It requires significant in-house technical expertise, needs dedicated staff and resources, takes time and effort and might make organisations lag behind the development in the portal market (Daigle and Cuocco 2002,p.122; Eisler 2003,p.79; Thomas 2003,p.111).

2.4.2 Outsourcing

Outsourcing has been defined as "the use of external agencies to process, manage, or maintain internal data and to provide information services whether offshored or operated domestically" (Berg and Stylianou 2009,p.236). There are many reasons for outsourcing which include: improving organisational efficiency, reduced IT cost, better service, access to new technology and an ability to refocus in-house staff on higher-value work (Lacity and Willcocks 1998,p.364; Fink and Shoeib 2003,p.303). The outsourcing option has two main types: to buy ready-made solutions or to outsource the total portal development.

2.4.2.1 Type 3: Ready Made Solutions

This has many advantages. First, is the availability of portal technologies in the market from different vendors with various functionalities and capabilities. There are many portals, for example SharePoint (Microsoft), WebSphere (IBM), Luminis Portal (SunGard). For what is believed to be an exhaustive list of vendors of portals in 2003, see Terra and Gordon (2003,p.381). Second, buying ready-made solutions can provide organisations with cutting edge technologies, as vendors produce more innovative tools and applications (Eisler 2003,p.79). Third, it saves organisations a lot of resources such as staff, time and effort, in comparison with building a portal from scratch. Fourth, it is very convenient when an organisation does not have enough in-house technical expertise and IT competence.

However, this method has many disadvantages. First, it can be expensive. A report by HECB (2009,p.18) suggested that an average portal could cost between $250,000 and $1,000,000 annually, bearing many issues such as establishment cost, licenses, maintenance, and other expenses. Second, ready-made solutions might not be compatible with existing systems, require considerable technical assistance to solve technical issues; thus integration could be problematic (Dolphin and Sherratt 2003,p.20). Third, is the stability of the vendor. Many researchers recommend a careful examination of the market and the financial stability of the vendor (Ast and Gerfen 2003,p.244; Thomas 2003,p.111; Kakumanu and Mezzacca 2005,p.131). This is because the portal market is relatively new and it is difficult to predict which providers will survive. Fourth, buying a portal might not fit with different institutional interests and may not be acceptable to all member institutions (Bajec 2005,p.264). Although the author does not provide an explanation, it seems that organisational culture, cost, compatibility were the main issues. Fifth, the level of customisation could be limited as most portal products provide pre-defined channels (Eisler 2003,p.80). This is compared with the in-house option which allows full customisation. Moreover, ongoing technical support from the vendor is required.

Consequently, organisations become more dependent on the vendor, especially if the technical knowledge has not been transferred to the local staff (Karlsbjerg et al 2003,p.51).

2.4.2.2 Type 4: To Outsource to a Third Party

This has several advantages such as not requiring any in-house technical expertise as the customer benefits from the consultants' experience and knowledge. It has been reported that this method provides a technically well-designed system which implements cutting edge technologies (Karlsbjerg et al 2003,p.51). However, there are many disadvantages. Organisations might be locked-in and become dependent on one vendor and it is an expensive option (Karlsbjerg et al 2003,p.51). Furthermore, Eisler (2003,p.80) argued that vendors may promise more than they can deliver, which organisations should bear in mind. Finally, the outsourcer may not understand the needs and requirements of the organisation, which may result in poor implementation.

In conclusion, it can be said that no implementation strategy is superior to the others. Each has its advantages and disadvantages and the choice of any method depends on the organisation circumstances and the availability of the resources.

2.5 Factors Affecting the Adoption and Implementation of Portal Technology in Organisations

The adoption and implementation of IS in organisations is complex and challenging. Previous research on IS, conducted from both conceptual and empirical perspectives (Premkumar and King 1994,p.77) has resulted in identification of many factors. For example, Tornatzky and Fleischer (1990,p.154) developed the Technology-Organization-Environment (TOE) framework, in which the authors argue that organisations' decisions to adopt and implement technological innovations are influenced by three main factors: the technological, the organisational, and the environmental contexts. Furthermore, Bouwman et al (2005,p.20) propose another framework and claim that such factors can be related to the organisational, the technological, the economic and the user perspectives. These frameworks are utilised to build the theoretical framework for this study and to identify previous research and

studies. Based on the literature, several factors have been identified and they are organised into four categories: organisational, technological, environmental and economic related factors.

2.5.1 Organisational Factors

The organisational context or perspective is concerned with those factors related to organisations and their characteristics (Tornatzky and Fleischer 1990,p.154; Bouwman et al 2005,p.16). These include elements such as the organisation size, structure and culture, degree of centralisation, formalisation, human resources, amount of slack resources, processes and decision-taking and linkages among employees.

Yang et al (2005,p.352) claim that organisational factors have important impacts and could have positive or negative effects on quality, outcome, and effectiveness of IS in organisations. Many authors identified several organisational factors, for example (Grover and Goslar 1993,p.141; Chau and Tam 1997,p.13; Crook and Kumar 1998,p.88; Bradford and Florin 2003,p.215; Zhu et al 2003, p.264; Benbya et al 2004,p.215; Huang et al 2010,p.295). These factors include top management involvement, organisation size, strategy, organisation structure and culture, processes, decision-taking, IT maturity and adequate resources allocated to IS projects.

In considering portal technologies, several organisational factors have been reported and the following is a discussion of these factors.

2.5.1.1 Top Management Support

Top management support has been well documented in the literature (Jarvenpaa and Ives 1991,p.205; Bajwa et al 1998,p.41; Crook and Kumar 1998,p.88; Bradford and Florin 2003,p.215; Huang et al 2010,p.295) and many writers have emphasised the importance of top management support in developing CPs (Bishop 2003,p.188; Eisler 2003,p.84; Thomas 2003,p.110; Benbya et al 2004,p.217; Sullivan 2004,p.73; Al-Mudimigh et al 2011,p.42). Ely (1990,p.301) claimed that support at the executive level is an important factor that facilitates the development of educational technology. Furthermore, Remus (2007,p.549) argues that top management support is one of the most important

CSFs for portal implementation. Thomas (2003,p.110) claimed that support from the executive level can facilitate wider institutional co-operation. Benbya et al (2004,p.217) reported that if top management spend significant time and resources on portal implementations, employees can see this as a sign of management's commitment for the project and act accordingly. Furthermore, some researchers found that top management commitment facilitated the access to funding and staff (Bishop 2003,p.188; Rahim 2006,p.9). On the other side, lack of management commitment can negatively affect portal development. Eisler (2003,p.84) reported that if there is no strong support, the portal initiative might not be understood. Similarly, Rahim (2007,p.7) found that inadequate management support affected a portal initiative and contributed to the low usage of the portal.

Many authors stress the importance of convincing top management about the feasibility of the portal. For example, there is a need to demonstrate the clear business benefits of the portal in the same way as every other IT project and that many mangers demand greater justifications and outputs for the money and resources spent on the initiative (Benbya et al 2004,p.217; Sullivan 2004,p.73; Sugianto et al 2005,p.41).

In sum, top management support is important in portal initiatives. It helps to overcome project problems that might arise during the development stages. It is important in securing the necessary resources for the project such as funding and staffing. Finally, top management support can facilitate co-operation, collaboration and communication at an organisational level.

2.5.1.2 Co-operation and Co-ordination
The adoption and implementation of a portal is a cross-functional project that touches almost all parties in the organisation. Therefore; it requires the co-operation and co-ordination between portal teams and other organisational departments and units. This argument is supported by many researchers (Eisler 2003,p.75; Thomas 2003,p.110; Sheehan and Jafari 2003,p.1; Stoffel and Cunningham 2005,p.156; Scheepers 2006,p.644; Remus 2007,p.544).

Previous research discussed this issue from different aspects. For example, Eisler (2003,p.78) emphasised that issues surrounding the co-operation and collaboration must be addressed. Furthermore, Sheehan and Jafari (2003,p.1) Bunt and Pennock (2006,p.42) stress the role of co-operation between campus units and departments, because CPs bring together different campus constituents who not normally work together, who rarely interact, and whose interests are often different. Remus (2007,p.544) argued that EIPs are extremely integrated information systems and their implementation necessitates commitment and co-operation of staff members from many departments. In addition, Bishop (2003,p.189) claims that co-operation across the campus is critical to share the vision of different campus constituents and to create a coordinative group that can take the portal from development to completion.

Lack of co-operation and co-ordination could result in negative outcomes and poor implementation. According to Pickett and Hamre (2002,p.38) and Thomas (2003,p.121) if the whole organisation is not working together, a lot of time, effort and resources may be wasted and such a project can be at risk. Other researchers reported that the biggest concern in portal implementation was getting all potential campus entities to co-operate and co-ordinate (Frazee et al 2003,p.148; Li and Wood 2005,p.54; Bolton 2008,p.21).

2.5.1.3 Change Management

Portal implementation requires a change management strategy that addresses the individual and organisational levels. Prior research has acknowledged that managing change can be difficult in large and complex organisations like universities (Rahim 2007,p.3). Change management is an important factor in portal implementation and the introduction of portals might cause resistance, confusion, anxiety, redundancies and errors. This is because portals provide an entirely new work setting based on new user interfaces, organising content, services and applications in a completely different manner, which is likely to affect daily work (Norris and Duray 2002,p.34; Remus 2007,p.541). Other researchers reported that technology deployment must be associated with cultural process and role changes and new organisational arrangements and responsibilities (Daniel and Ward 2005,p.11; 2006,p.120; Rahim 2007,p.8).

Moreover, Bishop (2003,p.188) reported that one of the challenges in building a CP was managing change. A similar view was given by Dolgonas (2003,p.46) when he said "*the most difficult challenge is facilitating a culture change across the institution. Many departments and universities as a whole are resistant to change*".

Change management is an important aspect that should not be overlooked. This is because many of the academic community do not initially understand what a portal is (Dolphin and Sherratt 2003,p.17; Eisler 2003,p.85; Scheepers 2006,p.644). Change management requires resources such as staff, money, time and effort and it is important that portal implementers do not underestimate the potential campus resistance to change (Eisler 2003,p.85; Thomas 2003,p.121). In order to address this issue, many authors suggested several approaches. For example, Norris and Duray (2002,p.34) argued that traditional change management techniques such as communication can help to prepare people for the outcomes of change. Bishop (2003,p.188) suggested that universities should implement a portal strategy that takes the campus in the direction of its goals and at the same time keeping enough tradition to ensure acceptance. Furthermore, it is important to start the project with the early adopters, those people who are keen on the project, as they can effectively spread the word about the value of the system to other people (Sullivan 2004,p.73; de Freitas and Oliver 2005,p.90). Finally, there should be a lot of emphasis on the added value of the portal to all campus constituents. For example, it is important to show people what the portal offers them in terms of services and resources that they cannot get elsewhere (Bishop 2003,p.199; Thomas 2003,p.121; Fisher and Craig 2004,p.9). No effort will influence and change users' behaviour if functional value is not present in the portal (Eisler 2003,p.85).

To conclude, universities are large organisations with different people and different attitudes and perceptions, so that managing change could be difficult. However, in order to ensure a successful implementation, universities have to address this issue by developing a comprehensive change management strategy.

2.5.1.4 Organisational Resources

The adoption and implementation of an IS requires many resources including staff and technical expertise. Many researchers have stressed the importance of allocating adequate resources for portal initiatives (Pickett and Hamre 2002,p.53; Bishop 2003,p.188; Eisler 2003,p.84; Aitkenhead 2005,p.228; Remus 2007,p.544). According to Ely (1990,p.300) the availability of resources is an important factor that facilitates the implementation of a technology in educational institutions. Furthermore, Remus (2007,p.544) claimed that the success of portal initiatives depends on the skills and experience of the staff, who should not only be technically minded but understand the organisation and its business needs. Many portal projects require at least two and sometimes ten or more dedicated full time staff (Pickett and Hamre 2002, p.53; Thomas 2003,p.111). According to Norris and Duray (2002,p.34), managing content requires between four and ten content specialists including writers, editors and web site developers to provide dynamic and useful content and to portal users.

The literature showed that universities experience several issues regarding the allocation of adequate resources. Eisler (2003,p.84) reported that IT departments in many universities are short-staffed, under trained and overloaded, thus a portal project could be a significant addition to their work. Furthermore, it has been reported that some IT professionals, with limited experience, pursue portal technologies without entirely understanding the scope of the project (Strauss 2002,p.33; Eisler 2003,p.73). Ast and Gerfen (2003,p.249) mentioned that many institutions hardly ever devote enough resources to portal implementation. A study by Cox and Emmott (2007,p.322) showed that lack of resources was a main issue in the development of UK university websites. Some studies showed that having adequate resources, including staff and technical expertise, contributed positively to portal implementation (Bishop 2003,p.188; Aitkenhead 2005,p.228) while others showed that lack of resources could result in poor implementation and lead to the delivery of an incomplete project (Rahim 2007,p.5). Many researchers reported that this issue was a major concern for portal development (Frazee et al 2003,p.148; Dolphin and Sherratt 2003,p.15; Bolton 2008,p.24).

In summary, it can be said that adequate resources, including dedicated staff and technical expertise, are important for portal implementation. The availability of these resources could contribute positively to portal development, and the lack of such resources may inhibit the success of the portal.

2.5.1.5 Internal Need

Research on IS has shown that internal need is one of the organisational factors influencing the decision to implement innovations. It has been defined as the realisation of real internal need within the organisation to use an innovation for improving its performance, operations, activities and productivity (Premkumar and Ramamurthy 1995,p.311).

Previous research revealed that organisations have perceived many benefits associated with the development of portal technologies, which can be regarded as the driving forces for deploying such technologies to address internal needs. In considering portal technology and comparing it with technologies implemented by organisations in the past, such as legacy systems, intranets, ERP and other corporate systems, it can be said that portals offer more advantages and opportunities to universities in terms of self-service, convenience, immediate access, flexibility and timeliness. Rose (2003,p.69) mentioned that portals do a better job for organisations regarding information management than earlier systems such as business intelligence software and ERPs. Daniel and Ward (2005,p.10; 2006,p.114) reported that portal development would improve the efficiency of organisations, improve individuals' performance, improve the delivery of services to users and improve connections between various stakeholders. Furthermore, one aim of portals is to provide users with a personalised view of the information and to give the right information to the right person at the right time. According to Dias (2001,p.284) a key advantage of portals that distinguishes them from other systems is the personalisation feature, which can provide users with a personalised view of enterprise information. Similarly, Daniel and Ward (2006,p.114) claimed that portals are better than intranets in that they have the ability to tailor the content received and to interact with existing systems. Furthermore, Al-Badi et al (2009,p.8) reported that portal implementation provided the university with

facilities that it did not have in the past and it did so in an open and easy-to-use way. Rogers (2003,p.15) refers to what he calls 'relative advantage' as the degree to which an innovation is perceived as better than the idea it replaces. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.

Prior research has shown that portals can help universities to address many internal needs, which included:

- To utilise e-business technology.
- To integrate and streamline information and services.
- To improve communication and collaboration (new communication channels such as alerts, notifications and SMS).
- To facilitate access to organisational information in a timely manner.
- To provide wider use of data and services of the existing systems.
- To improve service to students, academics and staff.

(Pickett and Hamre 2002,p.38; Englert 2003; Pearce 2003,p.12; Thomas 2003,p.105; Bajec 2005,p.254).

Another reason for portals is to support the administrative process. Handling different processes electronically is one of the greatest advantages of the technology. Etesse (2003,p.222) reported that portals can be used as a framework for managing the organisation information environment. Universities hold a lot of data collected in existing systems that could be very beneficial to the academic community. Therefore, providing them with direct access to these data would significantly simplify several administrative processes and procedures (Bajec 2005,p.255). Furthermore, Zazelenchuk and Boling (2003,p.35) argued that portals allow users to perform individualised or self-service processes. The study by Cobb et al (2002,p.17) showed that the portal has an impact on the approach taken to administration and processing of information. However, in order to achieve this, many campus departments have to re-engineer their processes (Bishop 2003,p.193). In this regard, Remus (2007,p.541) claimed that BPR is an important factor for portal implementations.

Another important reason is to support the educational process. According to Campbell and Aucion (2003,p.163) one of the educational purposes of a portal is to form new learning communities and academic spaces that allow people to interact with each-other. CPs can provide access to information, learning resources, experts, researchers, and teachers. This can encourage the interaction and collaboration, and support new models of teaching and learning. Furthermore, Ast and Gerfen (2003,p.243) reported that CPs can enhance e-Learning communities by providing spaces for interaction beyond the classroom, but still within an academic setting. Moreover, Jafari (2003,p.270) mentioned that a portal can be deployed as a web-based environment that enables users with various educational interests to access educational information, resources and services. It provides a co-operative setting where students and teachers can find peers who share the same interests. Finally, Campbell and Aucion (2003,p.171) claimed that CPs can support the educational process in many ways including: intelligent agents such as tutors, electronic course space, access to learning support systems and interactive discussion spaces.

To summarise, it can be said that CPs offer great opportunities to universities. CPs can help universities to address various internal needs such as improving access to services and information, improving communication, supporting the administrative process, and enhancing the quality of learning. These issues are important for contemporary universities.

2.5.2 Technological Factors

The technological aspect refers to external and internal technologies that are relevant to the organisation. The external technological resources refer to those technologies that are available in the wider environment, such as the IT infrastructure in the country. The internal technological resources include: basic technologies, accessibility, compatibility, technological innovations and IT organisational infrastructure (Tornatzky and Fleischer 1990,p.154; Bouwman et al 2005,p.16). Regarding the external technological resources, the wider environment in which organisations operate (e.g. IT infrastructure in the country) could have positive or negative impacts on IS development in

organisations. Developed countries generally have better IT infrastructure than do their counterparts in the developing world. A description of some ICT indicators in both countries is provided in Chapter 3 Saudi Arabia and Chapter 4 the UK.

The issue of internal technological resources has been well documented. Technology infrastructure resources have been described as "the hardware and communications networks used to store, process and transmit the software and information in an organisation" (Chaffey and Wood 2005,p.43). Thomas (2003,p.106) argues that technical and information infrastructure and technology standards "are critical to long-term success and stability of information systems". Furthermore, several authors have acknowledged the importance of technological readiness to the successful adoption and implementation of IS in organisations (Premkumar and Ramamurthy 1995,p.311; Crook and Kumar 1998,p.88; Zhu et al 2003,p.264; Zhu et al 2004,p.42; Pan and Jang 2008,p.100).

Concerning the adoption and implementation of CPs, several authors have emphasised the importance of developing comprehensive institutional information technology infrastructure and architecture to support the portal. These include: network issues, computing resources, software, hardware, compatibility, security, speed of access, system response rate, technical support and systems integration (Pickett and Hamre 2002,p.42; Palmer 2002,p.151; Bishop 2003,p.199; Duffner 2003,p.219; Eisler 2003,p.78; Pearce et al 2003,p.67; Franklin 2004,p.16).

Although some of the factors are similar to those for traditional IS, others are unique to portal technology such as systems integration, the availability of identity and access management systems, and portal governance and management. The following is a description of these issues.

2.5.2.1 Information Systems Integration

Information systems integration has been defined as "the extent to which IT components, such as computer hardware, software applications, databases and communication networks are blended into a functional whole or a unified

information system" (Langdon 2006,p.6). Historically, IS has evolved within functional areas, separated from other organisational areas, units and activities (Woznica and Healy 2009,p.116).

The disadvantages of developing separated IS are varied. For example, Woznica and Healy (2009,p.116) reported that organisations may find it difficult to collect, share, use and retrieve information when needed. Furthermore, Themistocleous (2004,p.92) identified four problems caused by the lack of integration including: technical, operational, managerial and strategic. In order to overcome these problems, some organisations have adopted integration technologies.

Many benefits of integration have been reported which include: cost reduction, improved business processes, better performance and productivity, support for decision making, increased ROI, standardisation, improved information management, and ease of access (Themistocleous and Irani 2001,p.328; Woznica and Healy 2009,p.116). However, there are many problems regarding the implementation of integration technologies, which included: political issues, resistance to change, no single product solves all integration issues, lack of time to train employees, added cost of redesigning business processes and complexity of business processes (Themistocleous and Irani 2001,p.328).

Over the years, universities have developed various disparate corporate systems such as administrative systems, learning systems, research systems, CRM, library systems, HR, marketing, and corporate databases. These systems were developed within different functional areas, separated from other organisational areas, units and activities (Dolphin and Sherratt 2003,p.9; Bunt and Pennock 2006,p.42). This has resulted in the emergence of software islands, which make communication between these pieces of software difficult (Alves and Uhomoibhi 2010,p.80). Integrating these systems can bring considerable benefits. One aim of CPs is to integrate various systems and provide users with SSO access. Prior studies have shown that systems integration and SSO were major reasons for portal deployment (Dolphin and Sherratt 2003,p.9; Bajec 2005,p.254; Daniel and Ward 2006,p.118). According

to Bajec (2005,p.255) portals are ideal solutions for universities to transform their legacy systems into integrated, user centric information systems.

However, the literature shows that universities have experienced several issues with systems integration. Bajec (2005,pp.254-261) reported that many universities struggle to have their systems integrated and that in some cases subsystems required prior modification. Furthermore, other studies reported that the biggest technical challenge in deploying and maintaining CPs was the integration of the portal with other applications and the implementation of a SSO (Thomas 2003,p.168; Li and Wood 2008,p.169; Al-Badi et al 2009,p.4).

2.5.2.2 Access and Identity Management Systems
According to Alves and Uhomoibhi (2010,p.80) access management is a term used to describe the administrative process to allow individuals to access secure online resources and information such as a web site or web applications. The aim of these systems is to link and connect the right people with the right resources to which they are entitled in a controlled secure way (JISC 2009,p.13). These systems define users attributes such as their personal details, memberships and roles, and provide access accordingly (Alves and Uhomoibhi 2010,p.80).

The growing number of web applications in universities, such as learning management systems and portals, requires a more effective way to manage identity and provide security and accessibility (Alves and Uhomoibhi 2010,p.79). Furthermore, some individuals could have multiple roles. For instance, some users are students and at the same time members of staff. The lack of identity management systems could affect the delivery of content and services to those groups of people. In this regard, Tate et al (2007,p.7) reported that an important consideration is the ability to easily manage and integrate those roles and provide users with access to content and services that are relevant to them (role integration). Prior studies on CPs revealed that one of the main challenges was the lack of access and identity management systems (Dolphin and Sherratt 2003,p.30; Frazee et al 2003,p.149).

2.5.2.3 Portal Governance and Management

The goal of IT governance is to guide and supervise an organisation's IT-related decisions and processes (Huang et al 2010,p.289). Traditionally, the structure of IS management tends to be centralised, decentralised or hybrid structures (Brown 1997,p.70; Ward and Griffiths 2000,p.502; Huang et al 2010,p.291). Brown and Grant (2005,p.704) reported that centralised IT governance is found in a centralised organisation, and decentralised IT governance is found in a decentralised organisation.

The centralised structure suggests a top-down, organisation-wide perspective (Huang et al 2010,p.291) and the responsibility of decision-making regarding IS belongs to a centralised IS unit (Brown 1997,p.73). This approach has several advantages, including:

- It enables the organisation to develop a consistent IS strategy across the entire organisation.
- The use of standard hardware and software enables the organisation to develop wide in-house technical expertise, which helps to solve technical problems quickly.
- It gives the department economic advantages with respect to buying software and hardware.
- The work tends to be organised in projects, and staff can move between projects, which provides a highly motivating environment (Skidmore and Eva 2004,p.20).

The decentralised structure reflects a bottom-up local work unit perspective (Huang et al 2010,p.291) where the responsibility of decision-making belongs to individual organisational units (Brown 1997,p.73). The decentralised approach has several advantages, including:

- It provides easy and convenient methods to control IS development in each organisational unit.
- IS personnel develop a deeper knowledge of their own application areas.
- The best software and hardware fit can be bought.

- There is a common feeling that they are less complex and require fewer people, allowing projects to be developed more quickly and more cheaply (Skidmore and Eva 2004,p.21).

Some organisations have tried to develop another approach: the hybrid or federal approach (Brown and Grant 2005,p.702; Huang et al 2010,p.291). This approach involves collaboration and co-ordination between participants holding organisation-wide perspectives with other participants holding local work unit perspectives. It aims to provide a mixed approach using centralised governance structures for some IS decisions and decentralised governance structures for others, or applying both of these designs (Huang et al 2010,p.291). It shares some advantages of both the centralised and decentralised structures. According to Daniel and Ward (2005,p.5) this approach helps to address the imbalances in managing IS.

One of the issues that needs to be considered for portals is how they should be governed and managed (Maheshwari et al 2007,p.264; Detlor et al 2008,p.6). Unlike other traditional IT applications, portals require a fresh approach as they have some unique characteristics, require a healthy information environment, and differ in their use and implementation (Damsgaard 2002,p.417; Detlor 2004,p.108). The following is a discussion of these issues.

First, portals are WBIS, and are a different type of IS with a different underlying network infrastructure, which requires people to consider them differently (Isakowitz et al 1998,p.79; Detlor 2004,p.108). The two key features of these technologies are: ubiquity of services (Lyytinen et al 1998,p.243) and superconnectivity (Turoff and Hiltz 1998,p.116). These features are unique to WBIS and they allow these systems a greater possibility to change the delivery of IS services in an organisational context (Detlor 2004,p.108; Lyytinen et al 1998,p.242) and if implemented properly, they can fundamentally change how organisations operate (Graves Hale 2003,p.46).

Second, portals support many stakeholders who have different profiles and different information needs (Bishop 2003,p.196; Detlor 2004,p.108). In a university setting, these include students, academics and staff, who could have

more than one role. CPs may support other users for example, potential students, alumni, partners, and suppliers. These users require different services and resources and bringing these facilities together from various locations in the campus into the portal represents a significant challenge. Moreover, managing users' profiles and needs via the personalisation feature is very important and it has been reported that traditional user modelling systems, such as stereotypes, may not be appropriate in a portal environment (Teixeira et al 2008,p.129). This adds another challenge for the management and governance of portals.

Third, a portal project is cross-functional and touches several organisational units and information holders in the organisation (Detlor 2004,p.109; Teixeira et al 2008,p.142). The development of a central organisational portal could raise several issues regarding portal governance, content management and content ownership. Walsham (1993,p.40) reported that "information systems are arguably one of the key areas for political action in contemporary organisations". As already reported, Sheehan and Jafari (2003,p.1) Bunt and Pennock (2006,p.42) comment that CPs bring together campus constituents who do not normally work together, who rarely interact, and whose interests are often different. Moreover, Bunt and Pennock (2006,p.42) claimed 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*". Furthermore, Thomas (2003,p.122) reported that one of the issues that needs to be addressed is ownership of the portal. The scope of the CP project is so wide-ranging and it can be difficult to give ownership and responsibility to one group. This can raise control and communication issues within the institution. Meanwhile, Daigle and Cuocco (2002,p.121) mentioned that there are many issues that need be considered to address content ownership, for example: 'who owns what data?', 'how will conflicts between data owners be resolved?', and 'who manages the portal?'

There is scarce empirical research that addresses portal governance and management. Detlor (2004,p.108) suggested that portals need a balanced approach for their management. Furthermore, Thomas (2003,p.116) stated that

one way to govern CPs is to form an executive steering committee, which should include people from senior management, senior administrators from key departments, and representative from students, faculty and staff. A study by (Rahim 2007,p.8) showed that the distributed model of managing the portal affected the development. For example: the portal team received conflicting orders from the portal committee and from their management, and the committee did not have influence or control over other departmental intranets, which made it difficult to develop a centralised system and discouraged employees from accessing the portal. The study concluded that it is important to assign portal management and ownership to a single group or department.

Another challenge is managing the portal content. This is because portals bring content and information in different formats and structures from different places around the campus. Most importantly, transferring content and information from traditional (paper-based) to electronic formats and organising them in a meaningful way represents an additional challenge (Pickett and Hamre 2002,p.45; Thomas 2003,p.121). In order to address this issue, the use of controlled vocabularies such as taxonomies, ontology and thesauruses to organise content and information can be very important. They can be used to describe and label services and content in a meaningful and consistent way, so that users can easily find and locate content, services and channels of interest (Pickett and Hamre 2002,p.45; Thomas 2003,p.121; Maheshwari et al 2007,p.267).

In summary, each IS management approach has its own advantages and the choice of any structure depends on the organisation's circumstances. This agrees with the view reported by Brown (1997,p.70) that the best IS governance structure for a given organisation is dependent on its organisational context. However, the traditional approach to managing IS may not be suitable for portals and, as Detlor (2004,p.108) suggested, portals need a balanced approach for their management.

2.5.3 Environmental Factors

Since organisations operate within a wider environment, they are likely to be affected by various environmental issues. The environmental context consists of the size and structure of the industry, the regulatory environment, the organisation's competitors and other environmental characteristics (Tornatzky and Fleisher 1990,pp.152-154). Previous research has found that various environmental factors affect IS development, for example competitive pressures (Premkumar and Ramamurthy 1995,p.323; Teo et al 2003,p.40; Zhu et al 2003,p.264) exercised power (Premkumar and Ramamurthy 1995,p.323; Rajao and Hayes 2009,p.329) and government regulations (King et al 1994,p.148; Hu et al 2007,p.165; Jensen et al 2009,p.349).

The literature shows that there are many environmental factors that affect universities' decisions to adopt and implement CPs. One is the presence of competition in the local environment (competitive pressures) which can be seen as a motivation for technological innovation. Research shows that CPs have received widespread attention in the academic environment (Zazelenchuk and Boling 2003,p.35; Li and Wood 2005,p.50; Klein 2006,p.167; Bolton 2008,p.22; Lee et al 2009,p.2; Presley and Presley 2009,p.168) and there is an increase in the number of universities currently offering CP services. This is because portal technology is considered to provide a competitive edge and universities wish to show that they offer the most convenient service and stand out in the field of IT (Zazelenchuk and Boling 2003,p.35; Lee et al 2009,p.2). Meanwhile, portal technologies are competitively important and have become a keystone in the context of universities and they "inject immediate customer satisfaction, the basis for reputation into the competitive equation affecting long-term prestige" (Graves and Hale 2003,pp.39-40). Furthermore, Ast and Gerfen (2003,p.240) reported that today's non-traditional students (Net Generation) are Web users who require technology-based learning and flexible administrative procedures as essential parts of their educational experience.

Another environmental factor is the presence of communities of practice that are involved with CP development. Hislop (2009,p.167) defines this concept as "a group of people who have a particular activity in common, and as a

consequence have some common knowledge, a sense of community identity, and some element of overlapping values." Two well known communities of practice related to CPs include:

1. JISC.
2. JA-SIG uPortal community.

These communities consist of technology experts, academics and other IT professional involved with higher education who work together to exchange ideas, knowledge and experiences regarding portal deployment and management. Many universities, especially in developed countries (for example the UK), have joined these communities. The aim of this co-operation is to create a shared code approach for the development of CPs (Eisler 2003,p.79; Stoffel and Cunningham 2005,p.156). Research shows that many universities have benefited from these communities (Dolphin and Sherratt 2003,p.27).

Another factor is the availability of portal vendors in the local environment. This is particularly important when a university decides to buy a ready-made portal or outsource the portal development to a third party. Some aspects related to this are discussed in section (2.4.2). Other aspects related to environmental factors are discussed in Chapter (3) SA and Chapter (4) the UK.

In conclusion, organisations are likely to be affected by many environmental factors, which could have positive or negative effects on technology development.

2.5.4   Economic Factors

The economic aspect of ICT is mainly concerned with benefits and costs (Bouwman et al 2005,p.14). Regarding the benefits, many authors have claimed that the investment in IT can yield economic and financial benefits, for example (Boddy et al 2002,p.107; Oblinger and Goldstein 2002,p.70; Ward and Daniel 2006,p.8; Shelly et al 2006,p.560). These include: reducing costs by automating processes, increasing ROI, decreasing telecommunications costs, and reducing IT support costs due to self-service and online help. Sullivan (2004,p.88) lists the following as possible savings that may result from portal implementation:

- Reduced printing and distribution cost.

- Reduced telecommunications costs.
- Decreased time required to find information.
- Better decision making through more frequent access to detailed operational information.
- Lower training costs with a single point of access to information.
- Reduced IT support costs due to self-service and online help.
- Reduced data duplication.

Furthermore, some real world examples from the industry have been reported. For example, Rose (2003,p.66) reported that Hewlett-Packard implemented a human resources portal, resulting in first-year savings of $50 million. Meanwhile, Whirlpool claimed its B2B portal has helped it handle sales growth from $7 billion to $10 billion without having to add staff to process orders.

The second issue, which critical to the project (Bishop 2003,p.188; Eisler 2003,p.84; Fisher and Craig 2004,p.6) and which is very expensive, is the cost of portal development. For example, it has been estimated that the cost of a portal implementation can vary between $250,000 and $5 million (Sugianto and Tojib 2007,p.4; HECB 2009,p.18). Financial support is needed to cover expenses such as the cost of software and hardware, servers, upgrade, staff, implementation and promoting, integration, user support, maintenance, and content management (Boddy et al 2002,p.104; Eisler 2003,p.84).

The cost of portal implementation should be considered from the outset of the project. Several authors stress the importance of management commitment of financial resources. However, in order to convince the top management to support the portal, it needs to demonstrate clear business benefits and advantages in the same way as every other IT project and it must show a financial return for the organisation that outweighs the costs. Many mangers evaluate projects on a purely economic basis and therefore demand greater justifications for the money spent on the initiative (Benbya et al 2004,p.217; Skidmore and Eva 2004,p.59; Sullivan 2004,p.73; Daniel and Ward 2005,p.11). This can be achieved by showing the economic feasibility of the portal. The

study by Rahim (2007,p.7) reported that lack of funding affected portal development.

In summary, CPs can provide universities with financial benefits that can help to reduce cost and increase ROI. Furthermore, in order to ensure a successful CP implementation, financial resources are important. Portal teams need to demonstrate that developing a portal can benefit universities financially, particularly in these harsh economic times where universities face financial constraints.

2.6 The Adoption and Use of Web Portals: Users' Perspective

The user perspective is concerned with the adoption and use of the technology (Bouwman 2005,p.19). User acceptance has been well documented with several theories and models that address issues such as users' motivations, behaviours and satisfaction. This section provides a theoretical foundation to some key models in this area such as the Technology Acceptance Model (TAM) (Davis 1989,p.320) and DeLone and McLean's IS success model (DeLone and McLean 2003,p.10). These models are considered to be important in informing our understanding of issues related to the adoption and use of CPs. Further justification of the selection of these models is provided in the following sections.

2.6.1 Technology Acceptance Model

TAM has been the most widely used model in IS literature to explain the individuals' behaviours and intentions regarding the acceptance and use of IT. Davis (1989,p.320) proposed TAM suggesting that perceived usefulness and perceived ease of use affect people's decisions to use or reject IT. Perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis 1989,p.320). Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort"(Davis 1989,p.320). TAM is based on the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975). The aim of TAM is to "provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and

user populations, while at the same time being both parsimonious and theoretically justified" (Davis et al 1989,p.985). Figure 2.2 depicts TAM.

Figure 2.2: Technology Acceptance Model
Source: Legris et al 2003,p.193
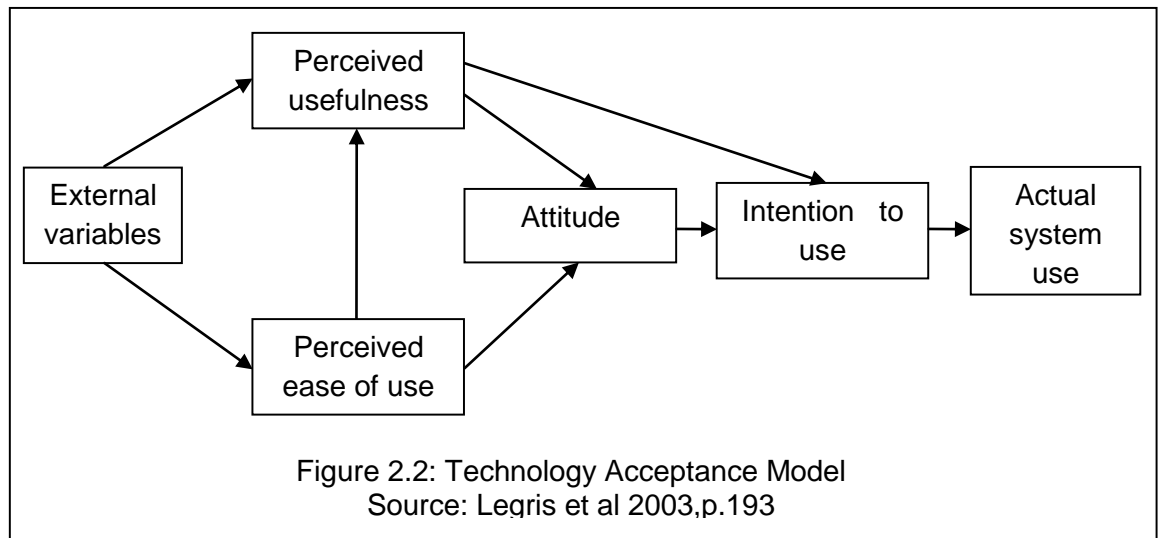
TAM is one of the most important models (Lee et al 2003,p.752) and subsequent to its development, an extensive empirical literature emerged using this model, for example (Adams et al 1992,p.227; Agarwal and Prasad 1999,p.361; Brown et al 2002,p.283; Amoako-Gyampah and Salam 2004,p.731; Kamis and Stohr 2006,p.904; Hsu and Lin 2008,p.65). Moreover, since 1994, TAM has been studied and expanded, which has resulted in the addition of many variables especially related to the external variables (Lee et al 2003,p.755; Bouwman et al 2005,p.103). For example, Igbaria et al (1995,p.90) incorporated users characteristics, system characteristics and organisational support. Furthermore, Agarwal and Prasad (1999,p.368) added some individual variables. Moreover, Presley and Presley (2009,p.171) extended TAM to study the factors influencing students' acceptance of an academic portal. They incorporated new constructs: compatibility and enjoyment. Overall, the findings of these studies confirm the influence of the two key variables in TAM namely, perceived ease of use and perceived usefulness, which indicate that the model is well founded. Finally, based on an extensive literature review and a meta-analysis of previous TAM research, Legris et al (2003,p.193) and Lee et al (2003,p.756) concluded that TAM could successfully predict IS acceptance

behaviour under different technologies and different situations and that research results with TAM have generally been consistent.

Previous research seems to support TAM, in that the perceived usefulness of portals is a key determinant to the use of CPs (Lin and Wu 2002,p.2658; Zazelenchuk and Boling 2003,p.37; Presley and Presley 2009,p.176; Al-Busaidi 2010,p.5). These studies found that portals were perceived to be useful for users in various aspects such as SSO, improved access to services and information, convenience and improved communication. Moreover, the study by Rahim (2007,p.5) found that the low usage of a university portal was attributed to the fact that employees did not consider the portal to be useful for them.

Although TAM attracted many IS researchers, it has been subject to criticism because of its limitations. Lee et al (2003,p.763) Legris et al (2003,p.202) and Bouwman et al (2005,p.103) reported many issues. First, TAM is a self-reported usage model, which means that it does not measure the actual usage of the system but rather, considers the user's intention and behaviour. Second, is the methodology as many studies were conducted on students. Third, is the type of application. Some studies used only a single IS for the research and others investigated the introduction of office automation software or systems development applications. Finally, TAM does not distinguish between mandatory and voluntary usage, or assume voluntary usage.

In conclusion, TAM has been a key model in IS research and it can predict individuals' behaviours and intentions to use technology. However, this is a self-reported model and it does not consider other characteristics related to that technology. The next section reviews another model that emphasises the role of an IS characteristic.

2.6.2 IS Success Measurement and Users' Satisfaction
Since the 1980s, success measurements and users' satisfaction have been a major area in IS research. This has resulted in the development of various instruments and models that aim to understand and measure users' satisfaction with IT usage (Bailey and Pearson 1983,p.530; Ives et al 1983,p.785; Doll and

Torkzadeh 1988,p.259; DeLone and McLean 1992,p.87; DeLone and McLean 2003,p.10).

One of the most widely used models is DeLone and McLean's IS Success Model (D&M IS Success Model). The model, which was developed in 1992, identified six major categories: system quality, information quality, use, user satisfaction, individual impact and organisational impact (Delone and McLean 1992,p.87). A decade later, Delone and McLean (2003,p.24) updated their model with some modifications. The revised model consists of six interrelated categories: information quality, system quality, service quality, intention to use, user satisfaction, and net benefits. D&M IS Success Model suggests that a system is developed containing certain features such as information, system and service quality. Then, users experience the system (use it), and as a result they are either satisfied or dissatisfied. Over time, certain beliefs that could be positive or negative will be developed, which affect users' satisfaction and intention to use the system in the future (DeLone and McLean 2003,p.11). Figure 2.3 depicts D&M IS Success Model.

Figure 2.3: D&M IS Success Model.
Source: DeLone and McLean (2003,p.24).
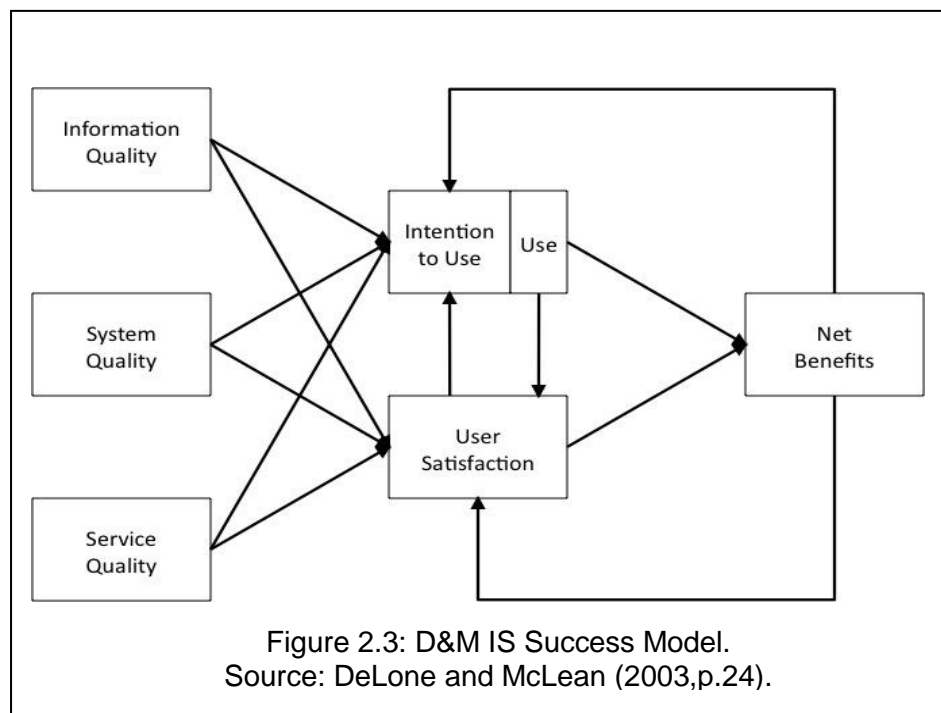
This model has been applied as a theoretical foundation to guide the literature review in this section and to identify previous research on the factors that affect

the use of CPs. Using this model can be justified as follows. First, according to DeLone and McLean (1992,p.88), when combined with a literature review, this model can identify areas where previous work has been conducted, so that it can build a general understanding. This is consistent with Urbach et al (2010,p.186) who used this model in their study. Second, this model was developed and based on various theoretical and empirical contributions conducted by many IS researchers since the 1970s, which gives it a strong foundation (DeLone and McLean 2003,p.10). Third, many IS researchers have applied this model and there are around 300 papers that have referred to and made use of the model (DeLone and McLean 2003,p.10). Furthermore, it has been used by many researchers to investigate web portals including organisational portals, for example, (Yang et al 2005,p.578; Masrek 2007,p.344; Al-Busaidi 2010,p.7; Urbach et al 2010,p.189). Finally, it is important to mention that this study does not aim to measure users' satisfaction with CPs. Rather; it aims to identify the factors that affect the use of these systems from the users' perspective. Thus, for the purpose of this study, the focus will be on the three quality dimensions of the D&M IS Success Model: system quality, information quality and service quality.

2.6.2.1 System Quality

This dimension describes the desirable characteristics of an IS and includes elements such as usability, security, user requirements, and integration (McKinney et al 2002,p.310; Sedera and Gable 2004,p.455; Petter et al 2008,p.238). System quality is the measure of the portal itself and emphasises the outcomes of the interaction between the portal and the user (Masrek 2007,p.342; Urbach et al 2010,p.187). Previous research on portals has identified several issues that affect users' satisfaction regarding system quality. The following is a discussion of these issues.

2.6.2.1.1 Usability

The usability of the portal is concerned with the extent to which it is visually appealing, consistent and easy to use (McKinney et al 2002,p.301). The usability and design of websites has received wide interest in the field of Human

Computer Interaction (Palmer 2002,p.152). Usability includes simple layout, ease of use, clear and user friendly design, responsiveness, accessibility and navigation. According to Thomas (2003,p.115) usability is an important issue for a successful portal. The aim of a CP is to make it easier for users to access services, and if is difficult to use, it might not succeed. Many users, who are very familiar with the Internet and its applications, expect a user-friendly portal design and do not want to spend time learning how portals work (Pickett and Hamre 2002,p.39; Kakumanu and Mezzacca 2005,p.131). Prior research on portals found that usability is an important aspect for users' satisfaction (Lin and Wu 2002,p.2658; Sheehan 2003,p.267; Zazelenchuk and Boling 2003,p.38; Tate et al 2007,p.5; Lee et al 2009,p.13). The study by Karlsson and Olsson (2008,p.12) found that poor usability of CPs led to a low usage by students.

One important issue related to usability is customisation (Palmer 2002,p.164; Morville and Rosenfeld 2007,p.139). This has been defined as the ability of users to have direct control over some aspects of the website such as presentation, layout, navigation and content options (Morville and Rosenfeld 2007,p.139). Many commercial portals such as Amazon, MyYahoo and MySpace provide a great customisation. The study by Pearce et al (2003,p.44) showed that customisation was something that users wanted in CPs.

Another issue is the availability of the portal and the response time that it provides. Since many users in the campus has become familiar with 24/7 accessibility, they would expect a similar service to be available on portals and "there is no excused downtime, no set hours of operation and no patience for system failures" (Pickett and Hamre 2002,p.52). Response time is an important issue (Palmer 2002,p.163) and portal technologies require bandwidth. If the site provides a slow response, this may affect users, cause lower satisfaction and discourage use (Hoxmeier and DiCesare 2000,p.2; Eisler 2003,p.74; Zazelenchuk and Boling 2003,p.38; Tate et al 2007,p.5; Al-Busaidi 2010,p.6). Another issue is the possibility of making CPs accessible via alternative communications devices. Mobile portals (MPs) provide users with several advantages such as ubiquity, convenience, personalisation and dissemination of information (Serenko and Bontis 2004,p.74; Parsons 2007,p.583; Yang

2010,p.262). Prior research showed that accessing CPs from communications devices such as mobile phones and PDAs was important to many users (Frazee et al 2003,p.144; Pearce et al 2003,p.47).

Web site navigation is another usability issue. Navigability has been described as the arrangement of pages, layout, labels and links in a consistent and meaningful way, so that users can understand the relationships between them while interacting with the website (Palmer 2002,p.155; Kalbach 2007,p.5). According to Nielsen (2000,p.188) navigation is an important aspect of website usability. Successful websites have good navigation capabilities and good content organisation (Palmer 2002,p.164). A study by Karlsson and Olsson (2008,p.12) found that navigation was an important feature in CPs.

In order to enhance usability, portal designers and implementers can take advantage of usability principles (Palmer 2002,p.152). Thomas (2003,p.115) Karlsson and Olsson (2008,p.13) recommend a user centred design for portal development. This can be achieved by involving users in the initial design of the system, conducting usability tests, getting direct feedback from users, and focusing on accessibility issues especially for users who have special needs. Similarly, Lee et al (2009,p.13) Presley and Presley (2009,p.180) suggest that universities should consider CP design on a regular basis and provide users with usable functionality and a satisfying experience.

2.6.2.1.2 Security and Privacy

Security and privacy in general are serious issues that concern users and organisations (Kakumanu and Mezzacca 2005,p.129; Maheshwari et al 2007,p.263). On the one hand, security refers to "the policies, procedures, and technical measures used to prevent unauthorised access, alteration, theft, or physical damage to information systems" (Laudon and Laudon 2006, p.342). An information system should address many issues related to security such as safer identification, verification and authorisation (Bouwman et al 2005,p.27). This can help to prevent unauthorised access to data and information. On the other hand, privacy has been described as the ability to control the access and use of personal information produced by interaction with information systems

and to ensure that information is protected from illegitimate or unauthorised use (McGlynn et al 2001, p.240; Laudon and Traver 2008, p.264). It allows users to manage their accounts and to specify whether or not to display certain information on the system (Bishop 2003,p.197). Security and privacy are important issues in relation to campus portals. One issue that needs to be considered is the fact that some users in a university setting have multiple-roles, and as a result require different access. For example, some users are students and at the same time members of staff. In addition, some support staff access the portal for administrative purposes, and at the same time they access it to perform some tasks related to students. Security can maintain privacy by allowing users to access the portal through various mechanisms such as permission and authorisation. However, since some users have multiple-roles, there is a need for clear rules and procedures for the role-based access and that should be defined to ensure that the portal protects individuals' privacy (Meingast et al 2006,p.5457).

Since portals provide users with an integrated access to many services and resources, it is not surprising that security and privacy are important issues that need consideration. This is because portals encounter several security issues such as denial of service attack, Web alteration, fraud and identity theft (Eisler 2003a,p.1). Security and privacy issues can be addressed by establishing different institutional policies and procedures, and other technical mechanisms to ensure that the system is dependable and capable of protecting data and information.

Many researchers have stressed the importance of these issues. For example, Bajec (2005,p.266) mentioned that since portals provide access to information and services via a common screen, they increase risk, as they bring all services and resources, including critical ones, very close to users. Furthermore, Rose (2003,p.69) reported that making information and functionality available to a wider group of people means that security measures that were previously handled by individual systems via physical access must be more complex. The consequence of not considering security is the possibility of functionality and content getting into the wrong hands. Previous research found that security and

privacy were important requirements of portals (Gounaris and Dimitriadis 2003,p.541; Pearce et al 2003,p.43; Sheehan 2003,p.267; Thomas 2003,p.121; Bauer et al 2005,p.172; Jones et al 2006,p.113; Tate et al 2007,p.6; Al-Busaidi 2010,p.6).

In order to address this issue, Thomas (2003,p.122) argued that many questions must be considered such as: 'how can these services be secured appropriately?', 'how much data will be kept for each user?', 'how will the data be used?', and 'will the portal contain or allow advertising?' Moreover, Eisler (2003a,p.1) and Bajec (2005,p.266) reported that to prevent the misuse of information and ensure secure access, portals must support network-level security, encryption, session-management and authentication to protect sensitive information and prevent unauthorised access. Given the potentially wide range of access points available, from highly-secure locations to public networks, wireless devices, PDAs and smart phones, further multiple authentications methods and systems must be supported. Furthermore, Frazee et al (2003,p.151) recommend that portal implementers should convince users that the portal is secure and dependable.

2.6.2.1.3 Information Systems Integration

IS integration has been defined in section (2.5.2.1). The aim of service integration is to provide users with a simple and convenient way to access various services and resources (Jin and Peng 2009,p.541). Users want to deal with a single common interface rather than many and do not want to have several user names and passwords. Several studies, for example (Sheehan 2003,p.267; Pearce et al 2003,p.40) found that one of the most important requirements for a CP was SSO and integration. Furthermore, Frazee et al (2003,p.151) reported that providing users with an integrated service to various systems and applications, especially integrating the portal with their personal technology-based systems such as email and PDA applications, was a major concern to users. Another study by Al-Busaidi (2010,p.6) found that limited integrated services and information was one of the main weakness of CP.

In conclusion, system quality represents an integral part of the system and emphasises how the user interacts with the system. System quality has been a stable dimension in IS research. It includes several elements such as usability, ease of use, navigation, accessibility, security, response time, and system reliability.

2.6.2.2 Information (Content) Quality

Information quality describes the desirable characteristics of the system outputs. It includes various elements such as relevancy, currency, understandability, personalisation, timeliness, accuracy and completeness (DeLone and McLean 2003,p.15). It refers to the information quality that the portal provides to users (Urbach et al 2010,p.187). In this study, information quality and content quality are used interchangeably, which is consistent with many researchers (Palmer 2002,p.157; Tate et al 2007,p.5; Karlsson and Olsson 2008,p.2) who do not differentiate between the two terms.

Previous research has shown that information quality is an important factor for the success of IS, particularly in the context of WBIS (Palmer 2002,p.164; Kuo et al 2005,p.319; Wixom and Todd 2005,p.98; Schaupp 2006,p.8; Cheung and Lee 2009,p.119; Urbach et al 2010,p.187). Several authors have emphasised the importance of providing good content on portals. For example, Watkins (2003,p.52) argued that in order to attract users, the portal should provide useful content that cannot be accessed elsewhere. Furthermore, Yang et al (2005,p.585) reported that users demand unique, reliable, valuable, accurate and up-to-date content from portals. Many studies on portals found that information quality is an important factor that contributes to users' satisfaction (Zazelenchuk and Boling 2003,p.39; Yang et al 2005,p.585; Aitkenhead 2005,p.228; Sampson and Manouselis 2005,p.189; Tate et al 2007,p.5; Karlsson and Olsson 2008,p.11).

An important feature of portal technologies is personalisation (Dias 2001,p.283; Telang and Mukhopadhyay 2005,p.63; Franklin 2006,p.25; Remus 2007,p.538). It allows users to obtain content that is tailored to their needs and preferences (Zimmerman et al 2005,p.276; Daniel and Ward 2006,p.118). Effective

personalisation services enable the delivery of the right content to the right people in the right amount. The study by Pearce et al (2003,p.42) showed that personalisation was one of the most wanted feature for CPs and was considered to be a key element in reducing information overload.

Previous research has identified several issues that concern users with content quality. The study by Jones et al (2006,p.115) showed that content structure and organisation was a requirement of portals. Furthermore, Zazelenchuk and Boling (2003,p.39) reported that users were worried about the use of confusing terminology to describe content on CPs. Moreover, currency, accuracy of content and an appropriate level of description were main issues (Pearce et al 2003,p.50; Tate et al 2007,p.5). The study by Karlsson and Olsson (2008,p.11) found that poor information structure contributed significantly to the low usage of a CP. Furthermore, Rahim (2007,pp.5-6) showed that limited useful content, the absence of relevant content and the availability of sources other than the portal to access information were main reasons for the low value of the portal.

In order to address these issues, many researchers have emphasised the importance of providing clear and understandable content description. For example, Nielsen (1994,p.30) stated that "the system should speak the users' language, with words, phrases and concepts familiar to the user rather than system-oriented terms… making information appear in a natural and logical order". In addition, Thomas (2003,p.121) recommended the use of logical and meaningful names for labelling services and content, and this must be considered and developed so that users may easily find information, services and channels of interest. This can be achieved by using some sort of controlled vocabularies such as taxonomies and thesauruses (Pickett and Hamre 2002,p.45).

To conclude, content quality is an essential aspect of the system, and is one of the determinants that affect the success of IS and user satisfaction. It stresses many aspects such as content relevancy, accuracy, currency, timeliness and completeness.

2.6.2.3 Service Quality

The Service Quality (SERVQUAL) model was developed in the Marketing field and has been adopted by many IS researchers (Pitt et al 1995,p.173). In the context of IS, service quality refers to the support that system users receive from the IS department and IT support personnel, such as responsiveness, accuracy, reliability, technical competence, and empathy of the personnel staff (Petter et al 2008,p.239). Many researchers have studied CPs from the service quality perspective (Masrek 2007,p.349; Tate et al 2007,p.4; Lee et al 2009,p.13; Al-Busaidi 2010,p.5; Urbach et al 2010,p.195). Three main issues related to service quality have been identified: communication, end user computing support, and user involvement.

2.6.2.3.1 Communication

Communication is a well established topic in organisational behaviour and management. Organisational communication has been defined as the creation and transmission of information and messages between people through the use of spoken, non-verbal, and visual symbols, which takes place within the boundaries of an organisation, with the intent to motivate or impact behaviour (Ivancevich et al 2005, p.422; Angell 2007,p.4; Blundel and Ippolito 2008, p.11; Daft 2010,p.537). Internal communication can help organisations to achieve their goals and objectives, implement organisational change, co-ordinate organisational tasks and activities, and reach organisational members to convey the voice and message of the organisation (Ivancevich et al 2005, p.421).

From an IS perspective, communication refers to the establishment of a communication process between implementers and other various stakeholders before, during and post implementation processes. Communication has been emphasised in the literature and is considered to be one of the most important factors for successful IS adoption and implementation, and has the potential to influence users' perceptions of the usefulness of systems (Aladwani 2001,p.270; Al-Mashari et al 2003,p.359; Nah et al 2003,p.11; Amoako-Gyampah 2004,pp.171-179; Lin and Rohm 2009,p.538).

In the context of portals, internal communication is a crucial aspect in conveying the message of the portal, its objectives, scope and most importantly the added value that it can bring to the university. Remus (2007,p.544) considered communication as one of the most important CSFs for portal implementations. Furthermore, Thomas (2003,p.121) argued that communication helps to deliver the portal message and should not stop once the portal project is underway. The importance of communication lies in that it allows ideas and feedback to be shared directly and frequently, to ensure that CPs meet the needs of stakeholders. Moreover, communication plays a key role in promoting the portal services and resources to users (Kakumanu and Mezzacca 2005,p.131). According to Scheepers (2006,p.637) since large organisations have various users with divergent and unique needs, this implies that implementers should consider internal promoting. Sound promoting and marketing are important factors and can increase users' awareness about what is being offered on the portal (Fisher and Craig 2004,p.9; Scheepers 2006,p.639; Maheshwari et al 2007,p.265; Detlor et al 2008,p.7). The study by Rahim (2007,p.5) found that the low usage of a university portal was attributed to the fact that employees were not fully aware of its capability and services. Similarly, Pearce et al (2003,p.14) found that the level of awareness of CPs was low.

2.6.2.3.2 End User Computing Support

End user computing support refers to the many methods available to provide users with assistance to solve various computer and IT related problems or issues (Lundgren 1998,p.60). It includes: training end-users, answering questions, providing users with technical information and support, maintaining software and hardware, evaluating and solving problems, and keeping users up-dated and informed (Lundgren 1998,p.61; Shelly et al 2003,p.25; Glandon et al 2008,p.11). In this section, two main issues are discussed: 1) user training, 2) technical support.

The importance of end-user training has been widely reported in IS literature (Guimaraes et al 1992,p.409; Igbaria et al 1995,p.87; Al-Gahtani 2004,p.20; Rouibah et al 2009,p.338). Training and educating users on how to use a system is very important, and according to Shelly et al (2006,p.441) no system can be efficient without proper training. Some users may lack knowledge and IT experience, which makes adequate training necessary (Mahmood et al 2000,p.756). Moreover, training provides a good opportunity for users to adapt the new change associated with the introduction of the system, and helps to develop positive perceptions toward the system (Aladwani 2001,p.271; Amoako-Gyampah 2004,p.179). Furthermore, providing training can greatly impact on users computing skills and understanding of software applications (Rondeau et al 2010,p.52). Training can be of particular importance especially in the context of developing countries where the level of information and computer literacy is low. Previous research conducted in the Arab world showed that training has an impact on technology usage and acceptance (Al-Gahtani 2004,p.20; Rouibah et al 2009,p.348).

In the context of CPs, many researchers acknowledged the importance of providing training and helpful instructions on to how to use CPs (Pickett and Hamre 2002,p.52; Zazelenchuk and Boling 2003,p.38; Frazee et al 2003,p.142; Masrek 2007,p.351; Remus 2007,p.544). Although portals are WBIS and in general users are aware of the Internet and have some experience with it, many people might not be familiar with the concept of a portal (Bishop 2003,p.191; Dolphin and Sherratt 2003,p.17). According to Remus (2007,p.544) 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. Previous research on CPs shows that training was one of the most wanted requirements by portal users (Frazee et al 2003,p.142; Zazelenchuk and Boling 2003,p.38).

The second issue is the technical support, which is one of the most important dimensions related to service quality (Petter et al 2008,p.239). The responsiveness of the IS function or IT service departments to various

organisational computing needs and demands is important for user satisfaction (Rondeau et al 2010,p.44). Technical support includes various activities such as answering questions, providing users with technical information and support, maintaining software and hardware, solving problems, and keeping users up-dated and informed (Lundgren 1998,p.61; Shelly et al 2003,p.25; Glandon et al 2008,p.11). Many researchers found that there is a relationship between the quality of IT support provided by the IS departments and user satisfaction (Leclercq 2007,p.44; Lee et al 2009,p.13). Frazee et al (2003,p.142) identified several concerns associated with use of CPs, including technical support and assistance. Similarly, Lee et al (2009,p.13) found that support services significantly influence user satisfaction and users felt disappointed with the quality of support provided. Moreover, the research by Zazelenchuk and Boling (2003,p.39) and Al-Busaidi (2010,p.6) identified that insufficient feedback and the lack of support to communicate feedback or enquiries were main issues to portal users. Lack of technical support may make users feel disappointed when their requests are delayed or neglected and as a result, this may affect users' satisfaction (Rondeau et al 2010,p.44).

2.6.2.3.3 User Involvement

In the context of IS, user involvement has been defined as "a psychological state reflecting the importance and personal relevance of a new system to the user" (Barki and Hartwick 1994,p.62). End-Users are a critical element in the adoption and implementation of IS. Involving potential users is very important to determine their requirements and needs. According to Leonard-Barton and Sinha (1993,p.1127) involving users has two main advantages. First, users will be more responsive to the new system if they participate in its design and development, and second it helps to improve the quality of the system by incorporating various inputs and insights from users. Prior research has emphasised the importance of this issue to the success of IS (Ely 1990,p.301; Guimaraes et al 1992,p.425; Hartwick and Barki 1994,p.462; Hunton and Beeler 1997,p.381; Mahmood et al 2000,p.765; Ward and Daniel 2006,p.41).

User involvement can be of particular importance in the development of technology in academic institutions. Ely (1990,p.301) considered it as an

integral element that facilitates the development of educational technology. He argued that in many cases, decisions are made by other people and passed on for implementation.

In order to ensure a successful implementation, portal initiatives must start with the participation and involvement of users including students, faculty, staff and other potential stakeholders (Dolphin and Sherratt 2003,p.17; Li and Wood 2005,p.54; Masrek 2007,p.351; Karlsson and Olsson 2008,p.13). This is because in universities, there are different categories of users who will desire different functions, services and content. As a result, it could be a major fault to ignore, or neglect users and their needs and requirements (Eisler 2003,p.85; Li and Wood 2005,p.53). The study by Li and Wood (2005,p.53) showed that users needs were ignored and most of the institutions surveyed did not evaluate their portals to determine users' needs and requirements.

To conclude, this section discussed the factors that affect the adoption and use of CPs. Several factors have been identified which include organisational, technological, environmental, economic, and users related factors. The discussion shows that there is a gap in the literature that needs to be addressed. The following section puts the current investigation into context with the extant literature.

2.7 Positioning the Current Investigation with Extant Literature

This section summarises previous contributions on the adoption and implementation of enterprise portals. Having reviewed the extant literature, the researcher has identified an important gap that has not been covered. This gap is worth investigating and has the potential to yield some interesting results. Table 2.3 shows previous contributions.

Table 2.3: A Summary of Previous Contributions on Enterprise Portals and CPs.

No	Key Issue	Author (s) Included	Data Sources	Location	Level of analysis	Participants
1	Design of an academic portal	Pienaar 2003	Experiment Interviews	South Africa	Individual	Academics and staff
2	Portal adoption in university	Frazee et al 2003	Focus groups Interviews online survey	USA	Individual and organisational	Portal team, students and academics
3	Users satisfaction with CPs	Zazelenchuk and Boling 2003	Questionnaire Usability test	USA	Individual	Students
4	User requirements for institutional portals	Liz 2003	Online survey Focus groups Interviews	UK	Individual	Students and staff
5	Portals in industry	Detlor 2004	Interviews Observation Documents Web tracking	Canada	Individual and organisational	Employees
6	Development of a campus portal methodology	Fuangvut 2005	Interviews Questionnaire	Australia	Individual and organisational	Portal team, students and staff
7	B2E portal adoption	Sugianto et al 2005	Literature review	N/A	Theory	N/A
8	Portals in SMEs	Chou et al 2005	Questionnaire	Taiwan	Individual	Users
9	EPs deployment in organisations	Daniel and Ward 2005	Questionnaire	UK	Organisational	Development teams
10	Portals in universities	Li and Wood 2005	Questionnaire	USA and Canada	Organisational	Development teams
11	Users satisfaction from Web portals	Sampson & Manouselis 2005	Questionnaire	Greece	Individual	Users
12	Measuring user perceived service quality of information in Web portals	Yang et al 2005	Questionnaire	Hong Kong	Individual	Users
13	EPs adoption in local government	Daniel and Ward 2006	Interviews Documents	UK	Organisational	Development teams
14	User satisfaction with an employee portal	Sugiantoa and Tojib 2006	Questionnaire	Australia	Individual	Academics and staff
15	Portals in HE institutions	Klein 2006	Observation Interviews	UK	Organisational	Development team
16	Portal implementation	Scheepers 2006	Interviews	Australia	Organisational	Development team
17	Service quality in a university web portal	Tate et al 2007	Focus groups	Not mentioned	Individual	Students and staff
18	Barriers to using B2E portals	Rahim 2007	Interviews Documents	Australia	Organisational	Development team
19	Campus portal effectiveness	Masrek 2007	Questionnaire	Malaysia	Individual	Students
20	CSF for portals	Remus 2007	Interviews and	Germany	Individual	Portal

			Questionnaire			integrators
21	Portals in HE	Bolton 2008	Questionnaire	International	Organisational	Development team
22	Quality assurance of university web portals	Karlsson and Olsson 2008	Usability tests Questionnaire	Sweden	Individual	Students
23	User satisfaction with portals	Tojib 2008	Questionnaire	Australia	Individual	Employees
24	Campus portal implementation	Li and Wood 2008	Questionnaire	USA	Organisational	Portal teams
25	User satisfaction with CP	Lee et al 2009	Questionnaire	Korea	Individual	Students
26	User acceptance of a university portal	Presley and Presley 2009	Questionnaire	USA	Individual	Students
27	Success of portals	Urbach et al 2010	Questionnaire	International	Individual	Employees
28	Strengths and weaknesses of a corporate portal	Al-Busaidi 2010	Questionnaire	Oman	Individual	Academics
29	Framework for portal implementation	Al-Mudimigh et al 2011	Informal meetings	Saudi Arabia	Organisational	Development team
30	A conceptual framework for portal implementation	Al-Mudimigh and Ullah 2011	Literature review	N/A	Theory	N/A

Several conclusions can be drawn from the table. First, the topic is still attracting the attention of many researchers. A total of 30 studies were identified, of which 18 are related to CPs, 10 in different sectors (organisations) and 2 studies were conceptual frameworks. Second, over half of the studies (16 out 30) were conducted from the quantitative perspective, six employed mix methods and a few studies (6 out of 30) used the qualitative approach. This indicates that the quantitative approach has been employed to a greater extent than the qualitative one and there is a need for more qualitative case studies. This argument is supported by many researchers, for example (Detlor 2004,p.185; Daniel and Ward 2005,p.12; Cox and Emmott 2007,p.324; Rahim 2007,p.9). Third, it is interesting to note that most of this research was conducted in the developed world (18 out of 30) with only 7 studies in developing countries. This suggests there is more likely to be a gap in understanding portal adoption and implementation in developing countries.

Fourth, to the best of the researcher's knowledge, no particular study compares developing and developed countries. Such comparative research could provide

useful insights into similarities or differences that exist and can show how different circumstances affect the adoption and implementation of these technologies. Fifth, most of these studies were conducted from a single perspective, either users or developers. Only two studies combined the two perspectives (Frazee et al 2003; Fuangvut 2005). However, this research suffered from several limitations. For example, both were conducted in developed countries and focused only on one country and culture. Moreover, although the study by Frazee et al (2003,p.127) was one of the earlier studies on CPs and provided useful findings, a major concern regarding this study was the lack of a robust methodology and the findings tended to be more descriptive. Furthermore, the study by Fuangvut (2005) was mainly about the development of a CP methodology. Although it has addressed some issues that affect portal development, the methodology proposed has not been validated on an actual CP (Fuangvut 2005,p.279). Combining the two perspectives together in a single study helps the researcher to understand the topic under investigation from different perspectives and could provide interesting results and conclusions. Last but not least, previous contributions on CPs concentrated more on the individual than the organisational level, and that all are at the micro level, neglecting the institutional context, that none link their empirical research to theory. This study uses institutional theory as a theoretical lens to understand the adoption and implementation of CPs by considering the wider institutional context. The following section introduces institutional theory.

2.8   Perspectives of Institutional Theory on IS

Both internal and external factors are crucial in understanding adoption and implementation of technologies in organisations (Jun and Weare 2008,p.272). However, Currie (2009,p.66) noted that most research on IS has primarily focused on the micro level (individual and organisational levels) and neglected the important role of the macro level (the wider environment). The researcher has observed this issue regarding the literature on CPs. Based on that, the researcher argues that integrating a theoretical perspective would help to understand human and social actions concerning CPs adoption and implementation. Institutional theory was considered to be appropriate for this

study. Several key concepts related to institutional theory are essential to inform our understanding. The following section briefly describes elements of institutional theory and then justifies the use of the theory in section 2.8.6.

2.8.1 Definition of 'Institutions'

The concept of 'institution' has its origin in sociology (Barley and Tolbert 1997,p.93) but it has captured the attention of many scholars and researchers from different disciplines and backgrounds including political science, organisational analysis, management studies, and economic research (Meyer and Rowan 1977,p.340; DiMaggio and Powell 1983,p.147; DiMaggio and Powell 1991,p.1; Tolbert and Zucker 1996,p.175; Peter 2000,p.1; Scott 2004,p.2).

Many researchers have proposed definitions. Scott (2001,p.49) defines institutions as "multifaceted, durable social structures, made up of symbolic elements, social activities, and material resources". In summarising the main characteristics of institutions he says that they are:

- "Social structures that have attained a high degree of resilience.

- Composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life.

- Transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artifacts.

- Operate at multiple levels of jurisdiction, from the world system to localised interpersonal relationships.

- Connote stability but are subject to change processes, both incremental and discontinuous" (Scott 2001,p.48).

Lammers and Barbour (2006,p.357) mentioned that the concept of institution has many meanings in everyday language. It is sometimes used interchangeably with 'organisation' to refer to a particular church, school, college, hospital, asylum, reformatory, mission, or corporation, especially to confer prestige or status.

According to Jepperson (1991,p.144) an institution represents a social order or pattern that has attained a certain state or property. Institutional theory aims to capture the effects of the wider environment (world society, organisations and professions) on the constitution and reconstitution of organisations (Queiroz 2007,p.3). According to the institutional perspective "organisations are suspended in a web of values, norms, beliefs, and taken-for granted assumptions" (Barley and Tolbert 1997,p.93). The foundation of institutional theory is that it describes the bottomless and more resilient aspects of how institutions are generated, sustained, changed and dissolved. It considers how institutions affect human behaviour "including the processes by which structures as, for example, rules, routines, and norms lead social behaviour" (Jensen et al 2009,p.346). Furthermore, Meyer et al (2005,p.3) argue that institutional views stress the dependence of local social organisation on wider environmental meanings, definitions, rules, and models.

In summary, given the complexity and variety of views and contributions of many researchers to institutional theory, it can be said that there is no precise definition of "institution". However, what the definitions have in common is the importance of an institution and its legitimacy in the society and how it influences the practice and behaviour of organisations and individuals.

2.8.2 Mechanisms of Isomorphic Change: Institutional Pressures

Since institutions and organisations have direct links with the wider environment, they are subject to several institutional processes, changes and pressures. DiMaggio and Powell (1991,p.67) and Scott (2001,p.52) identify three types of institutional isomorphism that influence organisational changes, actions and decisions: coercive pressures, mimetic pressures, and normative pressures. Coercive pressures have been defined as formal and informal pressures exerted on organisations by other organisations upon which they are reliant and by the expectations of the society members within which organisations operate (DiMaggio and Powell 1991,p.67). There are many sources that coercive pressures may arise from including: government mandate, resources-dominant organisations, professional regulatory bodies,

large customers, and parent organisations (DiMaggio and Powell 1991,p.67; Teo et al 2003,p.23; Harcourt et al 2005,p.2118).

Mimetic pressures drive an organisation to change over time to become more like other organisations in its environment (DiMaggio and Powell 1991,pp.69-70). Organisations have a habit of modelling themselves on similar organisations in the same field that are considered to be more legitimate or successful. Moreover, Haveman (1993,p.593) identifies two main sources of mimetic pressures. First, the occurrence of a given practice in the main organisational field, and second, the success of organisations that have adopted that practice. Mimetic isomorphism can result from uncertainty, and organisations may imitate or model other organisations to copy their behaviour (DiMaggio and Powell 1991,p.69).

Another source of isomorphic organisational change is normative pressures that mainly arise from professionalisation (DiMaggio and Powell 1991,p.70). According to the authors, professionalisation is the "collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the producers and to establish a cognitive base and legitimation for their occupational autonomy" (DiMaggio and Powell 1991,p.70). Institutional theory suggests that organisations and institutions are more likely to adopt certain practices and behaviours if those practices and behaviours have been taken by a large number of other organisations and institutions within the same field (Shi et al 2008,p.276).

Meyer and Rowan (1977,p.348) claimed that isomorphism with environmental institutions has three main consequences for organisations. First, they incorporate practices that are legitimated in the external environment, rather than with respect to efficiency. Second, they employ external evaluation criteria to describe the value of structural components. Third, reliance upon externally fixed institutions decreases turbulence and sustains stability. The authors argue that institutional isomorphism increases the organisational success and survival. Prior research has shown the impact of these institutional pressures on the adoption and implementation of IT innovations in organisations (Teo et al

2003,p.19; Khalifa and Davison 2006,p. 282; Hu et al 2007,p.153; Liang et al 2007,p.59; Son and Benbasat 2007,p.55; Liu et al 2008,p.435; Standing et al 2009,p.141; Jensen et al 2009,p.349).

To conclude, institutional isomorphism is an important component of institutional theory. Institutions and organisations are likely to respond to institutional pressures and be compatible with the wider environment in terms of existing practices and behaviours.

2.8.3 Institutional Logics

Institutional logics have been defined as "a set of material practices and symbolic constructions which constitutes its organising principles and which is available to organisations and individuals to elaborate" (Friedland and Alford 1991,p.248). Scott (2001,p.139) provides a similar view and defines institutional logics as "the belief systems and related practices that predominate in an organisational field". Ocasio (1997,p.196) uses the term "rules of the game" instead of institutional logics and describes them as "the formal and informal principles of action, interaction, and interpretation that guide and constrain decision makers in accomplishing the firm's tasks and in obtaining social status, credits, penalties and rewards in the process". Previous research has shown that the adoption and implementation of IT in organisations conflicted with institutional logics, for example (Sia et al 2002,p.23; Wanger 2003,p.140; Currie and Guah 2007,p.242; Jensen et al 2009,p.349).

The importance of addressing conflicts that may result from systems implementation has been reported in the literature. For example, Wanger (2003,p.241) suggested that negotiation is an important aspect, as it helped to overcome conflicts that emerged during an ERP implementation, and helped different institutional actors to reach a point of compromise. Another study emphasises the importance of understanding IT implementation in its wider context, including socio-political and inter-organisational environment, and by engaging users from different institutional groups in order to reduce clashes of institutional logics (Currie and Guah 2007,pp.244-245). Similarly, to reduce tension between different institutional actors, other research has suggested that

the new system should be aligned effectively and strategically with institutional objectives (Gosain 2004,pp.174-175; Jensen et al 2009,p.349). Finally, Butler (2003,p.227) stressed the importance role of communication to resolve various problems regarding conflicts, especially those related to users.

In summary, institutional logics shape the practice and behaviour of social actors and have an impact on how different institutions interact with each other.

2.8.4 Organisational Field

The notion of an organisational field is important in institutional theory. It has been described as those organisations that "constitute a recognised area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organisations that produce similar services or products" (DiMaggio and Powell 1991,p.64). Scott (2001,p.136) elaborates on this and argues that an organisation field can be regarded as an independent variable or a combination of contextual factors or conditions that influence and affect organisation structures or processes. In this study, the higher education system is considered as the organisational field, the impact of which on organisations and institutions will be described in Chapter 9. The higher education systems in SA and the UK are described in Chapters 3 and 4 respectively.

2.8.5 Rationalised Myths

Another important concept in institutional theory is 'rationalised myths', which are part of an institutional life (Meyer and Rowan 1977,p.347). The authors argue that when myths are generated by particular institutional practices and spread across different networks, they are likely to be relationally effective (1977,p.347). According to Svejvig (2009,p.10) when different techniques, practices, services, products and public opinions have institutionalised, they act as powerful myths and exert institutional pressures on organisations in different ways. Some research has shown the impact of rationalised myths in IS adoption. For example, the study by Jensen et al (2009,p.343) reported how a rationalised myth about the efficiency of an ERP system affected its implementation in hospitals. Another study by Alvarze (2002,p.63) showed how "the myth of integration" affected an ERP implementation and how it de-institutionalised the old system at the organisation.

Portal technologies have been institutionalised very well and attained wide interest among professionals, industry and organisations. In the industry sources, portals are being communicated and marketed as great solutions that can improve access to services and information, provide systems integration, offer personalisation and customisation, and improve communication. These can be regarded as "rationalised myths" of the technology.

2.8.6 Justifications of the Use of Institutional Theory in this Study

Using institutional theory can be justified as follows. First, institutional theory serves as a useful approach to analyse various types of organisations that are considered to be institutionalised (Scott, 2001,p.83). In this research, the universities studied are subject to different institutional processes as they operate under social, political, cultural, economic and environmental governance structures. Institutional theory allows the researcher to focus on institutions (the universities studied) as the unit of comparison, rather than a comparison of the UK and SA. Second, it provides a framework for studying a phenomenon in its wider context. This study seeks to understand the factors that affect the adoption and implementation of CPs in the wider context by considering the individual, the organisational and the environmental levels (institutional context). According to Currie (2009,pp.63-66) the main strength of institutional theory is its emphasis on multi-level and multi-stakeholder analysis, and it can enhance our knowledge and understanding about the societal, organisational and individual issues that relate to IS. Furthermore, Orlikowski and Barley (2001,p.153) reported that "institutional analysis examines how broad social and historical forces, ranging from explicit laws to implicit cultural understandings, affect and are affected by the actions of organisations". Furthermore, Shi et al (2008,p.275) argue that institutional theory can shed light onto the significance of institutional environments to attitudes and behaviours of social actors.

Third, many IS researchers have used this theory to study the adoption and implementation of IT in organisations, for example (Teo et al 2003,p.19; Currie and Guah 2007,p.235; Liang et al 2007,p.59; Shi et al 2008,p.272; Jun and Weare 2008,p.272; Baptista 2009,p.305; Currie 2009,p.67; Kalle et al

2009,p.286; Nicholson and Sahay 2009,p.332). These authors have found that the use of institutional theory offers rich insights and informative findings and comments. Consequently, they recommend other IS researchers continue to use this theory in investigating IS adoption and implementation to understand their underlying ideas and assumptions (Jensen et al 2009,p.350) and to know how institutions influence the design, use and outcomes of ICTs (Orlikowski and Barley 2001,p.153). For comprehensive reviews on the use of institutional theory in IS research, see (Mignerat and Rivard 2005,p.5; Mignerat and Rivard 2009,p.369; Weerakkody et al 2009,p.354). Finally, the researcher has observed that early studies on CPs adoption and implementation have primarily focused on the micro level (individual and organisational levels) and neglected the important role of the institutional context. This argument is supported by Currie (2009,p.66) who argued that few studies on IS pay attention to the role of institutional context. According to Klein and Myers (1999,p.72) it is important for IS researchers, especially those who adopt an interpretive approach, to apply theoretical insights and concepts that would help to understand human and social actions. This study links macro with micro levels and uses elements from institutional theory as a theoretical lens to provide some understanding of the role of institutional context in the adoption and implementation of CPs.

In summary, several concepts related to institutional theory were described. These include the definition of institutions, institutional pressures, institutional logics, organisational field, and rationalised myths. The researcher has justified the use of this theory in this research. The ideas and concepts will be used to understand the findings of this investigation.

2.9 Conclusion

This chapter provided a literature review and built a theoretical background for this research. It has reviewed previous contributions from an IS perspective on the factors that affect the adoption and implementation of enterprise portals including CPs. The literature shows that the development of CPs is affected by many factors including organisational, technological, environmental, economic, and user related factors. It was found that some factors are similar to traditional IS whereas other factors are specifically related to portals. Based on the

literature review, the researcher has identified a gap in the current literature that is worth investigating and provided justifications for conducting this study, which aims to fill this void. The following Chapters (3 and 4) provide a description of the case studies where the investigation takes place.

Chapter 3: Saudi Case Studies Description

3.1 Introduction

This chapter describes three case studies from Saudi Arabia (SA). First, it provides general information about SA. Then, it highlights aspects related to the ICT in the country. This is followed by a description of the higher education system. Then, it describes three universities that participated in this study. The chapter concludes with a summary of the main findings.

3.2 Saudi Arabia: Main Characteristics and Facts

SA is located in the southwest corner of Asia and occupies the largest part of The Arabian Peninsula with around 2,149,690 sq km and a population of 25,7 million (Saudi e-Government National Portal 2011). SA is monarchy and is one of the most important countries in the Arab World and the Middle East. It is well known for its twin pillars: Islam and oil (Pool 2005,p.288). Figure 3.1 illustrates the map of SA.

Figure 3.1: The Saudi Arabia Map.
Source: The World Fact book,2011.

The capital and largest city is Riyadh, which is located in the centre of the country. The main language in the country is the Arabic, and English is the second most widely used language. Table 3.1 presents some of the main facts about SA.

Table 3.1: Saudi Arabia: Main Facts.

Full name	Kingdom of Saudi Arabia
Population	25.7 million
Capital	Riyadh
Area	2,149,690 sq km
Major language	Arabic Second language: English
Major religion	Islam Source: Saudi e-Government National Portal 2011.
Main ICTs indicators	Internet users: 11 million Internet penetration: 44% Broadband subscription: 3.2 million Facebook users: 2.5 million Mobile technology: 6.5 million mobile devices Source (MCIT 2010)

3.3 ICT in Saudi Arabia

In today's modern societies, ICT plays a key role in national development and contributes to the wider economy. Many developing countries around the world have paid attention to the development of ICT, as it is considered vital for the improvement of modern societies (Maheshwari et al 2007,p.258). SA has paid particular attention to this issue, and ICTs have become a crucial component in the national and strategic plans for the country. In 2003 a royal decree was issued to change the name of the Ministry of Posts, Telegraphs and Telephones to The Ministry of Communications and Information Technology, MCIT (SADOC5). This change reflects the attention of the Saudi government to the ICT sector. The change aims at the realisation of the desired goals for the transformation to an information society (MCIT 2009a). The establishment of MCIT was to monitor and control IT services and regulations and to construct future plans for ICTs. As a result, the government deregulated and liberated the telecommunication sector and removed it from the public sector to the private sector in 2007 (Abanumy and Mayhew 2005,p.4).

The Saudi IT market is one of the strongest in the Arabic world, and is growing rapidly. For example, a recent report by Business Monitor International (2011,p.31) revealed that the total IT market will be $3.6bn in 2011 and expected to rise to $4.9bn by 2014. Furthermore, the Saudi IT market is the biggest in the Gulf as computer hardware sales including PCs, notebooks and accessories reached $1.8 billion and the IT services market hit $971 million in 2010 (Zawya 2010:SADOC1).

An examination of The Annual Report of the National Plan for Information and Communication Technology (MCIT 2009b) revealed that ICT plays a key role in the nation's development and it has become important on the Government agendas for the long-term improvement of many public sector organisations such as education, industry, services, health, economic and other areas. According to the report, the main focal point for the adoption and implementation of ICTs is to reach the desired development goals (MCIT 2009b:SADOC6). Consequently, the government has allocated a huge amount of money and resources to the IT sector, and in recent years, many projects have been established to develop IT infrastructure. The key technologies that are widespread across the country include: the Internet and mobile communications.

3.3.1 The Internet in SA

The Internet entered SA in 1997. Since that date, the rate of Internet penetration has been dramatic rising from one million users in 2001 to an estimated 11 million users by the end of the first half of 2010 (Alriyadh Newspaper 2010:SADOC10). This figure represents a ten-fold increase over the nine years, as shown in figure 3.2. The rate of Internet penetration was about 44% of the population by the end of the first half of 2010 (SADOC4). There are many reasons behind this growth. First, increased awareness of the benefits and advantages of the Internet for the society as a whole as well as for individuals. Second, growth of broadband services in the country. Third, the decrease in the prices of software, hardware and communications services including the Internet subscription. Finally, is the widespread use of e-services applications such as internet banking, e-commerce transactions and the

transformation towards the adoption and implementation of e-government initiatives (MCIT 2010:SADOC4). Figure 3.2 shows Internet users and penetration in SA from 2001 to 2010.

Figure 3.2: Internet Users in SA from 2001 to 2010.
Source: MCIT 2010:SADOC4.
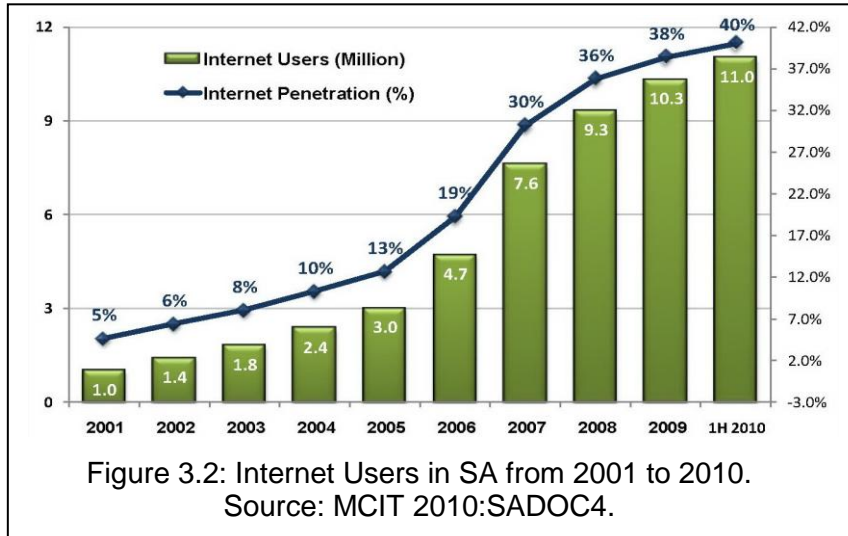
3.3.2 Mobile Communications in SA

Mobile communication is one of the most important applications in SA and it is one of the fastest growing. The Saudi mobile communication market has witnessed important developments in recent years regarding the proliferation and the quality of mobile services and prices, as the number of subscriptions to mobile services reached about 47 million by the end of the first half of 2010, with an average cumulative annual growth of 43%, and the penetration of mobile telecommunications services in the Kingdom now stands at about 172%, which is higher than the world average of 67%, and 57% in developing counties and even the 114% in developed countries (MCIT 2010:SADOC4). Figure 3.3 shows mobile subscriptions in SA.

Figure 3.3: Mobile Subscriptions in SA form 2001 to 2010.
Source:MCIT 2010.
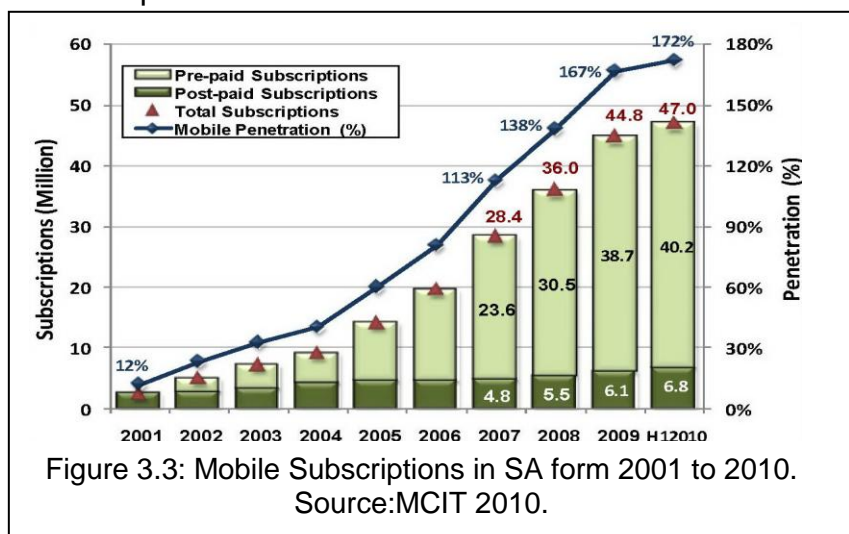
3.3.3 Portalisation in SA

There is a general trend in SA towards to the idea of portalisation in many public and private organisations. Although the concepts of portals and e-services are quite new, there are several portal implementations (Al-Mudimigh et al, 2011,p.40). These initiatives are widely supported by the government, which is pouring huge amounts of money into these projects. Examples of such initiatives include: The Saudi eGovernment National Portal, The Portal of the Ministry of Interior and The Portal of the Ministry of Higher Education. The main goal for deploying and utilising portal technologies is to provide citizens and residents with an integrated access to various government services and resources that are related to people's daily businesses and needs.

Having described some aspects of ICT in SA, it is important to mention some of weaknesses. The IT sector in SA experiences several issues and problems that could affect the adoption and implementation of ICTs in organisations. Some of these problems are related to the IT infrastructure, human issues, social and cultural issues, lack of technical expertise and other issues related to IT management, governance and planning. Atiyyah (1989,p.99) found that low user involvement and lack of manpower specialised in IT affected computer system effectiveness in Saudi public organisations. Furthermore, Al-Turki and Tang (1998) and (Altameem 2007,pp.8-36) identified several issues that many Saudi organisations experience regarding IT, such as lack of IT planning, shortage of qualified human resources and insufficient IT training. Moreover, the study by Al-Gahtani (2004,p.20) identified several factors, which included organisational culture, lack of technical support and insufficient training. Another common issue regarding the IT infrastructure in the country is the weakness of internet connections and the slow speed of communication networks. Although broadband technology has been introduced in SA, the internet connection remains a concern and the technology is still in its infancy as the country lags behind other countries in the developed world (Altameem 2007,p.9-13; Al-Shehry 2008,p.178).

3.4 The Higher Education System in Saudi Arabia

The Ministry of Higher Education was established by royal decree in 1975. It is the main governing body responsible for planning, organising and managing higher education strategies and policies. The ministry is a large and complex organisation, with twenty-one public universities, eight private universities and eighteen community colleges and institutions. The aim of higher education in SA is:

- To build and develop human resources.
- To create the knowledge economy and contribute to the transformation towards the information and knowledge society.
- To prepare Saudi citizens for local and international labor markets.
- To encourage learning, teaching and research for the development of the local society (Ministry of Higher Education, 2011b:SADOC2).

The higher education system tends to be centralised and highly structured. The major elements include: the ministry of higher education, the council of higher education and higher education institutions including universities and colleges. Figure 3.4 illustrates the structure of higher education system in SA.

Figure 3.4: The Structure of Higher Education System in SA.
Source: SADOC11.
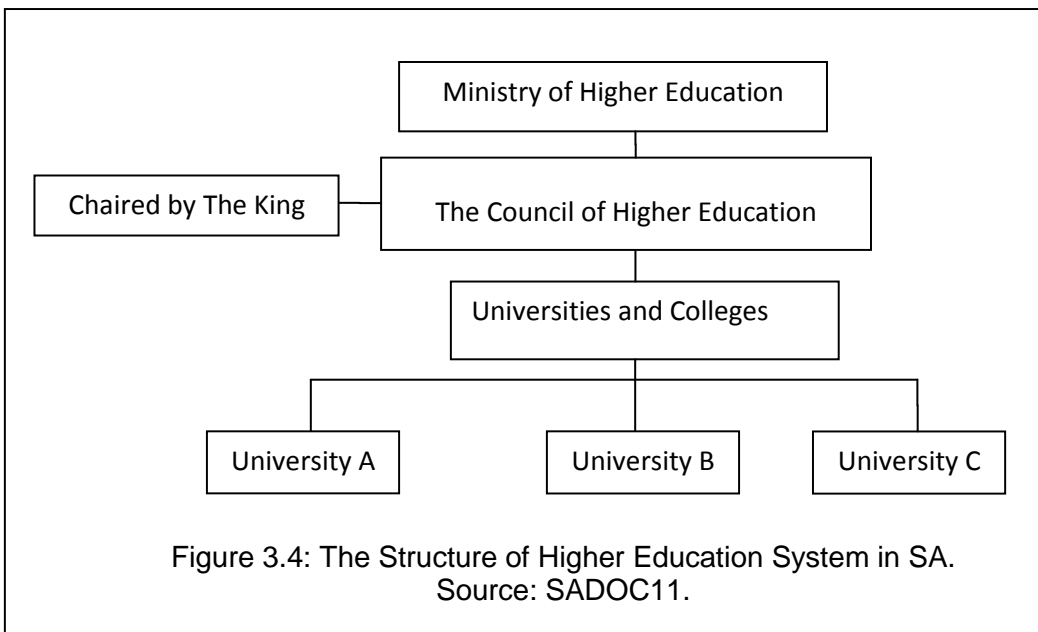
The Council of Higher Education is the major governing body for all higher education institutions. The Council is chaired by His Majesty The King, (who is

The Prime Minister), while the Minister of Higher Education serves as the Deputy Chairman. It is responsible for the establishment of new higher education institutions, departments, units and programs. Furthermore, it coordinates the activities and tasks of higher education institutions, approves regulations and rules for universities operations, and appoints vice rectors of universities (Higher Education System in SA, 2007:SADOC8). The Minister of Higher Education is the direct supervisor for all universities and chancellors, and is directly linked to The King. The Minister chairs the board of each university and is responsible for monitoring the implementation of the state education policy. The Minister is responsible for ensuring that all operations of higher education institutions are conducted in accordance with the charter of the council of higher education, universities and the regulations (Ministry of Higher Education 2011a:SADOC3).

The Chancellor is the chief academic and executive officer of the University. He/She is appointed by a royal decree based on a recommendation from the Minister of Higher Education. The Chancellor is responsible for governing the university and managing its affairs including the scientific, administrative and financial affairs. The chancellor is responsible for ensuring that all operations and activities of the university are conducted in accordance with the government policies and regulations. Chancellors in Saudi universities are subject to annual performance evaluations by their parent organisation, The Ministry of Higher Education, to determine what they have achieved in a particular period of time. Each year, the chancellors have to provide an annual report about the university to the Minister of Higher Education. The report is discussed by the council of higher education, and forwarded to The Council of Ministers (chaired by the King), which is the highest authority in the country (Higher Education System in SA, 2007:SADOC8). Chancellors in Saudi universities have a great deal of power and enjoy wide authority over universities in terms of decision making.

In recent years, higher education has undergone through tremendous changes and developments, including the establishment of many new universities, improving the quality and outcome of teaching and learning, supporting

research projects and programs and the investment in many ICT projects. Consequently, this sector is generously supported by the government. For example, the higher education budget increased from $80 million in 2006 to $3.5 billion in 2009 (Al-watan Newspaper, 2009:SADOC9). Alongside Saudi government plans to develop higher education institutions, ICT is considered to be a crucial part in the development of this sector. The development of the education system through the use of ICTs has been emphasised in The National Plan for ICT. According to the report, ICTs play a key role in improving the quality and outcomes of the education system. As a result, the government will invest a huge amount of money to develop the IT infrastructure in the country and to adopt and implement ICTs to support and improve learning, teaching and research (SADOC6). During the last few years, the ministry of higher education and many universities have witnessed the deployment and development of various IT projects such as The Ministry of Higher Education Portal and The National Centre for e-learning and Distance Learning (NCEDL).

3.5 Universities Studied Description

Three universities participated in this research. This section provides a brief description of these universities. To respect the promise of anonymity, the researcher cannot name the universities studied, instead, they are referred to here as University A, University B, and University C. For more details about each university, see Appendix (1).

3.5.1 University A

University A was established in the 1950s. It is a large and complex organisation. It operates in different locations in the Kingdom and has many branches around the country. The university aims to be a world class university and a leader in developing and building the knowledge society in the country. The university mission is to provide unique education, generate creative research, serve society and contribute in building the local knowledge economy. Teaching and research are the core businesses of the university and they are organised within many faculties including: Engineering, Science, Social Sciences, Humanities and Medicine (University A website, 2010). A detailed description of this University is provided in Appendix (1).

3.5.2 University B

University B was established in the 1970s. Currently it has more than 24,000 students and 1,300 faculty members. The University comprises many colleges including: the Colleges Law, Mass Communication, Informatics and Computer Sciences, Social Sciences, and Science. The University has many branches around the country and abroad. A further description of this University is provided in appendix (1)

3.5.3 University C

University C was established in the beginning of 1960s. It is one of the most prestigious universities in the Arab Gulf region and the Middle East and is a leading institution in Science and Engineering programs and research. Teaching and research at the University are organised into several colleges that include: Sciences, Engineering Sciences and Applied Engineering, Computer Science and Engineering, Industrial Management, Environmental Design, and Applied and supporting Studies (University C website, 2010). The university has branches in various locations throughout the country. For more details about this University, see Appendix (1)

3.6 Conclusion

This chapter described three case studies from SA. It has provided general information about the country and highlighted some issues regarding ICTs. It described the higher education system in SA and provided a brief description of the three universities which participated in this research, and highlighted some common issues among these universities, which can be summarised as follows. First, they are all related to the Ministry of Higher Education. Second, their structure and functions are highly centralised with most resources controlled by top management. Third, due to the geographical nature of SA, all the universities studied operate in multiple parts of the country. Fourth, the universities bought ready made solutions. Findings will be discussed in the forthcoming chapters (6, 8, and 9) to determine how various issues mentioned in this chapter affect the adoption and implementation of CPs in the universities studied.

Chapter 4: UK Case Studies Description

4.1 Introduction

This chapter describes two case studies from the UK. First, it provides general information about the UK. After that, it highlights some aspects related to the ICTs in the country. This is followed by a description of the higher education system. Then, it describes two universities that participated in this study. The chapter concludes with the main findings.

4.2 The UK: Main Characteristics and Facts

The UK is located in the North West of Europe and is made up of four countries: England, Wales, Scotland and Northern Ireland. The UK is a democracy and a constitutional monarchy. It is a leading country at an international level with its strengths in politics, economics, industry, healthcare, education, ICTs, manufacturing, finance and trade. The UK is an island country and occupies 242,514 sq km with a population of 61.9 million (BBC, 2010). Figure 4.1 illustrates the UK map.

The capital is London, which is located the south east of England and the main language is English. Table 4.1 presents some of the main facts about The UK.

Figure 4.1: The UK Map.
Source: The World Fact book, 2011

Table 4.1: The UK: Main Facts.

Full name	United Kingdom of Great Britain and Northern Ireland
Population	61.9 million (Source: UN, 2010)
Capital	London
Area	242,514 sq km
Major language	English
Major religion	Christianity (Source: BBC 2010)
Main ICTs indicators	Internet users: 51,4 million Broadband subscription: 16.8 million Facebook users: 27,8 million Sources: Ofcom 2011; Internet world stats 2010

4.3 ICT in the UK

Developed countries have been investing in ICTs for long time and are heavily dependent on ICTs in various aspects of everyday life. The UK can best be described as a high-tech nation, with a well-established IT infrastructure across the country. According to a report by the Department for Business Innovation and Skills (2009,p.229) the UK is strongly regarded as an innovative country with respect to technology. In addition, the UK has one of the strongest ICT infrastructures in the world and the largest IT market in Europe.

There are many strengths of the ICTs sector in the UK. A report released by The UK Trade and Investment (2010) highlighted three main areas which were: a strong environment for digital industries, the widespread availability of broadband technology, and the wide availability of wireless technology including Wi-Fi connection. Other areas of strength are the resilience of communication networks and the availability of national IT skills in the development and management of ICT projects. This latter area includes technical expertise such as programmers and IT consultants. Furthermore, the country has strong applications in e-commerce and e-business. Moreover, the level of computer and information technology literacy in the population is high and there is a general awareness among people of the important role of ICT in everyday life.

During the last few years, the UK Government has invested heavily in both ICT infrastructure and in the provision of e-services and ICT has been high on the agenda of The UK government. For example, the publication of the document titled "Digital Britain" in 2009 by the Department for Business Innovation and Skills, shows that the government is committed to developing ICT in the country. Among the objectives of this document are:

- Modernizing and improving the UK's digital communication networks including wired, wireless and broadcasting infrastructure to keep Britain in its position as a leading digital economy in this digital world.
- Offering a convenient climate for investment in technology and innovation in digital content, services and applications.
- Developing peoples' digital skills, knowledge and experience at all levels.

(Department for Business Innovation and Skills 2009, p.9).

4.4 Higher Education System in the UK

The UK is a leading country when it comes to higher education. The system is one of the most distinguished, efficient and highly rated in the world. It is large, complex and varied, with around 169 universities and colleges across the country. One of the notable features of UK higher education system is that UK universities and colleges are independent and legally autonomous entities (The Quality Assurance Agency for Higher Education, 2011).

Despite this, however, they are mainly funded by the government through Higher Education Funding Councils, which distribute billions of pounds to universities and colleges each year based on certain guidelines and criteria set out by the government (HEFC 2010, p.6). In addition to this, UK universities get additional funding from other sources such as tuition fees, education grants, contracts, and research grants. However, in 2010, in response to the harsh economic times, the UK Government cut direct support for English Universities by £400 million (Stenvens 2009; Richardson 2010). Furthermore, at the end of 2010 the Government announced an increase in the tuition fees for home students, which resulted in thousands of students protesting outside the UK Parliament (Harrison 2010). These events suggest that the higher education

sector in the UK faces financial constrains and pressures, which make it difficult to predict what the situation will be in the future.

The UK higher education system is infused with various principles and values that have prevailed in the academic field for a long time that emphasise academic freedom, self-governance, autonomy and transparency. According to the website of The Quality Assurance Agency for Higher Education in the UK 2011:

> *UK universities and colleges of higher education are self-governing and are not owned or run by the Government. The level of autonomy of universities and colleges is high compared to many other countries. All have an independent legal identity… They are autonomous; they have intellectual and academic freedom, and do not have to follow a Government-set curriculum.*

4.4.1 Higher Education and ICT Development

UK universities are competing in attracting home students as well as international students. A key element in this competition is the investment in ICT resources to provide cutting edge technology to enhance and enrich students learning experience. The use of computers in higher education institutions in the UK has been a key aspect on the government's agenda for a long time (Oliver and Conole 2003,p.386) and the UK government has invested heavily in estalbising computer-based and networked infrastructure in colleges and universities (De Freitas et al 2008,p.26). Despite the fact that each university is independent and develops and maintains its own IT projects and resources, there is some co-operation and co-ordination at a national level. The main body that works with further and higher education institutions with respect to technology development is the Joint Information Systems Committee (JISC). According to JISC website (2010):

> *JISC is committed to enabling the UK education and research communities to engage in national and global collaborations. Working at the forefront of technology innovation for education and research, JISC establishes partnerships to collaborate with organisations to overcome the challenges of delivering world-class Information Communications Technology (ICT) solutions and services.*

JISC is an independent institution established to provide help, advice and support for the use of ICT for teaching, learning, research and administration

purposes. One of its aims is to provide guidance on institutional change. It can be described as a community of practice where senior managers, technology experts, academics and other IT professionals involved with higher education; work together to exchange ideas, knowledge and experiences regarding technology deployment and management in higher education institutions (JISC 2011). Many universities and other higher education institutions around the UK have joined the JISC community, including the two universities that participated in this study.

4.5   Universities Studied Description

The following section is a brief description of the universities studied. Two universities in the UK participated in this research. It provides general information about each university. To respect the promise of anonymity, the researcher cannot name the universities studied, instead, they are referred to here as University D and University E.

4.5.1   University D

The University was established in the late of 1890s, since when it has gone through substantial growth and development. Today, the University is one of the most popular universities in the UK and has a good reputation in both teaching and research. The University is organised into the following six faculties: Arts, Engineering, Medical and Veterinary Sciences, Medicine and Dentistry, Science and Social Sciences and Law. It is not a campus based university and its faculties and academic departments are spread around the city in a number of locations. The University has developed the portal in-house by using u-Portal framework. For more details about this University, see Appendix (2)

4.5.2   University E

This University, which was established in the late of 1990s, is a large, distributed, multi-campus institution that has gone through substantial growth and change over recent years. Teaching and research at the University are organised into five faculties: Art and Design, Business and Law, Health and Life Sciences, Humanities, and Technology. The university has about 20,500 students and around 3,240 staff. (University E Website, 2010). This University

built the portal locally and used u-Portal framework. A detailed description of this University is provided in Appendix (2).

4.6   Conclusion

This chapter described two case studies from the UK. It has provided general information about the country and highlighted some issues regarding ICT. It also described the higher education system in the UK, and provided a description of two universities that participated in this research, and highlighted some common issues. For example, both universities have developed their portal in-house by using uPortal framework as the underlying infrastructure for the campus portal. Second, the universities are part of two communities of practices: JISC and JA-SIG uPortal community. A detailed description of these universities is provided in Appendix (2). What has been reported will be discussed in the forthcoming chapters (7, 8, and 9) to determine how various issues mentioned in this chapter affect the adoption and implementation of CPs in the universities studied.

Chapter 5: Research Methodology

5.1   Introduction

Since the research proposed in this thesis aims to investigate the adoption and implementation of CPs, it is important to select the appropriate research methodology that fits with the research questions and objectives introduced in Chapter 1. In order to do so, a thorough examination of different research perspectives and methods was considered. This chapter describes the research methodology. First, it introduces the underlying assumptions of research methodologies, namely, the positivist, interpretivist and critical paradigms, and then provides justification for the selection of the interpretive perspective. After that, the chapter discusses quantitative and qualitative research approaches, and then justifies the adoption of qualitative research. Then, the chapter examines different strategies associated with the qualitative approach. Thereafter, the researcher describes the sites selection and the participants involved in this study. Then, the chapter describes the data collection process. This is followed by a discussion of the data analysis method and the researcher justifies the use of hermeneutics as a mode for data analysis. It concludes with a summary of the conclusions about an appropriate way to conduct this research.

5.2   The Underlying Assumptions of Research Methodologies

The underlying assumption of research methodologies is based on some philosophical perspectives. According to Myers and Avison (2002,p.5) any research is influenced and guided by "some underlying assumptions about what constitutes valid research and which research methods are appropriate". The research philosophy contains important assumptions about how researchers see the world and helps them to situate and position themselves to frame their research and investigations (Leclercq 2007,p.35; Saunders et al 2007,p.101; Neuman 2011,p.91). The most common approaches to research are: positivist, interpretivist and critical approaches. The following is a description of each paradigm.

5.2.1 Positivism

This school of thought is based on the fact that reality is objectively given and can be described by many measurable factors that are independent of researchers and their instruments (Myers and Avison 2002,p.6). The positivist approach has been defined as:

> *An organised method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity* (Neuman 2011,p.95).

There are many assumptions that influence the thought of this school. First, Keat and Urry (1975,p.25) reported that "there is only one logic of science, to which any intellectual activity aspiring to the title of science must conform". Second, it suggests that facts about the world are present externally and are waiting to be revealed (Schultze 1998,p.160; Neuman 2011,p.96). Third, positivists assume that we can understand humans by observing their behaviour and what is seen externally is the exact reality (Neuman 2006,p.82). Fourth, researchers who adopt this approach seek rigorous, precise measures and objective investigations and they are interested in numbers that can be measured quantitatively and analysed statistically (Saunders et al 2007,p.104; Neuman 2006,p.82). Fifth, researchers who subscribe to this stance are deductive and advocate the application of the methods of natural science to study natural phenomena by generating and developing hypotheses that can be tested in order to prove or refute the hypotheses (Saunders et al 2007,p.103; Bryman 2008,p.13).

Furthermore, the ultimate goal of positivist research is to establish causal laws and results that can be generalised (Remenyi et al 1998,p.32; Neuman 2006,p.82). Moreover, replication is an important aspect and researchers can replicate other research to verify the findings (Neuman 2006,p.85; Saunders et al 2007,p.103). Finally, positivism is based on objectives of being value free, which means that the choice of what to research and how to research can be influenced by objective criteria rather than by human values, opinions, attitudes

and interests (Easterby-Smith et al 2002,p.28; Neuman 2006,p.85; Saunders et al 2007,p.103).

The positivist approach has been subject to criticism, especially from interpretive researchers. Denzin and Lincoln (2005,p.11) argue that this approach is only one way to understand the social world. Moreover, Neuman (2006,p.82) points out that positivism considers people as numbers and emphasises abstract formulae, that are not related to the real lives of people and their experiences. Furthermore, the researcher is independent or detached from the research subject or what is being observed (Easterby-Smith et al 2002,p.28; Neuman 2006,p.13). Finally, it neglects the role of social contextual conditions and their influence on human action, which may lead to an incomplete picture of the phenomenon under investigation (Orlikowski and Baroudi 1991,p.12).

5.2.2 Interpretivism

The interpretive approach has been defined as:

> *The systematic analysis of socially meaningful action through the direct detailed observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds* (Neuman 2011,p.102).

This approach is related to hermeneutics, the theory or philosophy of the interpretation of meaning (Bleicher 1980,p.1; Neuman 2006,p.88). This school of thought is influenced by many assumptions. First, knowledge and reality are socially created and constructed, and seen as a part of social practices, interaction and human experience (Schultze 1998,p.163; Easterby-Smith et al 2002,p.29; Neuman 2011,p.102) Second, unlike positivism, researchers who advocate this approach claim that the social world is complex and fundamentally different from the natural sciences, thus the application of scientific method is not suitable to study the social world which requires a different method (Saunders et al 2007,p.106; Bryman 2008,p.15). Third, it emphasises the importance of conducting the research with people rather than objects; thus the concept of "social actors" is important (Easterby-Smith et al

2002,p.29; Neuman 2006,p.91; Saunders et al 2007,p.106). Consequently, interpretivists try to understand phenomena through the meanings that people assign to them (Myers and Avison 2002,p.6; Neuman 2006,p.88). Fourth, researchers are involved and not detached from the phenomena under investigation and they have to interact directly with its subject matter to gain access to common-sense thinking (Bryman 2008,pp.15-16) which is an important source of information for understanding people (Neuman 2006,p.91). Fifth, it emphasises the fact that social action cannot be separated from the context in which it takes place and facts are context specific (Neuman 2006,p.92). Finally, the interpretive approach is inductive in its nature and researchers collect rich data from which ideas and insights are induced.

The interpretivist approach has been subject to criticism. One of the main issues is that it is difficult to generalise results from an interpretive study (Saunders et al 2007,p.107). Second, according to Orlikowski and Baroudi (1991,p.18) this approach does not consider the conditions, especially, the external conditions, that give rise to specific meanings and experiences. Third, is the subjective nature of the interpretive research. Researchers' previous assumptions, values and beliefs always influence their investigations and consequently, may affect the outcomes of the study. Finally, it fails "to explain historical change; that is, how a specific social order came to be and how it is likely to vary over time" (Orlikowski and Baroudi 1991,p.18).

5.2.3 Critical
This paradigm is seen as an alternative to the positivist and the interpretivist paradigms (Chua 1986,p.618; Orlikowski and Baroudi 1991,p.24). Critical research aims to improve the human condition, empower people and make change happen; and critical researchers try to critically assess and alert the social reality under study (Orlikowski and Baroudi 1991,p.19; Kincheloe and McLaren 1994,p.140; Ngwenyama 2002,p.116; Neuman 2011,p.109). Myers and Avison (2002,p.7) describe it thus:

> *Critical research focuses on the oppositions, conflicts and*
> *contradictions in contemporary society, and seeks to be*

emancipatory; that is, it should help to eliminate the causes of alienation and domination.

There are many assumptions that influence the thought of this school. Firstly, critical philosophy assumes that social reality is historically constituted, and that individuals, groups and societies are not constrained to exist in a certain status (Chua 1986,p.619). Although people and societies are confined by existing systems such as economic, legal, political and cultural systems, they can act to change their social circumstances (Orlikowski and Baroudi 1991,p.19). This is because people are the producers of their social world and they can change it if they wish (Ngwenyama 2002,p.117; Neuman 2006,p.95). Second, knowledge is grounded in social and historical practices (Chua 1986,p.620) it thus shares a close similarity with interpretivism. Another important component of this approach is the idea of entirety, which suggests that aspects can never be dealt with as separated elements. A certain element becomes real only in the context of the entirety of the relationships of which it is a part, and both the whole and the part are better understood in their historical context and situation (Orlikowski and Baroudi 1991,p.19). Fourth, critical researchers argue that it is not enough to study and interpret the social world, rather; the actual condition must be understood and critiqued to uncover myths and false illusions; and in this sense, researchers play a role in initiating a change in societies (Orlikowski and Baroudi 1991,p.20; Neuman 2011,p.109), thus 'transformation' is a key element in critical research (Myers and Klein 2011,p.24). Finally, it emphasises longitudinal (long-term) studies, ethnographic and historical studies and analysis (Orlikowski and Baroudi 1991,p.20; Neuman 20110,p.109).

5.2.4 Discussion and Justification of the Selection of the Research Paradigm

The underlying assumption of research methodologies is an important aspect in conducting research and formulating the research methodology. Furthermore, each paradigm has its own set of assumptions, methods, strengths and weaknesses. Orlikowski and Baroudi (1991,p.20) state that researchers should adopt a paradigm that is well-matched with their own research interests and assumptions.

It was decided that the interpretive approach seemed to be appropriate for this study, and it can be justified as follows. First, the researcher subscribes to the ontological and epistemological assumptions of the interpretive approach and believes that reality and knowledge are socially created and constructed. This research aims to investigate the factors affecting adoption and implementation of CPs in universities. The views and experiences of individuals involved with CPs are very important; and the phenomenon under investigation is seen "as emergent process-as an extension of human consciousness and subjective experience" (Burrell and Morgan 1979,p.253). The interpretive research in Information Systems aims to produce "an understanding of the context of the information system, and the process whereby the information system influences and is influenced by its context" (Walsham 1993,pp.4-5). It helps researchers to understand human behaviour and action in social and organisational contexts (Klein and Myers 1999,p.67). As mentioned above, the positivist approach fails to acknowledge this and does not consider people as an integral part of the research; rather, it seeks to view the world as a set of fixed objects and considers that facts are independent of people and their social life. Furthermore, this study does not aim to test any hypotheses and therefore; the positivist approach is rejected.

Second, regarding the critical approach, although it shares some similarities with the interpretive one, it has been rejected for two main reasons. First, critical research desires emancipation (Walsham 1993,p.11) and aims to empower people and initiate changes. The ultimate goal of the current researcher is only to understand the factors that affect CP adoption and implementation through the participants' experiences, and he is not in a position to make changes to the status quo in the universities studied. According to McLean and Stahl (2007,pp.9-10) the lack of power that a researcher has in relation to the organisations under study has an important influence on the level to which he or she can progress in the quest for liberation and transformative action. Moreover, critical research emphasises longitudinal and ethnographic research design (Orlikowski and Baroudi 1991,p.20; Neuman 2006,p.95) which requires spending a considerable amount of time in the field, which was impossible for

the researcher. This is because the researcher lacked the resources and the time needed for a prolonged stay in the research sites.

Having identified the research philosophy, it is important to move to the next stage and consider the research approaches available. Broadly speaking, there are two main research approaches: quantitative and qualitative. The following is a discussion of these approaches.

5.3   Quantitative and Qualitative Research Approaches

The term 'research methods' refers to "a strategy of enquiry which moves from the underlying philosophical assumptions to research design and data collection" (Myers and Avison 2002,p.7). Meanwhile, Bryman (2008,p.31) describes a research method as a technique for collecting data that involves a specific tool such as questionnaires, interviews or observation. The research methods can be classified in various types of methods and described from different perspectives. A common classification is the distinction between quantitative and qualitative research approaches.

5.3.1   Quantitative Approaches

Quantitative research approaches were developed in the natural sciences (Myers and Avison 2002,p.4). These approaches usually stress quantification in the collection and analysis of data and the emphasis is on measuring variables and testing hypotheses (Neuman 2006,p.151; Bryman 2008,p.697; Robson 2011,p.18). There are different types of quantitative methods such as experiments, questionnaire surveys and content analysis. Researchers who adopt the quantitative approaches aim to collect empirical data and statistics "where the data are in the form of numbers" (Punch 1998,p.4). They are usually associated with positivism (Neuman 2006,p.151; Bryman 2008,p.697). Since the researcher has positioned himself with the interpretive perspective, we should now consider qualitative approaches.

5.3.2   Qualitative Approaches

Qualitative research approaches which were developed in the social sciences (Myers and Avison 2002,p.4), usually focus on meanings and understanding instead of quantification in the collection and analysis of data (Bryman 2008,p.697; Robson 2011,p.19). Qualitative research is an empirical

investigation that aims to collect data in a non-numeric form (Punch 1998,p.4). In contrast to the quantitative approach, the qualitative approach is associated with some "unstructured qualitative methods, such as participant observation studies and in depth interviews" (Henn et al 2006,p.14). These methods are usually associated with the interpretive approach. However; it is important to mention that while often associated with each other, the word qualitative is not a synonym for interpretive. Qualitative research may be or may not be interpretive, and this depends on the underlying philosophical assumptions of the researcher and qualitative research can be conducted from different approaches including positivist, interpretive or critical (Myers and Avison 2002,p.5). Since the researcher has already situated himself with the interpretive approach (see section 5.2.4), it is not necessary to dwell on those possibility. It is sufficient to note that qualitative methods are compatible with interpretive perspective.

5.3.2.1 Justification of the Use of Qualitative Research

The rationale behind choosing the qualitative approach over the quantitative one can be justified as follows. First, this research aims to investigate the adoption and implementation of CPs in universities, from the implementers' and users' perspectives. According to Hunter (2004,p.292) the main focus of qualitative researchers is the people involved in organisations. Thus, qualitative researchers try to understand research problems in terms of the words that people assign to them. Therefore; the use of qualitative research would help to gather data on this topic that is based on participants' perception. This suggests that people and their institutions represent a crucial aspect of qualitative research. In contrast, quantitative research does not acknowledge this issue and it fails to differentiate people and social institutions from "the world of nature" (Bryman 2008,p.159). Furthermore, "adopting qualitative methods allowed unanticipated factors to be recognised and explained" (Holt and Oliver 2002,p.286).

Second, qualitative research embraces the importance of studying a phenomenon in its natural setting and context as it occurs (Orlikowski and Baroudi 1991,p.5; Marshall and Rossman 2006,p.53; Creswell 2007,p.40;

Robson 2011,p.19). In this study, the researcher will investigate CPs adoption and implementation in some universities in their natural settings by conducing fieldwork and collecting data through interviews and documentation. This gives the researcher the opportunity to interact directly with the participants and allows him to probe more information. Consequently, this can help to build and develop a holistic picture of reality through the eyes of participants. In contrast, an investigation in the quantitative approach does not consider the possible effects of the context and is often conducted in artificial settings (contrived context) with the intervention of, or manipulation by, the researcher (Cohen et al 2000,p.22; Robson 2011,p.19). Furthermore, one of the disadvantages of quantitative research is the dependence on instruments and techniques that hinder the link between the research and everyday life, and in many cases there is no interaction between the researcher and the participants. Bryman (2008,pp.159-160) reported that:

> *Many methods of quantitative research rely heavily on administering research instruments to subjects (such as structured interviews and self-completion questionnaires) or on controlling situations to determine their effects (such as in experiments). However…how do we know if survey respondents have the requisite knowledge to answer a question or whether they are similar in their sense of the topic being important to them in their everyday lives?*

Third, qualitative research helps researchers to address and answer "what" and "how" questions, which in turn will help the researcher to understand the nature and complexity of the process taking place (Creswell 1998,p.17). This study seeks to answer such questions, for instance: what are the factors that affect CP adoption and implementation in Saudi and UK universities? How are CPs being adopted and implemented in universities?

Finally, employing a qualitative study will result in presenting a detailed view of the topic (Creswell 1998,p.17). It is hoped that the findings will address various issues related to CP adoption and implementation. As a result, it could provide decision makers in Saudi and UK universities and portal providers with an insight into how CPs can be adopted and implemented effectively to support the academic community. Furthermore, quantitative research does not provide a

detailed view of the topic. Rather, it provides general results. Marshall and Rossman (2006,p.54) point out that:

> *Policymakers and practitioners are sometimes unable to derive meaning and useful findings from experimental research and that research techniques themselves have affected the findings. The lab, the questionnaire, and so on have become artefacts.*

Based on the above discussion, it can be said that the qualitative research seems to be the appropriate approach for the purpose of this study, given the justifications provided and the epistemological assumption being adopted in this research (section 5.2.4).

However, this does not mean that this approach is free of disadvantages. There have been many criticisms against the use of qualitative research. Bryman (2008,pp.391-392) lists the following as the main disadvantages of this approach:

• Qualitative research is too subjective.

The findings of qualitative research rely mainly on the researcher's often unsystematic views about what is significant and important. Furthermore, the findings depend on the close relationship between the researcher and the individuals studied (Bryman 2008,p.391). Since the researcher will provide his interpretation to the research findings and discussion, and this could result in subjective interpretations and opinions, he will allow the participants interpretations to shine through, in so far as he is able. Moreover, the findings and discussion of the research are interpreted in conjunction with other research findings, literature review, participants' opinions and the views and knowledge of the researcher on the topic.

• Difficult to replicate.

Unlike the quantitative research, it is difficult to replicate the findings of qualitative research. This is because the standard procedures to be followed cannot spell out the degree of detail required for replication. In qualitative research, the researcher is the main instrument of data collection. Thus, what interests one researcher may not interest the other and the focus of the enquiry might be different. Because of such factors, it is difficult, and sometimes

impossible, to replicate the findings of a qualitative study (Bryman 2008,p.391). This is due to the fact that we are dealing with social phenomena that change over fairly short time-spans, and where there are variations from individual to individual. To replicate, researchers would have to interview the same individuals again, on the same date and time as the initial interviews: clearly this is impossible.

- Problems of generalisation.

The results of a qualitative study are restricted to particular people, events, groups, and organisations. A small number of individuals or cases cannot be representative of others, which makes the generalisation of the results more difficult (Bryman 2008,p.391). In fact, full generalisation is not sought in this study. However, since this research is based on multiple-case studies, it can offer the opportunity for resonance regarding the research findings. Resonance has been described as the extent to which research findings make sense to individuals and how the findings resonate with readers' own knowledge and understandings and with the published literature (Finlay 2006,p.13 ; Kuper et al 2008; Flick 2009,p.438). Yin (2003,p.10) argues that the findings of case studies "are generalisable to theoretical propositions and not to populations or universes". Furthermore, Williams (2000,p.215) describes what he calls moderatum generalisations as the state where some aspects of the enquiry "can be seen to be instances of a broader recognisable set of features". In this regard, it is important to mention that since this study is limited to five universities in two different countries, further comparison and extended studies are needed to support the findings of the current investigation.

- Lack of transparency.

Lack of transparency means that sometimes it is difficult to establish how researchers who have conducted qualitative research have arrived to their conclusions in a systematic way. By contrast in quantitative research (Bryman 2008,p.392). To address this issue, a detailed explanation of how the research was carried out is provided. For example, an explanation and justification is made of how respondents were chosen, how the results were analysed and

presented and how the researcher arrived at his conclusions. Such procedures help to minimise the lack of transparency.

5.3.3 Combining Multiple Methods

Most researchers carry out either quantitative or qualitative research work, with the choice of method depending on the kind of research and its aims, objectives and questions. However, in order to ensure cross-checking, some researchers use mixed methods (combining multiple methods). It has been described as "the use of two or more methods of data collection in the study of human behaviour" (Cohen et al 2000,p.112).

There are many types of cross-checking. Denzin (1970) reported six types which include: time, space, combined levels, theoretical, investigator and methodological. Two types of cross-checking were used in this study and they are described below:

- Spacial cross-checking.

This involves collecting data on the same phenomenon in multiple sites. The aim is to validate the data by testing for cross-site consistency (Polit 2004,p.431). Furthermore, spacial cross-checking attempts to overcome the limitations of studies conducted within one culture or subculture (Cohen et al 2000,p.113). In this study, spacial cross-checking was achieved by using different research settings from Saudi and UK universities. The selection of the two counties and the universities studied is discussed in section (5.4.1).

- Methodological cross-checking.

Methodological cross-checking means using the same method on different occasions or different methods on the same object of study (Cohen et al 2000,p.113). There are two types of methodological cross-checking: between methods and within methods (Jick 1979,p.602). Between methods focuses on validity by using multiple methods, for example (quantitative and qualitative: a survey and in-depth interviews) and looking for convergence in the data collected. Within methods uses multiple techniques within a given method to collect and interpret data. It involves cross-checking for internal consistency and reliability, for example, the use of qualitative data collection

techniques: interviews and documentation (Jick 1979,pp.602-603). According to Benbasat et al (1987,p.374) using multiple methods of data collection allows the opportunity for cross-checking and provides greater support to the research outcomes and conclusions. This study uses interviews and documentation for data collection.

5.3.4 Qualitative Research Approaches

Having described and justified the use of qualitative research, it is important to examine the appropriate research strategies associated with the qualitative approach. There are four main qualitative research approaches: action research, ethnography, grounded theory and case study (Myers and Avison 2002,p.7; Hunter 2004,p.294).

5.3.4.1 Action Research

Action research is "an approach in which the action researcher and members of a social setting collaborate in the diagnosis of a problem and in the development of a solution based on the diagnosis" (Bryman 2008,p.382). Action research emphasises the collaboration between researchers, participants and practitioners to solve a social or organisational problem and it aims for an action to facilitate or bring social and political changes (Baskerville and Wood-Harper 2002,p.133; Neuman 2006,p.26). Unlike the idea of conducting the research for building theories and knowledge, action research aims to design an investigation and gain knowledge for the purpose of addressing practical problems and promoting change (Punch 2005,p.160; Robson 2011,p.188). Furthermore, the researcher is mainly involved with action for change and interested in applying the knowledge gained elsewhere (Saunders et al 2007,p.141). For this study, action research does not seem to be appropriate. This is due to the fact that the overall aim of this research is to understand a particular issue rather than bringing a change or solving a problem. Furthermore, such a research approach requires the researcher to be part of a particular organisation and to work in collaboration with other practitioners to solve a particular social or organisational problem.

5.3.4.2 Ethnography

Ethnographic research has its origin in social and cultural studies where researchers study human behaviour (Punch 2005,p.150). Researchers immerse themselves in a field to observe behaviour, listen to what is said and ask questions over an extended period of time (Saunders et al 2007,p.142; Bryman 2008,p.402). Ethnography provides rich insights into human, social and organisational issues as it deals with the phenomena under investigation in its real context and deeply involves the participants (Harvey and Myers 2002,p.177). However, there are two main disadvantage associated with this method. First, it takes time to prepare participants in societies or organisations for accepting an in-depth study (Harvey and Myers 2002,p.179). Second, it tends to be longitudinal and requires researchers to spend a considerable amount of time in the field and needs many resources (Schwandt 2001,p.80; Harvey and Myers 2002,p.179; Punch 2005,p.150). It seems that this method is not practically feasible for this research and it is difficult for the researcher to be involved deeply with the participants over a long period of time in the field, because of the lack of time and resources and because it requires full access to research sites.

5.3.4.3 Grounded Theory

Grounded theory was developed by Glaser and Strauss (1967) in health science. This method aims to generate a theory "that is grounded in data systematically gathered and analysed" (Myers and Avison 2002,p.9). Grounded theory differs from other research methods in that it emphasises theory generation and development and the importance of collecting and analysing data at the same time and there is interplay between these processes (Myers and Avison 2002,p.9; Howitt and Cramer 2011,p.345). An important element of grounded theory is the 'theoretical sampling' (Corbin and Strauss 2008,p.143) which means that "the sampling of additional incidents, events, activities, populations, and so on is directed by the evolving theoretical constructs (Schwandt 2001,p.110). For the purpose of this study, grounded theory seems to be inappropriate for two main reasons. First, grounded theory may sacrifice some elements of understanding as it emphasises on theory generation.

Second, a key element of grounded theory is the fact that it requires the researcher continually return to the research site to collect further data in order to achieve full data saturation, which was not possible for the current researcher. This is consistent with study by Alvarez (2008,p.68).

5.3.4.4 Case Study

'Case study' is a research method that aims to investigate a specific contemporary phenomenon in depth within its real life setting, especially when the boundaries between the phenomenon and setting are not obviously evident (Robson 2002,p.178; Yin 2009,p.18).

Case study research has several characteristics. For example, it is mainly concerned with the study of a phenomenon in its real context and focuses on contemporary events (Robson 2002,p.178; Yin 2009,p.18). Moreover, case study research could be about an activity, an event, a process, an individual, a group, a project, an organisation or a community (Creswell 2005,p.439; Yin 2009,p.33; Robson 2011,p.135) and can be designed as a single case or multiple cases. Furthermore, case study helps researchers to answer 'how' and 'why' questions (Benbasat et al 1987,p.371; Yin 2009,p.8). Moreover, it is useful in providing further understanding of a particular problem, issue or concept (Schwandt 2001,p.23). According to Yin (2009,p.18) case study takes advantage of previous developments of theoretical frameworks that help to guide data collection and analysis. Finally, case studies use multiple means of data collection, which include: documentation, archival records, interviews, direct observation, participant observation, and physical artifacts (Yin 2009,p.102). In this research, case study has been adopted as the research strategy. The following section justifies the selection of the case study.

5.3.4.4.1 Rationale for Selecting the Case Study Method

To begin with, a case study aims to investigate a specific contemporary phenomenon (Benbasat et al 1987,p.372; Robson 2002,p.178; Yin 2009,p.18). This study aims to investigate the adoption and implementation of CPs in universities. It can be said that CPs is a relatively recent phenomenon in the academic environment and portals have become commonplace in universities,

and there is very little known about the factors affecting adoption and implementation of CPs. These issues were discussed in Chapter 2 section 2.7.

Second, case study research emphasises the importance of conducting the investigation within its real life context. In this study, the researcher will carry out the investigation and visit some universities in Saudi and the UK to gather the required data. In doing so, the researcher has the opportunity to study the phenomenon in its natural context to learn about various issues related to CP adoption and implementation.

Third, case study is a suitable method for answering 'how', 'why' and 'what' questions, which in turn will help the researcher to understand the nature and complexity of the process taking place (Benbasat et al 1987,p.370; Yin 2009,p.8). This study seeks to answer such questions, for instance: how are CPs being adopted and implemented in universities? Why do universities invest in establishing and developing CPs? What are the factors that affect CPs adoption and implementation? Moreover, case study research is a suitable method to investigate an area in which few previous studies have been conducted. The literature review has concluded that there is a need for more research, and in particular case studies, that investigate and compare CP adoption and implementation (Chapter 2, section 2.7). Finally, this study can be described as an exploratory case study. This kind of research helps to answer 'what' questions (Pare 2004,p.238; Yin 2009,p.10) and the current study seeks to answer the question: What are the factors that affect CP adoption and implementation? Exploratory case studies "are useful for theory building as they are valuable in developing and refining concepts" (Themistocleous 2002,p.92).

Having justified the use of case study, it is important to examine another issue related to the design of the study. Yin (2009,p.46) identifies two types of case study designs: single-case versus multiple-case. The latter was adopted in this study, and the following section provides justifications for this choice.

5.3.4.4.2 Single-Case Designs versus Multiple-Case Designs
Case study research can be a single case or multiple cases (Yin 2009,p.46). Each design has its own unique style and features. A major issue in case

research design is the decision to include one or more cases in the research project (Benbasat et al 1987,p.373; Pare 2004,p.241). Yin (2009,pp.47-48) suggests that the single case design is an appropriate choice under certain circumstances: 1) the case represents a critical test of existing theory, 2) the case is a rare or unique event, 3) the researcher wants to study previously inaccessible cases, 4) the longitudinal case study. Multiple-case design involves more than one case (Yin 2009, p.53). According to Benbasat et al (1987,p.373) multiple case designs are suitable when the focus of the research is description, theory building or theory testing.

To achieve the aims and objectives of this study, a multiple-case design was considered to be appropriate. The rationale is as follows. First, this study does not fall under the conditions that have been reported by Yin (2009,pp.47-48) which means that the use of the single case design is not justified. Second, the results from multiple cases are often considered more convincing and more robust (Herriott and Firestone 1983,p.17; Yin 2003,p.53). Third, multiple case designs allow the extension of theory (Benbasat et al 1987,p.373). The findings from this multiple case design could support or contradict prior research, studies and existing theories, and will contribute to theory building in the area. Finally, since this study aims to compare the adoption and implementation of CPs in two different countries and cultures, a multiple-case design is valuable in identifying the similarities and differences among the cases under investigation (Hunter 2004,p.296). One of the benefits to be gained from cross-national work includes a deeper understanding of other cultures and their practices and processes (Hantrais 1996). Cross-national studies aim to identify, analyse and understand similarities and differences across societies. It is hoped that the findings of this research will provide some interesting issues regarding the commonalities and differences between Saudi and UK universities regarding portal implementations.

5.4   Research Design
Yin (2009,p.26) defines research design as "the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions". According to Philliber et al (1980) four issues must be addressed

when considering research design: what questions to study, what data are relevant, what data to collect and how to analyse the data. In this study, the research questions were drawn from the literature review provided in Chapter 2. The main research question that this study seeks to answer is: what are the factors that affect the adoption, implementation and utilisation of CPs? Chapter 1 provides a description of the research questions and objectives. In order to answer the research questions and meet the objectives of this study, an empirical research methodology was adopted to address these issues. The following section describes the research design.

5.4.1 Cases and Site Selection

This research aims to investigate the factors affecting the adoption and implementation of CPs in Saudi and UK universities. In order to achieve the aim and objectives of this study, a multiple case design has been adopted, that involves five cases:

- Three cases from SA.
- Two cases from the UK.

Five universities were selected, three from SA and two from the UK. A detailed description of these universities is provided in Appendices 1 and 2. Yin (2009,p.54) suggests that when researchers undertake multiple-case studies, it is important to consider two main issues. First, the selection of a case that predicts similar results and second, the selection of a case that predicts contrasting results. This issue is applicable to the current investigation.

An important element in case study research is the site selection. According to Benbasat et al (1987,p.373) site selection should be considered carefully and the research topic is a key issue in this process. Regarding the selection of the two countries, they are suitable to be studied for the following reasons. First, in both countries, a sufficient number of universities have developed portals and established a sufficient level of portal adoption and implementation. This means that the researcher can learn from these universities, answer the research questions, and meet the research objectives. Second, Saudi universities are benchmarking themselves against UK universities especially regarding IT implementation. Thus, the results could provide some useful insights into the

extent to which Saudi universities can learn from their counterparts in the UK. Third, the literature review has concluded that there is no previous study that compares CPs adoption and implementation between institutions in the developing countries and their counterparts in the developed world, therefore, this study aims to fill this void. In addition, this study responds to calls from other IS researchers to study enterprise portals by conducting comparative case studies (Daniel and Ward 2006,p.121; Sugianto and Tajib 2006,p.249; Cox and Emmott 2007,p.324). Comparative studies aim to identify the similarities and differences among the cases under investigation. One of the advantages to be gained from cross-national work is the fact that it can provide an understanding of other cultures and their practices and processes (Hantrais 1996). It is hoped that the findings of this study will provide some useful insights regarding the commonalities and differences between Saudi and UK universities with respect to portal implementations. Finally, is the practicality of accessing the necessary data for this research and the availability and willingness of the universities to participate in this study.

Regarding the Saudi universities, the literature shows that most of the research was conducted in the developed countries and there is scarce research in the developing countries (Chapter 2, table 2.3). To the best of the researchers' knowledge, no previous research has been conducted into CP adoption and implementation in Saudi universities. Thus, the current investigation aims to contribute to the literature by studying CPs in Saudi universities as an example of the developing countries. Three universities have been selected. The rationale behind choosing these universities is as follows. First, these universities are the leading educational organisations and are highly regarded in the country. They claim that they have invested a large amount of money in developing ICT to support teaching and research. Furthermore, within these institutions, there is a great desire to establish and develop WBIS. In recent years, these institutions have shown an interest on the development of portals and consequently, they launched portal projects. The management of these institutions are apparently enthusiastic about the development of such portals. Moreover, to the best of the researchers' knowledge, these universities have not

been investigated before with respect to CPs adoption and implementation. Finally, the universities offered the researcher an opportunity to access and collect data that will be helpful for this study.

Concerning the UK universities, two universities participated in this study. They were selected for two main reasons. First, they were early adopters of WBIS and in particular CPs and have established some practices regarding portal adoption and implementation. Second, the researcher approached many universities in the UK requesting participation and access to sites, and these two universities were unusual in responding positively, agreeing to participate in this study and offering the necessary access.

5.4.2 Sampling and Participants Involved in the Study

A sample is built-up that allows the researcher to meet the research aim, objectives and questions (Robson 2011,p.275). Sampling is an important aspect when doing qualitative research. Common issues that need to be addressed include: who to interview? How many interviews to conduct? How much data should be collected? (Miles and Huberman 1994; Pare 2004,p.246). There are no established rules for such issues. Instead, it depends on various factors such as the overall purpose of the study, relevance to the research topic, time available and resources (Marshall and Rossman 2006,p.63; Pare 2004,p.246; Denscombe 2007,p.17). Most importantly, representation and sample size are not major concerns in a qualitative study. One of the sampling strategies for selecting informants in case study research is the theoretical sampling. The theoretical sampling means that the researcher selects information cases that are relevant to the study that help to provide sufficient data and information to answer the research questions (Creswell 1994,p.148; Mason 2002,p.124; Pare 2004,p.246; Marshall and Rossman 2006,p.70). This method is useful for theory and concept development, which in turn will help the researcher to develop an understanding of the area under investigation.

The participants involved in this study can be classified into two main categories: implementers and users. The former is concerned with the people who are involved in the process of adopting, implementing and developing CPs

at the universities studied. The latter is the users of CPs and includes students, academics and staff. The rationale for targeting such groups can be justified as follows:

- It is the researcher's belief that these groups are the right people to be approached and interviewed because they are relevant to the research questions proposed in Chapter 1.

- Portal implementers are elite individuals who are involved directly with portal implementations. They are a key actor in the process. Therefore, learning directly from them could yield valuable and useful information regarding the factors that affect CP development.

- End users are the ultimate target for systems development and they are vital stakeholders. In this study, students, academics and staff are directly linked to the topic under investigation. They are expected to use web portals including CPs. Consequently, learning directly from them and understanding their requirements, needs and expectations could provide useful information. Maximum variation was considered as an important aspect to include diverse users from different ages, backgrounds and perspectives (Marshall and Rossman 2006,p.63; Creswell 2007,p.129).

- The literature review has shown that there is little research that combines the view of the implementers and users in a single study. Only two studies have been identified, and they suffered from some limitation (Chapter 2, section 2.7). Combining the two perspectives together could provide good results and conclusions, and it would identify different views, opinions and perceptions.

5.5 Data Collection Techniques

This study employs two main sources of data collection: interviews and documentation.

5.5.1 Interviews

Interviews are the most widely used qualitative method and in case study research (King 1994,p.14; Yin 2009,p.106). Furthermore, Seidman (1991,p.4) claimed that interviewing "provides access to the context of people's behaviour

and thereby provides a way for researchers to understand the meaning of that behaviour". Using interviews has several advantages, including:

- Good for measuring attitudes and most other content of interest.
- Allow probing by the interviewer.
- Can provide in-depth information.
- Very quick turnaround for telephone interviews.
- Relatively high response rates often attainable.
- Useful for exploration and confirmation.

(Tashakkori and Teddlie (2003,p.308).

Interviews can elicit more in-depth detail and information from respondents and allow researchers to discover a significant amount about respondents' perceptual experience, values, attitudes, feelings and views of events (Gorman and Clayton 2005; May 2001,p.120). Moreover, Walsham (1995,p.78) argues that interpretive research depends on interviews as the main source for qualitative data and "through this method the researcher can best access the interpretations that participants have regarding the actions and events which have or are taking place, and the views as aspirations of themselves and other participants".

Despite these advantages, however, interviews do have some disadvantages, which include:

- Expensive and time-consuming.
- Possible reactive and investigator effects.
- Possible low perception of anonymity by respondents.
- Data analysis sometimes time-consuming for open ended items.
- Measures in need of validation. (Tashakkori and Teddlie 2003,p.308).

There are other disadvantages: people may not always tell the truth (either intentionally or unintentionally); if they are asked about things they know little (or nothing) about, they may give meaningless opinions. There may be other more authoritative sources of information about the same subject (e.g. other people, documents, observation, etc).

Case study data are mainly collected through interviews (Pare 2004,p.246; Yin 2009,p.106). There are four types of interview: structured, semi-structured, unstructured and group and focus interview (May 2001,p.121; Robson 2011,p.280). The semi-structured interview is employed as a primary technique for data collection, and this can be justified as follows. First, this study aims to address the factors affecting the adoption and implementation of CPs in universities through the participants' point of view. Therefore, these types of interview allow people to answer more in their own terms than other types of interview and give interviewees considerable latitude in saying what they want (May 2001,p.123). Second, semi-structured interviews are suitable methods when doing a multiple-case study. According to Bryman (2008,p.440) researchers are likely to find that they will need some structure in order to ensure cross-case comparability. Third, they are a suitable choice when there is a focus on a particular topic. According to Mason (1996,p.38), semi-structured interviews tend to be a thematic, topic-centred method and they are suitable when a researcher does not have a structured list of questions, but does usually have a range of issues and themes which he wants to address. Bryman (2008,p.439) argues that:

> "If the researcher is beginning the investigation with a fairly clear
> focus, rather than a very general notion of wanting to do research
> on a topic, it is likely that the interviews will be semi-structured
> ones, so that the more specific issues can be addressed."

This study focuses on a particular topic with various issues related to the adoption and implementation of CPs in universities. Finally, this type of interview is based on the interaction between the interviewer and the interviewee and this in turn will allow the interviewer to probe issues and topics of interest more deeply.

5.5.1.1 Interview Guide

For the purpose of this study, two interview guides were developed. One was for interviews with implementers (portal teams) who are involved with CP adoption and implementation (Appendix 3), and the second was for the users (Appendix 4). The interview guides consist of several topics and open-ended questions derived from the research questions and from the literature related to

portal adoption and implementation. The interview guides were translated from English into Arabic, and verified by using back-translation techniques (see Appendices 6 and 7).

5.5.2 Documentation

Documentation is important tool for data collection in qualitative research and, in particular, case study (Yin 2009,p.103). Documents contain public and private records and data that researchers gain about settings or informants in a study. Marshall and Rossman (2006,p.107) argue that previous knowledge and context surrounding a particular setting can be obtained from reviewing documents. For example, valuable data can be obtained from various types of document such as minutes of meetings, policy statements, guidelines, letters, manuals, diaries, newspapers, magazines, and reports. Such documents help to develop an understanding of the context that is being studied.

One major advantage of using documents in research is the fact that it can be a relatively unobtrusive form of research, which can be conducted without disturbing the setting in any manner and without having to approach respondents directly. Rather, they can be traced through the documents that they have generated (Blaxter et al 2006,p.168; Marshall and Rossman 2006,p.108). Second, documents are ready for use and analysis without the need for the transcription that is required in other tools, such as observational and interview data (Creswell 2005,p.219). Finally, Yin (2009,p.102) mentions that one of the strengths of documents is that they are stable and can be reviewed repeatedly.

However, documents have several disadvantages. For example, researchers might find it difficult to locate and obtain documents, especially if they are not available to the public (Yin 2009,p.102) or require the researchers to travel, all of which can be time-consuming and expensive. Another disadvantage is the fact that they need considerable interpretative skills to determine the meaning of the materials that have been found (Bryman 2001,p.370; Creswell 2005,p.220). In this study interviews and documentation were the main source for data collection. Table 5.1 illustrates the data sources.

Table 5.1: Data Sources.

1. Semi-structured interviews			
Universities (Cases)		**Participants**	
		Implementers	**Users**
Saudi	A	3	10
	B	3	8
	C	3	11
UK	D	1	7
	E	4	6
Total		14	42
2. Documentation			
Universities		**Number of Documents**	
Saudi Universities		37	
UK Universities		23	
Total		60	

5.6   The Pilot Study

Conducting a pilot study is an important procedure in the research process. Many researchers recommend a pilot test activity to refine data collection methods and to develop some aspects of the data collection techniques and procedures that researchers might not be aware of in the first place (Yin 2003,p.74; Sampson 2004,p.383; Robson 2011,p.405). In this study, a pilot study was conducted in Saudi and the UK between October and December 2008. The first aim was to make sure that the relevant data could be obtained from the respondents and the interview questions could be understood easily without any ambiguity. Second, to help the researcher to prepare the data collection phase of the project, to practise his interview skills and to get useful results from the piloting. Third, the pilot study allowed the researcher to arrange access to the selected sites. The following was done in the pilot study:

- The researcher visited some universities that are part of this study.
- Some interviews were conducted with students, academics and staff. Ten people were recruited to pre-test the instrument and selected to be similar to, but different from the people who would be interviewed for the main study.

- An initial evaluation of some CPs that are related to the current investigation. This was done by browsing some parts of CPs that belong to these universities studied.
- Investigated the best method to interview women in Saudi Arabia, either by employing a female field worker or through phone interviews.

The pilot study revealed the following findings:

- The universities that the researcher visited showed willingness to participate in the study and promised to offer access during the data collection phase.
- The pilot study provided useful information with respect to the adoption and utilisation of CPs in universities, and helped the researcher to develop pre-understating about the topic under investigation.
- There were some weaknesses in the interview questions that needed to be improved to reflect the research aims and questions. For example, some questions needed to be re-phrased or re-worded to clarify more what they meant and the researcher had to include new questions.
- It revealed that the best time for doing the fieldwork in SA was March to June in 2009, as it was considered to be term-time, so the researcher arranged the travel to Saudi during this period.
- The researcher needed to develop some aspects of the interview techniques such as the process of introducing the interview to the interviewees, and managing the interview process and time.
- With respect to interviewing women, the researcher could interview women either by employing a female field worker or through phone interviews.

In sum, the feedback of the pilot study was used to modify and enhance the clarity of the instruments and to further develop some aspects of the interview guides. Moreover, it was used to design and develop data collection procedures prior to the main data collection phase. It was hoped that this would help to prevent errors from happening during the course of the main data collection phase.

5.7 Conducting the Fieldwork

The researcher arranged, in advance, access to the universities studied. During October to December 2008, the researcher conducted a pilot study in SA and the UK and arranged access to the selected sites. The researcher contacted the universities and explained the purpose of the research and the need for data collection. The universities welcomed the idea and promised to provide the necessary access and support for data collection. In this study, data were collected over two periods. In SA, the researcher visited the universities and collected the data between March and June 2009. Regarding the UK, the fieldwork was conducted between November 2009 and February 2010.

5.7.1 Ethical Considerations

Since this research involves gathering information about human beings and organisations, and to comply with human research ethics, three main issues were considered prior to the fieldwork. First, permission to enter the sites. The researcher sought permission from the universities studied and this was arranged in the pilot study. Second, ethical approval was needed. The researcher sought ethical approval from De Montfort University, and obtained approval. Consent was given by participants after having carefully and truthfully informed them about the research (Fontana and Frey 2003,p.89; Robson 2011,p.200). An informed consent letter was written in two languages: English and Arabic. The original letter was written in English, and then translated into Arabic. The letter explained the importance and purpose of the study and asked the participants' assistance and co-operation. It stated that the participation was completely voluntary and participants had the right to withdraw from the study at any time. Moreover, other important information that participants should know about was included in the informed consent letter. For more details, see appendices 5 and 8.

Third, it is important to consider the right to privacy. Confidentiality, anonymity and the protection of data are important issues that need to be considered by researchers. To reassure the participants about the confidentially of their answers, it was emphasised in the interview guide and in the informed consent letter that the data would be made anonymous, would be completely

confidential and would be used only for research purposes. Addressing these issues can encourage participants to express their feelings and to be truthful.

5.7.2 Conducting the Interviews

As mentioned earlier, semi-structured interviews were used in this study for data collection. The interviews were conducted in the following manner:

- The researcher contacted the management of CPs and arranged interviews with key people such as mangers, systems analysts and webmasters. Email correspondence and telephone calls were used for this purpose.

- Before the start of the interview, the researcher thanked the interviewees for their participation, and then introduced himself and the purpose of the interview. The interviewees had the opportunity to read the Informed Consent Letter and then it was signed by each interviewee (see appendices 5 and 8).

- The researcher was able to record most of the interviews and take some notes. However, some interviewees did not wish to be recorded and the researcher respected their right. In this case, note taking alone was used.

- At the end of the interview, the interviewer thanked the interviewee and terminated the process.

- After each interview, the researcher transcribed the interviews.

- The average interview lasted for between 40 and 50 minutes.

5.7.3 Collecting Documentation

In addition to collecting data through semi-structured interviews, the researcher used documentation. There were two types of documents that the researcher managed to collect: hard copy documents and electronic documents. These were collected from two main sources: 1) project documentation produced by the universities studied related to CPs, 2) documents related to the current investigation that were available in the public domain, but not generated by the universities studied. The documents that the researcher managed to collect

included: computer files, manuals and guidelines, newspapers, magazines, organisational policies and procedures, portal policies and reports.

Several issues were taken into consideration during the course of data collection. First, data analysis commenced with data collection and the processes went hand in hand. This is particularly important for the researcher, because he needed to decide when to cease and terminate data collection. The decision was made when the researcher felt that there were no new or major themes and issues emerging. This is what is described as data saturation (Corbin and Strauss 2008,p.143). Another factor determining when to cease data collection was when the researcher felt that the research aim, objectives and questions had been addressed. Furthermore, the researcher used a useful technique while interviewing the participants. Although most of the interviews were recorded, the researcher took notes during the interviews to identify the significant issues and statements that were mentioned by the participants. At the end of the interview, the researcher summarised what has been reported by the participants and engaged in a dialogue with the interviewees about the main issues that they had reported and expressed.

5.8   Data Analysis

One of the most fundamental steps in qualitative research is data analysis. This takes several forms, but is essentially non-mathematical in nature (Themistocleous 2002,p.101) and "interpretivists reject the notion that frequency is an indication of importance" (Lacity and Janson 1994,p.149). Unlike quantitative analysis, there are no particular, established rules, procedures or methods for analysing qualitative data. However, there are some general approaches and strategies, and most notably the coding process (Spencer et al 2003,p.200; Creswell 2005,p.232; Bryman 2008,p.538). Some researchers have proposed several methods, for example, constant comparison (Strauss and Corbin 1990), narrative analysis (Riessman 1993), hermeneutical analysis (Phillips and Brown 1993), logical analysis/matrix analysis (Miles and Huberman 1994), analytic induction and thematic analysis (Bryman 2008). The common aspect among those researchers is the fact that data analysis in qualitative research aims to prepare, reduce, summarise and organise the data through

coding and categorising which will result in the identification of themes and representing them in tables, figures, charts and other representation methods (Creswell 2007,p.148; Cooper 2010,p.16). The choice of method depends on several aspects such as the kind of the research and its objectives and questions, the researcher's assumptions about the phenomenon being studied. It can be said that there are no clear cut rules for the process. Therefore, the data analysis procedures in qualitative research can be summarised in the following points:

- Data analysis commences during the data collection.
- Qualitative researchers try to familiarise themselves with the data collected by reading and reviewing to get a general view about the data.
- Data coding in which the researcher applies some coding to the categories and themes to identify significant statements.
- Where necessary, data reduction is applied.
- It is expected that certain themes and patterns will emerge from the data. These are organised in categories and sub-categories.
- Then, data is presented in tables, figures, charts and other representation methods.
- Offering interpretations. The researcher provides his/her interpretations of the themes and topics that have been identified. Moreover, the interpretations are linked to the literature and previous studies. According to Patton (2002,p.480) "interpretation means attaching significance to what was found, making sense of the findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meanings, and otherwise imposing order".

These guidelines and strategies were considered in this study for data analysis. The following section describes the process of data analysis.

5.8.1 Sorting and Organising the Data

Once the data have been collected, the next logical stage is analysis. There is general consensus among researchers that qualitative research generates voluminous data (Mason 1996,p.107; Patton 2002; Bryman 2008,p.538). This

fact implies the importance of developing techniques to sort and organise the data. The researcher has developed indexing and classification methods so that data can be retrieved easily and quickly. Each interview was recorded and then transcribed using Microsoft Word Software, and saved in folders according to university name. Each file was given a file name, for example (A1) participant 1 from University A, (E9) participant 9 from University E. Concerning document classification, there were two types of documents: hard copy documents and electronic documents. Hard copy documents such as reports were organised in files according to the university name. Electronic documents such as PDF files, and Word documents were organised in computer files according to the organisation name, and given codes, for example (DOC3D) Document 3 from University D. Moreover, the researcher collected some documents related to the current investigation that were available in the public domain, but not generated by the universities studied. In this case, these documents were classified as follows:

- SADOC1: Document 1 related to Saudi case studies.
- UKDOC1: Document 1 related to the UK case studies.

5.8.2 Using Hermeneutics as a Mode for Data Analysis:

The main method of data analysis used in this study is hermeneutics. The term 'hermeneutics' comes from the Greek deity Hermes, who was considered to be the messenger of the Gods and whose function was to deliver and interpret the messages of the Gods to man (Lacity and Janson 1994,p.149; Butler 1998,p.286). Hermeneutic philosophy has existed for centuries and was associated with interpretation of the Bible (Myers 2004,p.103).

Bleicher (1980,p.1) defined hermeneutics as "the theory or philosophy of the interpretation of meaning". Hermeneutics is basically concerned with the meaning and understanding of a text (Myers 2004,p.103) and it aims to "ascertain the meaning as intended by the speaker/author and to explore how that meaning may be interpreted by the researcher to uncover new insights" (Metha 2005,p.78). Hermeneutics can be used as a philosophical underlying approach to human understanding for interpretivism or it can be treated as a

mode of analysing and understating textual data (Bleicher 1980,p.1; Myers and Avison 2002,p.10).

Within IS research, the use of hermeneutics has attracted the attention of many researchers and the literature can be classified into two main categories: epistemological and methodological. Many researchers have used hermeneutics to study IS (Boland 1985; Boland 1991; Lee 1994; Myers 1994; Myers 1995; Bussen and Myers 1997; Butler 2003; Lukaitis and Cybulski 2004; Sheffield 2005; Cole and Avison 2007). Furthermore, hermeneutics has been used as a mode of data analysis by many researchers (Boland 1985,p.193; Boland 1991,p.439; Lee 1994,p.143; Metha 2005,p.77; Cole and Avison 2007,p.821).

According to Lacity and Janson (1994,p.149) the aim of hermeneutic analysis is twofold: first, to determine the precise translation of a text, and second, to uncover the instructions contained in the text. This can be achieved by developing a detailed explanation of a piece of text, so that the researcher can identify the intentions of the author and put his/her interpretation to the text. Moreover, Lacity and Janson (1994,p.150) reported that "hermeneutics prescribes that an interpreter should live with a text to understand it ... and the meaning of a text is contextual and depends on the moment of interpretation and the experiences brought to it by the interpreter". A key element in hermeneutic analysis is the hermeneutic circle (Klein and Myers 1999,p.71). Gadamer (1976,p.117) described it as follows:

> *It is a circular relationship… The anticipation of meaning in which the whole is envisaged becomes explicit understanding in that the parts, that are determined by the whole, themselves also determine this whole.*

According to Myers (2004,p.107) "the idea of a hermeneutic circle refers to the dialectic between the understanding of the text as a whole and the interpretation of its parts, in which descriptions are guided by anticipated explanations". Boland (1985,p.195) argued that the design and use of IS in organisations can best be understood as a hermeneutic process. In this case, the organisation can be viewed as a text, and the researcher starts the study by developing some general knowledge about the organisation 'the whole'. This can be

achieved by reading some documents such as reports and other materials 'the parts'. Then, the researcher interviews some people who are involved with the system, for example the developers, the designers and the users of the system 'the parts'. As more data are collected, the researcher's understanding of the organisation as a whole and its constituent parts will improve (Boland 1985,p.195; Myers 2004,p.107). Figure 5.1depicts the hermeneutic circle used in this study.

Figure 5.1: Hermeneutic Circle
Adopted and modified from (Boland 1985; Lacity 1992; Myers 2004)
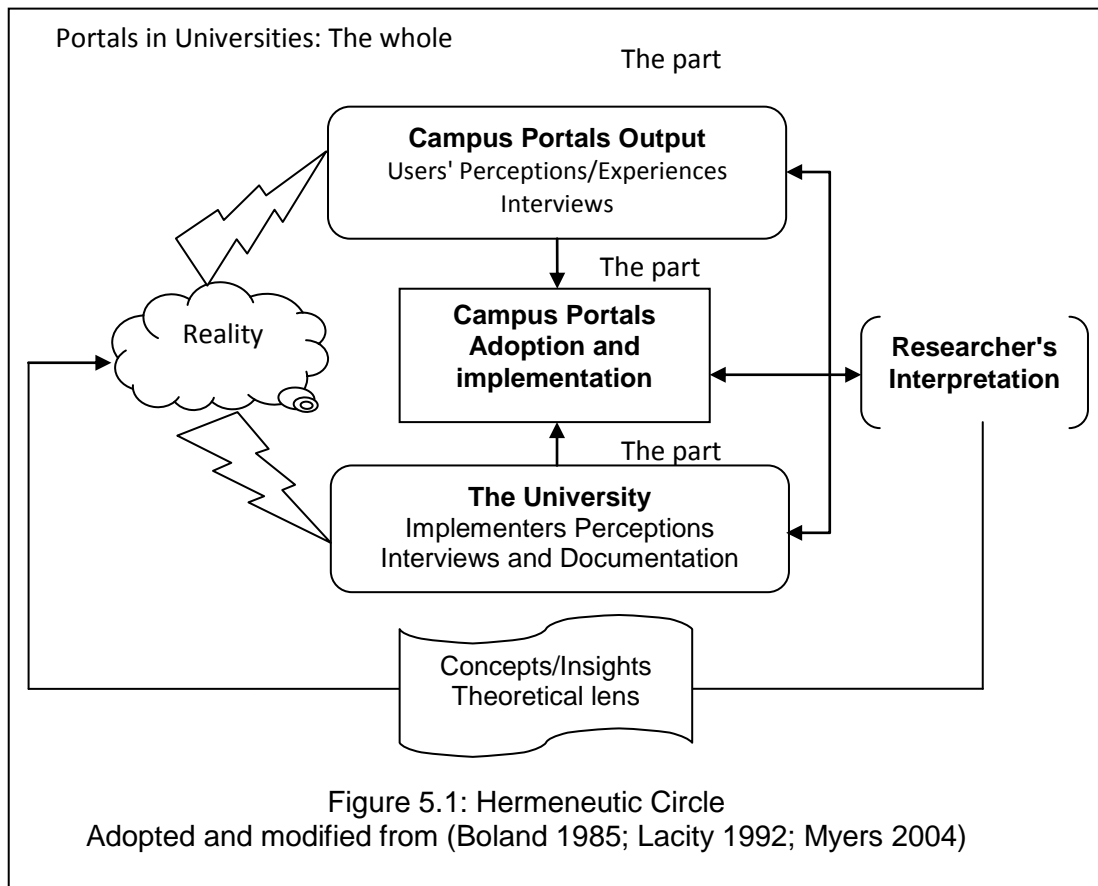
Using hermeneutics can be justified as follows. First, hermeneutics aims to understand the whole through its parts. In this research, CPs adoption and implementation in the universities studied can be regarded as the 'whole' that the researcher wants to understand. This 'whole' consists of several parts such as the organisation and its environment, the implementers of the system and users of the system. Therefore, studying the 'whole' and 'parts' could provide a better understanding of the phenomena under investigation. The use of

hermeneutics is useful since the researcher aims to create an inclusive checklist of different issues that affect CPs adoption and implementation.

Second, hermeneutics is concerned with the meaning and understanding of a text. The main qualitative data used in this study is text, which includes transcribed interviews and documents created by the members of the organisations studied. According to Lee (1994,p.149):

> *Many hermeneutic scholars have extended their conception of text to include not just the documentary artefacts that human subjects create, but also their individual actions, group behaviours, and even social institutions, all of which, as text analogues, have meanings that can be read and interpreted.*

Moreover, Webb and Pollard (2006,p.31) provide a further explanation to the Lee (1994) quotation by saying:

> *This suggests that hermeneutics is an approach that lends itself to application within organisational contexts where there is commonly a preponderance of documentation describing and explaining the organisations focus, mission, processes and procedures. In addition, the employees themselves represent a rich and valuable source of text or text analogue, most commonly in the form of interview transcripts.*

This notion proposes that organisations and their members are text analogues, which the researcher comes to study and understand through oral or written text (Myers and Avison 2002,p.10). In this study, employees who are involved with CP adoption and implementation, users of the system, and the documents generated as a result of portal development can all be regarded as text analogues that can be read and interpreted. Finally, using hermeneutics can help the researcher to provide better interpretations of the phenomena under investigation by incorporating a theoretical perspective. This study uses institutional theory as a theoretical lens to understand portal implementations by considering the wider institutional context, which emphasises multi-level and multi-stakeholder analysis including individual, organisational and environmental issues (Orlikowski and Barley 2001,p.153; Currie 2009,pp.63-66).

5.8.3 Data Analysis Processes

The researcher's goal is to understand the factors that affect the adoption and implementation of CPs. The empirical evidence used in this study is based on two main sources: interviews and documents (the text analogues). The main focal point of the hermeneutic analysis is on texts as a source of data. In order to understand the text analogues, the researcher engages in a dialogical action with the text analogues and uses explanatory principles and his prior knowledge and experience of the topic to understand what is said, read and written and to provide an interpretation of textual materials. The theoretical framework developed in the literature review was very helpful in guiding data analysis. Interviews were recorded and then transcribed using Microsoft Word and then become ready for analysis.

The researcher followed the technique developed by Patterson and Williams (2002,p.45) with respect to analysing interviews using the hermeneutic data analysis. Each interview was analysed individually (idiographic level) through reading the text to identify the individual meaning units and significant statements, so that an understanding of the text could be achieved. The meaning units are the "actual statements from the interview and they represent the hard data or evidence" (Patterson and Williams 2002,p.47). Then, the researcher did cross-interview analysis (nomothetic level), so that a whole understanding could be developed. This has resulted in generating a thematic representation (thematic labels) of the individuals' perspectives, which "represent the researcher's analysis concerning what the meaning units reveal regarding the phenomenon being studied" (Patterson and Williams 2002,p.47). A similar method was used to analyse documents. Document analysis in qualitative research aims to identify the underlying themes in the materials being analysed (Bryman 2008,p.529). Each document was examined individually to identify the underlying themes, and then compared with other documents. Finally, interviews and documents were compared, so that a deeper understanding could be achieved.

5.9 Conclusion

This chapter has described the research methodology implemented in this study. A discussion of the underlying assumptions of research methodologies was initially provided, and the researcher has justified the use of the interpretive perspective. After that, the researcher debated quantitative and qualitative research methods, showed that the use of the qualitative approach was the appropriate one for the current investigation, and provided justification. Then, the chapter examined different qualitative research strategies before justifying case study research. Thereafter, the researcher described site selection and the participants involved in this study. After that, the process of data collection was described. This was followed by discussion of the data analysis method in which the researcher justified the use of hermeneutics for data analysis, and described how the data were analysed. The following chapters (6 and 7) report the findings of this research.

<div align="center">**Chapter 6: Case Studies Findings: Saudi Universities**</div>

6.1 Introduction

This chapter presents the findings from three case studies conducted in SA. Three universities, referred to here as Universities A, B and C, participated in this study. Appendix 1 provides a description of these universities. The findings are presented in two main sections. First, from the implementers' perspective (portal teams) and second, from the end users' perspective. The chapter concludes with a summary of the main findings.

6.2 Results of Analysis based on the Implementers' Perspective

The data for this section were gathered through semi-structured interviews and an analysis of some organisational documents.

6.2.1 Source of Portal Initiatives

The findings revealed that the idea of developing CPs came from top management. It is a top down initiative and is delegated to IT departments in the universities. What can be noticed from the findings is the fact that chancellors in the universities have direct involvement with portal development. The results indicated that the national IT plan for the higher education sector in the country has been coercively imposed by government on universities. One of the interviewees stated that:

> *The idea of developing a campus portal came from the university top management and from the strategic plan of the university. (Participant A2)*

Another participant mentioned that:

> *The top management have realised that we should develop a portal to help the academic community and to provide services and information. (Participant C2)*

6.2.2 Implementation Strategy

The results showed that the universities studied considered three possible approaches: developing the portal in-house, outsourcing to a third party, and buying a readymade product. It was found that all universities bought ready-made solutions. The empirical evidence suggested that there were many factors

that influenced this decision such as the cost, resources available, time, effort, availability of portal technology in the market and most importantly the shortage of skilled and qualified staff. One of the participants pointed out that:

> *We did not want to re-invent the wheel and did not want to waste time trying to develop a system from scratch and the market is full of such products… Developing a portal from scratch requires huge investment in money, resources, effort, time and most importantly you have to have very qualified people. We don't have enough internal expertise. (Participant A1)*

Another participant ruled out the possibility of developing a portal in-house for many reasons. He said:

> *We have never thought of developing the portal in-house... We will save time and money when we buy a readymade product. Furthermore, developing such systems locally requires great knowledge, experience and skills and we lack such requirements. (Participant B3)*

When they were asked why they selected a particular product over others, the results showed that several criteria were considered. These included: the compatibility of the solution with current hardware and software, ease of use, the presence of the vendor in the region, technical support and the availability of manpower with experience of the system. An interviewee commented on this issue when he said:

> *We considered several issues. These included: the presence of the vendor in the region, the availability of manpower who are experienced with the system, technical support, the compatibility of the solution with our systems and ease of use. (Participant A1)*

Another participant emphasised the importance of compatibility:
> *Our portal is provided by SunGard and they are supplying us with the university student system… if we were not using the banner system we may not have taken this product. (Participant C1)*

Another interviewee stated that vendor presence, technical support and compatibility were the main issues. He said:

> *We chose SharePoint Portal because Microsoft is a global company that has a strong presence in our region. We put technical support at the top of our priorities… We have many applications that are based on Microsoft products which are compatible with the portal. (Participant B1)*

In summary, the analysis shows that the universities bought ready-made solutions. Reasons for this decision included: cost, resources available, time, effort, availability of portal technology in the market and, most importantly, shortage of qualified staff. Furthermore, choice of vendor and product were influenced by factors such as compatibility of the solution with current hardware and software, ease of use, presence of the vendor in the region, technical support, and availability of manpower experienced with the system.

6.2.3 Motivations for Campus Portal Adoption and Implementation

The findings suggested that the institutional motivations underlying CP implementation include: improving efficiency, confirming to institutional rules and expectations, and responding to internal and external demands. Many interviewees agree that a portal is a great technology to improve access to information, to integrate different systems, to provide one place for accessing services, to improve communication, to increase information flow, to increase ROI, to support education, to improve administrative processes and to overcome geographical barriers. These can be regarded as rationalised myths of the technology (see section 2.8.5). As shown in Table 6.1, these motivations include: organisational, technological, educational, economic, environmental, geographic and administrative motivation as well as user expectations.

Table 6.1: Motivation for Investing in CPs: Saudi universities.

Motivation (Reason)	Example
Organisational	Improving access to information and services. Improving communication.
Technological	Systems integration. SSO.
Educational	Supporting the educational process by providing key applications for learning: Blackboard and WebCT.
User Expectations	Role-based services and resources. SSO access.
Geographic	Overcoming geographic barriers. Providing users with remote access.
Administrative	Improve administrative processes. Deploy e-services.
Environmental	Compete with other universities.
Economic	Cost reduction. Increase ROI. Reduce assets deployed.

6.2.3.1 Organisational Motivation

What can be noticed from the participants' responses is the fact that the institutional change that the universities are currently facing requires changes and development in the way the business is conducted. The overall organisational motivation for developing a CP was to improve access to information and services, and to improve communication. Most of the participants consider the portal technology to be a great solution to providing instant access to services, resources and information from anywhere at anytime. A systems analyst mentioned that:

> *We want to apply the concept of e-working by implementing more effective and efficient working practices… and to provide e-services that don't require physical presence, and to get rid of all complicated processes associated with paper work. (Participant B2)*

One of the participants reported that the fact that the university has a great amount of information, services and resources which are located around the campus means that they require a system that combines them all in one place. He mentioned that:

> *Our university has a tremendous amount of information and data which were scattered and spread over a wide range of places and locations… and bringing these data and information together was a top priority. (Participant C1)*

The following participant described how the access to services and information has improved, especially for students:

> *In the past, when a fresher student attended the university he had to move from pillar to post to get his job done. He needed to know what classes he was taking, where the classes were, which class room he was to attend...etc. This was all difficult for students. With the portal all has gone. They can sign on once and they will be able to know everything they need. (Participant C2)*

Improving communication within the university and among its members was another organisational motivation for CP development. The technology is seen by many participants as an excellent mechanism for communication by using communication channels such as emails, SMS messages, and online forums. One of the participants reported that:

We wanted to improve the communication inside and outside the university, which was absent in the past. (Participant A2)

Another participant mentioned that the portal makes things easier in terms of providing users with communication channels:

We wanted to improve the communication between the academic community and to make things easier for academics and students. In the past there weren't good channels for communication. (Participant A3)

For the following participant, the portal can provide new communication channels for teachers and students. He claimed that the widespread acceptance of the mobile culture among Saudi people would help to provide this service:

The way that students and teachers communicate has improved. We have set a service called "The University Mobile" which allows students to ask questions through SMS messages by using their mobile phones… By providing this service we wanted to exploit the mobile culture among students and teachers… Our society depends to large extent on mobile phones and SMS for communication (Participant B1).

Although participants were optimistic about the benefits of the portal to improve access to information and improve communication, users have expressed concerns about these issues, which will be reported in section 6.3.2.

In conclusion, it can be said that improving access to information and services and improving communication were the main organisational motivations. The portal technology is seen as a way to support these processes and as an opportunity to achieve these purposes.

6.2.3.2 Technical Motivation

Systems integration was a major issue for all universities studied with portal technology seen as a way to integrate different systems and to unify and simplify access to these systems. The universities have developed various systems and applications such as email, the library, SRS, Blackboard systems, financial systems, and HR systems. Access to these systems required different usernames and passwords, so that a user could have 5 or 10 accounts. This has many issues for the universities. First, it contributes to the workload in managing user profiles. Second, it raises a security issue by giving users many

accounts. Third, it is unpopular with the end users. Overcoming these issues by integrating these systems within the portal was a priority for the universities. These issues will be discussed in section 8.2.3.2. One of the interviewees pointed out that:

> *We had many applications and unifying the access to these applications was an important issue for us… By developing a portal, we managed to apply the concept of SSO to different systems with only one user name and password. (Participant A2)*

Another participant mentioned that the aim of systems integration was to provide users with one place to access services and resources and the integration process was a dream for the university:

> *We wanted to provide the members of the university with a main gateway to all systems through a SSO… we have different systems and integrating them together was a dream for us. (Participant C1)*

Furthermore, systems integration was evident in many project documents. For example, in University B, it was found that a main benefit of the portal was the integration of different systems and applications in one place (DOC2B). Furthermore, in University C it was found that integration among academics, students, staff, research and administrative functions is vital for decision making and user satisfaction in an academic environment (DOC1C and DOC8C). However, it seems that integration is limited to certain systems such as SRS, learning systems, HR and finance systems, and there are many systems that have not been integrated yet, and results from the users support this claim.

In summary, it can be argued that systems integration and SSO were main issues for the universities studied. The portal is seen as a way of providing an integrated service and combining campus systems and applications in one place via a SSO logging.

6.2.3.3 Educational Motivation

It is not surprising that educational motivation was one of the most important reasons for developing CPs, as universities are places for learning and education. Technology is seen as an enabler to support learning and education. According to the findings, the educational motivation for adopting a CP was:

- To provide students and academics with a SSO gateway to access different systems such as Blackboards, MLE, the library system and online resources.

- To provide communication channels such as the email system, forums, and SMS.

- To offer students and academics a collaborative educational environment.

A webmaster mentioned that the portal is a key tool in providing users with access to educational services, resources and information easily and quickly:

> *The portal is a valuable technology in enhancing learning and the communication between teachers and students, by providing them with access to services, and information that support the educational processes easily and quickly.(Participant A2)*

For the following participant, the portal is seen as a tool that links users with different educational services and resources:

> *There is the learning and educational motivator and to link students, academics and staff with each other and provide them with all services, resources and information that they need. (Participant B1)*

Furthermore, documents showed that a portal provides individuals with access to a learning environment in which they can interact and collaborate in a seamless and personalised way, and which provides them with a valuable and enriched educational experience (DOC2A and DOC1C). However, the findings suggest that the portal only provides links to learning tools such as Blackboard and WebCT, and the universities have not yet exploited portals to the full capacity to support learning and education.

To conclude, it appears that there is an educational dimension for CP development whereby the portal is perceived as a tool that provides users with access to various learning services and resources from a single place to fulfill educational and learning purposes.

6.2.3.4 User Expectations

According to the results, users' expectations were one of the most important motivations for adopting CPs (albeit in the context of institutional needs and pressures). Users in the universities studied have different roles: students,

academics and staff. The nature of each group is different from the others; therefore, each requires different resources and services. The findings revealed that users want to have a unique identity with only one user name and password, and they want to deal with a single interface. The following participant suggested that the University has a large number of people with different roles and responsibilities, who would therefore expect a role-based service. He mentioned that:

> *We have a large population of faculty, staff and students and we know that their roles are different. We wanted to deliver all the information based on their roles in one screen. (Participant C1)*

For the next participant, users would expect to have one user name and password, and they complained about having multiple accounts:

> *People used to have many different user names and passwords and they had to remember them or write them down. This was not good for users and many were complaining about this. (Participant A2)*

Another participant expressed a similar view and claimed that users would expect a SSO access and there were particular requests for that:

> *With the portal, users only have one username and password that allows them to get access to different systems and applications via a SSO. We have seen demands for this feature. (Participant C3)*

It seems that responding to user expectations was another reason for CP development. In particular, the findings suggest that providing a role based service and a SSO access were the main issues for the universities studied. However, results from the users' perspective indicate that users were concerned about these issues.

6.2.3.5 Geographic Motivation

The main issue here was to overcome the geographical barrier and to provide users with remote access to WBIS and services. It was found that all the universities studied have other campuses and branches around the country, and that portal technology can overcome the geographical barrier to transmit information and deliver services. A vice president of a portal department stated that:

Our university is a large organisation and we operate in different campuses, therefore, it is important to provide access to information and services to all university members. (Participant A2)

Another issue was to bring the university services and resources to users without the need to physically come to the university. A manager of an information systems department commented on this issue when he said:

We have some students and staff who do not live in the same city, and sometimes do not have to come to the University. If they want to access the University's services, they can do so by logging into the portal without the need to visit the university to get their business done. (Participant C3)

The Internet and in particular the Web can play a key role in overcoming geographical barriers to delivering services and information. This is particularly important when universities operate in different locations.

6.2.3.6 Administrative Motivation

A major motivation for CP adoption and implementation was to establish the concept of paperless office, e-enterprise and the digital campus. The technology was seen to help to improve effectiveness of administrative processes, improve support for decision making, eliminate bureaucracy and simplify procedures, and to deploy the concept of online services. The universities studied handle various processes on a daily basis to serve the academic community. These include: administration, teaching and research activities, housing services, sport services, classes and lecture arrangements, land students and staff welfare. The portal is seen as an enabler to facilitate handling such processes. One of the participants mentioned that:

We wanted to develop some aspects of the administrative processes… The portal has streamlined processes effectively and improved access to information. (Participant C1)

A project manager commented on this and said:

Our university has different processes, and it is not practical for faculty members and students to go to different buildings to get their papers or documents signed. We're going to provide this service via the portal. (Participant A1)

An examination of some project documents revealed that CPs have great potential to streamline and facilitate administrative processes. Part of these

benefits is to put forms online, apply the concept of e-services, and simplify several processes through the implementation of workflow applications (DOC1A,DOC2B,DOC5C). Currently, users can perform some online services. It is interesting to note such findings since Saudi organisations, including universities, are bureaucratic in their administrative processes. This issue will be discussed in Chapter 8.

In summary, there is an administrative motivation for CPs development and the universities wanted to deploy the concept of e-services. The portal is seen as an enabling tool for this purpose.

6.2.3.7 Environmental Motivation

The findings showed that competition between universities influences the decision to adopt a CP. This can be regarded as an environmental motivation. Many participants mentioned that portals have become commonplace in universities and are a key technology. Furthermore, most of the participants acknowledged the fact that CPs have attracted attention as they are considered to be a source of competitive advantage. The findings suggested that competitive pressures affect the implementation of CPs.

A project manager stated that portals have found their way into universities worldwide and they have to respond to this trend:

> *Nowadays portals have become a key technology in universities' and from my experience it is difficult to operate without them. Universities worldwide are investing a great deal of money and resources to develop portals, so that you have to go with the flow. (Participant B1)*

Another participant mentioned a similar view and stated that:

> *Portals have become a trend in universities…and we can see this at local, regional and global levels… The technology has proved to be practical and beneficial for universities and to some organisations it is a source of competitive advantage…So we have to respond to this. (Participant C1)*

This issue was evident in many documents. For example, the Universities implemented the portal because they wanted to keep abreast of recent developments in ICT in the academic environment locally and internationally and to adopt and implement new innovations (DOC5A,DOC8C).

In conclusion, responding to the external environment can be seen as a motivation for CP development. To some extent this is true and the literature review has shown that portals have found their way into many universities worldwide. In relation to the local environment, many universities in Saudi and in the Gulf area have developed such technologies.

6.2.3.8 Economic Motivation

The findings showed that the universities studied perceived many economic and financial benefits associated with portal adoption. These benefits include: cost reductions, increased ROI, and reduced assets deployed. Many interviewees agreed that a portal technology is a great solution for saving universities money and cutting costs. One of the participants described this issue as follows:

> *We did a business case and evaluated how much money the portal would save us. After the portal went live, we saw many benefits, including reduced printing and distribution costs, cuts in communication costs and decreases in the cost of finding information. (Participant A1)*

Another participant from a different university claimed that there is an economic dimension for portal development. He said that:

> *If many services are offered online, we would cut the number of people employed to handle the paper work in different parts of the university… Providing online access to organisational information can help us to reduce the cost of printing and distribution of information (Participant B2)*

Furthermore, in University C, it was found that there are several financial benefits for the project such as reduced assets deployed, improved cash flow, reduced staff costs, reduce transactional cost and increased stakeholder value (DOC6C). However, since the universities have implemented portals during the last few years, it is difficult to claim that the ROI has been achieved. The researcher tried to find some supporting information, for example figures or numbers that resulted from reducing the cost, but was unable to.

In summary, it can be said there is an economic motivation for CP development. The technology is seen as a tool that can help universities to increase ROI and reduce costs. This is especially related to providing online services and reducing the cost of printing and distribution of organisational information.

6.2.4 Factors Affecting the Adoption and Implementation of Campus Portals

One of the main questions that this study seeks to answer is: what are the factors that affect the adoption and implementation of CPs at Saudi and UK universities? Understanding such factors could lead to better adoption and implementation of portal technology. The findings showed that there are many such factors, grouped into two main categories: enablers and barriers.

6.2.4.1 Enablers of CP Adoption and Implementation

The findings suggested that there are several potential enablers that could support the adoption and implementation of CPs. These enablers are classified into three main categories: organisational, environmental and economic. They are summarised in table 6.2.

Table 6.2: Enablers of CPs Adoption and Implementation: Saudi Universities.

Main Factor	Sub-factor
Organisational	Top management support. Internal co-operation. Staff commitment.
Environmental	External co-operation. The relationship with the vendor. The current trend of ICT adoption in the country.
Economic	The current good condition of Saudi economy.

6.2.4.1.1 Organisational Factors

Many organisational factors have been identified which can enable and contribute positively to portal implementation. These include: top management support, internal co-operation, and staff commitment.

Top management support was a key factor, acknowledged by many interviewees. According to the results, the institutional power that the chancellors enjoy over the university has minimised the bureaucracy and simplified several processes that could otherwise impede the project progress. Participants mentioned that this was a critical issue for the project development and success. The kind of support provided by top management included: direct involvement of the chancellors by chairing the portal committee,

financial support, strategic support and guidance to other senior management, incentives and encouragement and decision making. One of the participants mentioned that:

> *It was the unlimited support from the top management and especially from the Chancellor. His direct involvement facilitated many things and helped to overcome many barriers…The top management played a key role through financial support, incentives, encouragement and help. (Participant A1)*

The following participant described The Rector as an "Excellent Guy" in his decisions and support, and was keen on the project. He said:

> *The Rector was an excellent guy with decisions made when we needed anything...He was always so enthusiastic about it and made his instructions and decisions that we must implement the system and encouraged others to participate in the project. (Participant C3)*

Another participant at another university described the top management support as the following:

> *The Rector has been playing a key role in facilitating some processes and procedures which are difficult to achieve in the normal way, so he was very supportive in this matter. (Participant B1)*

Project documentation showed some high profile involvement, commitment and support from top management. For example, the Rector in University C visited the project team offices many times during the implementation process and stressed the total commitment of the university towards the project. In University A, it was found that the portal team was connected with top management via a hotline. Finally, in all three Saudi universities studied, it was found that Chancellors were involved directly with portal development by chairing the portal committees (DOC8A,DOC5B,DOC4C,DOC8C). See section (6.2.5)

Another enabler is internal co-operation. This is seen by the participants as an important issue. According to the results, internal co-operation is considered to be a necessary task to the success of the project. This is because of the nature of the portal technology as a cross-functional project which touches different institutional units and departments in the campus, with what appears on the portal representing several systems and applications. Although many

participants reported that there was some kind of internal co-operation, this was limited in its scope. The chancellors played a key role in supporting internal co-operation through formal communication and correspondence. A project manager mentioned that:

> We thought it was important to involve a lot of departments and users to take their feedback… We dealt with student affairs, the registry, graduate studies, human resources and finance department. (Participant C1)

Another participant described the important role of the Rector in facilitating internal co-operation and said:

> There was co-operation with others…The Rector played a key role in facilitating the co-operation through formal correspondence with different departments and asking them to co-operate effectively with us… We had some situations where some departments and people were not fully willing to co-operate. (Participant B1)

Project documentation revealed that in order to promote and enhance co-operation and co-ordination between portal teams and other people, departments and units, the management provided some financial incentives and inducements (DOC7A,DOC2B).

Another enabling factor is the commitment of staff who worked on the project. This was mentioned by many participants. One of the interviewees mentioned that:

> The enthusiasm and commitment of some our staff towards the portal was very important and helped us a lot, and it would not have been possible without their effort. (Participant A1)

The following participant stressed the importance of having staff that are keen to work on the project. He stated that:

> The enthusiasm of some people has contributed positively to the project. It is very important to have staff who are very committed and keen on such projects. (Participant A2)

In conclusion, it appears that there were several organisational factors that contributed positively to CP development, such as top management support, internal co-operation, and staff commitment.

6.2.4.1.2 Environmental Factors

The environmental factor is related to the external environment. Many issues have been identified, including: external co-operation, the relationship with vendor, and the current trend of ICT adoption in the country.

Concerning external co-operation, the findings showed that the universities engaged with external institutions and organisations to share their experience and knowledge regarding portal implementations. Some participants mentioned that they looked at other universities' experiences and practices at local, regional and global levels. This was a good approach as it helped the universities to determine how other universities within the organisational field experienced CPs. One of the participants mentioned that:

> *We visited some universities in the Gulf area who have implemented portals. We talked to them about their experience, the problems they faced, and got a general impression about the portal in these universities. It was very useful. (Participant C3)*

Another participant said:

> *We worked with many universities to share their knowledge and experience. This helped us a lot in terms of what we needed, the problems that we may encounter and other things. Their experiences were very good and helped us. (Participant B1)*

Furthermore, it was found in University A and C, that the portal teams visited many international universities that had implemented portals, and they learnt from these universities in terms of their experiences with portals (DOC3C ,DOC5A).

Another enabler identified was the support from the vendor. As mentioned earlier, the universities purchased ready-made portals. According to the results, the major advantage of this method is the support from the vendor, including technical support, training, helping the universities to understand their requirements and needs, and support after the project is complete. It was found that the universities maintain a strategic relationship with the vendor. A project manager stated that:

> *We had good support from SunGuard… and they helped us a lot in understanding our requirements and needs. We have had a long relationship with SunGard for about 15 years. (Participant C1)*

Another participant emphasised their relationship with the vendor and the importance of the support they get:

> *We've enjoyed a strong relationship with Microsoft for many years, we trust Microsoft products. When we need them they are at our hand and very supportive. (Participant A1)*

Another external environment factor, seen by some interviewees as a key enabler, is the general trend in Saudi towards the adoption of ICTs and the spread of e-government initiatives (the wider institutional context). The country is experiencing significant changes and transformation in many aspects including a technical boom. A recent report by Business Monitor International (2011, p.31) revealed that the total IT market in Saudi will be $3.6bn in 2011 and expected to rise to $4.9bn by 2014. This 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. This can exert pressures on other institutions and organisations regarding IT implementation. The portal manager at University A pointed out that:

> *The country now is moving towards e-government, which means there is a lot of interest in the implementation of ICTs, and the government is supporting organisations by providing many facilities including funding, and we were very fortunate to develop the system at that time. (Participant A1)*

A systems development manager mentioned that:

> *The orientation of the government toward the transformation of e-government has a positive impact. This helped us in convincing The Ministry of Finance to allocate money, funding and resources toward the portal project and we were very fortunate to witness this period. (Participant B1)*

In summary, several environmental factors were found to be important. These included external co-operation, support from the vendor, and the current trend of ICT adoption in the country. The findings showed that these issues have a positive impact on the universities studied.

6.2.4.1.3 Economic Factors

In recent years, Saudi's economy has been booming, especially with the increase of oil prices. Consequently, the government has been pouring extra

money and funding into universities. The findings showed that the current good condition of Saudi economy was a main enabler and contributed to the allocation of money for various projects including ICT development. One of the participants mentioned that:

> *The current good state of the Saudi economy indicates that this is a good time to spend money on ICT projects. (Participant B1)*

Another participant said:

> *Technology adoption does not appear by itself, it is affected by many factors including financial issues. I would say if we had not witnessed the current healthy economy in the country, it would have been impossible to allocate money to the project. (Participant A1)*

In conclusion, it appears the enablers that helped the universities included: organisational, environmental and economic factors. All of these contributed positively to portal projects. It seems to the researcher that top management support, the current trend of ICT adoption in the country and the current good conditions of Saudi economy were very important.

6.2.4.2 Barriers Associated with CP Adoption and Implementation

One of the questions that this study seeks to answer is: what are the barriers associated with CP adoption and implementation? Determining the barriers could provide solutions for overcoming similar barriers in the future. The findings indicated that the barriers can be grouped into five categories: organisational, user, technological, innovation and financial, (table 6.3).

Table 6.3: Barriers of CPs Adoption and Implementation: Saudi Universities.

Main Factor	Sub-factor
Organisational	Lack of in-house expertise. On-going internal co-operation. Change management.
User	User acceptance. Requirements analysis. Training.
Technological	Deficient IT infrastructure. Systems integration. Lack of identity and access management systems.
Innovation	Uncertainty regarding portal technology. Content management. Portal and content ownership.
Financial	Cost of maintenance and running the portal.

6.2.4.2.1 Organisational Barriers

Many organisational factors have been identified. These include: lack of in-house expertise, on-going internal co-operation, and change management.

Lack of resources was one of the main challenges explicitly mentioned by the respondents. It includes: lack of in-house expertise and lack of staff dedicated to the project. The findings suggested that IT departments in the universities studied are undertrained, understaffed and overworked. Most participants agreed that there is a shortage of qualified IT staff that are well trained and specialised in the development of CPs. Furthermore, there are few full time staff dedicated to the project. The lack of resources was one of the main reasons that led the universities to consider buying ready-made solutions.

For the following participant, lack of in-house expertise was a main issue. He said:

> *We suffered from finding qualified people to work on the project. As a result, this has led us to outsource the project to a third party. (Participant B1)*

Another participant from a different university stated that:

> *The lack of qualified people with good knowledge and experience to develop and manage the portal remains a problem for us. (Participant A3)*

Another issue reported was the lack of on-going co-operation between portal teams and different campus constituents. Although there was some co-operation, it was limited and only at the start of the project. To many participants, co-operation and co-ordination are considered to be necessary for the success of the project, especially when it comes to bringing the content into the portal. Furthermore, some participants mentioned that the lack of co-operation and co-ordination was caused by the absence of policies to address this issue. One of the respondents mentioned that:

> *We had some situations where some departments and people were not fully willing to co-operate. Some of them thought that they owned their information and they had the right to be in charge of managing the portal. (Participant B1)*

129

The following participant emphasised the importance of developing policies to address this issue:

> *There was some kind of co-operation but wasn't as great as we hoped for… To bring the content together, you need to have good co-operation with different units and people. This issue was difficult for us, because we had to follow people and ask them to provide the content… I think it is important to develop policies that address this issue. (Participant A2)*

Another issue was change management. This was mentioned as a crucial requirement for CP adoption. It was suggested that the introduction of a portal requires a change-management strategy that addresses both the individual and the organisational (institutional) perspectives. To some participants, change management is difficult to deal with but not impossible. It requires many resources such as establishing strategies and policies, dedicated staff, money, time, and effort.

The following participant reported that institutional change can be difficult and described universities as "Frozen Organisations" and claimed that universities do not like change. He said:

> *Change management is not an easy task, especially in universities. In general, universities do not like change and there is not much change in universities… Change comes very slowly. Universities are frozen organisations…same teachers, same courses, same procedures, and to change something, it takes long time. Your model of business does not change frequently. (Participant C1)*

Another participant described change in universities as a difficult task, especially if people have established certain practices:

> *Change management is difficult to achieve in large and complex organisations such as universities. Over the years, our university has developed certain practices which people are comfortable with, so to change to a better or new situation you have to work hard. (Participant A1)*

To summarise, it can be said that there is a consensus among participants about several organisational issues which can be described as barriers to CP adoption and implementation. These include: lack of resources (in-house expertise), lack of co-operation and co-ordination, and change management.

6.2.4.2.2 User Related Barriers

Several issues related to users were identified as barriers. These include: user acceptance, training, and requirements analysis.

Accepting the new system and resistance to change were human factors that the universities experienced. One of the participants described this as follows:

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…especially for those with little ICT experience. (Participant A1)

The following participant claimed that when people become familiar with certain practices, accepting the new system can be difficult, especially with employees. He said:

People do not like change and they are comfortable with the way they do things… For example if you use a particular system and you want to move to another one, they say, why are they asking us to do this? This especially happened with employees and in particular with older staff, so that you have to change hearts and minds. (Participant C1)

Collecting user requirements and needs and transferring them into 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 others, and therefore requires different resources and services. According to the findings, conducting business analysis to identify user requirements and needs requires many resources such as money, qualified people, time and effort. A systems development manager mentioned that:

The process of collecting data and information is a tiring and exhaustive process, as we had to collect users requirements from more than 60 units and departments. (Participant B1)

Another participant had a similar view:

Collecting user requirements was a difficult task for us especially those that are related to analysing requirements, prototyping designs and conducting usability test and evaluations. (Participant A2)

User training was another challenge identified. The findings show that there is a need to train some users on how to use CPs. Training has two facets: first, training the people who are involved with portal management such as service

providers; and second, training the end users. Providing training is considered to be a time-consuming task that requires preparation, qualified staff, time, effort and other resources. One of the participants mentioned that:

We have a large population of students 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. (Participant A2)

Another participant mentioned that:

We had a problem that users were not able to understand how to log on and how to use other services in the portal, so we had to provide training. (Participant C2)

Furthermore, it was found in some documents that training hundreds of webmasters, other service providers and end users on how to use and manage the portal was a main challenge (DOC5A and DOC6C).

In conclusion, many issues related to users were identified as barriers to CP implementation. These included, user acceptance, training, and collecting user requirements and needs. Addressing these issues requires many resources and is time-consuming and labour-intensive.

6.2.4.2.3 Technological Barriers

Many technical problems and challenges have been identified. They include: deficient IT infrastructure, systems integration, and the lack of identity and access management systems.

Although the universities studied have some basic IT infrastructure, many participants felt that the quality was not high enough. More specifically, there were concerns regarding network issues, such as the speed of the network and frequent downtime. One of the participants mentioned that:

The IT infrastructure 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. (Participant A3)

The following participant reported that they had to develop some aspects of IT infrastructure to make the portal compatible with existing systems:

We had to make many changes to get to the new system. We had to get new hardware and software because the previous ones were not compatible with the portal. (Participant C2)

Systems integration was one of the largest technical challenges recognised by the participants. According to the findings, the universities developed different systems that handled business needs and matters. These systems included administrative systems, learning systems, business intelligence systems, CRM, and research systems. Moreover, many of these systems and applications were purchased from different vendors. These systems lacked flexibility and were hard to integrate with a single WBIS like portals. Having different systems from different vendors makes the integration process more complicated and difficult. One of the interviewees described this issue as follows:

> *Because we had many systems and applications from different companies and vendors, the integration process was not an easy task. (Participant A2)*

Another participant stated that:

> *We had different 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. (Participant C2)*

Another issue related to the technical barriers was the lack of identity and access management systems. A fundamental feature of portal technologies is that they provide a personalised service based on individuals' needs, preferences and interests. However, providing a personalised portal requires effective identity and access management systems. According to the findings, the lack of such systems affects the way the portal services and resources are being provided and delivered. One of the participants described this as follows:

> *We want to provide users with a personalised service. However, we can't do that currently because we don't have a system that links the right people to the right services and information. Although SharePoint portal has an Active Directory, it is very limited in terms of providing a personalised service. (Participant B1)*

Another participant stated that:

> *The main issue that we have is that we are not able to provide a very personalised portal that is based on individuals' preferences. We have different categories of users with different roles and responsibilities, and at the same time we don't have a system that manages user profiles more effectively. (Participant C3)*

Furthermore, some documents from University A (DOC5A and DOC3A) have reported several technological issues such as the IT infrastructure, transferring the Server from the hosted company, frequent network downtime and the lack of identity and access management systems.

In conclusion, the findings showed that there were several technological barriers that the universities experienced such as deficient IT infrastructure, systems integration and the lack of identity and access management systems. These findings suggest that an inadequate IT infrastructure could negatively affect CP adoption and implementation.

6.2.4.2.4 Innovation Related Barriers

There were several barriers associated with this issue. They include: uncertainty regarding portal technology, content management, and content ownership.

Uncertainty regarding portal technology and its benefits and advantages was identified in many interviews. The findings show that some people in the university were not aware of the technology and its advantages. A project manager mentioned that:

> *The portal technology is new in universities; so that you have to learn more about it… We had some situations where people did not know what a portal was or what it meant, so we had to tell them, convince them of its benefits. (Participant C1)*

Another participant 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. I can say that when people don't understand the technology and what it can serve, this is a real problem. (Participant B2)*

This has resulted in the portal being seen to conflict with other existing systems such as intranets, faculty web pages and the university website, especially in terms of accessing content and information. One of the participants described this issue as follows:

> *A common issue that we faced was the fact that some departments and people would ask us what was new about the portal. They would say we have our own faculty web pages and intranets, and most information can be found in different places. (Participant A1)*

Another issue reported is the content management and ownership. There were several issues such as managing, handling, supporting and updating content. As mentioned earlier, a main feature of portal technologies is that they provide access to various services and organisational information via a SSO. In order to achieve that, the content had to be brought from different places around the university. One of the interviewees mentioned that:

Another problem was related to putting the content into the portal. We have a huge amount of data and information that needed to go onto the portal, and bringing these data and information from different places was very challenging. (Participant A1)

The following participant said that brining the content from different places requires co-operation and co-ordination with various departments and people, and the lack of policies to address this issue was a main problem:

To bring the content together, you need to have good co-operation with different units and people. This issue was difficult for us, because we had to follow people and ask them to provide the content that they had. There was no policy to address this issue. (Participant A2)

Another participant from a different university acknowledged this issue and emphasised the dynamic nature of the portal:

Every unit in the university has some kind of content and they have to provide it and to put there, so they were not ready and it took us sometime to develop the content. In addition, the content on the portal changes frequently, so you have to go to users [service providers] and tell them to put new content and information. Managing the content remains a big problem. (Participant C1)

The following participant described how they experienced several issues with respect to bringing content from different places to the portal and said this issue raised several institutional arguments:

We experienced two main problems. The first was to locate and collect the content from different places, and the second was to transfer it to electronic formats. There are many issues associated with content regarding copyright, privacy of some data and information and the ownership of the content… we had to deal with various issues like who has the right over the content, who manages it, who is responsible for it, so that we had to overcome this critical issue. (Participant B1)

135

Another important issue related to content management is providing the content in Arabic and English (a bilingual portal). This is because English is the second most widely used language in the country and some universities (included the universities studied) teach some programmes and courses in English. Furthermore, these universities have many foreign academics and staff who only speak English. Therefore, the universities are committed to providing them with content in English. This has an impact on the content management. A project manager stated that:

> *We have the portal in two languages Arabic and English… We have to have good qualified people who speak two languages and need to have a strategy for translation… Add to this, you have to provide quality content for users in both languages. All of these cost us money, effort, time, and resources. Providing a bilingual portal is a very labour intensive and it will remain problematic for us. (Participant A1)*

Another participant described this issue as follows:

> *We have to provide the service in Arabic and English… Having English as a second language requires resources, qualified people for translation, policies for the translation process… This will remain a challenging problem for long time. (Participant A2)*

Another participant described how the provision of a bilingual portal affects managing the content:

> *Since we have to provide a bilingual portal, this issue remains a major concern for us. We need to have several bilingual staff and the quality of the translated content must be equivalent to the Arabic one…We don't have effective tools for translation. Although we can use automatic translation software products, in many cases these do not produce useful meaning and translation. (Participant B1)*

An analysis of some documents has showed several issues regarding content management such as managing bilingual content, translation issues, transferring the content from paper-based formats to electronic formats, data profiling and cleansing and content upload and migration of data. (DOC5A, DOC6A, DOC7A, DOC8A, DOC3B and DOC6C).

To conclude, the results indicated that there were several innovation related barriers associated with CP implementation. These issues included: uncertainty regarding portal technology, content management and content

ownership. The analysis showed that in order to address these issues, institutional policies must be established.

6.2.4.2.5 Financial Concerns

Many participants raised concerns about the on-going cost and maintenance of the project because the portal project is not a short term investment and it never ends. This requires sustainable resources such as money, staff and time. As mentioned earlier, top management support played a key role and the direct involvement of chancellors facilitated many aspects of the project including funding and resources. However, some participants expressed concerns about the cost of maintenance and support for the long term. A system developer mentioned that:

> *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. (Participant B1)*

Another participant made a similar point when he said:

> *I believe that a project like the portal 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 and upgrades. (Participant A2)*

In summary, the previous section highlights some issues that were considered to be barriers to CP adoption and implementation. They included: organisational, users, technological, innovation and financial barriers. The analysis showed that these issues have some negative impacts on the development and management of portals.

6.2.5 Campus Portal Organisation and Management

It was found in two universities (A and B) that the portal management and development are structured at a deanship level, and one university (C) at an IT departmental level. In University A, the portal management is under the Deanship of e-Transactions and Communication. A new department has been created for the portal development namely: Portal and E-services Department. Figure 6.1 presents portal structure at University A.

Figure 6.1: Portal Structure: University A.
Source:DOC8A
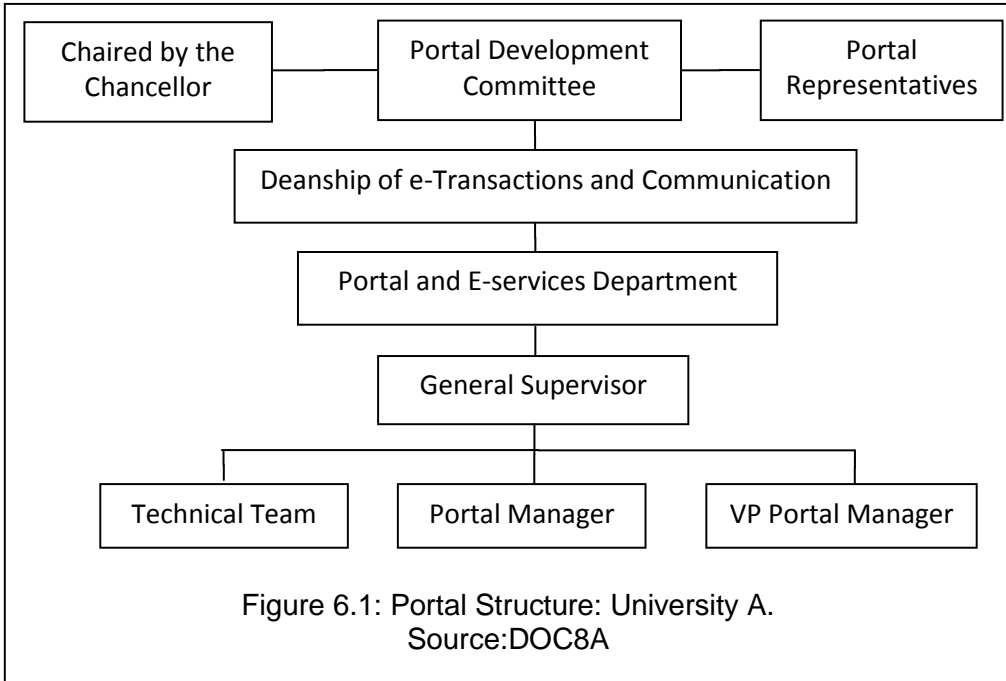
University B, took a similar approach to University A. The portal management is under the Deanship of E-learning. A new department has been created for the portal development namely: E-Portal Department. Figure 6.2 shows portal structure at University B.

Figure 6.2: Portal Structure: University B.
Source:DOC5B
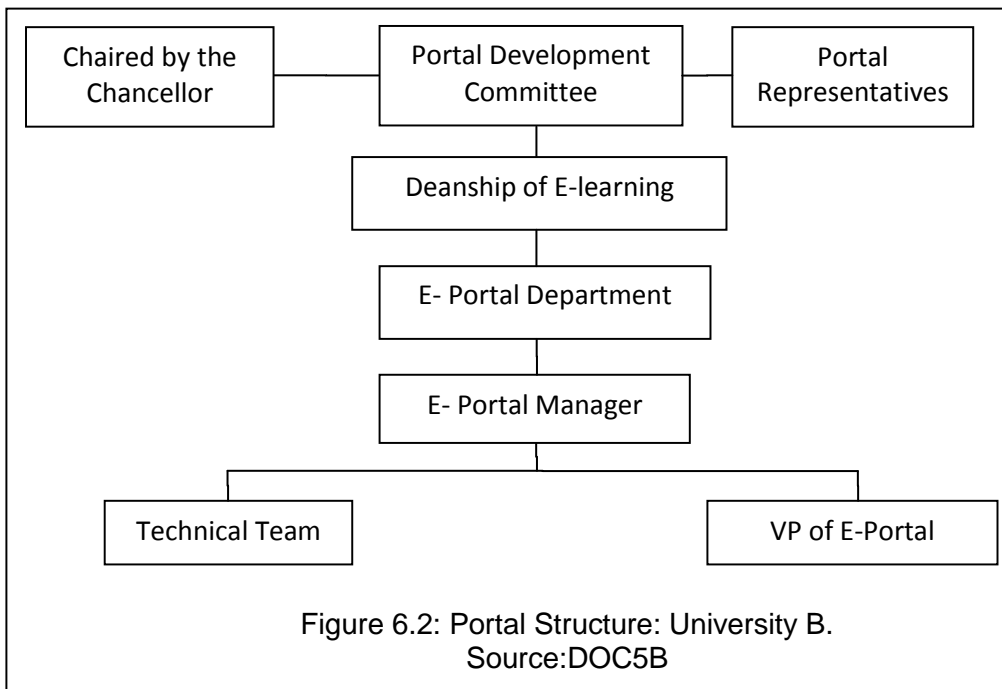
With respect to University C, the organisation of the project consists of three levels and includes an executive steering committee, which is chaired by the Rector, a project management team and three implementation groups. Figure 6.3 illustrates portal structure at University C.

```
┌──────────────────────────────────────────────────────────────────┐
│  ┌─────────────────┐          ┌──────────────────────────────┐    │
│  │ Chaired by the  │──────────│ Executive Steering Committee  │   │
│  │     Rector      │          └──────────────────────────────┘    │
│  └─────────────────┘                        │                     │
│                        ┌────────────────────────────────────┐     │
│                        │   Portal Project Management Team    │     │
│                        └────────────────────────────────────┘     │
│                                             │                      │
│   ┌─────────────┐        ┌─────────────┐        ┌─────────────┐    │
│   │   Group 1   │        │   Group 1   │        │   Group 1   │    │
│   └─────────────┘        └─────────────┘        └─────────────┘    │
│                                                                    │
│              Figure 6.3: Portal Structure: University C.           │
│                          Source: DOC4C                             │
└────────────────────────────────────────────────────────────────────┘
```

Figure 6.3: Portal Structure: University C.
Source: DOC4C
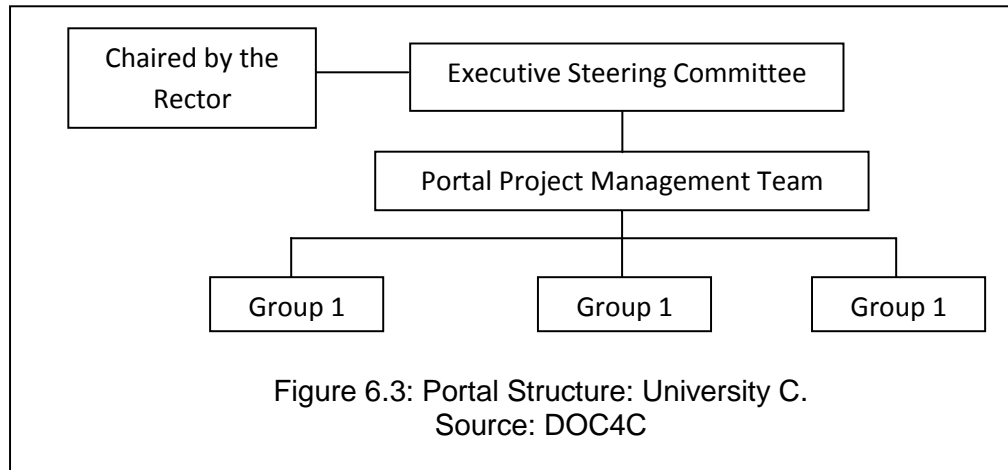
According to the findings, all universities have a portal committee chaired by chancellors. The portal committee has several roles and responsibilities, which include:

- To set vision, directions, goals and priorities of the project.
- To communicate support and co-operation for the project through the university.
- To approve budgets, contracts and other financial issues.
- To resolve escalated problems and issues related to CP development and management.

One part of the portal steering committee is portal representatives. The role of these representatives is to act as webmasters and to be responsible for the first level of support for all people in the universities departments and academic units. These representatives are responsible for training and provide technical support.

In conclusion, this section reported the findings from the implementers' perspective. First, it discussed the source of portal initiatives, which showed that CP implementations were top down initiatives. Then, it reported on the implementation strategy, which revealed that the universities bought ready-

made solutions. Thereafter, it reported the universities' motivations for CP adoption and implementation. Then, it described the factors that affect CP development and classified them into enablers and barriers. These factors included organisational, technological, environmental, users, innovation and economic related factors. Then, the section concluded with a discussion of the structure and management of CPs in the universities studied.

6.3 Results of Analysis based on the Users Perspective

This section reports the findings from the perspective of users at Saudi universities.

6.3.1 Motivations for Campus Portal Usage

The findings show that users perceived many benefits associated with the use of CPs. Examples of these benefits include: convenience of access, SSO, access to useful sources of information and services, saving users' time and efforts, and facilitating the access to various services and organisational information.

The following participant described the portal as follows:

> *The portal is a great idea. I can't imagine how we would study and work without it. It has brought things together and it saves your time and effort. (Participant C10)*

Another participant claimed that the portal has several advantages to users at many levels:

> *It is very significant at many levels. The portal can be beneficial for learning, communication and collaboration between the university members… It has made the access to information easier and quicker than ever before. (Participant B4)*

When asked about their motivations for using CPs, participants came up with various answers. The results show that the main motive for using CPs was to get access to various systems, services and resources that support their business needs for teaching, administration, research and academic purposes. This was a common issue among most of the interviewees. The portal is seen as the first place to get access to the university's systems and applications such as email, the library, Blackboards and VLE, the registration system, and the finance system. In general, it could be said that the participants have a positive

attitude towards the portal as it is the first point of access to some campus information systems. To the majority of the students and academics, the portal is the killer application. The use of services and resources depends on users' needs, and some services and resources are used more than others. One of the students mentioned that:

> *I use it for many reasons: to register courses, to access my email account and to get in touch with recent developments in the university and with my teachers and my fellow classmates. (Participant A6)*

The following academic uses the portal to access different services for academic and administrative purposes:

> *I use it for both teaching and academic purposes. I use it also for administrative purposes. The portal provides us with SSO for different applications. (Participant C4)*

Some participants mentioned that they use CPs because they have to, as it is the only channel they can use to get access to some services, resources and information. The findings suggest that coercive pressures have been exerted on users to adopt the system. It is mandatory usage versus voluntary usage, and the users are forced to use it. One of the academics said that:

> *We have to use it. Most of the options that we use such as faculty services, registration, email, blackboard etc... can only be accessed via the portal. (Participant C5)*

Another motivation identified was the use of portals for communication purposes. The portal is seen as a great technology for providing the members of the university, including students, academics and support staff, with various mechanisms and channels for communication in synchronous and asynchronous ways, such as email, access to online forums, SMS, and chat rooms. Many of the participants mentioned that the communication processes has improved significantly since the portal development.

6.3.2 Factors Affecting Campus Portal Adoption and Use

One of the main questions that this study seeks to answer is: what are the key factors that affect the adoption and utilisation of CPs? The findings show that there are a number of issues which include: system quality, content quality and service quality. Table 6.4 summaries the main factors and sub-factors.

Table 6.4: Factors Affecting CPs Adoption and Use: Saudi Universities.

Main Factor	Sub-Factors
System quality	Portal design. Portal security. Portal mobility. Extended services. Provision of E-services. Systems integration. Portal availability. Network issues.
Content quality	Content structure and organisation. Lack of content. Irrelevant content. Content accuracy.
Service quality	User Involvement. Communication. Benchmarking CPs. Training.

6.3.2.1 System Quality

Users have expressed various issues related to the quality of the system such as portal design, portal security, portal mobility, extended services, provision of E-services, systems integration, portal availability and network issues. The following section reports these findings.

6.3.2.1.1 Portal Design

The design of the portal was mentioned frequently in many interviews. Issues surrounding usability, accessibility, interface design, customisation and navigation were common. According to the results, the design of the portal is a crucial element and can enhance user's experience. Although some participants reported that they were reasonably satisfied with portal design, they expressed some concerns. Some interviewees suggested that the university needed to conduct usability tests and studies from time to time to evaluate the portal and to determine what users want to have on the portal. Furthermore, participants have called for a user centred design approach that matches users' requirements and needs.

The following participant described how the portal design affects the searching for information.

It is quite complex. Sometimes I spend a lot of time searching for basic information, for example finding information about my teacher contact details. (Participant C9)

The following participant suggested the inclusion of a search facility to help when finding and locating information.

They should put a search facility that can help in finding information, because now we can only browse and navigate the content. (Participant C6)

The next interviewee was concerned about the navigational capabilities and the search facility:

Navigation and search are important things in the portal. The search facility needs to be improved. It takes me a lot of time to find simple information. (Participant A9)

This student commented on the ease of use as follows:

There are some functions that are difficult to use and there is not enough information on how to use them. (Participant C8)

Another participant from a different university expressed a similar view:

Also some icons, button and tabs don't convey a clear message of what they contain. (Participant B10)

For the following participant, the presentation of content and information needs to be considered.

There is some kind of inconsistency. Some important information is in a very small font. Other information is written in coloures that are difficult to read. (Participant B6)

For the next interviewees, the limited layout and templates of the portal seem to be important.

We are restricted to certain templates (only three) that you can choose from to customise the portal. I can only change the main page, for other pages I have to use the default. (Participant C14)

Another participant shared this view:

The portal does not allow to customise the page layout and appearance as you would in web portals. You are limited to certain themes and colours. (Participant A12)

In conclusion, the results showed that there were several CP design issues that concerned users. These were related to usability, accessibility, interface design, customising the portal, navigation capabilities and the overall design and

presentation of the portal. The findings suggest that there is a need for a user centred design approach which meets the users' requirements and needs.

6.3.2.1.2 Portal Security

Since the portal provides users with an integrated access to many services and information, it is not surprising to know that portal security was an issue to many participants. Examples of these issues include, information security, the use of double authentication to enhance security, privacy, hacking and the protection of personal details. Users have reported that there is a great need to enhance the security and privacy on portals. This can be done by establishing protection policies and procedures that ensure the protection of users' personal details and other information related to them in the university. One of the participants mentioned that:

> *Information security is an issue for me. When I log on, a message appears and says that "the website is not secure because the certificate has expired" and it asks me if I want to continue or not. This especially happens when I access the portal outside the university. Although I trust the university with its capabilities to protect our personal details, this makes me a little bit worried. (Participant C12)*

The following faculty member expects a high level of information security in the university portal:

> *When I use a university portal I expect a high level of information security. All my information is stored there… We use the portal because we trust it... I think the university has the resources and money to get very secure applications to protect our data. (Participant B4)*

For the following participant, the portal security can be increased by applying the concept of double authentication. He said:

> *If someone knows your ID or has hacked your account and got access to it, he or she can do anything and put you in trouble... So information security must be considered. I would suggest that when you log on and you want to make some important changes, say for example deleting a course or changing your personal details, the system should ask you again about your user name and password for confirmation, this might be another username and password which are different. (Participant C8)*

144

Another student expressed her view when she said:

> *They should consider information security, it is good now but we want more by providing new ways of protection… sometimes I use the portal to charge my printing account by using my credit card, and sometimes I worry about the security of my details. (Participant A6)*

To conclude, it can be seen that security and privacy were important to many participants. Although participants trust the university in terms of the protection of personal details, many have suggested that this issue must be considered and addressed all time.

6.3.2.1.3 Portal Mobility

Some participants have shown interest in having their CP connected to their mobile devices and smart phones. The concept of a "Mobile Portal" is an issue for many participants, especially students. This suggests that with penetration of mobile telephony and mobile internet, mobility has become very natural and even quite essential to many people in today's connected world. To many participants, accessing the portal via mobile phones has many advantages such as convenient connection, faster access to services and information and, most importantly, it cuts the location barrier, letting users access the portal anytime and anywhere regardless of their location. One of the participants said that:

> *The portal is great, but it is still limited and restricted to my desk computer or my laptop and I can't access it from my mobile, or any other mobile device. (Participant C5)*

Another participant mentioned that:

> *It would be nice and convenient to access the portal from my mobile phone. Sometimes I need to access my account but I don't have a computer especially when I am away from home or the University. My mobile phone is already connected to the internet. (Participant B7)*

One of the participants said that:

> *It is good to make the system accessible from mobile devices. The use of mobile phones and mobile internet has become very common among students and academics. At present, it isn't compatible with mobile devices. (Participant A8)*

6.3.2.1.4 Extended Services

Some participants have shown interest in extending portal services to include external services, resources and content that are related to their needs. There are two main issues. First, the inclusion of external channels that are available on the Internet such as news and travel information. Second, the integration of other business services from other organisations into the portal, or what can be described as B2B Integration, for example the integration of some e-government and e-commerce services.

The following participant described how B2B integration can be achieved via the portal:

> *Some external agencies that we access on a regular basis are not integrated, for example access to governmental bodies. This is possible now because the e-government initiative helps you to directly link to external systems and e-services, for example doing some e-services, e-banking, e-tickets, requesting a visa. (Participant C4)*

Another academic mentioned that:

> *The portal focuses on providing access to internal services, which is good. But I would suggest that they should think about extending the portal to include external services and link to other websites. **Could you give me some examples?** Well, there are many services on the Internet that I use regularly, for example I use The e-Government Program and the NCEDL. (Participant A8)*

This following participant suggested the integration of some useful commercial web portals into the portal:

> *I use the library catalogue via the portal. When I search for a book and can't find it, it should provide me with similar results from external resources outside the university, for example from Amazon.(Participant B7)*

While the idea of B2B integration might be useful from the user's perspective, it could cost the university a lot of time, effort, money and other resources.

In summary, the results showed that integrating external services and content was a requirement for some participants. Two types of integration have been identified: the inclusion of external services and content from other web portals on the internet, and B2B integration.

6.3.2.1.5 Provision of E-Services

The concept of e-services was evident in many interviews. Participants have expressed a great desire to have e-services or e-transactions (digital campus services) on the portal instead of traditional services that are based on paperwork. The portal and associated technologies can be used to improve and transform key business processes and services. To many participants, especially the more technically aware ones, the portal can be used to eliminate bureaucracy and simplify processes that are associated with paperwork, for example, applying for accommodation and housing services, filling forms online, registering courses online, applying for conferences and leaves (in case of academics) and so forth. Many participants called for a transformation to e-services:

> *We would like to see a full transformation from traditional services to e-services so that faculty and students can perform all or most of the processes electronically. (Participant B4)*

The following participant suggested that:

> *Transforming the traditional services to e-services and making the portal our first point of access for everything related to our studies or business at the university. Also all students' services and affairs should be available on the portal. (Participant C11)*

The next participant supports the idea of "doing it online" rather than going to different buildings to sort out routine processes:

> *We don't like to move from our offices to do a routine process in the university administration building. We want to do all our services electrically. (Participant A7)*

A similar wish was expressed by another participant who said:

> *I expect them to provide us with good e-transactions that will not require us to go physically (personal visit) to different departments and units to do some procedures. (Participant C8)*

To conclude, the findings show that the concept 'e-services' was an issue to many interviewees. It is possible to automate traditional services and transform them to online services. Participants can see many benefits associated with this, such as convenience, ease of access and saving time and effort.

6.3.2.1.6 Systems Integration

Users came up with two distinctly different views on systems integration. On the one hand, users appreciate the fact that portal technology can combine campus systems and applications in one place and can be used as a single gateway to get access to these systems with a unique identity (one username and a password). According to the findings, this saves time and effort and is very convenient. Furthermore, it eliminates the need for users to have different username and password lists. One of the students mentioned that:

> *The most useful feature that I like is the fact that it combines most of the university systems together in one place and I can access them using only one username and password. (Participant C9)*

Another academic reported that:

> *I like the idea of unification of all interfaces from different systems into one interface… so you only deal with one interface and you become familiar with it. (Participant B5)*

On the other hand, interviewees have expressed concerns regarding systems integration. Some of them mentioned that although CPs integrate many different systems, the integration is limited. Furthermore, in some cases, the portal only provides links to other systems and applications, and when users go there they have to re-enter their logging details, or use different user names and passwords. One of the participants mentioned that:

> *The university claims that the portal integrates all campus systems in one place and that you need only one account… but this is not true. In many situations when I log into the portal and want to get access to some systems it asks me to re-enter my logging details. In addition, sometimes the portal provides links to other systems… The portal has not reached a position where full integration has been achieved. (Participant C5)*

Another student mentioned that:

> *I don't like the fact that in some situations I have to enter my username and password many times to use different campus systems. The portal is supposed to be a SSO and it should overcome this problem. (Participant A4)*

Another student said:

> *The home page of the portal says "the portal is your single point of access for information, services and resources". But in reality it isn't. I have to use other systems that aren't integrated into the*

portal, so that I have to use different user names and passwords. (Participant B10)

In examining some CPs, it was found that there is some integration but this is limited to certain systems and applications. For example, there is a link to the library system on the portal. When the link is clicked, it takes the user to the library homepage, and if the user wants to see his/her library account, they have to log again into the system.

6.3.2.1.7 Portal Availability

Another issue is the unavailability of the system (when the portal goes down). This was identified in most of the interviews and it seems that participants are not satisfied. Many participants complained about the frequent down-time of the portal. Moreover, some interviewees reported that they feel frustrated when they cannot access the portal for unknown reasons. When it is not available, they do not know if this is because it is broken or crashed, or because it has been made temporarily unavailable for routine maintenance. The participants complained about the lack of communication when the CP is not available.

The following participant pointed out that technology has developed and there is no excuse for the portal to be unavailable:

> *In some cases, when I try to log into the portal I can't and the system goes down for a period of time, and I don't know what the problem is. The technology has developed a lot, and there is no excuse for not providing access and support. (Participant B5)*

This participant complained about the lack of communication when the portal goes down and suggested that users should be informed:

> *In some situations, I try to access the portal but find it unavailable and you don't know what is wrong with it, is it broken down? Is it in maintenance? When it will come back? We should be informed about this.(Participant C5)*

The next interviewee reported a similar view when said:

> *Another thing that frustrates me is when the portal is unavailable for unknown reasons, so that you do not know what is going on. I think that as users we have the right to be told why we cannot access it. (Participant A8)*

Another participant mentioned that:

> *Sometimes the portal is broken and you can't get access to the services… and you can be in a situation where you urgently need to use the portal. (Participant C6)*

6.3.2.1.8 Network Issues

Another issue that seems to be important is the university network. Participants have raised some concerns regarding network problems such as low speed of the network connection and the scalability of the network. Some users questioned to what extent the university network is able to grow and become more powerful as the number of people using the CP increases. To many participants, access to the portal can be painful especially at peak times when there are a lot of people using it. Furthermore, some participants reported that they experience difficulty in accessing the portal off campus, for example from their homes or internet cafes. Participants have suggested several solutions. For example, increasing the university network speed and it's scalability to accommodate more users and providing alternative servers. One of the students mentioned that:

> *When many students access the portal at the same time, it gives a bad response time compared to the time it gives when there are fewer students. (Participant A4)*

The following participant described how it becomes difficult to access the portal and register courses at peak times:

> *When I use the portal for course registration, I find it difficult because there are many students doing the same thing at the same time, so that the system becomes very slow. This is an irritating situation and if I don't register on time I may not be able to get the courses that I want because the number of students is complete. Every semester this problem happens. (Participant C10)*

Another participant reported that:

> *The university network seems to be slow at most times and in some cases I find it difficult to access the portal, so that I have to log on to each system separately. (Participant B8)*

To conclude, the findings show that system quality was an important issue. Participants were concerned about many issues such as portal design, portal

security, portal mobility, extended services, provision of E-services, systems integration, portal availability and network issues.

6.3.2.2 Content Quality

The data seemed to show that there are many issues that need to be considered regarding content quality. Although some participants were reasonably happy with what is offered on the portal, they reported that there are various issues that concern them regarding the quality of the content. The participants seem to be dissatisfied with issues such as content structure and organisation, lack of content, irrelevant content, and content accuracy. For most participants, content is a very important aspect that needs to be considered at all times. One of the students commented on content structure and organisation when he said:

> *Sometimes you feel that things aren't organised properly, and I spend a lot of time trying to find simple information. Some basic content and services aren't in the right place, they are put in the sub-pages… I have to click many tabs to get there. (Participant C11)*

Another participant mentioned that the disorganisation of the content makes finding information difficult and suggested that content structure and organisation should be more logical:

> *I have found it quite difficult to find some information and that is due to disorganisation of the content… Access to information should be more logical… The content should be organised from the general to the specific, so that when you look for particular information you can find it easily and quickly. (Participant B5)*

The following participant described how the portal design affects the structure and organisation of the content, and as a result affects the searching for information.

> *Content is distributed all over and isn't organised in a particular space. Sometimes I spend a lot of time searching for basic information… for example finding information about my teacher contact details. (Participant C9)*

Another issue is the personalisation. There is a consensus among many participants that the lack of personalisation will result in two negative aspects.

First, users will receive content that does not interest them and does not fit with their needs. Second, users will receive too much content which will contribute to information overload. One of the participants mentioned that:

> *The level of personalisation is not good enough. You cannot personalise the content and tailor it to your interests, as a result I receive too much information that doesn't suit me. (Participant B5)*

Another interviewee expressed his concern as follows:

> *There is some content that isn't relevant to my need… I don't like to receive advertisements and commercials on the portal or in my email, or get some information, announcements or news about things that don't interest me. All these contribute to information overload. (Participant C8)*

The following participant described her experience with the Amazon website and she does like the personalisation feature:

> *Look at the Amazon website. It tells you your preferences and you can personalise the content as you like and see what you want. (Participant A9)*

An undergraduate student described how she receives irrelevant content as follows:

> *I receive content that does not fit with my needs and interests. Currently, I am doing an undergraduate degree, but I receive some content related to post graduate students. I want to see only the content that interests me. (Participant B6)*

One of the academics emphasised the importance of delivering quality content that is credible and reliable on the portal. He said:

> *Sometimes I get misleading information about particular things, and this isn't good for a portal in a university. The content must be credible and reliable. (Participant C6)*

Another issue that concerns the users is the lack of content on the portal. Some participants reported that there is useful content and information that cannot be found on the portal but which is on other campus systems, for example the university website and departmental intranet. According to the participants, such content and information should be available on the portal. One of the participants commented on this issue when she said:

> *Some useful content cannot be found on the portal and we have to look for it somewhere else such as the university website or*

*department home pages. **Could you give me some examples?** Yes, if I want to know how many books are due on my library account, I have to go to the library website and sign on. Another example, is the contact details, the university map and information about students that I teach. I have to use other systems. (Participant A7)*

For the following participant, the description of the navigational labels or tags should be clear and not confusing:

*Some labels confuse you and you do not know what is coming next when you click them. **Could you give me some examples?** Sometimes there are some technical terms that are difficult to understand, for example in the main page there are three tabs: Register a course, Courses and Your Courses. For a new user, it is unclear what this means. I think navigational labels and tabs should speak the language of the user. (Participant A5)*

In summary, the results indicated that content quality is a very important aspect on the portal that needs to be considered. Participants were mainly concerned with content organisation, the lack of content, irrelevant content and content accuracy. It can be said that managing content is an important aspect in CP development and management. Furthermore, when poor content is provided, this may have an impact on users' perception of the system and may affect their satisfaction.

6.3.2.3 Service Quality

Several issues related to service quality were identified. They include: user involvement, communication, benchmarking CPs, and training.

6.3.2.3.1 User Involvement

The importance of user involvement was one of the issues raised by many participants during the interviews. The findings indicated that involving users will help to understand their requirements and needs. Meanwhile, some participants suggested several ways to understand user requirements and needs, for example, direct involvement of users with portal development, continuous evaluation of portal services, online surveys and focus groups. According to the findings, understanding users' requirements and needs is an important factor in the success of portal adoption and use. One of the academics mentioned that:

It is important that the people who are in charge of the system should care about the users' requirements, needs and

expectations, and that these are reviewed on a regular basis. (Participant C6)

The following participant claimed that users' needs were not considered:

The users were not considered till now. There are many different users who have different requirements, you have academics, students, staff, researchers and others. (Participant B5)

The next interviewee emphasised the importance of listening to users requirements:

There isn't any communication. They should listen to users' requirements, and this is very important because the portal is delivered to us and our views and opinions are important. (Participant B4)

6.3.2.3.2 Communication

Communication, and the promotion of the CPs were among the hottest topics in most of the interviews, with several different issues being raised. Many participants have complained about the lack of communication between the portal management and users, and the findings suggest that there is a communication gap. This lack of communication has resulted in several negative aspects. For example, some participants reported that they are not aware of who is in charge of the portal, and if they have an issue, they do not know where to go or to whom they should speak. One of the participant said that:

The thing that I don't know is who manages the portal, where their location is and how I can approach them. (Participant C10)

The same issue was reported by another participant:

I don't know who is in charge of the portal and I don't know how to contact them. This should be clear… If I have a problem I don't know where to go or to whom I should speak, all that I do is ask a friend. (Participant A13)

The next participant expressed a similar view:

Communication should be done a lot but this is missing. I think there should be more events organised, online as well as offline, physical exchange of ideas, so that people are kept interested and can give suggestions for improving. The portal management is trying to keep the services going but not trying to improve or increase the usage. (Participant C4)

Other participants pointed out that the lack of communication affects the portal promotion. For instance, some interviewees mentioned that they were not aware of some services and resources that were offered on the portal until they learnt about them from other students, academics and staff. Furthermore, some participants raised the issue of communication when the portal becomes unavailable for any reason and they felt that they should be kept informed.

The next participant emphasised the importance of promoting the CP and its services and how this can increase users' awareness.

> *What we need is the effective promotion of the portal and its services.… This would increase users' awareness of what is being offered. Promoting the portal needs a strong communication strategy. (Participant B11)*

Another participant mentioned that:

> *The last time I heard about the portal was in the induction day when it was introduced to us as fresher students. I learn about the new things on the portal from my friends and classmates. (Participant A5)*

Participants have suggested several ways to promote the portal, for example via newsletters, leaflets, brochures, electronic channels such as email, online materials and the use of blogs. Finally, participants have emphasised that the more communication there is, the more the portal will be used to maximise benefits and increase the success of the portal initiative.

6.3.2.3.3 Benchmarking Campus Portals

Another issue identified is benchmarking CPs against best practices, which is seen as a method of judging CP performance. Participants have suggested two different methods to benchmark CPs: benchmarking against web portals (commercial portals) and benchmarking against other academic institutions to determine the best practice.

When asked about what improvements should be made to the portal, one of the academics recommended:

> *Benchmarking and looking at other academic portals. Here at the university they do some kind of benchmarking with other areas for example, curriculums, courses and modules. The portal should be viewed as a huge investment and improvement as a part of the*

university. Benchmark it with some top universities that have good performance and have successful portal experiences. (Participant C5)

Another participant suggested that it is a good idea to look at other universities experience with CPs:

A good way to improve the portal is to determine what others universities are doing. This approach will help to learn lessons. (Participant A11)

CPs are compared with web portals in terms of personalisation and customisation and universities can learn from these and provide users with a more satisfying experience. The following participant described his experience with web portals and suggested that universities should consider these features and make them available on CPs:

I am a user of many web portals like Yahoo and Excite and you can see the high level of personalisation and customisation that is available… These portals provide fantastic functionalities that allow users to tailor services and content according to their preferences. It would be nice if they focused their attention on some of these portals and learned from them. I think they can do that; the concept is the same and the technology is already there. (Participant B8)

Another student said that lessons can be learnt from web portals that are available on the Internet:

I think they should look at what is happening on web portals in terms of services, functionality and capability in order to provide an insight into how our campus portal can be developed. (Participant A13)

Another participant reported a similar view and said that:

Commercial sites provide you with high level of personlisation and customisation that isn't available in our university portal. I can personalise the content and customise the page layout as much as I want. (Participant B9)

6.3.2.3.4 Training

Another issue that seems to be very important is training. Several participants expressed concern about having the necessary training, especially those who are less computer literate. While some participants said that they do not require training because they are already computer literate, many of the participants

described themselves as less computer literate with little experience of some computer applications. Furthermore, most participants mentioned that they did not receive any kind of training on how to use the portal and its services. Moreover, some of them suggested that training should be compulsory for students, academics and staff.

The results show that training has many advantages. Firstly, it teaches users how to use the portal and how to benefit from its services and resources. Secondly, it increases end users' awareness of what is offered on the portal. Thirdly, it establishes a relationship between the users and the service provider. Furthermore, participants suggested that users in the university should be segmented into different groups and that training should be provided accordingly. For example, they can be segmented according to the level of study (undergraduate, postgraduate), IT experience and field of study. Moreover, participants made several suggestions for providing training. For example, through face to face sessions in computer labs or workshops, or by documentation (leaflets manual) and online tutorials.

When asked about what kind of training they had received, participants responded in different ways. The following student mentioned that:

> *No training was provided. They gave us a username and password and told us to use the portal. As a fresher student I did not know anything about the portal or what it is for, and I learnt about it from my classmates. (Participant A11)*

For the following student, the lack of training has resulted in a limited knowledge and awareness of what is offered on the portal. He said:

> *We have not received any kind of training even when we enrolled into the university... At least they should have given us basic information about the portal and its services which would alert us… The limitation of our knowledge about the portal means you do not know what is being offered… There are some functions that are difficult to use. (Participant B11)*

For the following academic the lack of training has resulted in less use of some services and resources:

> *I do believe that training is very important, because we see that there are certain areas on the portal that are not heavily used. (Participant C4)*

Another participant pointed out that:

> *There was only a little demo on the university website that explained how to use the portal. For me, I heard about the portal through an email sent and it said that there was a portal in the university, without giving more details. (Participant C11)*

In conclusion, the findings indicated that there were several issues related to service quality, which included: user involvement, communication, benchmarking CPs, and training. These issues seem to be important from the users perspective. Users involvement was seen as vital for understanding their requirements and needs. Communication, and the promotion of the CPs are important to increase users' awareness of what is being offered on the portal. Benchmarking CPs against best practices was considered as a method to develop and improve the service. Finally, training was an issue for many participants and it can help users to learn how the portal works.

6.4 Conclusion

This chapter presented the findings from three case studies in SA. First, it reported the results from the implementers' perspective. It showed that the concept of the portal has spread across Saudi universities. Portal initiatives come from top management, and chancellors are involved directly with portal development. Furthermore, the universities studied bought ready-made solutions and this decision was influenced by many factors including cost, resources, time, effort, and, most importantly, the lack of in-house technical expertise. The universities implemented CPs for many reasons including: organisational, technical, educational, economic, environmental, geographic and administrative motivations as well as user expectations. In addition, there are many enablers that helped the universities such as top management support, internal-co-operation, external co-operation, the wide spread of ICT and e-government initiatives in the country and the good current state of the Saudi economy. What is more, the results show that the universities experienced several challenges such as organisational-, technical-, user-, innovation- and financial-related challenges.

Then, the chapter reported results from users' perspectives. It showed that users perceive many benefits associated with CPs such as ease of access,

158

convenience, access to useful information and services, SSO, saving time and effort, and facilitating the access to various services and organisational information. Furthermore, users had some concerns related to system quality, content quality and service quality. Moreover, results indicated that there is a communication gap between portal teams and end users. The latter have complained about the lack of communication to promote the portal and its services and resources.

The following Chapter (7) reports the findings from the UK case studies, and this is followed by a cross-case analysis and a discussion of the five cases in Chapter 8.

Chapter 7: Case Studies Findings: UK Universities

7.1 Introduction

This chapter presents the findings from two case studies conducted in the UK. Two universities from different regions participated in this study, which are referred to here as University D and University E. Appendix 2 provides a description of these universities. The findings are presented in two main sections. First, findings from the implementers perspective (portal teams) and second, findings from end users perspective. The chapter concludes with a summary of the main findings.

7.2 Results of Analysis based on the Implementers Perspective

The data for this section were gathered through semi-structured interviews and an analysis of some organisational documents.

7.2.1 Source of the Initiative

The findings revealed that the idea of developing CPs came from technical and information services staff and as such is a grass roots initiative (bottom up approach). The portal was developed as a research project funded by JISC. The results indicated that the adoption and implementation of CPs has taken place in a wider institutional context which includes educational institutions and the organisational field. These can be described as normative pressures that have influenced the decision to implement CPs. One of the interviewees mentioned that:

> *It was a research project which we worked on with a national organisation called JISC and the research project was to test and develop the concept.(Participant E1).*

Another participant from a different university reported that:

> *I can say it is a grass roots initiative and has been adopted and supported by the university rather than the university saying we need a portal and lets have it now, it is more from the individuals staff coming up with an idea.(Participant D1)*

7.2.2 Implementation Strategy

The universities studied participated in a research project to determine the feasibility of developing CPs for their institutions. The findings showed that both universities developed their portal in-house and both selected the uPortal framework. This is an open source enterprise portal framework that can be used by higher education institutions (JASIG website 2010). This framework has been institutionalised in the organisational field, and has attracted the attention of many higher educational institutions at a global level, which makes it one of the most popular open sources for creating enterprise portals. The empirical evidence suggests that there were many factors that influenced the decision to develop the portal in-house, such as initial cost (lack of money to buy ready-made products), ongoing cost (including maintenance and annual licenses), resources, unavailability of ready-made solutions that fulfilled the universities requirements, and most importantly, the availability of in-house technical expertise. One of the participants mentioned that:

> *The university has a lot of technical expertise. We have technical staff who are experienced in portal applications and are highly qualified… We have the cost of staff already to build the portal rather than buying an annual license. If we don't have the technical expertise, we might buy a ready-made solution. (Participant D1).*

Another participant from a different university reported that:

> *The reason that we wrote it and developed it in-house was because all other portal products that we could buy wouldn't interface as well as a piece of written software… For us it was more productive to write our own system... A good advantage of having done it in-house is the fact that we really know how it works and how it interfaces with data. (Participant E2)*

According to the findings, both universities went for a long-term solution by developing their portals in-house, which gives them the ability to customise the portal according to their needs and requirements rather than being restricted by certain features and specifications from a particular product. A project officer mentioned that:

> *There were no off-the-shelf products which did everything we wanted. Using uPortal meant that we had a lot of scope in what*

*we developed, but were not starting from scratch, and could
benefit from a large developer community. (Participant E2)*

Another participant expressed a similar view when he said:

*We can develop our own portal and customise it according to our
needs. We went for a long term solution which we could manage
rather than a more supportive solution which is obviously more
expensive and involves ongoing cost. (Participant D1)*

In summary, the results show that the universities studied developed their
portals in-house by deploying an open source framework. Furthermore, they
went for a long term solution and there were many reasons that influenced this
decision, such as cost, flexibility of the customisation, control over the system,
and the availability of technical expertise.

7.2.3 Motivation for Campus Portal Adoption and Implementation

One of the questions that this study seeks to answer is: 'why do universities and
academic institutions invest in establishing and developing CPs?' The findings
suggest that the rationalised myth about the effectiveness of portals has exerted
a strong influence on universities to implement CPs. These include:
organisational, technological, educational, economic, geographic and
environmental motivation as well as user expectations, as shown in Table 7.1.

Table 7.1: Motivation for Investing in CPs: UK Universities.

Motivation (Reason)	Example
Organisational	Improving and simplifying access to services and information. Improving personalisation experience. Improving communication.
Technological	Systems integration. SSO.
Educational	Supporting the educational process by providing users access to key applications (Blackboard).
User Expectations	Meeting users' expectations. Providing users with new technology.
Economic	Cost reduction. Increase ROI. Reduce assets deployed.
Geographic	Overcoming geographic barriers to deliver services and transmit information. Providing users with remote access.
Environmental	Compete with other rival universities.

7.2.3.1 Organisational Motivation

Improving and simplifying the access to organisational information, services and resources was considered as a main reason for developing CPs. One issue linked to this is to provide the university members with an instant access to information, services and resources 24 hour a day, seven days a week and around the year in an electronic way. An examination of some project documents (DOC1E,DOC1D) showed that one of the benefits of the portal is improved access to information and services and a coherent universal approach to accessing key services within and outside of the university. When asked why the university has developed the system, a portal manager mentioned that:

> *It is a case of the growing amount of content being available in different places and to give the individuals access to the most relevant information more easily and quickly. They log on and can see their emails, calendar, news, announcements, and can access different tools and applications. (Participant D1)*

Another participant reported that providing users with access to various services and information was important to the university:

> *We have got many systems that handle student and staff information such as the library system, the financial system and others. Because we have already got these data and information, it coincided that it was a good way to present information in an electronic way. (Participant E2)*

Another issue was improvement of the personalisation experience for individuals and providing them with the relevant content and services that they need in order to give a cohesive corporate view of the university. A portal manager described this issue as follows:

> *What we are trying to do is to create an environment which makes it very easy for staff and students to access the content that they need. (Participant D1)*

Another participant mentioned a similar view regarding the personalisation when he said:

> *We try to support and enhance the idea of personalisation… and the portal allows users to configure themselves and see the content that they want. (Participant E3)*

For the following participant, the personalisation experience aims to provide the right information to the right people at the right time:

To provide a space where users could get information from the different parts of the university and to provide them with a personalised view of the campus and to give the right information to the right persons at the right time. People see what they want when they need it. They don't see things which are superfluous to their needs. (Participant E1)

Although the implementers claim that they want to improve the personalisation experience, the results from the user perspective suggest that users complain about the lack of personalisation. This issue will be reported in section 7.3.2.2

Another organisational issue was the communication process within the university and between the university members. CPs are seen as a mechanism to improve communication by providing users with access to various communication channels. In University E it was found that the development of the portal supports the university communications strategies and it aims at directness and completeness of communication (DOC9E). A system analyst claimed that:

We want to improve the communication within the university and provide students and staff with a modern technology to communicate with each other and to provide them with an instant access to information 24 hour a day, seven days a week and around the year. (Participant E2).

Another participant reported that:

One of the reasons that motivated us to develop the portal was to use it as a means of improving communication within the University. The portal has streamlined certain process mainly to do with communication between students, academics and staff. (Participant E3)

The portal manager at University D claimed that the portal aims to improve the internal communication within the University and they are trying to make it the main communication channel:

There is a general weakness in the University internal communication. No one body or department has the responsibility of internal communication…A lot of internal content can be found in different systems…We are trying to make the portal the main internal communication tool. (Participant D1)

While the universities claim that portal development will help to improve access to services and information, the findings from the users indicated that CPs are

being overlapped with other campus systems such as the University website, faculty webpages and departmental intranets, especially with accessing content and information.

7.2.3.2 Technical Motivation

Many participants agreed that systems integration was one of the most important motivations for adopting and implementing CPs. Unifying the access to various information systems and applications via SSO and providing users with a consistent interface were a top priority. According to the results, there were a growing number of resources that were WBIS available to users and the users had to log on to each system separately with different user names and passwords. Furthermore, users had to deal with different interfaces to log on to these systems and they had to learn them. The portal is considered to be the solution for these issues and it can be used as a gateway to access various information systems and services and to integrate them in one place. The portal eliminates the need to separately access and log into each of these systems. Most importantly, it is a great technology that provides users with a consistent interface rather than dealing with many interfaces and screens. One of the participants pointed out that:

> *One of the things that we wanted to achieve is to make the portal a single sign-on system and we are trying to make sure that every time we produce something new it should go to the portal. (Participant E2)*

Another participant described many benefits of systems integration such as centralising services, speed and convenient access for users and a consistent interface. He said that:

> *We want to integrate different systems and applications so that users will only have one user name and password, and they don't have to deal with different interfaces. With the portal, users are able to log on to different systems and see different information. It provides them a quick dashboard view, so rather than going to every web based application, I can go here and can see my emails, my calendar, news, library account and others. (Participant D1)*

Moreover, an examination of some documents suggests that one of the main reasons for developing CPs is to integrate various systems and bring them in a

single and personalised environment (DOC3E). In University D, it was found that the portal contributes to the University Mission by developing integrated information systems (DOC1D). It is important to mention that while the universities aim to integrate different systems into the portal, the integration is limited to certain applications, and the findings from uses' perspective support this claim (section 7.3.2.1.6). Furthermore, systems integration was identified as a main challenge (section 7.2.4.2.2).

In conclusion, it can be said that achieving systems integration was one of the main issues. The development of CPs can result in integrating different systems and applications in one place via a SSO and this is one of the unique advantages of portal technologies. Most importantly, it provides users with a consistent interface.

7.2.3.3 Educational Motivation

Several participants believe that developing CPs can support the educational process and serve various educational needs and purposes. This can be achieved by providing students, faculty and staff with access from a centralised location to various key applications for learning such as Blackboard, MLE, SRS and other eLearning platforms. Furthermore, investing in CP technology could enhance users' experience by exposing them to cutting edge technology. In University D, it was found that the portal supports and enhances the educational side and supports the University Mission by:

- Providing academics and students with the best and most stimulating environment for education and learning.
- Improving ICT services and facilities to support learning, teaching and research (DOC1D).

One of the interviewees mentioned that:

> *We are trying to create an environment which makes it very easy for staff and students to access the content that they need… and find information that is relevant to them, where they are now, what they are doing now. The portal presents this to all of them at the appropriate time in their academic life. (Participant D1)*

Another participant reported that:

> *It is to provide students and staff the best view of the university, so that they can have easy access to information they need. (Participant E4)*

In University E, the portal was an extension of the MLE system that aimed to bring various learning services, resources and support tools into a single place and provide users with a personalised learning environment (DOC3E). Similar to the Saudi cases, it seems that the portal only provides links to learning tools such as Blackboard, MLE, and library resources and the universities have not yet exploited portals to the full capacity to support learning and education

In summary, the results show that the universities perceived some benefits associated with CPs in supporting and enhancing the educational process. Portals can help universities to integrate various services and information to serve educational needs and purposes.

7.2.3.4 Users Expectations

The findings show that responding to users' expectations was one of the reasons for developing CPs. Students, academics and staff expect universities to deploy the cutting edge technology that is based on convenience, timeliness, access and engagement. This is because the use of Internet and web-based applications has become very popular among students and academics, and they expect similar services to be available in universities to support teaching and learning. This issue applies specifically to today's students who can be described as digital natives. One of the participants mentioned that:

> *Today's tech-savvy students are looking for places to study where they can have good technology to enhance their educational experiences. (Participant E2)*

Another participant reported that:

> *Some students and academics feel that a lot of information is still available in various places around the campus, for example faculty websites, the university website, and Blackboard… To many of them, this is not good practice and we have seen a demand for a central system that combines all information in one place. (Participant D1)*

Furthermore, this issue was emphasised in a project document by University D (DOC1D) which states that nowadays students come to universities with the expectation of web-based applications being available for communication and learning and if the portal does not get support, the university will fail in meeting students' expectations. Although meeting user expectations was important issue to the universities, the results from the user perspective show that users raised concerns regarding the use of the portal (see section 7.3.2).

To conclude, it can be said that meeting users' expectations can be regarded as a motivation for CP development. The results suggest that universities members such as academics and students are already aware of WBIS and they would expect similar services to be available in the academic environment.

7.2.3.5 Economic Motivations

According to the findings, the universities perceive many economic and financial benefits associated with the development of CPs. These include: increased ROI, cost reduction, and reduced assets deployed. Developing CPs will help the universities to save a lot of money and will contribute to cost cutting. For example, in University D, it was found that a central portal will help to avoid the costs associated with the development of different departmental intranets and it can save the university around £3.4 million. (DOC1D). Regarding University E, developing a portal reduces the cost associated with the access and distribution of information. A project officer mentioned that:

> *The portal saves the university money. For example, before the portal, every student was given a hard copy of the University regulations. But now it can be accessed online. So, for 7 years we saved about 50000 copies every year which is a half million pounds. (Participant E2)*

Although this can be achieved by a simple intranet, the portal can do it in a more efficient way. For example, if each department has their own intranet, there is no doubt that this will entail expenditure in the hundreds of thousands of pounds to cover staff, software, hardware and maintenance.

To conclude, CPs have an economic value to universities and could cut costs associated with access to services and information. Furthermore, portals can

reduce administration costs associated with the development of different departmental intranets by investing in a single technology and focusing the resources in one place.

7.2.3.6 Geographic Motivation

Overcoming geographic barriers to deliver services and transmit information to users was another motivation. To many of the participants, the portal has proven to be a valuable technology in this regard and is very cost effective. This is especially important when an organisation operates in different locations. A project officer said that:

> *The portal is a great tool for delivering and transmitting information. We have 4 campuses and in the past if we wanted to deliver information to all, the message went out slowly. Now, we just pull the message, and this is a great advantage… The portal is used by many users and we have people logging on from around the world. (Participant E2)*

Another issue was to provide users with remote access to various information, services and resources regardless of their geographical location. One of the interviewees reported that:

> *If users are away from their interface or desktop in an internet café, or anywhere in the world, they can log into the portal and can access some of the key tools and the portal provides them with a quick dashboard view. (Participant D1)*

Furthermore, an examination of DOC3D shows that users have logged into the portal from different locations around the world such as USA, Spain, Germany, China, Hong Kong, Cyprus and India.

In summary, there is no doubt about the importance role of the Internet and in particular the Web in cutting geographical barriers to deliver services and provide access to information, and these are among the unique features of the technology.

7.2.3.7 Environmental Motivation

Responding to the external environment was another motivation for CP adoption. The findings show that developing a portal is necessary to compete with other universities because many universities have deployed portals. Universities could fall further behind their competitors if they do not develop portals. Moreover, students have become familiar with web-based applications

and they come to universities with expectations that they will find similar services available for their use. The results indicated that institutional pressures in the form of competitive pressures affect the implementation of CPs. One of the participants mentioned that:

> *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. (Participant E2).*

An analysis of project documentation supports this claim. It was found that if the portal project at University D is not continually developed and supported, the university will not be in a position to compete with similar services provided at other universities and will lose its competitive advantage (DOC1D).

In conclusion, it can be said that there were many motivations for CP adoption and implementation. In addition, the universities studied perceived several advantages associated with portal development which can be regarded as the driving forces behind CP adoption and implementation.

7.2.4 Factors Affecting the Adoption and Implementation of CPs

This section is divided into two main parts. The first is concerned with the enablers whereas the second is related to the challenges or barriers.

7.2.4.1 Enablers of CP Adoption and Implementation

There were many enablers that helped the universities to develop CPs. These factors can be grouped into four main categories: technological, organisational, environmental and users. Table 7.2 summarise these factors.

Table 7.2: Enablers of CPs Adoption and Implementation: UK Universities.

Main Factor	Sub-factor
Technological	Technology readiness. IT infrastructure. Resilient networks. Access to hardware and software.
Organisational	Staff commitment. In-house technical expertise.
User related	Users' uptake.
Environmental	External co-operation and coordination.

7.2.4.1.1 Technological Factors

Technology readiness was identified as a main enabler. Many participants reported that prior to the deployment of CPs, their universities had a good IT infrastructure in place, including some IT standards, servers, networks, hardware, software, databases, and telecommunications. IT infrastructure was an important issue and contributed positively to the project. This suggests that technology readiness is a crucial aspect that contributes to the success of portal technology. 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. (Participant E3)*

Another participant mentioned that:

> *We have a good IT infrastructure. There is standard infrastructure across the university and we have various software, hardware and applications and other IT components. In addition, the university network is very good in terms of connection. (Participant D1)*

Another interviewee described the University IT infrastructure as follows:

> *The IT infrastructure is fine and has a clear plan for hardware and software and upgrading…Our IT infrastructure is pretty good. The network is pretty sound, pretty resilient. (Participant E4)*

7.2.4.1.2 Organisational Factors

Two organisational factors have been identified which can be regarded as potential enablers and which could contribute positively to portal implementation. These include: staff commitment and in-house technical expertise. Staff commitment was acknowledged by most of the interviewees, who suggested that this is a crucial element in sustaining the portal development and management. Although there are few staff dedicated to work on the project, their enthusiasm and commitment were remarkable and had a positive impact on the project. A project manager described it as follows:

> *I think the very committed staff involved is absolutely crucial in our case. Without their commitment, a lot of work would not have been possible. Fortunately, the development staff are very keen and I got support from them. (Participant D1)*

When he was asked what the factors were that helped during the process of portal development, an interviewee mentioned that:

> *The staff who were involved in the project. They were very committed to the new system, and spent a considerable amount of time developing the system and thinking of creative ways to get it to the users. (Participant E2)*

Another issue was the availability of technical expertise and development capability to develop and manage the portal in-house. The respondents were confident about their IT skills and internal expertise. According to the results, IT personnel skills and experience are seen as an important enabler of portal development and management. 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 are very experienced. (Participant D1)*

Another interviewee reported that:

> *We have got some staff who have good backgrounds and experience in programming, running and designing portal applications. This was one of the reasons that made us develop the portal in-house. (Participant E2)*

7.2.4.1.3 Users Related Factors

This issue is related to the end users and their interaction and response to the new system. According to some participants, at the beginning of the portal launch, user uptake was very low, despite widespread awareness of the service being offered. Several months later, the use of the portal had grown rapidly, especially with students. Although many participants reported resistance to change and accepting the new system, it was only at the start of introducing the system. According to the results, the portal is the killer application for students and, to a certain extent, for academics in both universities. A project manager commented on this issue when he said:

> *Uptake by users was an important issue. When we started there were only about 300 student users and several hundred staff users. After six months we reached about 3500 users and after the same period we had about 7500 users. We hope the uptake will continue.(Participant D1)*

In University E, the use of the portal has increased especially with students and the participants believe that the increased number of users logging on to the

system is an indication of users' acceptance. Table 7.3 provides figures on the number of users.

Table 7.3: Number of Users Accessing the Portal at University E.

	December 05	December 06	December 07	December 08
Student portal	15154	16103	42409	128112
Staff portal	1560	8615	9551	12598

Source (DOC6E).

However, since the use of the portal tends to be mandatory, user uptake cannot be regarded as an indicator of acceptance. Users have raised several issues regarding the use of the portal (see section 7.3.2).

7.2.4.1.4 Environmental Factors

As mentioned previously, the universities participated in a research project at a national level to investigate the feasibility of developing a CP. The project was co-ordinated by JISC. Many universities around the UK participated in this project. The universities worked closely with each other while the project was going on. According to the findings, this has created opportunities to share institutional knowledge with other organisations and institutions within the organisational field. This was helpful and was a very important aspect in terms of sharing ideas and experience. To many participants, external co-operation is of vital importance to evaluating different outcomes and to getting support, advice, and consultation from a larger community who developed the same software. A portal director mentioned that:

> *The project was co-ordinating nationally… While the project was going on, we worked with many organisations and universities, and we evaluated each other's projects and tested different outcomes. (Participant E1)*

A portal manager at a different university stated that:

> *There was co-operation with some universities and we exchange ideas and experience in terms of the development and management. We hold meetings on a regular basis to discuss various issues related to each institution and know their experience regarding portal development. (Participant D1)*

In conclusion, the findings show that there are many enablers that contributed to CP, which include: technological, organisational, environmental and users

related factors. It seems that technology readiness and in particular adequate IT infrastructure are important for CP adoption and implementation. Staff commitment and in-house technical expertise are important organisational issues to sustain the project. User uptake is considered to be an important issue, and finally, external co-operation helps to share knowledge and experience regarding CP development and management.

Although many enablers were identified, both universities did experience several challenges and barriers. The following section discusses these issues.

7.2.4.2 Barriers Associated with CP Adoption and Implementation

The results reveal that there are many barriers and challenges that have been reported by the respondents, and they are grouped into four main categories: organisational, technological, user, and innovation. Table 7.4 synthesises the main barriers and their sub-factors.

Table 7.4: Barriers of CPs Adoption and Implementation: UK Universities.

Main Factor	Sub-factor
Organisational	Inadequate top management support. Lack of internal co-operation. Organisational structure. Lack of resources (staff and money) Change management.
Technological	Systems integration. Lack of identity management systems. Independent IT projects management.
User	User acceptance. Requirements analysis. User expectations.
Innovation	Uncertainty of portal technology. Conflict with other systems. Content management and aggregation. Portal and content ownership.

7.2.4.2.1 Organisational Barriers

This category includes: inadequate top management support, lack of internal co-operation and co-ordination, organisational structure, lack of resources, and change management.

Inadequate top management support was reported in both universities. The findings indicated that key organisational actors such as top managers and

senior people did not express their desire to have a portal at the beginning of the project. This in turn had an impact on the allocating of necessary resources, such as money and dedicated staff, needed to conduct the project. The participants reported that top management had not seen the portal as a priority, so that it was not on the agenda. In University D it was found that the university lacked a high profile policy for providing users with access to disparate information sources via the portal (DOC10D). 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. (Participant D1)*

When asked about how much support they got from top management, participants came up with different answers and views. One of them said that:

> *I thought for the first two years they could stop it and just say no we are not going to do that and we are going to buy a product, because it meant that we had to maintain a team of 4 people who did different parts of the design and implementation and if they bought a product, they could have done it with only two people. (Participant E2)*

For the following participant, the portal first needs to reach a critical mass and many senior managers in different parts of the university had not seen the portal as important to the university. He said:

> *The portal has not reached a critical mass yet, where it is seen as a critical service. Yes there is management support up to a certain level, but if you are talking about the heads of departments, heads of faculties, senior director level or even a high level like Vice Chancellor or Pro-Vice Chancellor, the portal isn't on the agenda... If you ask them are they supporting the portal, they would say yes and it is useful. But when you say would you help or provide something to help they would say: well, we need to look for the balance and you will never get a proper answer. (Participant D1)*

The lack of top management support can be attributed to many factors. First, top management has not yet seen the portal as a priority for the university and it has not reached a status where it can be regarded as a strategic tool. Second, the portal initiative in both universities was a grass roots initiative from the bottom up rather than top down.

Another organisational issue was the lack of internal co-operation and co-ordination. Although there was some co-operation between portal teams and

other academic departments and units, it was of limited scope, especially when it comes to bringing content into the portal. According to the results, the lack of internal co-operation can be attributed to various reasons. First, some institutional actors such as service owners or providers have not seen much value in the portal and they are not aware of the benefits of the portal, and they do not understand the portal technology. Second, some of them are not willing to share their content with portal teams, and they think that they have a right over their content; as a result they will not co-operate in providing that content. Third, there was not a wider institutional policy from the outset of project that addressed this issue. These reasons were identified from different interviews and some documents (DOC3D). Overall, the inability to get internal co-operation affected the project development and management. This is because the portal is heavily contingent on other service providers, who have not always seen the portal as a priority (DOC4D). A project manager mentioned that:

> *One of the biggest challenges was the lack of co-operation. This is because some departments and units are not aware of the benefits that the portal might bring them and the absence of policies that address this issue. (Participant D1)*

Another participant expressed his view as:

> *The portal brings stuff together, so it brings stuff across organisational boundaries and that sometimes is complicated. Sometimes people in your organisation think that you will take some work and responsibility from them. (Participant E3)*

Another major issue identified was the lack of resources. The participants expressed two main aspects: money, and shortage of dedicated project staff. Many participants agreed that the investment in CPs requires many resources such as staff, money and time. This is due to the fact that a portal technology is a long term investment and is expensive to plan, develop, manage and maintain. Getting funding from the outset of the project was a major concern. A project manager reported that:

> *No financial support was provided. I have a small budget and I have the equivalent of 0.8 of a full time member of staff working on the project…There are limited resources and they need to be allocated in the appropriate way. **What do you mean by resources?** Well, I mean people, money and time available to do*

the job. A lot of stuff that we do can be done by many resources including staff and it takes up the developers' time to be able to plug something into the portal…The limited availability of resources is affecting us very much. (Participant D1)

Another participant pointed out that:

The portal is managed by half a person. There is really a very small amount of resources…we have only three staff and they are busy doing other things, we have a small amount of money and time to spend. (Participant E1)

Organisational structure was identified as a factor that negatively affects the development and management of CPs. The fact that individual faculties and other academic departments and units are quite independent or autonomous is not helpful in driving the portal agenda or in planning, developing, deploying and managing a central CP. According to the findings, a decentralised structure means that each unit and department in the university has its own budget, various IT projects and standards, different processes and has different priorities. A portal manager commented on this issue when he said:

We have a devolved structure. The individual faculties are quite autonomous. The work is done differently in different parts of the university. You tend to find in other organisations that the management structure is centralised and more rigid and the support services are more standard, so the same tools being used by the people in the Engineering Faculty are the same tools are being used by the Science Faculty… That is not something that can be done in our university. It is very difficult to present the cutting edge tools to all students and staff. This doesn't help in terms of driving the agenda for a central university portal. (Participant D1)

The participant went on and talked about the history of the university concerning the organisational structure, and how this affected the portal development:

It is just the history of the University and the academic freedom principle is running very deeply at our university… Academics and researchers bring research and income to the university and therefore they argue that they have the right to spend the money they bring on what they need and want…Also they have the authority to do their things and the senior management not being in the position where the Vice Chancellor or the Pro-Chancellor can tell academics what to do and what not to do…The nature of our institution makes it difficult for very senior levels of the university to dictate how to use things. Our university is a very difficult environment. (Participant D1)

Another participant from a different university expressed a similar view, and claimed that the devolved structure of the university resulted in different IT projects and spending issues. He mentioned that:

> *The traditional approach used in developing IT projects was a critical issue for us. For example, the library system will look for their IT, the finance department will look for their IT, colleges develop their IT etc. So we had to overcome some historical barriers as to why things were separated. It is a lot to do with budget and spending and this is my money and I spend it on what and where I want. (Participant E2)*

The findings suggest that organisational structure affects portal development and management. Participants consider that a decentralised structure does not help to develop a central university portal and there are many issues that need consideration.

The issue of change management was mentioned by a few participants. The fact that the introduction of a new system like the portal requires a change management strategy that addresses various issues. However, this issue did not attract much discussion and the participants mentioned that it was impossible to develop such a strategy because of the lack of resources such as staff and money, and they have to prioritise the resources available to keep the portal running.

In conclusion, the results show that there are several organisational issues that can be considered as challenges for CP development and management. These include: inadequate management support, lack of resources (staff and money), lack of internal co-operation and co-ordination, organisational structure, and change management.

7.2.4.2.2 Technological Barriers

Although most participants in both universities acknowledged the fact that their universities had good IT infrastructure that contributed positively to the portal development (section 7.2.4.1.1), they mentioned that they experienced some technical challenges and barriers. These included: different IT project management, the lack of identity and access management systems, and systems integration. The following is a discussion of these issues.

As mentioned earlier, the universities studied have a devolved structure, which resulted in a decentralised approach to developing and managing IT projects. According to some participants, this has affected the portal development and made it difficult to establish co-operation between IT departments and portal teams, especially when it comes to bringing, supporting and enriching the portal with content. This has resulted in inconsistency, duplication, overlap and other issues. A project manager reported that:

> *There is a standard infrastructure in the university. However, some faculties and departments have their own services and networks. So there is some inconsistency across the university and it is more to do with applications development and also with the process…This doesn't help in terms of driving the agenda for a central university portal. (Participant D1)*

Another participant pointed out that:

> *The traditional approach used in developing IT projects was a critical issue for us. For example, the library system will look for their IT, the finance department will look for their IT, colleges develop their IT etc. So we had to overcome some historical barriers as to why things were separated. (Participant E2)*

The lack of identity and access management systems was identified in University D. Users in the university have different roles and responsibilities: students, academics and staff. The nature of each group is different and requires different resources and services. Portal services and resources are offered according to user roles. The aim of these systems is to connect the right people with the right services and resources to which they are entitled in a secure, controlled way. The absence of such systems affects the delivery of the services and information, especially the personalisation service. 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. The project manager at University D described this issue as follows:

> *We can currently develop content to be seen by a student by year of study and department. It then gets complicated if we want to deliver content based on 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). (Participant D1)

Systems integration was a common issue and was caused by many factors, such as different IT standards and data sets, incompatibility, old hardware and software and the complexity of business processes. These universities have multiple diverse information systems and applications that handle students and staff information and other organisational data and information such as database systems, file systems, CRM, timetabling, HR, SRS, library systems, VLEs, finance, marketing systems and some web-based applications. Most importantly, many of these systems were developed separately by different IS divisions in the universities. Furthermore, prior to the development of the portal, academic support services were provided by different service providers. Thus, it is not surprising to know that systems integration can be problematic. A project officer described this issue as follows:

The systems that work in the university have evolved over time separately, so they have different standards and different data models. It took us a long time and a lot of work to unify the data between various systems. (Participant E3)

Another participant at different university expressed a similar view when he said:

We have the issue of systems integration. There are many and diverse corporate systems across the university with different standards and specifications and integrating them into the portal was an issue. It took us a lot of time and effort to do that and we haven't yet achieved a full integration. (Participant D1)

For the following participant, the aged hardware and software were a main issue for systems integration. He stated that:

I think it is to do with integration. Some of the technologies are quite old. You know that most products available in the market that support portal technology are based on web technology, and we have to update some parts of the software and hardware. (Participant E1)

In conclusion, the discussion shows that technological difficulties may arise as a result of CP implementation. The findings show that different IT projects, lack of identity and access management systems and systems integration were the main issues to the universities studied.

7.2.4.2.3 User related Barriers

These barriers include: user acceptance, requirements analysis, and meetings users expectations. The findings show that resistance to change and accepting the new system were human issues that the universities encountered when the portal was introduced. These issues seem to be more related to academics and staff rather than students. Moreover, the findings suggest that when people become familiar with a particular practice over the years, it can be difficult to draw their attention to a new practice. One of the interviewees described this issue as follows:

> *One of the issues that we had was the fact that the portal hadn't been dictated so that the people should use it. The challenge we faced was to convince those users, staff and the service owners to use the portal…There is apathy, people would say I find information somewhere else, so I don't really have to use this… why I should be bothered?. (Participant D1)*

For the following participant, the changing from paper based to electronic formats was a main issue. He said:

> *It was getting the portal to be accepted really. The university was changing quite a lot from everything on paper to produce resources, services and information electronically...we had to convince the university and users that the portal is important for us and provide them with justifications as to why we are investing in this technology. (Participant E2)*

Another issue related to users was requirements analysis. Collecting and analysing user requirements and needs were reported to be a significant challenge to both universities. Within these universities, there are different groups of users: students, academics and staff. Each group is different from the other, thus; it requires different services. The results indicated that conducting business analysis to identify users' requirements and needs requires many resources such as money, staff, time and effort. With limited resources being

available, this was a challenge to the universities. One of the interviewees mentioned that:

> *It was quite difficult really to identify users requirements and needs, because at the beginning they wouldn't know what portals were and because you are collecting requirements for things that do not exist. We have students, academics and support staff and to fulfill their requirements you have to invest in many resources such as money and dedicated staff. We lack such resources. (Participant E2)*

Another challenge identified was meeting users' expectations. The use of the Internet and web-based services and applications has become very popular among students and academics. Consequently, they expect a similar environment in universities. According to the findings, CPs are being compared with commercial portals and some students and academics have good experience and awareness of web portals such as Yahoo, Excite, MSN, Amazon. This has an impact on their perceptions of CPs. They like the features that web portals provide such as excellent services and interactive interfaces, usability, dynamic and interactive features, high level of personalisation and customisation that are based on individuals' needs and preferences. Meeting such expectations with limited resources is very challenging and there is an expectations gap. One of the participants mentioned that:

> *Students and some staff are familiar with some Internet applications like IGoogle 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! (Participant D1)*

In summary, the findings showed the universities studied experience many issues related to users such as accepting the new system, meeting users' needs, requirements and expectations. Furthermore, it was difficult for the universities to address these issues especially with lack of resources such as staff and money.

7.2.4.2.4 Innovation related Barriers
These barriers include: uncertainty regarding portal technology, conflict with other systems, content sharing, management and ownership. Uncertainty

regarding portal technology and its benefits to the university was identified in many interviews from both universities. This uncertainty led to another issue, which is how the portal will interface with other systems such as the university website, faculty web pages and, in particular, departmental intranets. This finding suggests that there is a conflict between the portal and other existing system, especially in terms of content and services.

For the following participant, lack of understanding among other service providers about the portal has raised several issues:

> *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. (Participant E3)*

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 is new on the portal? (Participant D1)*

Another issue identified was content management and aggregation. Many participants expressed some concerns regarding the process of bringing, collecting, managing and aggregating the content into the portal from different internal resources, especially from other service providers. This issue is related to the fact that some organisational actors and units were not willing to share their content and bring it to the portal, and they fear that if they do, they might lose their institutional power and authority. This has affected the process of supporting and enriching the content. One of the interviewees said that:

> *The big challenge is getting data and content. People were enthusiastic by saying yes we would like to be involved and then when we ask them to give us or update content we had to chase them and it is difficult to chase many people in the university, and you never get stuff. (Participant E2)*

Another participant mentioned that:

> *In fact aggregating all content and information across the university to present it to users is a very difficult task. (Participant D1)*

Another issue raised by some of the interviewees in both universities is the ownership and responsibility for data and information when an institution develops a portal (content ownership). The development of the portal has raised the issue of power relationships that exist between different institutional actors. In University D, it was found that there is not a clear picture of who will become the owner of the portal and its content (DOC8D and DOC10D). This issue was confirmed in several interviews. For example, a project officer expressed his view as follows:

> *The portal brings stuff together, so it brings stuff 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? Who is in charge of it? Who manages it? Who owns it? It is a controversial issue. (Participant E3)*

Another participant expressed a similar view about content sharing and ownership and how it affected the development of the portal and he claimed that there is misunderstanding about the role of the portal. He said:

> *We have the issue of content ownership. Some people think when we ask them to provide their content that we will take their content and databases from them, especially the hidden content… We try to convince them that all what we do is to structure and organise the content….and you own that content and you manage it. We had some situations when people said we don't want you to take the content from us. I think this happens because there is a misunderstanding of what the portal is and what is it about. (Participant D1)*

To conclude, the development of CPs raised several issues such as how CPs interface with other systems, and who has the right over the management of the portal and its content. These issue affected many processes related to bringing the content into portal and presenting it to the end users.

This section reported the challenges and barriers associated with CP adoption and implementation, which included: organisational, technical, user, and innovation related challenges.

7.2.5 Campus Portal Organisation and Management

The findings show that the management and development of CPs is done at a departmental level. In University E, the portal is managed and run by the

Information Services and Systems Division (ISASD). In University D, the responsibility of portal management is in the Information Services. Furthermore, the management of the portal is supported by a steering committee that guides and directs the portal development. The steering committee consists of several people from different departments and units in the university, for example, senior staff, academics, departments' managers, some staff and stakeholders representatives. Moreover, the approach that is being used to manage the content of the portal is a mixture of bottom-up and top-down. Figure 7.1 illustrates portal structure at University D.

Figure 7.1: Portal Structure: University D.
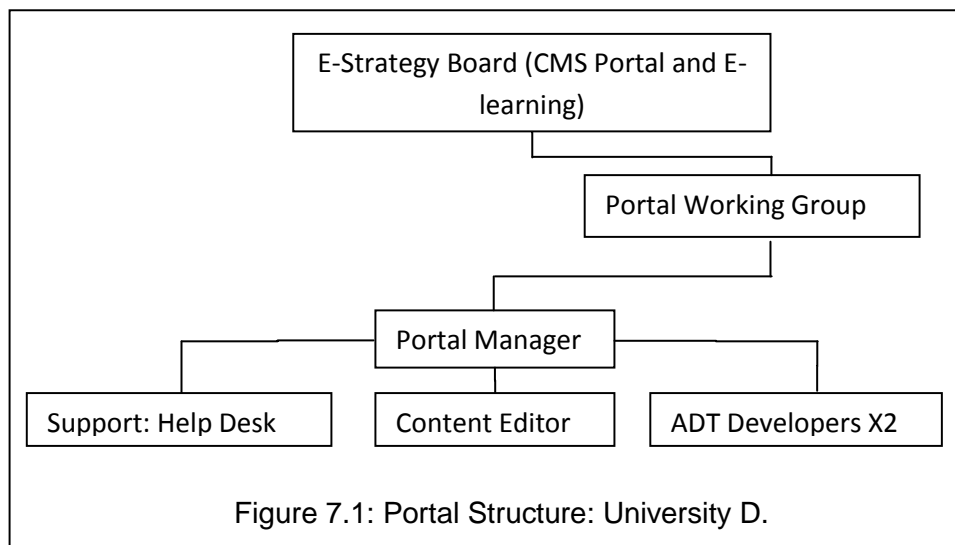
An examination of some documents from University D (DOC3D and DOC5D) shows that there was a long delay in the appointment of a portal manager. As a result, the lack of leadership would result in poor progress and the demise of the portal as a service. The documents emphasised the importance of a new manager to guide and direct the strategic vision of the CP.

7.3 Results of Analysis based on the Users' Perspective

This section reports the findings from the perspective of users. The data were collected through semi-structured interviews and reading some documentation.

7.3.1 Motivations for Campus Portals Usage

The findings show that participants are aware of the existence of CPs and use them for different reasons and purposes. When asked why they use the portal, the main answer was to access various systems, services and information such as the email system, the library, Blackboard, HR system, and the financial system. Furthermore, many participants perceive the benefits associated with the use of CPs, such as SSO, ease of access on and off campus, convenience, timeliness and ease of accessing services and information. One of the participants mentioned that:

> *If we make an assumption that it is convenient to have SSO for all of the online systems, then the main value of the portal for me is that it is a SSO and if I sign into the portal I can then get access to blackboard, timetable page and other systems (Participant E7).*

Another participant reported that

> *It is a source of information. I use it to see which courses I have been on and which courses I haven't been on, access my email, the Blackboard system, and to make the supervision records and to access to other services and resources, all of these have driven me to use the portal. (Participant E5)*

Some participants mentioned that they are forced to use the portal because it is the only point of access to some services and resources, such as the email and Blackboard systems. The results indicated that coercive pressures have been exerted on users to use the system. One of the academics stated that:

> *The regulations of the university say that you should use the portal to communicate with students, to put assignments and course materials. (Participant D3)*

In summary, it can be said that users are aware of CPs and they use them to access services and information and to communicate with others. Users perceived many benefits with CPs such as ease of access and convenience. However, the use of CPs tends to be mandatory rather than voluntary and people have to use it in order to access services and information.

7.3.2 Factors Affecting Campus Portals Utilisation

The results revealed that there are many factors that affect CPs adoption and use. These include: system quality, content quality and service quality. Table 7.5 summaries the main factors and sub-factors.

Table 7.5: Factors Affecting CPs Adoption and Use: UK Universities.

Main Factor	Sub-Factors
System quality	Portal design. Portal security. Portal mobility. Conflict with other systems. Provision of E-services. Systems integration. Portal availability.
Content quality	Content structure and organisation. Lack of content. Irrelevant content. Content currency
Service quality	User Involvement. Communication. Benchmarking CPs.

7.3.2.1 System Quality

Several issues related to system quality were identified. These include: portal design, portal security, portal mobility, conflict with other systems, provision of E-services, systems integration and portal availability. The following is a description of each factor.

7.3.2.1.1 Portal Design

Portal design was one of the topics raised during many interviews. Issues surrounding usability, accessibility, navigation, content presentation and the overall appearance of the portal were common themes. Although some participants reported that the portal design was quite good, others mentioned that the design was not attractive or innovative. Moreover, some concerns were reported regarding the usability of the portal and the ease of use. Although many participants felt that the portal is intuitive and is easy to use, some of them reported the exact opposite view. Furthermore, searching for and finding information were issues to many interviewees and the portal design does not

help in this matter and there are not enough tools available to support information retrieval.

For the following participant, the design of one element on the portal reflects the designer but not the user. She said:

> *Take for example the supervision form; the person who designed it hasn't considered what we need, so when I use it I feel it is quite complicated and difficult. They should consider what we want and require. (Participant E5)*

Another participant mentioned that the design of the portal should help people:

> *The portal should be designed ergonomically, so that it helps people to work better, more quickly and more efficiently. (Participant D6)*

For the following interviewee, a key element in the design of the portal is the availability of a search function that helps users to find and locate information.

> *They should include a search function to support information retrieval. At the moment the only way that I use it to find information is through browsing and navigation menus. (Participant D2)*

Moreover, some participants mentioned that they have to click many times in order to complete a particular task, which is not necessary and it could be improved. Furthermore, the interaction between the system and the user has received some criticism. One of the academics mentioned that:

> *Some parts of the portal design could be improved and the interaction as well. I dislike the amount of clicking that is necessary because often we have to carry out very repetitive tasks which are unnecessary and sometimes irritating. I can say that the interaction between the user and the system is similar to the idea some years ago… There are some pages where some important information such as the timetable is in very small font and some of the less important information is in bigger font…I think the person who has created the page was not a page designer and they aren't trained or they aren't professional developers. (Participant E7).*

Another participant stated that:

> *There are a lot of drop down menus that I have to click to access some services and information, which I think is not necessary. It should be organised logically and the access should be simple and straightforward. (Participant D5)*

The following participant described how customisation is limited on the portal and result in the feeling of lack of control:

I cannot change the layout of the page, and I am not able to customise it according to my preferences. (Participant E10)

An examination of some documents (DOC9D,DOC4E and DOC5E) about the design of CPs in the universities studied has provided some comments. For example:

The portal staff page is not attractive, lack of pictures and graphics.

Convoluted waste of time and how are we supposed to know when to check it? Surely the new messages/flags (whatever you want to call them) should have an RSS feed or an automated email reminder or something linked to them.

Why must the portal have this stupid module interface, it is impossible to navigate using standard back/forward buttons.

The portal interface should be user friendly and intuitive.

The system should be uncluttered.

To conclude, the findings revealed that the participants have some issues and opinions regarding the portal design. These are related to usability, functionality, interactivity and the overall appearance of CPs.

7.3.2.1.2 Portal Security

According to the findings, several issues were identified related to the portal security. Examples of such issues include: information security, privacy, and the protection of personal details. Since the portal provides an integrated access to various campus systems and applications via a SSO, many participants have emphasised the fact that the university needs to address privacy and security concerns. Therefore, authentication and authorisation are two of the most important features on a CP. Moreover, some participants mentioned that the portal should have a security feature which logs users out automatically after a set period of time. This is particularly useful in case a user has left the portal logged on or forgotten to logout for any reason.

The following interviewee expresses concerns and makes a suggestion regarding portal security:

> *One thing that worries me is that when you start university your password is already your date of birth. If anyone knows it they can access your account... What they should do is, when students get their user names and start to use the portal, they should be forced to change their passwords. Another thing is to enhance the security of the portal. Suppose I've left my account on and forgotten to log out, it should automatically log out after a period of time 10 or 20 minutes. It doesn't do that. (Participant D2)*

The following participant suggests another method to enhance the security on the portal. The university should consider applying the concept of double authentication to verify whether someone is who they claim to be:

> *Security should be enhanced more. This can be done through using double authentication, so that users are asked to enter another password for confirmation which must be different from the logging details. This technique is very helpful to determine whether someone is who they claim to be. (Participant E9)*

The next interviewee expresses a security concern, but at the same time trusts the University in terms of protecting personal details. She mentions that:

> *I know that the University holds a lot of personal information about me… As long as people cannot hack into the portal I am happy and I trust the University in terms of private data protection. (Participant D5)*

The following participant accesses his Google email account via the portal and expressed his concern regarding privacy when he said:

> *The University has introduced Google mail which is now integrated into the portal and this makes me a little bit worried. You know Google is a third party… All information about my activities or at least my communication details are being held by Google…I want to know how our personal details and communication will be handled. It is a privacy issue that concerns me… I don't know what agreement the university has made with Google! (Participant E6)*

In summary, the findings indicated that there are many security and privacy issues that are related to the use of the portal. The universities studied apply the basic security measure of user name and password, and while this can ensure security, the findings suggest that new methods of security should be considered.

7.3.2.1.3 Portal Mobility

Some participants expressed their desire for CPs to be accessible via mobile communication devices such as mobile phones, smart phones and PDAs. For these participants, accessing the portal via mobile devices is very convenient when they are away from their machines. Furthermore, it provides users with faster access to services and information and, eliminates the location barrier, allowing users access the system anytime and anywhere regardless of their location. One of the participants mentioned that:

> *It is a great idea to get access to the portal via my mobile phone or IPhone, and I am always on the move, so I want to see my results, check my timetable etc... without being restricted to my PC or laptop. (Participant D2).*

When he asked about what improvements should be made to develop the portal, one of the academic staff mentioned that:

> *I think it is a good idea that they consider the portal to be accessible via mobile devices such as mobile phones, personal organisers and other devices. (Participant E7)*

7.3.2.1.4 Conflict with other Systems

Many participants expressed some concerns about how the portal is being overlapped with other campus systems such as the University website, faculty webpages and departmental intranets, especially with accessing content and information. Some participants reported that there is useful information that is not available on the portal and they have to find it somewhere else, for example the university map, contact details, academic calendar, local and travel information. Although the portal is supposed to be the main SSO to access multiple services, resources and information, the reality does not reflect this fact and there is a common feeling among many users that the content is available in different places. Furthermore, many participants reported that they do not appreciate the fact that they have to use different systems and applications to find information and access services. Instead, all should be accessed from one door or a single gateway.

The following participant questioned the fact that the intranet has been separated from the portal, although both systems provide information and services. She said:

There is a link from the staff portal to the intranet and I don't know why they have separated these two systems. (Participant E8)

For the following interviewee, some useful and important content is not available on the portal:

I don't know why some useful content and information has been put into other different systems and not made available on the portal. For example, the university map and academic calendar are available on the university website. (Participant D3).

7.3.2.1.5 Provision of E-services

According to the findings, the provision of E-services via the portal was an issue with some participants expressing their desire to have some e-services or e-business transactions available. The portal is seen as an effective platform for providing e-services and e-transactions. The provision of E-services will facilitate the access to the university services and eliminate or reduce unnecessary bureaucracy associated with traditional ways of providing services. Furthermore, it will help to speed up administrative, provide a flexible approach in conducting day to day business and saves users time and effort. From a student perspective, examples of such services include: filling forms online, applying for housing and accommodation services, requesting letters electronically, registering courses, booking campus facilities (a room in the library), applying for financial aid and tracking requests online. For academics, examples include: applying for conferences, requesting breaks, leaves and holidays online. One of the participants mentioned that:

We do a lot of administrative processes informally and manually. It would be quite useful if these processes were provided electronically…so that you can apply for a break or a holiday online. Everybody has access to the portal and can chase up requests. It saves time and effort. (Participant D5)

Another research student reported that:

If I need a simple letter that confirms my attendance at the university, I have to find the form, fill it in and take it to the research office for signature. These are not necessary processes and it should be done electronically via MyUniversity portal. (Participant E5).

7.3.2.1.6 Systems Integration

Issues surrounding systems integration were mentioned frequently in many interviews and participants came up with two different views. On the one hand, some interviewees appreciate the fact that the portal can integrate different campus systems and applications in one place and provide access via a common interface. The results show that the advantages of having a SSO system are varied. These include: saving users time and effort, providing a consistent and common interface, so that users do not have to deal with different interfaces, and minimising the amount of IDs and passwords that are required.

The following interviewee appreciates the SSO feature on the portal, which eliminates the need for logging into each system separately.

> *I find it quite useful. Once I log on, I get access to some applications without entering my user name and password again. If there was no portal, it would be difficult to log on and I would have to log on to each system separately and that would waste my time moving from one system to another. (Participant D2)*

Another academic staff expresses a similar view about the SSO feature and said that:

> *If we make an assumption that it is convenient to have SSO for all of the online systems, then the main value of the portal for me is that it is a SSO and if I sign into the portal I can then access blackboard, timetable page, library and other systems. (Participant E7)*

On the other hand, some participants mentioned that the portal is supposed to be the main SSO to access multiple services, resources and information, but that the reality does not reflect this fact. Although some campus systems have already been integrated into the portal, many participants complained about the lack of integration and reported that some systems have not been yet integrated, so that they have to log on into each system separately using different IDs and passwords.

The next participant claims that the portal does not integrate some of the systems and that he needs to log into these systems separately using different IDs. He stated that:

My University portal does not integrate some campus systems. For example there is a link to the students' union website and the library homepage. When I click the link, it takes me to the websites but to access your account you have log on again and you may have to use different login details. (Participant E9)

A similar view was reported by another interviewee who described the lack of integration as irritating, tedious and boring:

In many cases, I have to log on to each system separately. It would be much nicer if everything was integrated all in one place and one logging. I suppose there might be security issues. But I don't really see why the system cannot pick up my ID and password and then pass it on to other sub-systems… I think it is irritating, tedious and boring that you have to use so many different systems with different IDs and passwords. (Participant D7)

The following research student expressed her concern regarding systems integration and stressed the importance of using only one user name and password:

I think the most important thing is to deeply integrate all the systems that we need into the portal and to access them with only one user name and password. Yes they have integrated some systems but not all of them and they provide only links to some services. For example I can access the library system from the portal via a link which takes me the library website. However, to check my library account, I have to enter my library user name and password which is completely different from the one that I use to access the portal. (Participant E5)

In conclusion, systems integration is important for many participants. Although CPs provide users with a SSO access to many campus systems, the respondents feel there is more work to be done to improve systems integration. They would like to see a more integrated service with access via a single user name and password.

7.3.2.1.7 Portal Availability
Several participants expressed concern about the unavailability of the portal. Some of them mentioned that they experienced several situations when they could not access the portal for unknown reasons. Furthermore, some participants reported that there should be some sort of communication when the portal is not available for any reason.

The following participant expects access to the system to be available at all times, both on and off campus, and to be informed if it goes down for any reason.

> *I expect the portal to be available 24/7. They sometimes carry out maintenance and as a result I can't access the portal for certain times. I think the maintenance should not be carried out during term times…and most importantly we should be informed when the system is not available. (Participant D2)*

For the following participant, the portal is the main tool for communication, and she expects the system to be available all the time:

> *The portal should work all the time when we need it on campus and off campus. It is the main line for communication between me and the University. (Participant D4)*

Another interviewee mentioned that:

> *Sometimes the portal goes down and I cannot get access. There was no explanation of what was wrong, only an error message. (Participant D8)*

The findings suggest that accessibility is important for users and they expect the portal to be available all time. Furthermore, users should be informed when the portal is not available for any reason and this can be done via communication channels.

7.3.2.2 Content Quality

Content quality was one of the main topics reported by most of the interviewees in both universities. Participants were concerned with how content is being provided, managed and presented. Examples of these issues include: lack of content, irrelevant content, content structure and organisation, and content currency.

Many participants raised the issue that CPs lack some useful content which they have to find somewhere else such as on the university website or departmental intranets. One of the participants mentioned that:

> *In some cases I can't find what I am looking for and I have to find it somewhere else, in the university website, or the Blackboard system. **Could you give me some examples?** Yes, for instance, the contact details of my teachers, details about the courses that I am studying aren't available on the portal, I have to find them in the university website. (Participant D2)*

Another participant expressed a similar view when said:

> *Sometimes I need some information and I can't find it on the portal, so I have to use the university website. Our website has a lot of useful information and some of this information should be put on the portal. (Participant E8).*

Another issue is irrelevant content. Some participants reported that they do not appreciate the lack of personalisation, which causes them to receive too much information (information overload) and information they consider irrelevant. The following participant described how the personalisation is limited on the portal and result in receiving too much information:

> *We want to see a personalised experience. I am forced to see certain content and I receive so much information which isn't relevant to my need. (Participant E10)*

The following participant mentioned that:

> *The majority of the stuff on the portal I am not interest in, only a few different things that I actually use and nothing else. (Participant D7)*

Another participant wants the personalisation experience to be based on the individual interests and preferences. He mentioned that:

> *We need a personalised portal that brings information from a wide range of diverse systems and sources and is presented in a unified, coherent way. What I would like to see is information that is driven by individual interests and preferences. (Participant E8)*

One of the participants claimed that the lack of personalisation can be attributed to the university structure, which imposes certain solutions and forces people to use them regardless of their needs. Furthermore, he compares the personalisation experience at the University with that in corporate industry and claims that the academic environment is slightly behind and that lessons can be learnt from that practice. He said:

> *When a structure is imposed on you, it doesn't always relate to your needs, so there is a tension between having an environment that helps you do what you do and then there is a tension between that and an environment that constrains you and stops you doing what you want to do, so you get pushed and pulled between the two in a way. …Having said that I get the impression in industry, in a corporate environment, with Enterprise Information Systems that they have been able to provide a better balance between corporate portal structure and the ability to personalise and to*

have a personalised interface. Probably, universities are slightly behind what is happening in the corporate environment and they can learn lessons from that practice and experience. (Participant D7)

Providing a highly personalisable and customisable portal would cost the university a lot of money, and as reported earlier, the implementers mentioned that lack of money was a main issue for developing the portal.

Another issue related to the structure of the content and its organisation on the portal. One of the participants mentioned that:

The content needs consideration in terms of structure and presentation, and there is no uniformity among some aspects of the content. This makes users feel that there is some kind of inconsistency in terms of content presentation. (Participant E7)

For the following participant, some content on the portal seems to be out of date:

The content seems to be out of date and I see some news and announcements that have been on the portal for long time. (Participant D8)

For the next interviewee, searching and finding content on the portal is an issue and because of the lack of a good search function:

Finding information can be problematic, because there are no good tools that can help you to find and locate information. The search function is very weak. (Participant D6)

Furthermore, an examination of some documents (DOC5E,DOC7E,DOC9D) shows that most comments reported by users were about the lack of content and content being irrelevant, inaccurate and out of date.

In summary, content quality is very important. The findings showed that users expressed several concerns regarding the content, such as lack of content, irrelevant content, content structure and organisation and lack of tools to support efficient search and retrieval.

7.3.2.3 Service Quality

The analysis show that there are many issues related to service quality. They include: user involvement, communication and benchmarking CPs.

7.3.2.3.1 User Involvement

The findings show that in order to understand user requirements and needs, users should be directly involved with the portal development. Many participants reported that user involvement is critical to the success of portal adoption and utilisation. Furthermore, when users feel that their requirements have been considered, this will attract them to the portal, and as a result will increase the usage of the system.

The following quotation reflects one of the participants' concern regarding user requirements and needs, which can be understood via user involvement. He criticises the University's approach when it developed the portal:

> *Ideally, there should be an in-depth study of the users of the system, so that the implementers understand how people use the system… and you can build a quite rich picture. Also, a more qualitative study of talking to people about what they would like to do and actually involving people in a participative way. Solutions tend to be imposed and as a result they will not work because people who are imposing them do not really understand the full context. There should be a detailed requirement analysis involving users in the early stage of implementation. If you do not involve them, you just end with problems further down the line. (Participant D7)*

For the following participant, understanding user requirements and needs is critical to the success of portal adoption and utilisation. He said that:

> *To make the portal successful, students should be involved and their requirements and needs must be understood. The output of the portal should be driven by user requirements and needs. (Participant E5)*

When asked about what improvements should be made to develop the portal, the following participant emphasised the importance of understanding what users need and require. He said:

> *It is important to consider the views and opinions of users who are going to use the portal... what they want to see on the system will help to improve it. I think it is a good idea to speak to students and staff and to understand their views towards the use of the portal. (Participant D3)*

From several interviews and from different findings reported in this section, it can be concluded that user requirements were not fully understood by the implementers. The findings suggest that involving users is an important issue, which many participants feel that can contribute to the success of the system.

7.3.2.3.2 Communication

Communication and the promotion of the CPs are two of the most common issues reported by many interviewees in both universities. Many participants reported that there is a lack of communication between the portal team and the users. This has resulted in another issue, which is a lack of effort being made to promote the portal and its services and resources to the users. The lack of portal promotion has had an effect on user awareness of what is being offered. Furthermore, it has widened the gap between the portal team and users; therefore, there is poor communication inwards and outwards.

The following participant claims that there is a gap between users and the people who manage the system and he criticises them for being too technically minded and suggests that the portal should have some input from users. He said:

> *There is always a gap and especially with respect to communication. I suspect that the vast majority of the people in the University have no communication with people who manage the portal. I think the team who are in charge of the portal are technically minded and they have put technical standards at the top of their priorities. They should allow people through the University to communicate with them and be comfortable about knowing who to go to make comments and suggestions...If the portal is going to be important and succeed, they should have input from all people in the university. (Participant E7)*

The following participant claims that he does not know who is in charge of the system, and in case of any query, he does not where to go:

> *I don't know who is in charge of the portal. So, maybe if we knew who they are I would stop complaining and going to the library staff to ask for help. I do that because they are the only people who I know. (Participant D3)*

Another participant made a similar point:

> *We are talking about the virtual world as opposite to the world of reality. It isn't clear who to contact or to whom I should speak*

*when I need anything on the portal… I don't know where to go.
(Participant E6)*

Lack of communication to promote the portal and its services was reported by the following participant when she said:

There isn't much communication to promote the portal and increase awareness of its services. I became aware of it from a colleague in a meeting. I think promoting the portal can provide an overall vision of what it does, what you can do with it, so that it can hit everybody within the university and people will use it to the full capacity. (Participant D5)

It can be said that communicating and promoting CPs were important issues to many participants. The findings suggest that there is a communication gap between the implementers and users. There is a common feeling among many participants that there is insufficient effort being made to communicate and promote the portal and this has affected users' perception of the system.

7.3.2.3.3 Benchmarking the Campus Portals

Some participants mentioned that they have used some useful web portals on the internet that provide a great personalised and customised experience and that they want to see some of these features available in their CPs. The findings indicated that one way to improve the service is to benchmark the portal against best practices. One of the academics mentioned that:

I suppose it would be nice to have a high degree on personalisation and would be nice, for example, you know IGoogle, you can create gadgets and channels as much as you want, so that to have something like these things… I get the impression in industry that they have been able to provide a better a personalised interface… Universities are slightly behind what is happening in the corporate environment and they can learn lessons from that practice and experience. (Participant D7)

The following participant compares her experience using web portals on the Internet. She likes the great features and functionalities that are being provided:

MyYahoo is the gateway to use the Internet. It provides me with fantastic tools and allows me to customise and personalise the portal as much as I like… and I can see what I want…You can add content, change colours and appearance of the pages. I think we should have something like that in our university portal. (Participant D4)

200

7.4 Conclusion

This chapter presented the findings from two case studies in the UK. First, it reported findings from the implementers' perspective. It showed that portal initiatives in UK universities come from IT and Information Services departments and they are grass roots initiatives. In addition, the universities studied have developed their portals in-house, a decision influenced by many factors including: cost, unavailability of ready-made solutions that fulfilled the universities' requirements, and most importantly, the availability of in-house technical expertise. Furthermore, there are many different motivations that led to universities adopting and implementing CPs. These include: organisational, technical, educational, user expectations, economic, environmental and geographic dispersion. Moreover, many enablers helped the universities, such as the availability of in-house technical expertise, staff commitment, external co-operation and technology readiness. The findings show that the universities experienced several challenges such as inadequate top management support, the lack of identity management systems, technology acceptance, uncertainly regarding portal technology, and lack of funding and resources allocated to the project.

Then, the chapter reported the results from the users' perspective. Users perceived benefits associated with the use of CPs, such as SSO, ease of access on and off campus, convenience, timeliness and ease of accessing services and information. Several issues concerned users regarding CPs, which included: system quality, content quality and service quality. There were two main gaps between users and the people who manage CPs: a communication gap and an expectations gap.

Chapters 6 and 7 have reported the findings of five case studies (three from SA and two from the UK. The following Chapter (8) presents a cross-case analysis, bringing the five together and relating them to the literature.

Chapter 8: Findings Comparison and Discussion

8.1 Introduction

The previous Chapters (6 and 7) reported the findings of the case studies. This chapter compares and discusses these findings in the light of the literature and related work. First, it discusses the findings from the implementers' perspective and then it presents the factors that affect portal adoption and implementation. Then, it discusses the findings from the users' perspective and addresses their concerns and expectations from the development of CPs. The chapter concludes with a summary of the main findings.

8.2 Findings Discussion: The Implementers' Perspective

This section compares and discusses the findings reported by portal teams involved with portal adoption and implementation.

8.2.1 Source of the Initiative: The Role of the Organisational Structure

The findings showed that the organisational structure has affected the development of CPs and there was a difference between universities in both countries: centralised structure (Saudi universities) versus decentralised structure (UK universities). In the Saudi universities, the portal initiative came from top management where senior people made final decisions and introduced the concept of portalisation to the university. In contrast, the portal initiative in the UK cases came from IT departments and was a grass roots initiative in which the ideas came from the technical staff, as shown in Figure 8.1.
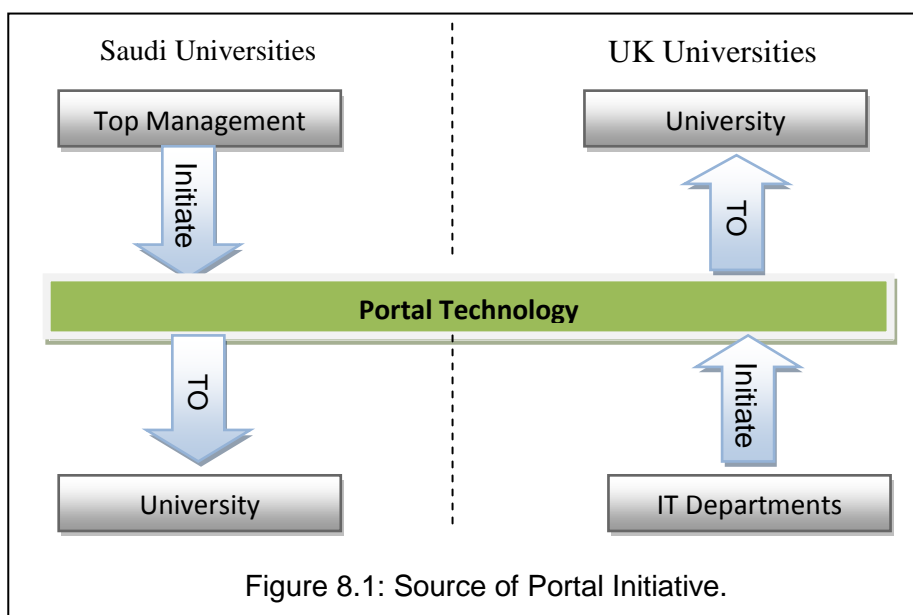
Figure 8.1: Source of Portal Initiative.

The difference can be explained as follows. First, Saudi universities tend to be highly structured and most important decisions are made by top management who have the legitimate power to make final decisions. This agrees with findings reported by (Al-Shehry 2008,p.162). Orders from a manager in an authority position are followed because the manager has the legitimate power to command certain subordinates in lower positions (Ivancevich et al 2005,p.388). The participants appreciated the important role of centralised processes in driving the agenda for a central university portal. This facilitated the access to funding, encouraged co-operation, and provided support for communicating the project development and management.

In contrast, UK universities tend to have devolved structures where most academic departments and units are quite independent or autonomous. Furthermore, UK universities are rather decentralised institutions, and many member institutions (faculties or departments) maintain their own information systems. Bottom-up initiatives are more driven by individual needs, individually funded and may run the risk of being uncoordinated due to a lack of management support (de Freitas and Oliver 2005,p.86; Scheepers 2006,p.645). The principle of "academic freedom" and the devolved structure used to manage IT projects were main issues that negatively affected several aspects related to the development and management of a central university portal. This agrees with the findings reported by Frazee et al (2003,p.145) and Cox (2007,p.776) on the factors affecting web management in universities.

In conclusion, it can be argued that the organisational structure plays a key role in developing and managing CPs. A difference between the cases was identified: centralised versus decentralised structures. The findings showed that in the Saudi universities the initiative was a top down approach, whereas in the UK was a bottom up approach. Other plausible explanations of these issues are provided in Chapter 9, in which the researcher applies some elements of institutional theory.

8.2.2 Implementation Strategies

This issue refers to how the portal technology was implemented. As mentioned in Chapter 2, one of the toughest decisions that organisations may face is how to implement an institutional portal. Campuses may choose a number of strategies in creating portals (Eisler 2003,p.78). The results showed that there is a difference between UK and Saudi universities. The Saudi universities bought ready-made solutions, whereas the UK universities developed portals in-house. The difference can be attributed to many factors, which are presented in Table 8.1.

Table 8.1: Portal Implementation Strategies.

Cases	Implementation Strategies	Justifications
Saudi Universities	Buying ready-made solutions	• It will cost us a lot of money, time and effort to develop the portal in-house. • Portal technologies are available on the market from different vendors. • Do not want to reinvent the wheel. • Lack of in-house technical expertise. • Money is available (financial support).
UK Universities	In-house Development u-Portal	• Unavailability of ready-made solutions that would fulfill our requirements. • Lack of money to buy ready-made products. • To avoid ongoing cost. • The availability of in-house technical expertise. • Allows full customisation to meet the campus needs. • Benefit from large communities that developed the same framework.

It can be said that there are many advantages and disadvantages associated with each method. In-house development has several advantages. It allows universities to design the portal according to their needs, systems and culture, and provides them with full flexibility regarding future development (Eisler 2003,p.78). These were important issues to the universities studied (Chapter 7, section 7.2.2). Another advantage is the fact that it provides universities with a shared approach to portal development as many universities have developed the same open source framework, which therefore helps to share knowledge

and experience (Eisler 2003,p.78; Stoffel and Cunningham 2005,p.156). This is especially true in the case of uPortal framework, where many universities worldwide as well as in the UK have utilised this framework for their CPs and there is a wide support for this framework. Institutions implementing uPortal framework could expect considerable levels of support from wider communities facing similar problems and issues (Dolphin and Sherratt 2003,p.20; Franklin 2004,p.14).

Moreover, this method helps universities to avoid ongoing costs including maintenance and annual licenses that are associated with buying a ready-made product, especially when organisations face financial difficulties. According to the results; avoiding ongoing cost was a main reason for developing the portal in-house. This applies specifically to UK universities at the present, as the higher education sector is facing a funding squeeze (Harrison 2010). The financial crisis of recent years means universities are facing cuts in their budgets which could affect many projects. For example, in 2010 The UK Government cut direct support for English Universities by £400 million (Stenvens 2009; Richardson 2010). Financial issues such as these will be discussed in section 8.2.4.4.

On the other hand, this method does have several disadvantages. For instance, homegrown portals require significant technical expertise, high IT competence, time, effort and dedicated staff (Eisler 2003,p78; Thomas 2003,p.111). These are significant issues for many contemporary universities. Participants from the UK were confident about their IT skills and internal expertise but they did, raise concerns regarding the lack of staff dedicated to the project and this issue was one of the main barriers to CP implementation. It will be described in section 8.2.4.2.3. Furthermore, establishing a portal from scratch may make universities lag behind their counterparts regarding portal development and they may not keep up with recent innovation and development in the portal market and may require a transition from a home-grown to a vendor-based solution (Daigle and Cuocco 2002,p.122; Eisler 2003,pp.78-79).

In contrast, Saudi universities bought ready-made products. This approach has many positive points. For example, it is a quick-win and it saves the university a lot of resources including money, time, effort and, most importantly, staff. Moreover, it provides universities with cutting edge technologies that already exist in the portal market from different vendors (Eisler 2003,p.79). Furthermore, this method is very convenient when an organisation does not have enough in-house technical expertise, thus the organisation benefits from vendors and consultants' experience and knowledge (Karlsbjerg et al 2003,p.51). This is especially true in the Saudi cases. As reported in Chapter 6, section 6.2.2, one of the main reasons for buying a ready-made portal was the lack of in-house technical expertise.

On the other side, buying a portal solution has many disadvantages such as cost, integration issues, the limitation of customisation and the need for ongoing technical support from the vendor. The cost of establishing the portal includes the ongoing cost for maintenance, paying the annual license, staffing, hardware, and integration (Thomas 2003,p.112). Although there are many vendors who provide portal solutions, the technology is still very expensive (Sugianto and Tojib 2007,p.4; HECB 2009,p.18). Although the cost of establishing the portal was not an issue for the universities studied and that the participants appreciated the financial support provided from the outset of the project, they did, however, express concerns about the on-going cost, maintenance and support in the long term. Portals require long-term investment of resources such as money and staff. This agrees with other research showing that sustainable funding is one of the most important factors in portal implementations (Fisher and Craig 2004,p.6; Detlor et al 2008,p.6).

Another disadvantage concerns integration issues. The findings showed that the universities experienced several issues regarding integration and compatibility of the portal with existing corporate systems. According Dolphin and Sherratt (2003,p.20) commercial products require considerable technical assistance to solve certain technical issues including integration. Customisation is another issue related to the implementation of ready-made products. This refers to the level at which organisations can customise the portal according to

their own preferences and needs. Many commercial portals do not offer flexibility to meet these needs and users are restricted to certain elements and components or pre-defined channels (Eisler 2003,p.80). A final issue is the need for ongoing technical support from the vendor which may lead an organisation to be locked-in and become dependent on one vendor (Karlsbjerg et al 2003,p.51). However, the findings suggested that vendor support was not a main issue and the universities had a strong long-term relationship with the vendors which contributed positively to CP development. This issue will be discussed in section 8.2.4.3.3.

In summary, the discussion showed that there was a difference regarding the implementation strategy: in-house development (UK universities) versus buying ready-made solutions (Saudi universities). It showed that there were several factors that affected the implementation strategy which were outlined in table 8.1. It can be said that no method that is superior to others, and the choice of method depends on the circumstances of the university and the availability of the resources and that each method has its own advantages and disadvantages.

8.2.3 Motivations for Campus Portals Adoption and Implementation

Many researchers have identified why organisations including universities are interested in portal technology (Looney and Lyman 2000,p.32; Dias 2001,p.283; Duffner 2003,p.203; Rose 2003,p.69; Franklin 2004,p.8; Sullivan 2004,p.88; Bajec 2005,p.254; Li and Wood 2005,p.50). These include: improved access to information, cost reduction, improved efficiency, improved customer service, development of new systems, increased ROI, systems integration, and improved communication and collaboration.

The findings indicated that the universities studied sought to achieve many objectives by developing CPs. Although the motivations were varied, the results show that a CP is a great technology to improve information access, to integrate different systems, to provide a SSO, to improve communication, to increase information flow, to increase ROI, to support education, to improve administrative processes, and to overcome geographical barriers. Furthermore, it is interesting to note that there are close similarities between universities in

both countries in their motivations. This can be attributed to the fact that universities in general, regardless of their location and culture, exist for similar purposes, and this may affect how the technology is adopted and implemented. However, the only difference between Saudi and UK universities is the fact that the administrative motivation was identified in the Saudi cases, and was not evident in the UK cases. Figure 8.2 shows the motivations (reasons). The following is a discussion of these motivations.

Organisational	Technological	Educational	User Expectations

Motivations for Campus Portal Adoption and Implementation

Geographic	Administrative Saudi cases only	Environmental	Economic

Figure 8.2: Motivations for Campus Portal Adoption and Implementation.
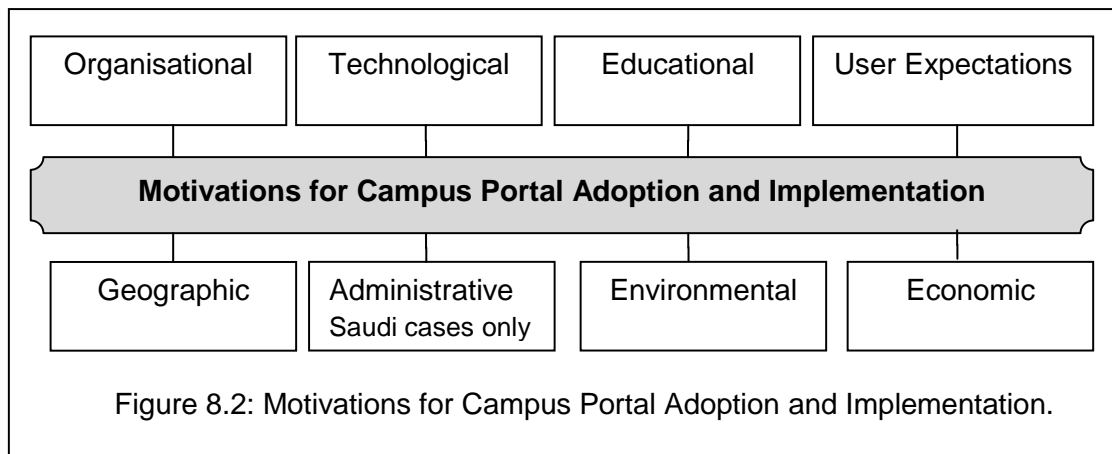
8.2.3.1 Organisational Motivation

Improving and simplifying the access to services and information and improving communication within universities were common issues. The results (Chapter 6 section, 6.2.3.1 and Chapter 7 section, 7.2.3.1) showed that the universities wanted to provide users with instant access in an electronic way to information, services and resources 24 hour a day, seven days a week, all year. To some extent, it can be said that the universities have achieved this aim and the findings from users support this claim. For example, it was found that users have perceived many benefits associated with the use of CPs, such as SSO, ease of access on and off campus, convenient access and timeliness. This agrees with findings from other research (Pickett and Hamre 2002,p.38; Englert 2003; Pearce 2003,p.12; Thomas 2003,p.105; Bajec 2005,p.254). Although this can be done via a simple website or an intranet, a portal can do it in more effective and productive ways by providing a SSO access and a personalised view of the campus services and information. Portals do a better job for organisations in terms of managing and accessing information than earlier

systems such as business intelligence software and ERP systems (Rose 2003,p.69). Furthermore, Al-Badi et al (2009,p.8) described how a portal implementation provided the university with some facilities that it simply did not have in the past. Finally, Dias (2001,p.284) reported that one of the advantages of portal technology, which distinguishes it from other systems, is the personalisation feature, which can provide users with a personalised view of enterprise information.

To conclude, the results revealed that simplifying access to services and information, and improving communication are the main issues, and there are similarities between the cases. Moreover, there is some correspondence between the views of the implementers and the users regarding the way in which CPs have facilitated these issues.

8.2.3.2 Technological Motivation

Technical motivation was one of the most important factors for portal implementation. Systems integration was a main issue for all the universities studied. According to the findings, the universities had developed various systems such as the email system, the library, SRS, VLE, financial systems, HR systems and others corporate systems. This had many implications. First, the access to these systems required different usernames and passwords, so that a user could have many accounts and had to log to each system separately. Second, it contributed to the workload in managing users' accounts and profiles. Third, it raised a security issue by giving users many accounts. Fourth, users had to deal with different interfaces to log on to these systems and had to learn how to use them. Finally, this approach was not appreciated by users many of whom complained about this issue. Integrating these systems within the portal became a priority to the universities.

These findings are consistent with prior studies reporting that systems integration and SSO were main reasons for portal deployment (Dolphin and Sherratt 2003,p.9; Bajec 2005,p.254; Daniel and Ward 2006,p.118). For example, Bajec (2005,p.255) argued that portals present an opportunity for universities to transform themselves more effectively, without first having to

throw all the legacy systems away, by integrating these systems in one place. Furthermore, systems integration can yield several benefits such as SSO, cost reduction, improved business processes, performance and productivity, improved security, better decision making, increased ROI, improved access to information and ease of access (Themistocleous and Irani 2001,p.328; Sullivan 2004,p.55; Woznica and Healy 2009,p.116).

It can be said that the universities have achieved partial integration. Moreover, the findings from the users' perspective suggest that participants appreciated the idea of systems integration and the SSO and they described its convenience, ease of access and the way it facilitated the access to various services and organisational information. However, many users raised several concerns regarding systems integration and these issues will be discussed in section 8.3.2.1.7.

In conclusion, it can be argued that systems integration is one of the main driving forces for CP implementation. This is because the technology is very promising and can provide universities with many advantages by integrating many systems in one place and providing users with a SSO access and a unique interface.

8.2.3.3 Educational Motivation

In the educational atmosphere of the early twenty-first century, new opportunities and promises of technology for teaching and learning have become widespread (Price and Oliver 2007,p.16). There was an educational motivation for CP development. This is not surprising given the fact that universities are places for learning and education. Throughout their history, universities have been active in the adoption and implementation of ICT to support learning and education, and technology has been taken-for-granted in this regard. Therefore, portal implementation is simply an extension of this practice. Portal technology is seen as a tool that can support the educational process by providing students, faculty and staff access to various key applications for learning, teaching and research such as VLE and WebCT. Moreover, investing in a CP can enhance users' experience by exposing them to cutting edge technology that supports learning. Many writers have

acknowledged the role of portal technology in supporting the educational process (Ast and Gerfen 2003,p.243; Campbell and Aucion 2003,p. 171; Jafari 2003,p.270).

However, it seems that the universities only use the portals for providing access to learning tools, resources and applications, and have not yet exploited them fully and effectively. For example, the collaborative and interactive sides have not been implemented as they should be. Portals can provide co-operative and interactive settings where students and teachers can find peers who share the same educational interests and interact in a seamless and personalised way via the use of 'Intelligent Agents' (Campbell and Aucion 2003,p.171; Jafari 2003,pp.90-270). However, such applications require many resources (staff, money, technical expertise, effort and time) all of which are significant issues to universities. Some of these issues have already been reported and others will be discussed later.

8.2.3.4 User Expectations

As reported in Chapter 6, section 6.2.3.4 and Chapter 7, section 7.2.3.4 responding to user expectations was one of the reasons that motivated the universities to adopt a CP. It suggests that users would expect universities to invest in ICT and deploy cutting edge technology. This agrees with findings of Cobb et al (2002,p.6) who reported that meeting the rapid increase in customer expectation was a main objective for portal development. Furthermore, the use of Internet and web-based applications has become very popular among students and academics and is an essential part of teaching, learning, training and research. This issue applies specifically to today's students, who can be described as 'digital natives' in their learning and communication style (Ast and Gerfen 2003,p.240). They come to universities with the expectation of web-based applications being available for their use, and they expect cutting edge technology that is based on convenience, ease of access and engagement. Thomas (2003,p.104) reported that modern campus constituents have become familiar with the concept of self-service and they are no longer interested in the use of traditional campus applications that lack flexibility, convenience and efficiency. Their current requirements and needs demand a new approach in

delivering IT services which is based on self-service, convenient, immediate access, flexibility and timeliness. Moreover, Ast and Gerfen (2003,p.240) reported that today's non-traditional students or the 'Net Generation' require technology-based learning and flexible administrative procedures as essential parts of their educational experience.

It can be said that responding to user expectations is a main reason for developing CPs, given the fact that users have become familiar with Internet and web-based technologies, and they expect a similar environment to be available for their use in universities.

8.2.3.5 Geographic Motivation

Overcoming geographic barriers to deliver services and transmit information to users was another motivation in which there is a similarity between the cases. The advantages of providing remote access are varied. First, if the portal integrates the university systems in one place, users can access them off-campus without the need to launch each system separately. Another advantage is bringing the university services and resources to users' fingertips without the need to physically come to the university (for example if a student or an academic has no classes on a particular day). The portal has proven to be a valuable technology in overcoming geographic barriers, especially when distributing campus information. In the Saudi cases, it was found that there are campuses and branches around the country, so that the portal technology can help to deliver services and transmit information. This agrees with Al-Shehry (2008,p.115) who found that one of the reasons that motivated the Saudi Government to implemented e-government was to overcome geographical dispersion. Concerning the UK universities, linking users with the university electronically when they are far away from the campus was an important issue.

8.2.3.6 Administrative Motivation

This issue was only identified in the Saudi case studies. However, one university from the UK (University E) has considered this issue and there is a plan to develop E-administration service (DOC9E). Although UK universities are considered to be more advanced in the deployment of ICT than their counterparts in Saudi, it is interesting to note that Saudi universities are ahead

in the implementation of E-administration. Furthermore, the results from the UK cases showed that users want to see the application of e-services (Chapter 7, section 7.3.2.1.5).

Many participants from Saudi universities referred to the concept of the e-enterprise and the digital campus. The technology is seen as a great tool to handle different administrative processes that are related to students, academics and staff. It is seen as an excellent alternative to the traditional methods such as improving the effectiveness and efficiency of administrative processes, improving support for decision making, eliminating bureaucracy, and improving quality of services. There is a strong trend in many Saudi organisations towards the implementation of e-administration and the provision of e-services. A recent report by Business Monitor International (2011,p.29) has revealed that Saudi organisations are spending hundreds of millions of dollars each year on e-administration applications, as government organisations become more aware of the potential benefits and efficiencies from applying ICT. Furthermore, the study by Al-Sobhi et al (2010,p.25) showed that the aim of e-government in Saudi organisations was to establish e-offices and introduce e-services to citizens.

Handling different processes and procedures electronically is one of the greatest advantages of a portal technology and it allows users to perform individualised or self-service processes (Cobb et al 2002,p.17; Etesse 2003,p.222; Zazelenchuk and Boling 2003,p.35; Bajec 2005,p.255). Currently, students, academics and staff can perform some online services. For example, an academic who is interested in attending a conference, can complete an online form, send it online to his/her manager for approval. At the same time they can trace their request online. This is done through the implementation of workflow applications.

Such findings are interesting for at least two reasons. First, Saudi organisations, including universities, tend to be more bureaucratic in their structures and administration processes. Several questions arise from this finding. First, will portal deployment enhance these bureaucratic practices or eliminate them?

Second, does this require a change in the organisational structure or a change in the work practice? These questions are not easy to answer and raise several issues that need further consideration.

Providing e-services requires organisations to redesign their processes and procedures (Bishop 2003,p.193; Remus 2007,p.541). According to Remus (2007,p.541) BPR is one of the CSFs for portal implementations and it must be considered when an organisation contemplates a portal technology. It seems that the universities did not spend a considerable amount of time on this issue and they have only implemented limited online services. The findings from the users' perspective suggest that, although participants appreciated the provision of e-services, at the same time they raised concerns about the limitation of these services and called for a wider implementation. This issue will be discussed in section 8.3.2.1.2.

In summary, there was an administrative motivation for CP development, which was evident only in the Saudi cases. It could be argued that a portal technology can help universities through the implementation of workflow applications and by integrating them into the portal. This may help to improve productivity and performance by facilitating the access to E-administration services.

8.2.3.7 Environmental Motivation
Responding to the external environment was another motivation. The findings showed that competition between universities influenced the decision to adopt CPs. Many participants mentioned that portals have become popular in universities and are considered to be a source of competitive advantage. For example, a project manager at a Saudi university stated that portals have become a key technology in universities and it is difficult nowadays to operate without them. He suggested that because universities in the local environment and worldwide have implemented these technologies, they had to respond to this trend. A similar view was provided by another participant from a UK university, who added that students are looking for universities that have good technology to enhance their educational experiences.

These findings are consistent with the literature showing that CPs have become commonplace in universities (Zazelenchuk and Boling 2003,p.35; Li and Wood

2005,p.50; Klein 2006,p.181; Bolton 2008,p.26; Lee et al 2009,p.2; Presley and Presley 2009,p.168). Furthermore, students have become familiar with web-based applications and they come to universities with expectations that they will find similar services available for their use. Moreover, universities may fall further behind their competitors if a portal project is not adopted and developed. Graves and Hale (2003,pp.39-40) reported 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".

Responding to the external environment can be seen as a motivation for developing a CP by attracting students and enhancing customer satisfaction. Moreover, the presence of competition in the local environment can be seen as a significant motivation of technological innovation in organisations. Some useful insights regarding the role of competitive pressures in technology implementation are provided in Chapter 9, section, 9.2.3. from an institutional theory perspective.

8.2.3.8 Economic Motivation

The economic aspect of ICT is mainly concerned with benefits and costs (Bouwman et al 2005,p.14). The findings showed that there are many economic and financial benefits that are associated with portal adoption. These include: increased ROI, reduced costs and increased savings. Most interviewees agreed that a portal technology is a great solution for saving money and cutting costs. For example, a project officer at a UK university mentioned that the development of the portal has saved the university a lot of money by providing online access to the university regulations via the portal instead of hardcopy, and claimed that for 7 years they saved about half a million pounds. Similarly in the Saudi cases, there was some evidence that portals reduced printing and distribution costs, cut communication costs and decreased the cost of finding information. These findings correspond to previous studies which show that the investment in portal technologies can yield several economic benefits such as reduced costs of distribution of information, decreased time needed to locate

information, reduced cost of training, decreased IT support costs due to self-service and online help, and reduced data duplication (Oblinger and Goldstein 2002,p.70; Rose 2003,p.66; Sullivan 2004,p.88).

In summary, it can be said that the universities perceive many advantages associated with the implementation of portals. These advantages can be regarded as the driving forces for deploying such technologies. In considering portal technology and comparing it with previous technologies implemented by universities, such as legacy systems, intranets, ERPs, and learning platforms, it can be said that portals offer more advantages and opportunities to universities in terms of self-services, convenient, immediate access, personalisation, flexibility and timeliness, and better access to services and information (Dias 2001,p.284; Rose 2003,p.69; Daniel and Ward 2005,p.10; 2006,p.114). In this regard, Rogers (2003,p.15) refers to what he calls 'relative advantage' as the degree to which an innovation is perceived as better than the idea it replaces. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.

8.2.4 Factors Affecting the Adoption and Implementation of Campus Portals

One of the main questions that this study seeks to answer is: what are the factors that affect the adoption and implementation of CPs at Saudi and UK universities? Understanding such factors could lead to better adoption and implementation and provide useful insights to decision makers. The findings show that there are many factors, which include: technological, organisational, environmental, financial, innovation and user related factors. Furthermore, it is important to mention that a particular factor can be either an enabler or a barrier (inhibitor). For example, having an adequate IT infrastructure contributed positively to portal adoption and implementation in UK universities, whereas in the Saudi context, deficiencies in the IT infrastructure negatively affected the portal development. Table 8.2 presents and compares these factors showing both similarities and differences.

Table 8.2: Factors Affecting the Adoption and Implementation of Campus Portals.

Main Factor	UK universities		Saudi universities	
	Enablers	Barriers	Enablers	Barriers
Technological	Technology readiness: IT infrastructure. Resilient networks. Access to hardware and software.	Systems integration. Lack of access and identity management systems. Independence of IT project management.	Basic IT infrastructure. Some reusable hardware.	Deficient IT infrastructure. Systems integration. Lack of access and identity management systems.
Organisational	In-house expertise. Staff commitment.	Lack of top management support. Lack of co-operation Change management Inadequate resources (staff and money)	Top management support. Internal co-operation. Staff commitment.	Lack of in-house expertise. Ongoing co-operation. Change management.
Environmental	External co-operation and coordination.	Not found.	External cooperation. The current trend of ICT adoption in the country. Good relationships with the vendor.	Not found
Financial	Not found	Lack of funding and money to support the project.	The current good condition of Saudi economy.	Cost of maintenance and running the portal.
Innovation	Perceived benefits of the system.	Uncertainty regarding portal Technology. Conflict with other systems. Content management Portal and content ownership.	Perceived benefits of the system	Uncertainty regarding portal technology. Content management. (bilingual portals) Portal and content ownership.
User-related	Users' uptake.	User acceptance. Requirements analysis. User expectations	Users' uptake.	User acceptance. User training. Requirements analysis.

217

8.2.4.1 Technological Factors

The findings revealed that technological factors were important to the adoption and implementation of CPs. Several issues have been identified which include: IT infrastructure, systems integration, lack of access and identity management systems and the independence of IT project management. The following is a discussion of these issues.

8.2.4.1.1 IT Infrastructure

There was a difference between the cases. It was found in the UK universities that technology-readiness, including good IT infrastructure, IT standards, resilient networks, access to hardware and software contributed positively to the portal development. In the Saudi cases, deficient IT infrastructure was a main barrier and contributed negatively to the project. Although there was a basic IT infrastructure, many participants felt that the quality was not high enough. This finding is consistent with other studies showing that deficient IT infrastructure affected ICT implementation in some Saudi organisations (Altameem 2007,p.9-13; Al-Shehry 2008,p.178). These findings suggest that adequate IT infrastructure must be in place prior to the development of CPs. Several writers emphasise the importance of developing an information technology infrastructure, which is considered to be critical to the long-term success of portal technology (Duffner 2003,p.219; Eisler 2003,p.78; Thomas 2003,p.106; Franklin 2004,p.16; Alves and Uhomoibhi 2010,p.80).

One reason for the variation between UK and Saudi universities might be the generally poorer IT infrastructure in the developing world compared with the developed world. Chapters 3 and 4 show several variations regarding the IT infrastructure in both countries. Furthermore, a report by Dutta and Mia (2010,pp.28-306) illustrates some important differences between the two countries. These are presented in table 8.3. It can be said that the UK is better equipped than SA regarding the IT national infrastructure. These issues could have some impact on the adoption and implementation of ICT in organisations, since organisations are linked to their external environment (Tornatzky and Fleischer 1990,p.154; Bouwman et al 2005,p.16).

Table 8.3: A Comparison between IT Infrastructure in SA and the UK.

Component	SA Rank	UK Rank
Networked Readiness Index	38	13
Availability of latest technologies	43	18
Secure internet servers	75	11
Accessibility of digital content	64	17
Internet bandwidth	59	5
Broadband internet subscribers	66	13
Internet users	61	10
Internet access in schools	69	17
Extent of business internet use	49	8
High-tech exports	116	21
Government online Service index	72	4
Presence of ICT in government agencies	40	20
E-Participation Index	90	4
The rank number reflects the position of the country worldwide, among 133 nations. Source: Dutta and Mia 2010,pp.282-306.		

8.2.4.1.2 Systems Integration

This issue is considered to be a main challenge to portal implementation recognised by most of the interviewees. According to the findings, there are two main issues. First, different systems evolved over time separately, so they have different standards. Second, these systems were purchased from different vendors and companies. Therefore, integrating them into the portal was a real a problem. This agrees with the findings from other studies (Thomas 2003,p.121; Li and Wood 2005,p.54; Davies 2006,p.119; Li and Wood 2008,p.169; Al-Badi et al 2009,p.4) showing that the biggest challenge in deploying and maintaining CPs was integrating the portal with other systems and the implementation of SSO.

This is not surprising given the fact that systems integration is a common problem and could be found in many organisations. According to Bajec (2005,p.254) many universities struggle to have their systems integrated and working as a whole. This is because in some cases subsystems require modifications before they can be integrated into the portal. Furthermore, Li and Wood (2005,p.54) reported that portals are in their infancy in terms of evolution and development and are still immature. Moreover, Themistocleous and Irani (2001,p.328) identified several problems with systems integration such as

complexity of business processes, political issues, lack of time to train employees on integration technologies, shortage of employees with good technical expertise, and the integration adds extra cost to redesign business processes.

8.2.4.1.3 Lack of Access and Identity Management Systems

Another issue identified was the lack of identity and access management systems. Users in universities have different roles: students, academics and staff. The nature of each group is different from the others, therefore; it requires different resources and services. The portal services and resources are offered according to users' roles. The aim of these systems is to connect the right people with the resources to which they are entitled in a personalised way (JISC 2009, p.13). According to the results, the absence of such systems affected the portal management, especially in terms of content provision and personalisation. These findings agree with prior studies revealing that one of the main challenges was the lack of access and identity management systems (Dolphin and Sherratt 2003,p.30; Frazee et al 2003,p.149). The results from the users' perspective showed that users complained about the lack of personalisation which contributed to information overload and receiving irrelevant content. This issue will be discussed in section 8.3.2.2.

It can be said that having an effective University identity management structure allows universities to add extra granularity in terms of developing content, showing content and allowing others to edit that content. Furthermore, the nature of higher educational institutions implies that some individuals within a university could have multiple roles. For example, some users are students and at the same time members of staff. As a result, the lack of identity management systems could affect the delivery of content and services to those groups of people. Tate (2007,p.7) reported that an important service quality consideration is the ability to easily manage and integrate those roles and provide access to content and services that are relevant to them (role integration). This issue should be addressed and considered, and some mechanisms for obscuring should be established. Finally, Alves and Uhomoibhi (2010,p.80) argue that the growing number of web applications in universities, such as portals, needs a

more effective method of identity management, providing security and accessibility.

A final issue identified was the independence of IT project management, which was only evident in the UK case studies. As reported in Chapter 7 UK universities have a devolved structure and this has resulted in a decentralised approach to developing and managing IT projects. This has made it difficult to develop a central university portal and bring all different systems and applications in one place. Some issues related to this factor have been discussed in section 8.2.2.

In summary, the findings showed that there were several technological issues that affected CP development, and there were some similarities and differences. Overall, Saudi universities experienced more technological challenges than did their counterparts in the UK, especially in terms of IT infrastructure. Regarding the similarities, it was found that systems integration and the lack of identity and access management systems were common issues. The discussion suggests that technology readiness is important for the adoption and implementation of CPs.

8.2.4.2 Organisational Factors

Many issues related to the organisational factors have been identified, and there are some similarities and differences between the cases. Concerning the Saudi universities, it was found that top management support, internal co-operation and staff commitment were the most important enablers. Moreover, the universities experienced several organisational challenges such as lack of in-house expertise, on-going co-operation and change management. Regarding the UK universities, it was found that in-house technical expertise and staff commitment were the most important positive factors. Concerning the challenges, the findings show that lack of top management support, lack of co-operation, change management and inadequate resources were critical to the universities. The following is a discussion of these issues.

8.2.4.2.1 Top Management Support

Most of the participants recognised that top management support is a very important factor to the success of portal initiatives. However, a difference

between Saudi and UK universities can be observed. For instance, chancellors in Saudi universities are involved directly with portal development. This involvement is seen as an enabler and contributed positivity to portal development. The kind of support provided by top management included: direct involvement of the chancellors in the project by chairing the portal committees, financial support, strategic support and guidance to other senior management, incentives and encouragement and decision making. According to the results, the power that the chancellors enjoy over the university has minimised the bureaucracy and simplified several processes that could have impeded the project progress (Chapter 6, section 6.2.4.1.1). These findings support other research on the role of top management support in Saudi organisations in driving the agendas for innovation implementation (Altameem 2007,p. 9-9).

Regarding UK universities, top management support was seen as an important factor. However, the level of involvement of top management was at a very low level. The lack of top management commitment had an impact on allocating the resources such as money and dedicated staff (Chapter 7, section 7.2.4.2.1). Furthermore, it is noteworthy that when top management do not see the portal as a priority, it is unlikely that they will give the portal project special attention. From this perspective, it can be argued that inadequate management support can have a negative effect on the portal adoption. This is consistent with previous research (Rahim et al 2005; Rahim 2007,p.7).

The difference between Saudi and UK universities can be explained in the following points. First, the organisation structure could have an impact. Saudi organisations tend to be highly structured with most important decisions being made by top management. Furthermore, it was reported earlier that portal initiatives in Saudi universities came from top management, where senior people introduced the portal. Therefore, if there had not been strong top management support, the portal initiative may not have been developed. In contrast, the structure of UK universities tends to be devolved, where most academic departments and units are independent or autonomous and many member institutions (faculties or departments) maintain their own information systems. Second, it could be the view and vision of top management towards

the portal and how it can serve the university. For example, it was found in a Saudi university that in early 2007, the university came under new management with the appointment of a new chancellor, who made a decision to change traditional ways of working by implementing a portal technology (DOC1A). This finding suggests that the development of the portal came with the appointment of the new chancellor who believed in technology, and in particular portals. Thus, he would support the project to achieve his vision. In contrast, the lack of top management support reported in the UK universities can be attributed to many factors. First, top management have not yet seen the portal as a priority and do not regard it as a strategic tool, so that it is not on the agenda. Second, the portal initiative in both universities was a grass roots initiative from technical staff in IT departments rather than 'top down'. According to Scheepers (2006,p.645) bottom-up initiatives lack of management support. Third, it could be due to the fact that IT departments have not convinced top management about the importance of the portal to the university as a whole. This is a very important aspect and one which portal teams should take into consideration. In order to convince the top management to support a portal project, the portal needs to show clear business benefits and advantages in the same way as every other IT project and that many managers demand greater justification and more outputs for the money and resources spent on the initiative. Most importantly, it must be shown that the financial returns outweigh the costs (Benbya et al 2004,p.217; Skidmore and Eva 2004,p.59; Sullivan 2004,p.73; Daniel and Ward 2005,p.11; Sugianto et al 2005,p.41).

These findings support previous research showing the important role of top management support in IS success (Bajwa et al 1998,p.41; Bradford and Florin 2003,p.215; Bishop 2003,p.188; Frazee et al 2003,p.151; Benbya et al 2004,p.217; Remus 2007,p.544; Al-Mudimigh et al 2011,p.42). According to Ely (1990,p.301) support at the executive level is one of the most important factors that facilitate the development of educational technology. Furthermore, Remus (2007,p.549) and Al-Mudimigh et al (2011,p.42) argue that top management support is one of the most important CSFs for portal implementation. Other researchers reported several advantages of top management support. For

example, Thomas (2003,p.110) claimed that executive level support can facilitate wider institutional co-operation. Moreover, Bishop (2003,p.188) and Rahim (2006,p.9) found that top management commitment towards a portal implementation facilitated the access to resources such as funding and staff. Other research showed that lack of management support adversely affected portal development. For instance, Eisler (2003,p.84) argued that if there is no strong support, the portal initiative might not be understood. Similarly, Rahim (2007,p.7) found that inadequate management support affected the adoption and implementation of a portal initiative and contributed to the low usage of the portal.

In summary, the importance of top management support in technology implementation cannot be overemphasised. The results of this study have reinforced previous findings on this issue. It can be said that top management involvement and support can contribute positively to CP development while the lack of such support can negatively affect the project.

8.2.4.2.2 Change Management

This issue was mentioned as one of the challenges faced by the universities in both countries. According to the findings, change management is a crucial requirement for portal implementations. Change management is difficult but not impossible to deal with in a university environment. It requires many resources such as establishing strategies and policies, dedicated staff, money, time and effort. This confirms previous work showing that one of the challenges in building a CP was managing change (Bishop 2003,p.188; Bunt and Pennock 2006,p.46). A similar view was given by Dolgonas (2003,p.46) "the most difficult challenge is facilitating a culture change across the institution. Many departments and universities as a whole are resistant to change".

These findings suggest that the introduction of a CP requires a comprehensive change management strategy that addresses both the individual and the organisational perspectives. This agrees with the views of many researchers who argue that in order to maximise and fully utilise the benefits of enterprise systems, technology deployment must be accompanied by a change management strategy (Bishop 2003,p.188; Eisler 2003,p.85; Thomas

2003,p.121; Sullivan 2004,p.73; Daniel and Ward 2006,p.120; Rahim 2007,p.8; Remus 2007,p.541). This is because a project such as the portal will have an impact on individuals and groups who will interact with the new system. Most importantly, many people in universities are familiar with existing systems and applications and many of the academic community do not understand what a portal is and thus; can see no reason for having one (Eisler 2003,p.85).

In order to address this issue, several techniques can be implemented. For example, universities should have a strong communication with users as this can help to prepare people for the outcomes of change (Norris and Duray 2002,p.34). Furthermore, Bishop (2003,p.188) suggests a balanced change management strategy that moves the university in the direction of its goals and at the same time keeps enough tradition to ensure acceptance. Finally, Sullivan (2004,p.73) and de Freitas and Oliver (2005,p.90) emphasise the importance of starting a project with early adopters who are keen on the project and are likely to offer help and support.

In summary, change management was identified as a challenge in this study, and there was a similarity between the universities studied. This result confirms previous findings on this issue. Therefore, it is important to consider this issue from the outset of the project.

8.2.4.2.3 Dedicated Resources: Project staffing and In-house Technical Expertise

Another issue reported was the dedicated resources needed to develop the project, which included: project staffing and in-house technical expertise. There is a difference between the universities in both countries. In Saudi universities, it was found that they lacked in-house technical expertise and this issue was one of the main reasons for buying ready-made solutions. This finding is consistent with previous research (Atiyyah 1989,p.99; Al-Turki and Tang 1998; Altameem 2007,pp.8-36). In contrast, the respondents from the UK were confident about their IT skills and internal expertise, and this contributed positively to the project. As reported previously, one of the main reasons that led UK universities to develop their portals in-house was the availability of technical expertise.

The difference in terms of technical expertise is unsurprising. One explanation of this difference might be 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 implemented.

Meanwhile, although participants from UK universities claimed that they had technical expertise, at the same time they complained about the lack of sufficient staff being dedicated to the project. This agrees with research of Dolphin and Sherratt (2003,p.15) Cox and Emmott (2007,p.322) that showed that lack of resources including staff was a main issue to the development of UK university websites.

The findings suggest that having in-house technical expertise and enough staff are critical to the success of a portal initiative. These findings correspond to a number of studies (Ast and Gerfen 2003,p.249; Bishop 2003,p.188; Eisler 2003,p.84; Aitkenhead 2005,p.228; Remus 2007,p.544). For example, Remus (2007,p.544) claimed that the success of portal initiatives depends on the skills, knowledge, and experiences of the staff. Moreover, many portal projects require a minimum of between two and ten dedicated full time staff (Pickett and Hamre 2002,p.53; Thomas 2003,p.111). These are significant issues in the context of contemporary universities, as IT departments are struggling to have and manage enough resources, including technical expertise and staff (Ast and Gerfen 2003,p.249; Eisler 2003,p.84).

It can be said that one of the main factors that must be considered is the availability of staff with experience and skill in portal applications. Having such resources is very valuable and could contribute positively to the success of portal implementation. However, these resources could cost universities a lot of money at a difficult time for the higher education sector, which is facing a funding squeeze.

8.2.4.2.4 Co-operation and Co-ordination

Another issue identified was the lack of co-operation between the portal teams and other service providers. Although some participants from the Saudi universities mentioned that internal co-operation was an important enabler, it was only at the beginning of the project. They appreciated the role of the chancellors in facilitating co-operation, for example by encouraging other departments and people to co-operate, communicating the project, initiating orders and providing some incentives. They did, however, raise concerns about the need for on-going co-operation. Similarly, the lack of co-operation was identified in UK universities. This confirms previous research showing that the biggest concern in portal implementation was getting all potential campus departments and units to co-operate and co-ordinate (Frazee et al 2003,p.148; Li and Wood 2005,p.54; Bolton 2008,p.21; Li and Wood 2008,p.169).

The main issue identified regarding co-operation is related to bringing content from different places and resources into the portal. If students or academics want to access different services and information such as personal details, financial information, course information and library resources, this requires all these systems to be integrated into the portal. In order to provide dynamic access, the departments and units who hold such data and information must co-operate with the portal team. This is very challenging and raises many issues such as content ownerships and content management. According to the findings, the lack of co-operation was caused by factors such as the absence of policies that address this issue, unclear vision of the added value to other service providers, fear of added workload to other academic departments and units, content ownership, and lack of interest in the portal from some people in the campus. These were important findings and will be discussed in section 8.2.4.5.

It can be said that co-operation and co-ordination are necessary tasks for the success of the project. This is because the portal technology is a cross-functional project which touches almost all parties in the campus. Many researchers have emphasised the importance of these issues (Bishop 2003,p.189; Sheehan and Jafari 2003,p.1; Thomas 2003,p.110; Stoffel and

Cunningham 2005,p.156; Scheepers 2006,p.644; Remus 2007,p.544). Effective co-operation and co-ordination can contribute to a successful portal implementation while lack of co-operation and co-ordination can result in negative outcomes and poor implementation. Furthermore, it is important to establish the co-operation and co-ordination first with early adopters who are keen on the project and there should be a lot of emphasis on the added value of the portal to all campus constituents.

8.2.4.2.5 Staff Commitment

Staff commitment was acknowledged by many participants as an important enabler. The findings suggest that portal implementation requires a major commitment from staff involved with the project. Although there were few staff dedicated to work on the project, especially in the UK cases, their enthusiasm and commitment towards the project was remarkable and had a positive impact on the project.

This is an important finding from this study, as the researcher could not identify previous research that reported the role of staff commitment in the context of portal implementation. However, some researchers have acknowledged this issue for the success of organisational initiatives and changes, particularly from the perspective of IT implementation. For example, Nah et al (2001,p.292) Kim and Peterson (2001,p.33) and Remus (2007,p.544) reported that staff commitment was one of the most important factors for implementing enterprise systems. Furthermore, Ellis (2005,p.130) found that staff commitment contributed positively to the implementation of an ERP system. Similarly, the study by Shum et al (2008,p.1356) showed that effective employee commitment was a critical factor to the success of CRM implementation.

One plausible explanation for this result could be that social actors who are close to the project believed in its strategic potential and the benefits to the university (Zuboff 1988,p.211). To support this claim, in section (8.2.3) the researcher discussed the implementers' motivation for CP implementation. The results revealed that the implementers perceived several benefits such as improved access to services and information, systems integration, a SSO, improved communication, reduced costs, improved administrative operations,

and overcoming geographical barriers. Broadly speaking, these issues are important to contemporary universities, thus staff may have considered the portal as a useful solution that fulfills an important need.

In conclusion, several organisational factors have been identified, which are believed to affect CP implementation. These factors included: top management support, change management, project staffing, in-house technical expertise, co-operation and co-ordination and staff commitment. The discussion showed that there were some similarities and differences between the universities.

8.2.4.3 Environmental Factors

Environmental factors are those factors that are present in the outside environment of organisations (Tornatzky and Fleisher 1990,pp.152-154). Many researchers found that the environment in which organisations operate affects the adoption and implementation of IS (King et al 1994,p.148; Zhu et al 2003,p.264; Hu et al 2007,p.165; Rajao and Hayes 2009,p.329; Jensen et al 2009,p.349).The results show that there were some similarities and differences. Concerning the former, it was found that external co-operation with other organisations and universities was an important issue that contributed to portal development. Regarding the differences, it was found in the Saudi cases that the current trend of ICT adoption and implementation and the relationship with the vendors were important enablers. The following is a discussion of these issues.

8.2.4.3.1 External Co-operation

External co-operation with other organisations and universities was identified as an important enabler which had a positive impact on portal development. In the UK cases, the universities participated in a research project at a national level with other universities to develop their CPs. The universities worked closely with each other while the project was going on. A similar finding was identified in the Saudi cases and the universities engaged with different universities to share their experience and knowledge (see Chapter 6, section 6.2.4.1.2 section and Chapter 7, section 7.2.4.1.4.

According to the findings, external co-operation was helpful and was a very important aspect in terms of sharing ideas, experience, knowledge and lessons

learnt. It is of vital importance for evaluating different outcomes and getting support, advice, and consultations from a larger community which has developed the same technology. In this regard, many writers (Dolphin and Sherratt 2003,p.27; Ehrmann 2003,p.30; Eisler 2003,p.74; Frazee et al 2003,p.136) appreciate this approach and recommend that universities contemplating a campus portal look and use one of the existing CPs that have already developed by other campuses and learn from their experience, and that implementers should talk to decision makers from several universities in various stages of portal implementation.

8.2.4.3.2 The Current Trend of ICT Adoption and Implementation in Saudi

In the Saudi cases, it was found that the general trend in the country towards the adoption and implementation of ICT projects was seen by most of the interviewees as a key enabler. The national IT plan emphasises the important role of ICT as a tool to reform public organisations and improve their performance (Abanumy and Mayhew 2005,p.3) and the Saudi government continues to regard ICT development as a national priority (Business Monitor International 2011,p.5). The launch of 'Yesser', the national e-government project, in 2005 was a remarkable event in the country's transformation to the provision of e-services, and it opened the door to the implementation of several IT initiatives in organisations. This resulted in a huge investment in the IT sector. For example, a recent report by Business Monitor International (2011,p.31) revealed that the total IT market in Saudi Arabia will be $3.6bn in 2011 and expected to rise to $4.9bn by 2014.

This finding suggests that there is a strong trend towards IT projects especially given the falling costs of hardware, which can have an impact on organisations in terms of allocating money and resources. Furthermore, there is a trend in the country towards to the idea of portalisation. Although the concepts of portals and e-services are quite new in SA, there are several portal implementations (Al-Mudimigh, et al 2011,p.40). These initiatives are widely supported by the government, which is pouring huge amounts of money into these projects. All of these issues have had a positive impact on the development of CPs in the universities studied. As reported in Chapter 3, higher education in SA has been

going through tremendous changes and developments, including the establishment of several ICT projects. Consequently, this sector is generously supported by the government. For example, the higher education budget increased from $80 million in 2006 to $3.5 billion in 2009 (Al-watan Newspaper,2009:SADOC9).

8.2.4.3.3 Relationship with the Vendors

Another issue identified in the Saudi cases is good vendor relationships, which is considered to be an important enabler. The universities studied purchased ready-made portals. The results revealed that the universities have established long and strong relationships with their vendors, and this has resulted in several benefits such as technical support, training, helping the universities to understand their requirements and needs, and post implementation support. These are significant issues since the universities lack the technical expertise to develop and manage portals in-house; therefore, they can benefit from the vendors' experience, knowledge and support (Karlsbjerg et al 2003,p.51; Remus 2007,p.549).

It can be said that a good relationship with the vendor can have a positive impact on the implementation process, especially in terms of getting support. This issue has been acknowledged in the literature. For example, Linder and Cantrell (2002,p.212) argued that the relationship between the organisation and the vendor is an important factor to the success of the project. Moreover, Pan et al (2011,p.119) reported that effective technical support from vendors is important for organisations to efficiently maintain and upgrade their systems in the post-implementation stage.

There are many plausible explanations for this result. First, the findings show that the relationship is based on trust, strong relationships, and good vendor support. It was found that the universities bought their portals from two companies: Microsoft and SunGard. These companies have been in the region for a long time and they are well known and highly regarded locally and globally. Such vendors are equipped with both the advantages of market power and knowledge expertise, thus allowing them to offer their clients good IT services that satisfy their outsourcing needs (Gallivan and Oh 1999,p.4; Webb and

Laborde 2005,p.437). Second, these vendors may have provided their clients with some aspects that go beyond their expectations, or as Webb and Laborde (2005,p.441) describe it "beyond the unwritten contract" or "going the extra mile" that may keep a client loyal. Third, it could be due to the long-term relationship between the two parties, which allowed the vendor to understand their clients' needs. Finally, the findings have reinforced previous results on the importance of developing a good relationship between the vendor and the organisation (Gallivan and Oh 1999,p.10; Jennex and Adelakun 2003,p.27; Webb and Laborde 2005,p.438; Sharma et al 2008,p.85; Tan et al 2009,p.8). Therefore, portal vendors could find these results useful and encourage them to establish and strengthen their relationships with clients.

In conclusion, there were several environmental factors that contributed positively to portal development. External co-operation was found to be important. Furthermore, the discussion of the Saudi cases revealed that the current trend of ICT adoption and implementation in the country and the relationship with the vendors were important enablers.

8.2.4.4 Financial Factors

The availability of financial resources is important to the success of IS in organisations and this was found to be equally true in this study. This agrees with findings reported by many writers who have emphasised the importance of this issue (Bishop 2003,p.188; Eisler 2003,p.84; Fisher and Craig 2004,p.6; Sugianto and Tojib 2007,p.4; Detlor et al 2008,p.6).

The findings showed a difference between the universities in both countries. Whereas the implementers from the Saudi universities appreciated the financial support provided from the outset of the project, those in the UK cases claimed that lack of financial resources affected them very much. It was found in the Saudi cases that the health of the economy was a major reason for pouring extra funding into universities and one which helped to develop portals. Saudi participants claimed that if they had not witnessed this period, it would have been difficult to get the funding (see Chapter 6 section, 6.2.4.1.3). In recent years, the Saudi economy has been booming, especially with the increase in oil prices. The revenue generated from the oil economy has boosted growth in the

non-oil sector including IT, which in turn has fuelled a huge increase in spending on IT systems and projects by large organisations (Business Monitor International 2011,pp.11-33). Furthermore, the Saudi government has demonstrated a significantly increased financial commitment to e-government strategies and initiatives across almost all governmental bodies.

Although participants from Saudi universities did not experience project funding issues during the adoption and implementation phases, they did express concerns about the on-going cost of maintenance and support and the need for long-term sustainable funding. This agrees with Detlor et al (2008,p.6) Fisher and Craig (2004,p.6) who reported that sustainable funding is one of the most important factors in portal implementation.

Regarding the UK universities, it was found that getting funding was a major concern from the outset of the project and affected several issues related to portal development (see Chapter 7, section 7.2.4.2.1). This agrees with Rahim (2007,p.7) who reported that lack of funding was a main challenge and affected portal development. The lack of financial support can be attributed to many factors. First, as mentioned earlier, top management have not seen the portal as a priority. This has an impact on the allocation of financial resources. As reported in Chapter 4, this comes at a difficult time for UK universities, which are facing cuts in their budgets (Stenvens 2009; Harrison 2010; Richardson 2010) that could affect many projects. This suggests that the higher education sector faces financial constrains and pressures which make it difficult to predict what the situation will be in the future. Second, it could be due to the fact that IT departments in the universities have not managed to convince top management and the university as a whole of the benefits and advantages that would result from the investment in portal technology. This is a very important issue and the researcher has discussed it in section 8.2.4.2.1.

In summary, it can be said that the availability of financial resources is a critical aspect for portal adoption and implementation. Furthermore, support from top management can facilitate the access to the financial resources. In order get support, a portal project needs to show how the organisation can get significant benefits from it.

8.2.4.5 Innovation Factors

Two distinct views have been identified. On the one hand, the universities perceived many benefits and advantages associated with portals, and there are close similarities between the universities in their motivations for the technology deployment. These findings were discussed in section 8.2.3. On the other hand, the deployment of a CP has raised many common issues and challenges within the universities during and after the adoption and implementation processes. The main issues identified include: uncertainty regarding portal technology, content management, content sharing and portal and content ownership. The following is a discussion of these issues.

8.2.4.5.1 Uncertainty Regarding 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. This in turn has led to another issue, which is how the portal will interface with other systems such as the university website, faculty web pages, and, in particular, departmental intranets. The main issue is that people in the university can already access services and information from other systems, and they question what is new about the portal.

This agrees with Frazee et al (2003,p.144) who reported that one of the issues that needs consideration is how portals interface with existing systems in the campus. This raises two crucial issues. First, it seems that some campus constituents are not aware of the added value that the unique characteristics of portal technology can bring them, such as personalisation, customisation, functionality, and interactivity. This is consistent with many researchers (Dolphin and Sherratt 2003,p.27; Eisler 2003,pp.78-85; Scheepers 2006,p.644) who claimed that many people did not understand or were not familiar with portals and as a result could see no reason for one. Thus, implementers should clarify and demonstrate the portal technology to the academic community. Second, it suggests that there was insufficient internal communication between the portal team and other campus constituents (including other service providers and users). This issue was confirmed by the findings from the user perspective (section 8.3.2.3.1). Ensuring strong communication is very important and is a

crucial aspect in conveying and delivering the message of the portal, its objectives, scope and, most importantly, the added value that it can bring to the university (Thomas 2003,p.121; Fisher and Craig 2004,p.9; Kakumanu and Mezzacca 2005,p.131; Remus 2007,p.544).

8.2.4.5.2 Content Management

Several issues related to content management, such as managing, supporting and updating content on the portal, have been identified, and there are similarities regarding this issue. This agrees with (Dolphin and Sherratt 2003,p.11; Cox and Emmott 2007,p.321;) who reported that content management was a main issue to the development of universities websites. The portal project is cross-functional and touches several organisational units and information holders (Scheepers 1999,p.4; Detlor 2004,p.109; Teixeira et al 2008,p.142) and this requires the integration of different systems and applications into the portal. In order to provide users with useful content, this requires several processes to bring, collect, manage and update the content into the portal from different places around the campus. Many authors have emphasised the importance of managing content, which is considered to be one of the most important factors (Pickett and Hamre 2002,p.45; Eisler 2003,p.78; Thomas 2003,p.120; Watkins 2003,p.52; Sampson and Manouselis 2005,p.189). The main issues related to content management include:

- Transferring the content from paper-based content to electronic format.
- Identifying the appropriate content that should be displayed on the portal.
- Managing and updating the content.
- Deciding how the content, resources and services will be structured.
- Deciding if the content, services and resources provided via the portal can be accessed from other systems and applications.

Addressing these issues is very challenging for many reasons. First, it requires the co-operation between portal teams and other service providers such as the registrar, the finance department, and the library, all of whom must be involved in managing content. The lack of co-operation was a main challenge to the universities studied (see section 8.2.4.2.4). Second, one of the challenges that the universities experienced was the lack of identity and access management

systems (section 8.2.4.1.3). This in turn had an impact on delivering the content to users. Users in universities have different roles: students, academics and staff, and each group is different from the others and requires different resources and services. In order to provide an effective personalisation experience, there is a need for effective identity and access management systems (Teixeira et al 2008,p.129; Alves and Uhomoibhi 2010,p.80).

Third, it can be argued that content management is affected by the lack of resources and particularly staff. Managing portal content is a complex process and requires content authors and editors (Norris and Duray 2002,p.34; Pickett and Hamre 2002,p.53; Thomas 2003,p.111). The shortage of dedicated staff was a main issue (section 8.2.4.2.3). Thus, it is not surprising that this will affect content management. Finally, it requires policies that address content management. The findings show that none of the universities studied developed a detailed portal policy for content management. This agrees with findings reported by (Green 2003,p.4; Klein 2006,p.173; Rahim 2007,p.8) who found that universities did not develop a detailed and integrated portal strategy and they entered the portal project without an obvious defined strategy.

8.2.4.5.2.1 Managing a Bilingual Portal (Saudi Universities)

Saudi universities provide portals in two languages, Arabic and English (Chapter 6, section 6.2.4.2.4). Providing a bilingual portal represented a key challenge to the universities and still remains a problem, and has several implications on managing portal content. First, it requires many resources to be allocated. For instance, qualified staff speaking both languages. Second, there is a need for translation policies, standards, tools and applications. Prior research found that translation issues were one of the main difficulties in the creation of bilingual websites (Cunliffe et al 2002,p.871; Forger 2004,p.632). Third, there is a need for quality assurance of the content being delivered in more than one language, in order to ensure that content is equivalent and has the same quality in both languages. Previous research revealed that content quality is one of the most important factors for the success of IS, particularly in the context of WBIS (Palmer 2002,p.164; Tate et al 2007,p.5; Urbach et al 2010,p.187). Fourth, the nature of enterprise portals is dynamic, thus; it requires

the content to be updated simultaneously, so that users have the same content at the same time in both languages. This seems to be very challenging. Fifth, there is an important issue related to users who use bilingual websites. Research has shown that cultural differences between different language users can affect the design of websites and their content (Marcus and Gould 2001,p.5; Cunliffe et al 2002,p.866; Zahir et al 2002,p.210). There is a significant difference between Arabic and English languages in terms of their structures, syntax, grammars and morphology. Therefore, these issues may affect how the content is managed and delivered to users. Finally, what has been mentioned requires effort, time and money, and are significant additions to the workload of portal teams.

This is an important finding that is not reported in previous work with relation to portal implementation in organisations, particularly in universities. Although there are some studies on the development of bilingual websites (Voge 1998,p.326; Cunliffe et al 2002,p.866; Zahir et al 2002,p.210; Forger 2004,p.630; Cunliffe 2004,p.1; Cunliffe and Herring 2005a,p.131; 2005b,p.157) these were not on enterprise portals.

It can be said that universities who provide bilingual portals may find it difficult to manage, support and handle the content. This is a significant finding and it raises two main issues. First, designing an effective bilingual portal is a challenge, beyond those that exist for a single portal and it requires an adequate information architecture (Cunliffe et al 2002,p.886). Second, 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, as this requires significant overheads (Cunliffe et al 2002,p.872). Finally, effective mechanisms should be put in place to address this issue. As the content within the portal will grow over time, this issue will become more significant (Thomas 2003,p.120).

8.2.4.5.3 Portal and Content Ownership
As mentioned earlier, a project like the portal is cross-functional and touches several organisational units (Scheepers 1999,p.4; Detlor 2004,p.109; Teixeira et al 2008,p.142). The results suggest that the development of a portal has raised

some institutional arguments about content sharing, ownership and the governance of the portal. The main argument was: when an organisation implements a portal, who has the right over the content and who is in charge of governing the portal? This issue was between portal teams and other service providers (see Chapter 6, section 6.2.4.2.4 and Chapter 7, section 7.2.4.2.4). Although these findings were found in all cases, it seems to be more evident in the UK universities.

These issues can be described as political struggles over the ownership of the portal and its content (Detlor 2004,p.102). The result supports the findings and views reported by several authors. For example, Walsham (1993,p.40) claimed that the development of information systems in contemporary organisations is a key arena for political action. Furthermore, Bunt and Pennock (2006,p.42) reported that since a portal cuts across many parts of the university providing access to information and services, this means that developing a portal raises important issues about responsibility and authority. Moreover, the scope of a project like the portal is so wide-ranging that it can be difficult to give the responsibility to one group and consider it as the appropriate owner of the service. This is because portals bring together campus constituents who rarely interact and whose interests are often different and may raise several questions such as: who owns what data? How will conflicts between data owners be resolved? Who manages the portal? (Daigle and Cuocco 2002,p.121; Sheehan and Jafari 2003,p.1; Thomas 2003,p.122; Detlor 2004,p.102; Bunt and Pennock 2006,p.44).

There are many plausible explanations for this result. First, it could be due to the fact that other service providers have not fully understood the function of the portal and the benefits that it might bring to the university. This issue was discussed in section 8.2.4.5.1. Second, it might be related to the fear of taking the content from other service providers, and as a result they lose their power and authority. In this regard (Franklin 2006,p.28) reported that "in most institutions, the owners of systems gain much of their authority and power through that ownership and reluctant to let go". A third explanation could be the lack of effective communication between portal teams and other service

providers. As reported earlier, strong communication is very important as it can convey and deliver the message of the portal, its objectives, scope and the added value that it can bring to the university (Thomas 2003,p.121; Kakumanu and Mezzacca 2005,p.131; Remus 2007,p.544). Fourth, it could be related to the power relationships that exist between various campus departments and units, as the portal attracts the attention of senior people in the organisation and service providers may fear that resources will be directed to the portal rather than to their specific business (Landqvist and Stenmark 2006,p.178). This might be true in the Saudi case studies. Finally, systems integration could raise the power tension and other political issues over who has the right to control the processes related to portal and content management (Themistocleous and Irani 2001,p.328; Landqvist and Stenmark 2006,p.178).

In order to minimise tensions that may arise regarding these issues, all parties and constituents in the university should be involved in portal development and management. The role of co-operation and co-ordination between all parties could be very significant here. Most importantly, a sensible data and information strategy and policy should be developed. This is a vital element in portal adoption and implementation.

In conclusion, the discussion revealed that there were several challenges related to CP implementation, and that there were both similarities and differences between the universities. Regarding the former, it was found that uncertainty regarding portal technology, content management and content ownership were common issues. With respect to the differences, it was found that Saudi universities experienced more challenges than did their counterparts in the UK, regarding content management and this was because the universities provide a bilingual portal.

8.2.4.6 Users Related Factors
This section deals with issues related to the users, which include: user acceptance, user training, and requirements analysis.

8.2.4.6.1 User Acceptance
Technology acceptance has been researched extensively (Davis 1989,p.320; DeLone and McLean 1992,p.87; Rogers 2003,p.15; Venkatesh et al

2003,p.425) and several authors have acknowledged this issue in portal adoption (Aiken and Sullivan 2002,p.3; Kakumanu and Mezzacca, 2005,p.131; Remus 2007,p.544; Al-Badi et al 2009,p.2).

The results indicated that accepting the new system and resistance to change at the beginning of introducing the portal were human issues that the universities encountered. This can be attributed to two main reasons. First, the system was new and unfamiliar to many users. Second, the different backgrounds, ages, perceptions, attitudes and experience of people at university might have affected their willingness to accept the new system. In this regard, Sullivan (2004,p73) and Remus (2007,p.544) reported that resistance to change and accepting the new system are main issues regarding portal adoption. This is because the introduction of portals might cause resistance, confusion, anxiety, redundancies and errors, as they provide an entirely new work setting based on new user interfaces, services and applications in a completely different manner, which is likely to affect daily work (Norris and Duray 2002,p.34; Remus 2007,p.541).

From the implementers' perspective, users' uptake at later stages was seen as an important factor that contributed positively to the project. They claimed that the number of users has mushroomed since its introduction. This finding should be treated with some caution for at least two reasons. First, since the use of the portal tends to be mandatory, user uptake cannot be regarded as an indicator of acceptance. This is one of the main criticisms for TAM, as it fails to distinguish between mandatory and voluntary usage and depends on self-reported use (Lee et al 2003,p.763; Legris et al 2003,p.202; Bouwman et al 2005,p.103). Second, although the findings from the users' perspective showed that users perceived several benefits associated with use of portals, they did, raise many concerns, which will be discussed in section (8.3.2).

8.2.4.6.2 User Training
Users training was another challenge that was only identified in the Saudi cases. The results showed that the universities had to provide training to meet the needs of some people, especially those who were less computer literate. Training has two facets: training the people who are involved with portal

development such as service providers; and the training of end users. The findings suggest that providing training requires many resources such as qualified staff, time, money, effort and preparation. LeRouge and Webb (2003,p.98) reported that training can be challenging for organisations and has several implications such as the high cost, selecting and designing quality training courses and the need for highly qualified trainers. Several issues related to the need for training from the user perspective will be discussed in section (8.3.2.3.2).

8.2.4.6.3 Requirements Analysis

Developing a successful portal requires careful understanding of the organisational and individual needs. It was found that collecting and analysing user requirements and needs and then transferring them into services was reported as a main challenge. According to the findings, conducting studies/research to identify users' requirements and needs requires many resources such as money, qualified people, time, good preparation and effort. Previous research has acknowledged the importance of requirements elicitation and analysis and suggests it is one of the most important factors in systems analysis and design (Browne and Ramesh 2002,p.625; Collins 2003,p.201; Hickey and Davis 2004,p.66; Davis et al 2006,p.78; Remus 2007,p.543).

Regarding portals, understanding business and user needs can be even more challenging, for several reasons. First, according to Davis et al (2006,p.78) "the modes of use and development of newer information technologies, such as portals, highlight the increasing pace of change faced by both analysts and user communities in the very dynamic environment". Second, as reported earlier, a project like the portal is cross-functional and touches several units and departments in the organisation (Scheepers 1999,p.4; Detlor 2004,p.109; Teixeira et al 2008,p.142). Within these units and departments, there are many users who have different roles and responsibilities, all of which require different services and resources. Understanding human and organisational needs is difficult and complex (Browne and Ramesh 2002,p.625; Remus 2007,p.543). Third, developing a portal that meets the actual requirements of users necessitates wider campus co-operation between portal teams and other

service providers. However, this issue was reported to be a challenge (see section 8.2.4.2.4). Finally, requirements analysis could be even harder for universities that provide a bilingual portal, as discussed regarding the Saudi universities (section 8.2.4.5.2.1).

In conclusion, this section discussed and compared the findings from the implementers' perspective. The discussion showed that portal adoption and implementation is affected by several factors such as technological, organisational, environmental, financial, innovation and user related factors. There were many enablers and challenges and the comparison showed that there were some similarities and differences between the universities.

8.3 Findings Comparison and Discussion: Users' Perspective

One of the questions that this study seeks to answer is: what are the factors that affect the adoption and utilisation of CPs at Saudi and UK universities from the perspective of end users? Understanding these factors could provide an insight into what users want and expect, and as a result, could lead to better adoption by users and an improved service. This section discusses the findings reported by users.

8.3.1 Motivations for Campus Portals Usage

The findings show that there are some similarities between users in both countries. For example, the participants were aware of the existence of the CPs and they appreciated and welcomed the idea of having portals in the universities. Furthermore, the participants reported that they used portals for different reasons, including: access to different services and information and for communication. Moreover, many participants mentioned that they are forced to use the portal because it is the only point of access to some services. Overall, it can be said that users perceive many benefits such as the SSO feature, convenience, immediate access, and timeliness. These findings correspond with the views reported earlier (section 8.2.3) from the implementers perspective, regarding the motivation for portal development, such as improving access to services and information, systems integration and SSO, providing users with remote access and improving communication.

The findings support previous research showing that perceived usefulness is a key determinant of portals adoption (Davis 1989,p.320; Zazelenchuk and Boling 2003,p.37; Detlor et al 2008,p.7; Presley and Presley 2009,p.176; Al-Busaidi 2010,p.5). Since the use of the portal tends to be mandatory; these findings should be treated with some caution. However, the findings from the user perspective suggested that they appreciated the value of the portal.

8.3.2 Factors Affecting Portal Adoption and Utilisation

Although participants in both countries have had a positive attitude and perceived several benefits associated with portals, they did raise some concerns. The analysis showed that there are many factors that can influence the use of portals, which include: system quality, content quality, and service quality. Table 8.4 presents and compares these factors.

Table 8.4: Factors Affect Portal Usage (Users' Perspective).

Factors affect portal usage	Saudi Universities	UK Universities
System Quality		
Portal design	√	√
Provision of e-services	√	√
Extended services	√	✗
Conflict with other systems	✗	√
Portal security	√	√
Portal mobility	√	√
Systems integration	√	√
Network Issues	√	✗
Portal Availability	√	√
Content Quality		
Content structure and organisation	√	√
Lack of content	√	√
Irrelevant content	√	√
Content currency	✗	√
Content accuracy	√	✗
Service Quality		
Communication	√	√
Training	√	✗
User involvement	√	√
Benchmarking campus portals	√	√

8.3.2.1 System Quality

System quality refers to the desirable characteristics of the portal and describes the outcomes of the interaction between the portal and the user (Masrek 2007,p.342; Petter et al 2008,p.238; Urbach et al 2010,p.187). Several factors have been identified which include: portal design, provision of e-services, extended services, conflict with other systems, portal security, portal mobility, systems integration, network issues and portal availability. The following is a discussion of these factors.

8.3.2.1.1 Portal Design

Based on the findings, the design of the portal is a crucial element in enhancing user's experience and satisfaction. It was a common theme in the five case studies. Several issues were raised regarding interface design, usability, navigation capabilities, accessibility, responsiveness, and customising the portal. Users came up with two distinctly different views regarding the portal design. On the one hand, some participants reported that the design was quite good and they felt that the portal was intuitive and easy to use. On the other hand, many participants reported that the portal was not intuitive, attractive, innovative and was difficult to use.

The results indicate that portal design is an important factor that can affect users' satisfaction. This finding is not surprising as this issue has been well documented (McKinney et al 2002,p.301; Muylle et al 2004,p.555; Masrek 2007,p.349; Tate et al 2007,p.5; Lee et al 2009,p.13; Al-Busaidi 2010,p.5; Urbach et al 2010,p.196). In order to develop the portal design and its usability, portal implementers should consider many issues. First, users must be involved in the design. According to the findings, there is a need for a user centred design approach that matches users' requirements and needs. This agrees with findings reported by many researchers (Thomas 2003,p.115; Detlor 2004,p.76; Karlsson and Olsson 2008,p.13). Detlor (2004,p.76) advocated participatory design and called for "the active involvement of users to gain a clear understanding of user needs and task requirements". Furthermore, Thomas (2003,p.106) claimed that usability of IS from the users' perception is key in meeting their requirements. Second, it is important for portal teams to conduct

usability tests and evaluation studies from time to time and to determine what users want to have on the portal. This allows direct input and feedback from users. Several writers stressed the importance of this method (Thomas 2003,p.116; Lee et al 2009,p.13; Presley and Presley 2009,p.180).

8.3.2.1.2 Provision of E-services

Users have expressed their desire for some kind of E-services to be available via the portal. This is consistent with the findings of Bishop (2003,p.193). Many participants especially the more technically aware ones called for a full transformation from traditional services to e-services culture where all or most of the processes are available electronically. One plausible explanation for this result could be that with the recent development of Web services, people have become familiar with the concept of self-service. Students, faculty and staff are no longer interested in the use of traditional campus systems that lack flexibility, convenience and efficiency. Their current demands require a new approach in delivering IT services and applications that are based on self-service, convenient access, flexibility and timeliness (Thomas 2003,p.104). Portals can effectively facilitate the access to the university services and eliminate or reduce unnecessary bureaucracy associated with traditional ways of providing services. Furthermore, they can speed up administrative processes, provide a flexible approach in conducting day-to-day business and allow users to perform individualised or self-services (Etesse 2003,p.222; Zazelenchuk and Boling 2003,p.35; Bajec 2005,p.255).

It was found in the Saudi universities that one of the reasons for portals development was the administrative motivation. However, many participants were concerned about the limited self-services via the portal and the incomplete implementation of e-services. The limited provision of e-services can be attributed to many factors. First, the lack of co-operation between portals teams and other service providers. In order to provide e-services, many service providers must be in co-operation with portals teams. Wider collaboration and co-operation are critical to achieve this purpose. Second, the need to redesign or reengineer their processes and procedures, including workflow systems,

which is one of the CSFs for portal implementations (Bishop 2003,p.193; Remus 2007,p.541).

8.3.2.1.3 Extended Services

This refers to the inclusion and integration of external content, resources and services into the portal. There are two main issues. First, the inclusion of external content and resources available on the internet such as news, local information and travel information. Second, the integration of other business services from other organisations into the portal (B2B Integration). These issues were identified in the Saudi case studies. This is consistent with the view of Graves and Hale (2003,p.49) who predicted that "*an organisation's enterprise portal may someday not be limited to internal information and transactions, but may have to support the storage, retrieval and manipulation of much of the data associated with constituent's life*". Moreover, Pearce (2003,p.12) found that access to different external services and resources was a key requirement for institutional portals. Furthermore, Watkins (2003,p.54) argues that portals should include external content and resources that fulfill users information needs.

It can be said that one of the main advantages of portal technology is its unique ability to integrate different external resources and information in one place. For example, portal teams can provide different external services and resources that are available for free on the Internet, such as search engines, news channels, emails, e-commerce services and so forth. According to Watkins (2003, p.59) many criteria for selecting external channels must be considered such as appropriateness, reliability and currency.

The second issue is B2B integration. Users wished to have some services from other organisations that their universities deal with on a regular basis integrated into the portal. Although this idea might be useful from the user's perspective, it raises several issues. According to Bauer et al (2005,p.155) the inclusion of services from third parties requires portal providers to invest into strategic alliances in order to increase transaction efficiency and benefits for users through a broader range of offerings. The universities studied are experiencing some difficulties in establishing wide campus co-operation to develop portal

services and resources, so that integrating external services from other organisations would be a significant addition to portal teams and would be very challenging. Furthermore, Brakel (2003,p.598) claimed that importing external services and content will have financial implications, so that management should be convinced of the business value of creating synergy between new digital sources and those already provided by the organisation.

8.3.2.1.4 Conflict with other Systems

This refers to the overlap, identified in the UK cases, between the portal and other campus systems such as the university website, faculty WebPages, and departmental intranets. There are two main issues: first, the availability of sources other than the portal to access services and information (duplication) and second, the unavailability of some useful information on the portal, which means that users have to use different systems. The results correspond to other work showing that the duplication of information on different systems and the availability of sources other than the portal to access services and information were main issues for portals' users (Frazee et al 2003,p.144; Detlor 2004,p.103; Rahim 2007,pp.5-6).

This finding is surprising as it is contrary to the findings from the implementers, who claimed that the portal was meant to provide SSO to different services and information. Many users disliked having to use different systems and applications to find content and access services. Instead, all should be accessed from a single gateway. From the implementers' perspective, the results showed that one of the main issues that universities experienced was uncertainty regarding the portal among some service providers, and this raised two main questions: How would the portal overlap with other campus systems? What was new on the portal?

This finding raises many issues. First, there should be no duplication when accessing content and information. This jeopardises the unique feature of portal technology, as it is considered to be the SSO for different campus systems (Thomas 2003,p.121; Klein 2006,p.175). Even in the case of cross departmental service-oriented approach, users should access services and information from one place, not many. Second, there should be a clear

description of the services and resources that users can find on portals. The role of communication could be significant here. Third, a CP is a cross-functional project which requires wide co-operation between portal teams and service providers to determine and decide where services and resources should be placed, in order to avoid duplication and the availability of sources other than the portal.

8.3.2.1.5 Portal Security

Security and privacy were important issues to many participants because the portal provides users with an integrated access to many services, resources and content. The findings are in line with literature showing that security and privacy are main issues that concern users regarding the use of portals (Bajec 2003,p.266; Bishop 2003,p.197; Thomas 2003,p.121; Frazee et al 2003,p.148; Bauer et al 2005,p.172; Tate et al 2007,p.6; Al-Busaidi 2010,p.6).

The need for portal security cannot be overemphasised and there are some issues that should be considered. First, it is important to assure users that a CP is secure and dependable (Frazee et al 2003,p.151) and this should be communicated to users. Second, although participants trust their universities to protect their personal details, the findings indicated that there is a need to enhance security. The universities apply the basic security measures of user name and password. According to Eisler (2003,p.1) portals experience several security issues, therefore; multiple authentication methods must be supported. Many participants suggested methods to enhance security, including double authentication and an automatic logout feature. The use of double authentication can add extra security. Lin (2009,p.6) reported that organisations are faced with a serious problem in that uninvited users are able to penetrate and access organisation information and there is of course "the age-old problem of users logging on under another person's identity. Two-factor authentication adds stronger security as users need to authenticate themselves with extra credentials in addition to their usernames and passwords". The automatic logout feature, where inactive users are logged out automatically, is particularly useful when a user has left his/her account on the portal logged on or has forgotten to logout for some reason.

Third, it is important to consider security and privacy especially when universities deal with third parties that could get access to personal information. For example, it was found that some universities have integrated email services from Google and Microsoft. Some users questioned how their personal details and communication would be handled. In this regard, Thomas (2003,p.122) mentioned that several key questions must be addressed such as: how these services can be secured appropriately? How much data will be kept for each user? How will the data be used? These issues should be clear to users. Finally, security and privacy policies that address these issues should be established.

8.3.2.1.6 Portal Mobility

This issue, which was identified in many cases, refers to the possibility of making portals accessible via mobile phones devices. Some participants have shown interest in having their CPs connected to their portable devices such as PDAs, mobile and smart phones. This finding corresponds to the findings of Frazee et al (2003,p.144) and Pearce et al (2003,p.47) who found that accessing portals via communications devices was important to users in universities.

The concept 'Mobile Portals' (MPs) is relevant to many participants, especially students. These findings indicate that, with penetration of mobile internet, mobility has become essential to a large number of people. In 2008 it was estimated that half of the world's population were mobile owners and this figure is expected to grow to 75% by 2011 (Portio Research 2008). The use of portable devices has become increasingly common in educational institutions, including universities (Wali et al 2008,p.41).

MPs have several advantages such as ubiquity, convenience, personalisation and dissemination of information (Serenko and Bontis 2004,p.74; Parsons 2007,p.583; Yang 2010,p.262). These features can be useful in a university setting. For example, ubiquity allows users to access the portal at anytime, regardless of their location and without being restricted to their desktop computers or laptops. This in turn provides users with convenient and faster access to the University's services and information at the point of need

(Serenko and Bontis 2004,p.74; Parsons 2007,p.583). Personalisation is another important feature. It enables users to receive good quality content and information that is tailored to their needs and interests. Finally, via the use of push technologies, MPs can be useful in the dissemination of up-to-date information such as alert notifications, news, announcements, and SMS communication.

Despite these advantages, however, the development of MPs may raise several issues. First, user acceptance is a major concern. Previous research in HE has shown that mobile technologies are still in their infancy, the uptake by users is much slower than expected, and there has been limited success in the field (Patten et al 2006,p.299; Corbeil and Valdes-Corbeil 2007,p.56; Wang et al 2009,p.93; Liu et al 2010,p.212). Second, there is an issue related to the design of MPs interfaces, which according to Jafari (2003,p.100) is one of the main challenges of offering this service. Their design must be compatible with the constraints of mobile devices such as limited screen space, different navigation bottom layouts, and lack of unique programming platforms (Parsons 2007,p.584). This may indicate that MPs require some advanced applications rather than standard web portals. Third, there is a security issue. Eisler (2003a,p.1) reported that if portals are accessible via mobile communication devices, further multiple authentication methods must be supported to enhance security. This is because the access to MPs from public access wireless networks may not be immune to security threats.

8.3.2.1.7 Systems Integration

Users perceived many benefits, such as integration and the SSO feature, from portals. However, users raised concerns regarding the limited scope of systems integration. Furthermore, in many cases the portal only provides links to other systems and applications, and when users go there they have to re-enter their logging details, or use different user names and passwords. The portal is supposed to be the main SSO to access multiple services, resources and information, but the reality does not reflect this fact. The findings indicated that portals have not reached a position where full integration has been achieved. The following issues have been identified:

- Users want to see full rather than partial integration.
- Users want to have only one username and password to access different campus systems.
- Users want to deal with one common interface rather than many screens and interfaces.

This finding is consistent with prior studies showing that systems integration and SSO were main requirements for CPs (Frazee et al 2003,p.151; Pearce et al 2003,p.40; Sheehan 2003,p.267; Al-Busaidi 2010,p.6). Furthermore, the implementers reported that systems integration was one of the main issues and is still a major concern to the universities. This issue was discussed in section 8.2.4.1.2.

8.3.2.1.8 Network Issues

Several issues related to the university networks, such as low speed of the network connection, response time and system scalability, were identified but only in the Saudi case studies. The access to the portal can be difficult especially at peak times. Saudi universities experienced more challenges regarding the IT infrastructure than did their counterparts in the UK, and there were significant differences between the two countries (section Table 8.3). This finding agrees with other studies demonstrating that the limitations in network capacity and bandwidth adversely affected IT development in Saudi organisations (AL-Shehry 2008,p.214; Altameem 2007,pp.8-26).

The results indicated that developing an information technology infrastructure, including resilient networks, is considered to be important to the long-term success of portal technology (Eisler 2003,p.78; Thomas 2003,p.106; Franklin 2004,p.16; Alves and Uhomoibhi 2010,p.80). This is because portals and their underlying network infrastructure are different from traditional IS, and are used by thousands of users (Bishop 2003,p.196; Detlor 2004,p.108). Previous research found that low network speed and poor response times affect user satisfaction (Hoxmeier and DiCesare 2000,p.2; Palmer 2002,p.151; Zazelenchuk and Boling 2003,p.38; Tate et al 2007,p.5; Al-Busaidi 2010,p.6). For example, Hoxmeier and DiCesare (2000,p.2) reported that lengthy system

response times may cause lower satisfaction and poor productivity among users. According to Sugiantoa and Tojib (2006,p.245) it is very important to ensure that portal users are satisfied with portal response time.

8.3.2.1.9 Portal Availability

Another issue identified was portal availability. The results showed that users expect the system to be available 24/7. This is not surprising as users have become familiar with the availability of the internet and other web services, and now expect a similar experience, where "there is no excused downtime, no set hours of operation and no patience for system failures" (Pickett and Hamre 2002,p.52). Previous research has reported that the system availability of web sites is an important factor that can contribute to users' satisfaction and their perceptions towards the overall of quality of the system (Parasuraman et al 2005,p.18; Sahadev and Purani 2008,p.609; Sun et al 2009,p.242).

An important issue identified is the communication with users when the portal is not available. However, this was more evident in the Saudi cases as many participants complained about the lack of communication when the portal went down for unknown reasons. Several issues related to communication will be discussed in section 8.3.2.3.1.

In summary, the results showed that system quality is an important factor in the adoption and use of CPs. The discussion revealed that there were some similarities and differences between the universities. Regarding the former, it was found that portal design, security, mobility, availability, systems integration, and the provision of e-services were common issues. Concerning the differences, the results indicated that users from the UK felt that the portal conflicted with other systems in terms of accessing content and information. In the Saudi cases, participants were concerned about the integration of external resources and services, slow speed of the network, response time and frequent down time. Finally, it is important for portal teams to consider these issues and to provide users with a pleasant experience. This can be achieved by understanding users' requirements from a system quality perspective.

8.3.2.2 Content Quality

Content quality describes the desirable characteristics of the system outputs. (DeLone and McLean 2003,p.15). It refers to the information quality that the portal provides to users (Urbach et al 2010,p.187). Content quality was one of the common issues. Although some participants were happy with what was offered on the portal, concerns were raised regarding various aspects such as content structure and organisation, lack of content, irrelevant content, content currency, and content accuracy (Chapter 6 section 6.3.2.2 and Chapter 7 section 7.3.2.2). The following is a discussion of these issues.

8.3.2.2.1 Content Structure and Organisation

Several issues regarding content structure and organisation have been identified, including:

- A lack of uniformity and consistency in terms of content structure and organisation.
- Poor content structure and organisation leading to some difficulties in finding content.
- Some basic services and content being put in sub-pages when they should be in the main interface.

The findings suggested that content structure and organisation are important aspects. This corresponds to previous research demonstrating that these issues concern portal users (Pearce et al 2003,p.50; Jones et al 2006,p.115; Medawar 2007,p.33; Karlsson and Olsson 2008,p.11). According to Little (2001,p.53) portals need a clear and logical structure and organisation. Furthermore, Thomas (2003,p.121) emphasised the importance of content structure and organisation and recommended the use of logical and meaningful names for labeling services and content so that users can easily locate services, content and channels of interest.

A practical technique that could help to organise content is to utilise some techniques developed in The Library and Information Science. This field has a long and brilliant history in the development of controlled vocabularies such as classification systems, taxonomies, ontology and thesaurus to structure and organise knowledge. The same principles can be applied to the organisation of

web portal services, resources and content. Many authors support this view. For example, Thomas (2003,p.121) argued that in order to organise content in a meaningful way, a standard set of terms or ontology, must be established. Little (2001,p.53) mentioned that it is important for portal teams to work with librarian and computer specialties to develop a systematic methodology to describe content on portals. This can help to address several questions such as: what terminology should be used to describe the individual services? How can the list of services and content be organised in a meaningful way? As the services and content within the portal grow, this issue becomes more important (Little 2001,p.53; Pickett and Hamre 2002,p.45; Thomas 2003,p.121; Maheshwari et al 2007,p.267). Finally, there have been recent trends in this matter, for example (Yang 2009,p.10148; Si et al 2010,p.415; Rezqui et al 2010,p.340).

8.3.2.2.2 Lack of Content

The lack of content was another issue related to content quality. Many participants complained that the portal lacks some useful content which can be found elsewhere. This jeopardises the unique feature of portal technology as it is considered to be the main SSO access (Thomas 2003,p.121; Klein 2006,p.175). This agrees with the study by Rahim (2007,pp.5-6) which showed that limited useful content, the absence of relevant content, and the availability of sources other than the portal were main issues for users and contributed to the low value of the portal. Similarly, Detlor (2004,p103) reported that users felt confused over the duplication of information on different systems. In this regard, Watkins (2003,p.52) argued that in order to attract the attention of users, the portal should provide useful content that cannot be accessed from other resources.

8.3.2.2.3 Irrelevant Content

Another issue related to content quality is irrelevant content. The findings showed that users get and receive content that does not match their needs and interests. Consequently, users receive too much information and this contributes to information overload, which is a significant problem (Terra and Gordon 2003,p.174). The portal is supposed to overcome this problem and must provide relevant content (Clarke III and Flaherty 2003,p.20). The results

suggest that there is a need for a more personalised experience. Personalisation refers to the degree to which users can receive content or information that is targeted at their interests, needs and preferences and that is based on the role of individuals (Zimmerman et al 2005,p.276; Daniel and Ward 2006,p.118). Although portals deliver a personalised content, it is very limited. This is consistent with previous work (Pearce et al 2003,p.42; Rahim 2007,pp.5-6). One of the main reasons for delivering irrelevant content could be the lack of effective personalisation on portals which in turn is caused by the lack of identity and access management systems.

8.3.2.2.4 Content Currency

Another issue related to the quality of the content was content currency. This issue was only identified in the UK universities. According to the results, in many cases the content on the portal tends to be static and does not reflect the dynamic nature of the portal. The result is consistent with earlier research showing that users demand up-to-date content and information (Yang et al 2005,p.585). A key element of portal technologies is that they are dynamic in their nature, and they allow users to receive up-to-date content that fits with users' interest and needs. Prior research has emphasised the importance of content currency on WBIS, including portals, and the impact it has on user satisfaction (Trepper 2000,p.108; Madeja and Schoder 2003,p.8; Silius et al 2003,p.4; Aitkenhead 2005,p.228; Wixom and Todd 2005,p.99; Aladwani 2006,p.186; Medawar 2007,p.33; Cheung and Lee 2009,p.119). This result should alert portal developers to the value of providing users with up-to-date content.

8.3.2.2.5 Content Accuracy

Content accuracy includes two main aspects: inaccurate content, and unclear description of some content and services (confusing terminology). This issue was only identified in the Saudi case studies. Some interviewees claimed that in some cases, there was inaccurate or misleading content provided on the portal. This finding corresponds with findings reported by Zazelenchuk and Boling (2003,p.39) who found that one of the issues that concerned users with the portal was the use of confusing terminology. This finding stresses the

importance of delivering quality content that is credible and reliable. In this regard, Nielsen (1994,p.30) stated that "the system should speak the users' language, with words, phrases and concepts familiar to the user rather than system-oriented terms". Users demand and expect reliable and accurate content from portals (Wixom and Todd 2005,p.98; Yang et al 2005,p.585; Cheung and Lee 2009,p.119).

Many plausible explanations might be considered regarding the issues that concern users with the content quality. First, with respect to receiving irrelevant content, it could be a technical problem. The results from the implementers' perspective (section 8.2.4.1.3) showed that the lack of effective identity and access management systems affected the provision of relevant content. The aim of these systems is to connect the right people with the right content to which they are entitled to in a personalised way (JISC 2009,p.13). The absence of such systems can affect the personalisation experience. A second plausible explanation might be the fact that users' requirements and needs were not fully understood regarding the content that they want to see and receive. In a university environment, there are many different types of users with different roles and responsibilities and each group requires different kinds of content and resources (Tate 2007,p.7). The findings indicated that the way the portal was implemented may have affected the personalisation experience, as many participants claimed that the university imposed certain solutions and forced people to use them regardless of their needs. This agrees with the view of Ely (1990,p.301) who mentioned that decisions about technology in education are often made by other people and passed on for implementation.

Third, it can be attributed to the lack of co-operation between portal teams and service providers. This issue has been identified as one of the main challenges (section 8.2.4.2.4). In order to provide up-to-date content, service providers need to update their content. This is because content on portals depends to a large extent on sub-systems (Landqvist and Stenmark 2006,p.173) which necessitates co-operation regarding the delivery of quality content (Scheepers 2006,p.644). Consequently, lack of co-operation between the two parties might affect the provision of up-to-date content. According to Yang et al (2005,p.585)

managing the information flow between internal departments and units is important for the purpose of information update. A useful method to address this issue is to establish a formal policy for content management and development. Fourth, it could be related to the lack of resources such as dedicated staff and technical expertise. These were found to be main issues to the universities studied (section 8.2.4.2.3).

In conclusion, content quality is a very important aspect that needs to be considered at all times. The results support the previous findings demonstrating that content (information) quality is one of the most important factors to the success of IS, especially in the context of WBIS (Palmer 2002,p.162; Watkins 2003,p.52; Yang et al 2005,p. 585; Schaupp et al 2006,p.8; Wu and Wang 2006,p.736; Karlsson and Olsson 2008,p.13). Finally, it can be said that the quality of the content might be affected by the provision of a bilingual portal, as discussed in section (8.2.4.5.2.1) regarding the Saudi cases.

8.3.2.3 Service Quality

In the context of IS, service quality refers to the support that system users receive from the IS department and IT support personnel (DeLone and McLean 2003,p.10; Petter et al 2008,p.239). Four main issues have been identified which are: communication, training, user involvement, and benchmarking CPs.

8.3.2.3.1 Communication

Communication was one of the hottest topics in most of the interviews, with different issues frequently being raised. Many participants complained about the lack of communication between portal teams and users. This resulted in two negative aspects. First, many users are not aware of who is in charge of the portal and they do not know where to go, or to whom they should speak if they have an issue regarding the system. Second, it has affected portal promotion and marketing. For example, many participants were not aware of some services and resources that were being offered on the portal and they learnt about them from other people. Finally, participants have emphasised the importance of good communication to the success of portal adoption.

The results suggested that there is a communication gap between users and the service provider. Many researchers have pointed out the importance of internal communication in conveying the message of the portal, its objectives, scope and most importantly the added value that it can bring to the organisation. Good communication is considered to be one of the most important CSFs for IS implementations (Aladwani 2001,p.270; Amoako-Gyampah 2004,p.171; Lin and Rohm 2009,p.538) as well as for portals (Thomas 2003,p.121; Kakumanu and Mezzacca 2005,p.131; Remus 2007,p.544). According to Thomas (2003,p.121) communication should be ongoing and it should not stop once the portal project has started. This allows ideas and feedback to be shared directly and frequently, which can help to ensure that the portal is meeting the needs of its stakeholders.

The advantages of communication with users are varied. First, it is a vital process to deliver and clarify the portal concept to the academic community. Eisler (2003,p.78) argued that implementers should clarify and demonstrate the portal to the academic community, especially those who are not familiar with technology or those who do not understand the portal value. If these demonstrations are met with a high level of uncertainty as to what the system is or the value it might bring, the portal might not be understood. This view is consistent with the findings of this research. As reported in section (8.2.4.5.1) one of the issues that implementers faced was uncertainty regarding the portal.

Second, good and continuous communication plays a key role in increasing user awareness about what is offered on the portal (Scheepers 2006,p.639; Maheshwari et al 2007,p.265; Detlor et al 2008,p.7). According to Kakumanu and Mezzacca (2005,p.131) getting the message across to the users that "There is a better way" to do things is crucial. It is important for portal teams to promote and market the portal to the users. There is a general feeling among many participants that there is not much effort being made to promote the portal. Consequently, it has affected users' awareness about what is offered. This is consistent with the findings reported by (Fisher and Craig 2004,p.9).

Third, good communication can help users to get the necessary technical support when needed. Technical support is important as it helps users and provides them with assistance and advice in using CPs and it solves various technical problems that they may encounter. Finally, effective communication helps establish a relationship between users and the service provider, so that a communication process between the two can be achieved. According to the findings, there is a communication gap and in order to bridge this gap, communication between users and the service provider should be developed.

In summary, it can be said that communication is a critical aspect for portal implementation. Ensuring good communication can contribute positively to users' experience and can enhance their satisfaction with portals. Furthermore, good communication between portal teams and users will narrow the communication gap that already exists between them, whereas the lack of communication will widen this gap and lead to poor adoption and implementation.

8.3.2.3.2 Training
The need for user training was identified in the Saudi case studies. Many interviewees, especially those who are less computer literate, expressed concerns about having the necessary training. A few participants mentioned that they do not need training because they are already computer literate. Moreover, most participants said that they did not receive any kind of training on how to use the portal. This result is consistent with Al-Turki and Tang (1998) and Altameem (2007,pp.8-36) who reported that insufficient IT training was one of the main issues for users in Saudi organisations. One explanation of this difference between users in the two countries might be the relatively low level of information literacy among users in the developing countries compared with their counterparts in the developed world. Heeks (2001,p.28) argued that for almost all developing countries, there is a need to build and establish basic computer literacy skills within user communities.

Although portals are WBIS and many people are familiar with the use of the Internet, this does not mean training is not important. Many researchers have

acknowledged the importance of providing training and helpful instructions to users on how to use IT, including portals, for example (Zazelenchuk and Boling 2003,p.38; Frazee et al 2003,p.142; Al-Gahtani 2004,p.20; Remus 2007,p.544). The results suggest that training is important and has several advantages. First, it allows users to learn how to use the portal and benefit from its services. Secondly, training increases users' awareness and attention of what is being offered on the portal. Third, training establishes a relationship between users and the service provider. Moreover, users should be segmented into different groups so that training can be provided accordingly. For example, they could be segmented according to the level of study, IT experience, or field of study. This agrees with Scheepers (2006,p.643) who reported that implementers should consider portal users as a number of distinct segments, each with their own unique needs. Furthermore, participants made several suggestions for providing training. For example, through face to face sessions in computer labs, workshops, documentation (leaflets or manuals), and online tutorials.

8.3.2.3.3 User Involvement

This issue refers to the involvement of end-users in decision making with the adoption and implementation of CPs. In order to make portals successful and ensure they are adopted by users, they should have input from almost all people in the university. Several participants criticised the people in charge of the portal for being too technically minded and for putting technical standards at the top of their priorities and for failing to understand what users want. The findings indicated that users' requirements and needs in both countries were not fully analysed and understood and there was lack of adequate user involvement. This finding confirms the study by Li and Wood (2005,p.54) who reported that one of the issues concerning users was the ignorance of their requirements and needs.

Several writers have stressed the importance of involving end-users in the development of IS, including portals (Hartwick and Barki 1994,p.462; Hunton and Beeler 1997,p.381; Bishop 2003,p.191; Li and Wood 2005,p.53; Masrek 2007,p.351; Karlsson and Olsson 2008,p.13). Detlor (2004,p.76) called for a participatory design and the active involvement of users to understand their

requirements and needs. According to Eisler (2003,p.85) Li and Wood (2005,p.53) it is difficult to imagine a portal being implemented without input of users and they say it could be a disaster to forget or ignore users' requirements and needs. Moreover, Ward and Daniel (2006,p.41) argue that the lack of end-user involvement can be attributed to the attitude and activities of IT personnel, as they do not show an interest in understanding how organisations work.

The implementers claimed that they did attempt to understand users' requirements, but only at the beginning of the project and only in a limited way. Understanding users' requirements and needs requires many resources such as money, qualified people, time and effort. These are critical issues to the universities studied. According to Eisler (2003,p.85) the management of user expectations can be a difficult task and is very challenging. This is because different categories of users and different users within a category will desire different functions, content, resources and information.

8.3.2.3.4 Benchmarking Campus Portals

CPs are compared with commercial portals by many users. Some interviewees have experienced and used web portals that provide great personalised and customised experiences, and they want to see some of these features and functionalities made available in their CPs. The participants' positive attitudes and perceptions towards these services have an impact on how they see their CPs in terms of personalisation and customisation. Overall, they seem to be happier and more satisfied with web portals than with their institutional portals. This agrees with Green (2003,p.6) who reported that users expectations about CPs services were fostered by their off-campus online experiences by using various web portals. Furthermore, research shows that users do develop loyalty for a given portal that provides extensive personlisation and customisation experience (Yoon et al 2002,p.1; Clarke III and Flaherty 2003,p.20; Telang and Mukhopadhyay 2005,p.63; Chiou and Shen 2006,p.18).

The implementers responded to this claim by arguing that in order to provide excellent and advanced services, many resources need to be allocated such as money, dedicated staff and technical expertise. With the lack of such resources,

it is difficult to meet such expectations and to compete with web portals. As reported by one of the participants "*we can't do it with limited resources and with only two staff. We are not Google!* (Participant D1).

The analysis showed one way to improve the service is to benchmark the portal against best practises. Benchmarking is seen as a method that can be used to measure CP performance. The findings indicated that two main methods can be used: benchmarking against web portals (commercial portals) and benchmarking against other academic institutions to determine and learn from the best practice locally, nationally or internationally.

When comparing CPs with commercial portals, several issues need to be taken into account. First, commercial portals are designed on different values and assumptions than those of the academic environment and are seen as pursuing different objectives and purposes (Batson 2000; Campbell 2001,p.1; Campbell and Aucion 2003,p.165). Second, the ROI of commercial portals is huge. Commercial portals tend to earn revenue from their business through advertisements and selling goods and services (Brakel 2003,p.596; Clarke III and Flaherty 2003,p.16). Therefore, it is expected that commercial portals will deploy and utilise the best cutting-edge technology. Third, there is great competition between web portals, such as Yahoo, Excite, MSN, iGoogle and AOL, to attract and retain more users by providing them with advanced services and an excellent browsing experience. According to Bishop (2003,p.200) commercial portals are built to gain customer loyalty and thus repeat business; the portal allows them to do targeted marketing as well as to retain some personalisation experience in the absence of face-to-face communication. Universities lack the direct profit motive for building portals, but targeted communication, community building and retaining personalisation are still very important.

This does not mean that universities should not look for best practices regarding portal development. Rather, universities are encouraged to adopt this approach and to learn from other experiences. According to Kyro (2003,p.222) benchmarking can be seen as evaluating and improving an organisation's

performance, technology, process, competence or strategy by learning from other organisations to determine the best practices in a particular issue. Many researchers recommend universities who contemplating a portal or wanting to evaluate their portals, to follow two practical methods. The first is to use one of the free commercial portals such as Excite and Yahoo. The second is to use portals that have already been developed by other campuses to identify what they have learned from their experience, and implementers should talk to decision makers from several universities in various stages of portal implementation (Frazee et al 2003,p.136; Eisler 2003,p.74; Ehrmann 2003,p.30; Lee et al 2009,p.13; Al-Mudimigh and Ullah 2011,p.47).

In summary, the discussion showed that there were several issues related to service quality. Communication, user involvement and benchmarking CPs were common issues. Lacks of communication and user involvement were found to be major concerns for users. Benchmarking is seen as a method to improve the portal and provide users with a good experience. The difference between the cases was the need for training among Saudi users. The researcher believes that portal teams should consider and address these issues, which can help to improve the service provided.

8.4 Conclusion

This chapter compared and discussed the research results regarding the factors that affect CP adoption and implementation in Saudi and UK universities. First, it discussed the findings from the implementers' perspective. It was found that the implementation of CPs was affected by several factors including: technological, organisational, environmental, financial, innovation and user related factors. In addition, there were some similarities and differences between the five cases. Second, it discussed the results from the perspective of users. It showed that users perceived several benefits associated with the use of portals, such as the SSO feature, convenience, immediate access, and timeliness. However, there were many concerns related to system quality, content quality and service quality. Moreover, the study has identified two main gaps between users and the service provider: a communication gap and an expectations gap. As a result, users complained about a lack of involvement

and poor communication.Finally, the discussion shows that there are several institutional factors that affect portal adoption and implementation. The following Chapter (9) provides some interpretation and discussion of the findings using elements from institutional theory as a theoretical lens.

Chapter 9: The Adoption and Implementation of Campus Portals: An Institutional Theory Perspective

9.1 Introduction

This chapter discusses the findings reported in the previous chapters by using institutional theory as a theoretical lens to understand the factors that affect the adoption and implementation of CPs. In Chapter 2 (section 2.8) the use of this theory was justified, and several related concepts, such as a definition of institution, institutional isomorphism, institutional pressures, organisational field, institutional logics and rational myths were introduced. There follows a discussion of how these concepts relate to the findings of this study.

9.2 Campus Portals Adoption and Implementation: The Role of Institutional Isomorphism and Pressures

This section discusses the impact of institutional isomorphism and pressures on the adoption and implementation of CPs. It was found that coercive and mimetic pressures influenced the technology adoption and implementation in the Saudi universities, whereas normative pressures were found in the UK cases. Furthermore, competitive pressures were found in all cases.

9.2.1 Coercive and Mimetic Pressures (Saudi Universities)

As reported in the findings, the portal initiative came from top management where senior people introduced the concept of portalisation to the university. It is a top down approach. All universities in Saudi are governed and managed by The Ministry of Higher Education (the parent organisation), and The Council of Higher Education, which is chaired by the King, is the supreme governing body. According to Meyer et al (2005,p.13) "the organisational structures of higher education reflect political institutional frames rather than educational ones… thus; in more centralised polities, universities tend to be more centrally structured, authorised and funded". This reflects the current status quo of Saudi universities.

The Saudi government, as well as planning to develop higher education institutions considers ICT to be a crucial part in the development of this sector. Consequently, the government is pouring a huge amount of money into several IT projects. In recent years, The Ministry of Higher Education has undergone a tremendous transformation in many aspects, including the adoption and implementation of wide ICT projects and initiatives at national level. Examples of these projects include: The Ministry of Higher Education Portal, the NCEDL and wide implementation of WBIS in many universities.

According to King et al (1994,p.139) governments in developing countries often intervene to accelerate the adoption and implementation of IT innovations. As a result, it is expected that universities around the country will respond to this trend and act accordingly and follow these behaviours and practices and be compatible with the policies and strategies. According to DiMaggio and Powell (1991,p.68) sub-organisations have to toe the line and follow the practice and policies of their parent organisation.

Based on the findings, chancellors in Saudi universities are the portal champions and have direct involvement in the development and management of these technologies by chairing portal committees. The high level profile involvement and support from top management suggests that national IT plans and strategies for the higher education sector in Saudi are being coercively imposed by government on universities (Jensen et al 2009,p.349). The Universities' strategies or tactics in responding to this kind of institutional pressure can be described as compliance, which means "conscious obedience to or incorporation of values, norms, or institutional requirements" (Oliver 1991,p.152). In this regard, Meyer and Rowan (1977,p.349) argue that by conforming to externally legitimated formal structures, organisations can increase their stability and legitimacy, which will result in securing their survival. In order to ensure compliance and to conform to this practice, the role of top management can be significant in driving the portal agendas. Chancellors in Saudi universities are powerful actors, who enjoy wide authority and power over universities, and such powerful actors "may sometimes impose their will on

others…or they may provide inducements to ensure compliance" (Scott 2001,p.53). Chancellors in Saudi universities are subject to annual performance evaluations by their parent organisation, to determine what they have achieved in a particular period of time. Figure 9.1 depicts how coercive pressures have been exerted on Saudi universities to develop CPs.

Figure 9.1: Coercive Pressures (Saudi Universities).
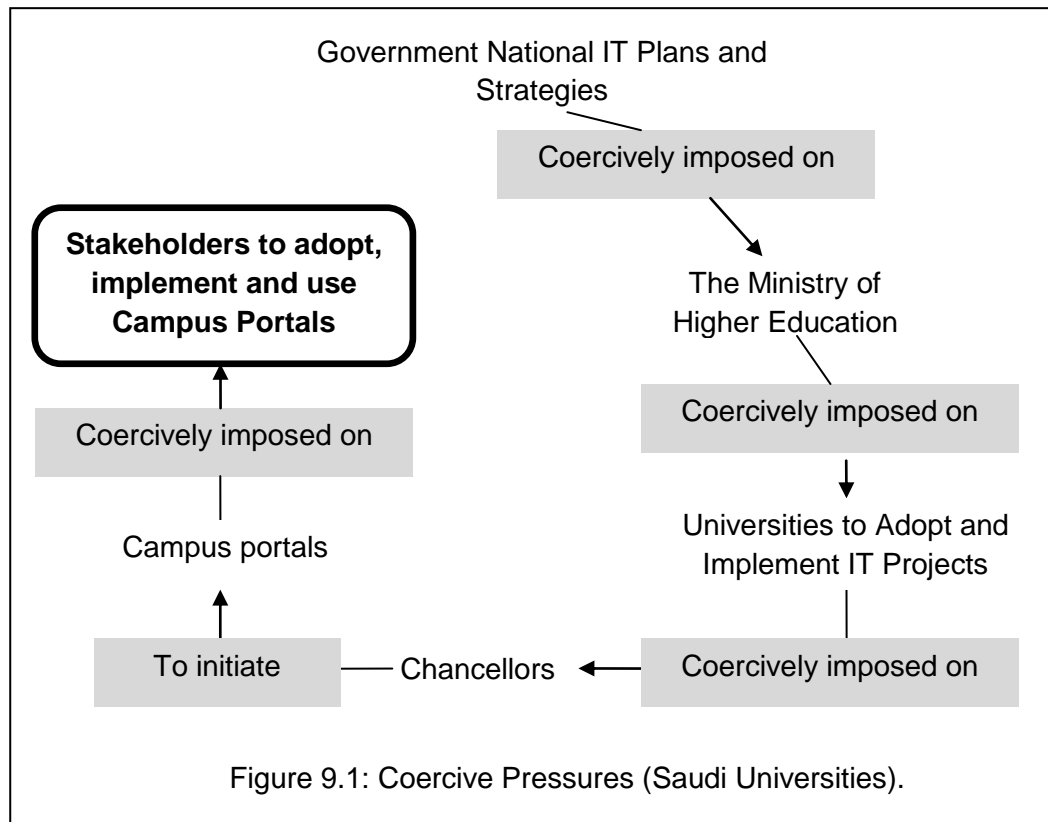
Furthermore, mimetic pressures can be observed in the Saudi case studies. Mimetic pressure is when organisations change over time to become more like other organisations in their environment and those organisations may imitate or model other organisations to copy their behaviour, especially those organisations who are considered to be successful (DiMaggio and Powell 1991,p.69). It was found that University B imitated University A and copied its behaviour, as the latter was considered by the former as an organisation that successfully exploited IT and in particular WBIS including CPs. According to Kraatz and Zajac (1996,p.812) successful adoption of innovations by organisations are more likely to be copied by similar organisations at national systems and levels. The mimetic process has two facets: 1) imitating the organisation practice in the development of the portal 2) implementation of the

same innovation product, as both universities have implemented Microsoft SharePoint Portal. The manager of systems development in University B mentioned that they worked closely with University A, which they considered as an organisation that had developed a good portal model, to share their knowledge and experience. According to the participant, this helped them considerably in terms of what they need, the problems that they may encounter and other related aspects.

The following points explain the rationale behind this imitation of behaviour and practice. First, University A has been institutionalised in the society for a long time. It was established in late of 1950's, gained its legitimacy from the government. Second, it is one of the leading institutions in the Middle East and the Arab world in terms of teaching and research, and is equipped with the latest technology to support the organisational activities. Third, in the eye of the Saudi Government, the University is one of the most important institutions in the country in terms of contributing to the local community development, and has the largest budget of any Saudi university. Finally, organisations with such characteristics can attract the attention of local government. In this regard, DiMaggio and Powell (1991,p.72) were right when said:

> *Government recognition of key firms or organisations through the grant may give these organisations legitimacy and visibility and lead competing firms to copy aspects of their structure or operating procedures in hope of obtaining similar rewards.*

9.2.2 Normative Pressures (UK Universities)

With respect to UK universities, the idea of developing a CP came from Technical and Information Services staff and as such is a grass roots initiative (bottom up approach). Decision makers who initiated and developed CPs have joined two communities of practice:

- JISC.
- JA-SIG uPortal community.

The former is an independent institution established to provide help, advice and support for the use of ICT for teaching, learning, research and administration purposes (see Chapter 4, section 4.4.1). JISC can be described as a community of practice where senior managers, technology experts, academics

and other IT professional involved with higher education work together to exchange ideas, knowledge and experiences regarding technology deployment and management. Regarding JASIG, it is a global community of many educational institutions and commercial partners sponsoring the development of open source software projects which benefit various higher education institutions (JASIG website 2010). The UK universities studied are part of this community and they have developed their CPs based on uPortal. This framework has been institutionalised in the organisational field, and has attracted the attention of many higher educational institutions at a global level, which makes it one of the most popular open sources for creating enterprise portals. It has been implemented by about 70 universities and colleges worldwide, including many universities around the UK.

The findings show that decision makers in the universities studied have benefited from their engagement and involvement with the communities of practice and helped them to develop their norms regarding CPs. Examples of such benefits and advantages include: sharing ideas, experience and knowledge collectively, evaluating different outcomes and getting support, advice, and consultation from a larger community all of whom developed the same.

Based on the foregoing discussion, it can be said that the idea of developing CPs in the universities studied may have stemmed from the professionalisation (communities of practice) which can be described as normative pressures (DiMaggio and Powell 1991,p.70). Communities of practice provide opportunities for collaboration, technical advice, support and help, and to learn more about other experiences and working context (Oliver 2002,p.247). According to Davis (1991,p.594) the perceived value of adoption will increase, if potential adapters establish communication with others who experienced and adopted the same innovation and communicated their reasoning. Furthermore, Liang et al (2007,p.66) reported that the role of normative pressures in technology implementation is closely related to the key features of that technology, that it contains commoditised knowledge. When the technology has been released and become available, members of an organisational field

including experts, consultants and developers jointly assess various features of the technology, hence forming institutional norms concerning implementation. According to Sherer (2010,p.127) the normative forces resulting from the successful interpretation of an innovation among organisational field members can influence the adoption of that innovation. Burt (1982) quoted in Teo et al (2003,p.24) explained this and claimed that organisations and institutions who have direct or indirect bonds with other organisations and institutions that have adopted an innovation are capable of learning about that innovation and its associated advantages, and are likely to behave in the same way. Finally, norms that arise from the professional circles and communities of practice play a key role in affecting organisational decision makers to adopt certain technologies (Teo 2003,p.40). Figure 9.2 depicts how normative pressures have been exerted on the UK universities studied to develop CPs.

Figure 9.2: Normative Pressures (UK Universities).
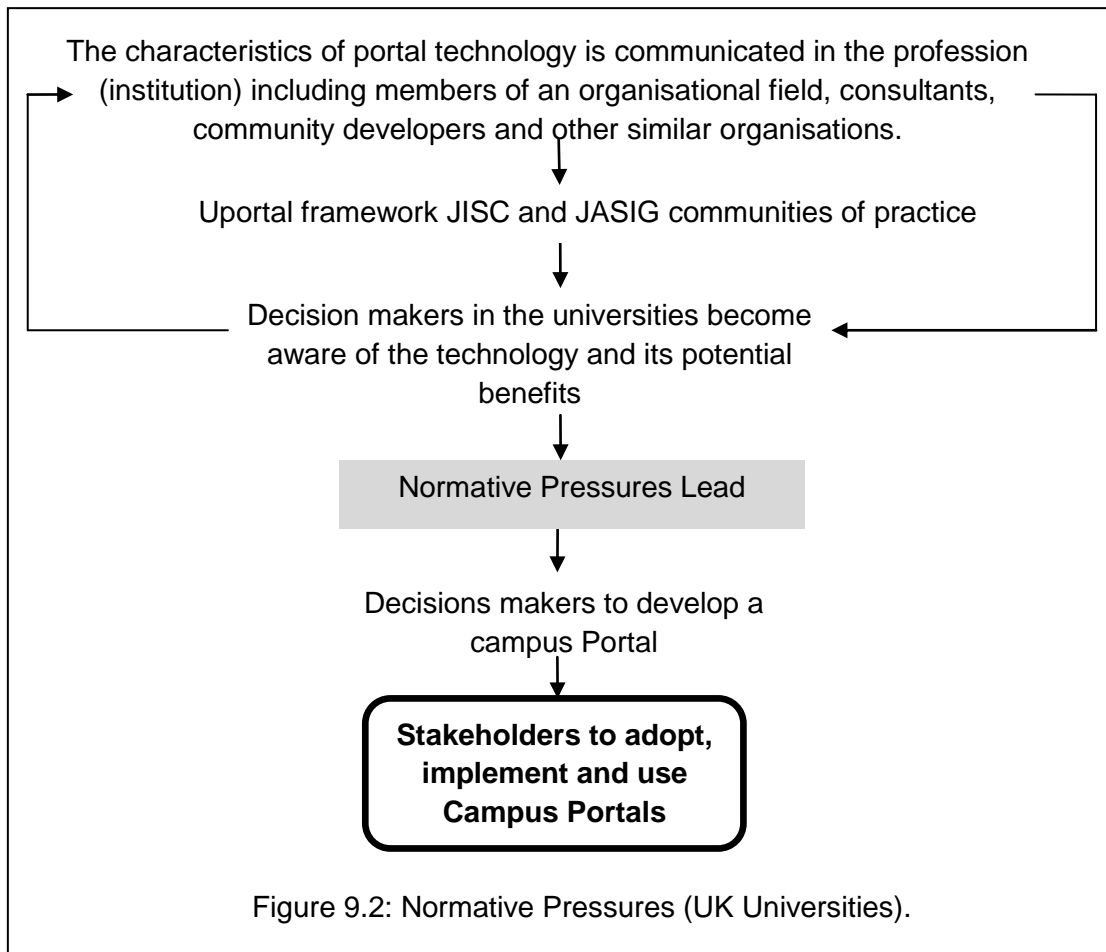
9.2.3 Competitive Pressures (Saudi and the UK)

Another institutional pressure that has been identified in this study is competitive pressures. DiMaggio and Powell (1983,p.149) view competitive isomorphism as "a system rationality that emphasises market competition, niche change, and fitness measures". As mentioned in Chapter 8 section 8.2.3.7 responding to the external environment was one of the main motivations for CPs adoption and implementation. The results showed that portals have found their way into the academic environment and many universities in the local and international environments have developed such technologies. Consequently; the universities studied had to respond to this trend. Furthermore, students now come to universities with the expectation of cutting edge technology and WBIS tools for learning communication and being available for their use. Figure 9.3 shows competitive pressures.

Figure 9.3: Competitive Pressures (All Five Cases).
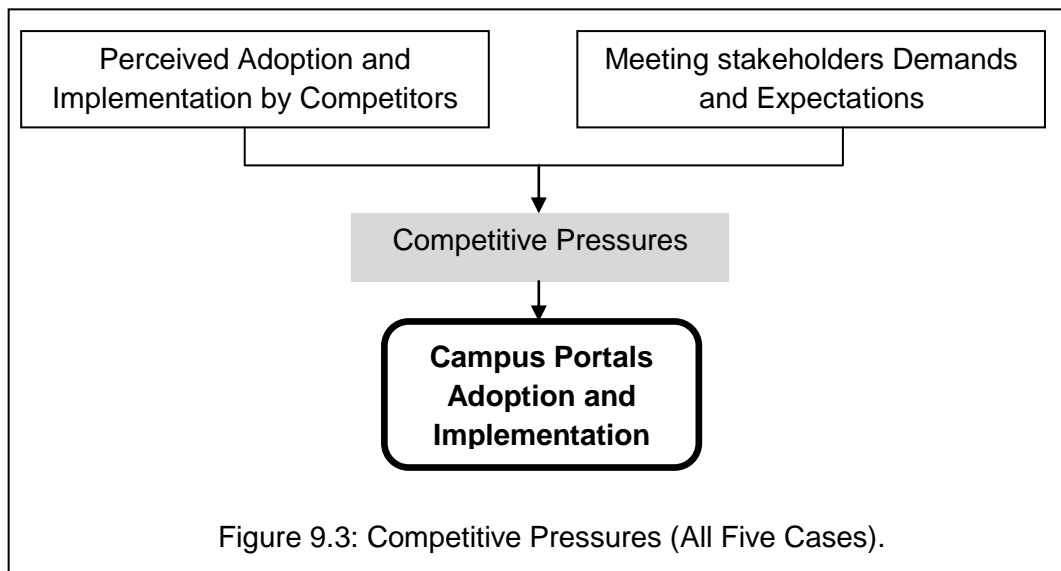
It can be argued that the competition between universities has influenced the decision makers in the universities studied to adopt and implement CPs. This can be regarded as an environmental motivation, and universities have to respond to the competitive pressures that arise from the external environment. To gain a competitive advantage, it is necessary to develop a portal. This is because CPs have become taken-for-granted as key technologies in contemporary higher education institutions, and many universities have

developed CPs. Moreover, universities may fall further behind their competitors if a portal project is not adopted and developed. In this regard, Teo et al (2003,p.22) were right when they said:

> *If enough organisations do things in a certain way such it gives rise to that particular course of action being legitimated or taken for granted throughout a sector, others will follow suit to avoid the embarrassment of being perceived as less innovative or responsive.*

9.2.4 Users and the Coercive Pressures to Use the System

Concerning the adoption and use of the portal by the users, it was found that coercive pressures have been exerted on users. This has been explicitly articulated by many participants, who mentioned that the portal is the only point of access to some key services and resources. The regulations of the university say that in order to get access to key institutional services, resources and information, people should use the portal.

These findings suggest that users feel that portals have been imposed upon them by the universities. Although some participants mentioned that portals in their universities are useful in terms of access services and resources, they feel that some of their requirements and needs have been ignored and neglected. Many participants have questioned the fact that, if the portals were developed for the sake of users, why do they lack input from end users? Several issues related to this matter were discussed Chapter 8, section 8.3. Conversely, the decision makers who developed the portal claimed that one of their motivations was to meet users' needs and expectations. It is interesting to note such conflicting claims, and these findings suggest that there is a contradiction between various institutional norms, beliefs and opinions among various stakeholders, including the users and the implementers. This issue will be discussed further in the following section.

In summary, it can be said that institutional pressures play a key role in the adoption and implementation of CPs in universities. These findings correspond with other research showing the impact of institutional pressures such as coercive, normative, mimetic and competitive pressures on the adoption and implementation of IT in organisations (Teo et al 2003,p.19; Khalifa and Davison

2006,p.282; Hu et al 2007,p.153; Liang et al 2007,59; Son and Benbasat 2007,p.55; Liu et al 2008,p.435; Shi et al 2008,p.272; Standing et al 2009,p.141).

9.3 Institutional Argument and Conflicting Institutional Logics

EISs in the form of CPs can be seen as carriers of institutional logics in universities (Gosain 2004,p.151). According to the literature review and the findings from this study, the benefits and advantages of enterprise portals to organisations are various. Furthermore, the results suggest that portals are efficient in the universities studied. Examples of these benefits include: enhancing users' satisfaction, improving access to information and services, integrating different systems, improving communication, increasing information flow, reducing costs, improving administrative processes, overcoming geographical barriers and providing a source of a competitive advantage. Theoretically, portals can contribute positively to organisations' work by improving performance and increasing productivity.

In the concept of institutional theory, these can be regarded as the rationalised myths (Meyer and Rowan 1991,p.41), in that "the system represented an artefact worth implementing…based on its potential advantages" (Jensen et al 2009,p.349). Portals have become taken-for-granted as key technologies in contemporary universities. However, the adoption and implementation of new (EISs) in the form of portals can raise several issues and cause "institutional argument" (Jensen et al 2009,p.349) and create the potential for conflict between portal teams and different campus constituents such as service providers (Gosain 2004,p.166). This is because of the nature of the portal technology, as it is a cross-functional project and touches almost all parties in the campus. Developing a central university portal could lead to a clash of some institutional logics that have already prevailed in the academic environment for long time. As a result, this could affect the way the technology becomes institutionalised over time in universities. Examples of these institutional logics identified in this study include:

- The principle of academic freedom. (UK universities only).

- The structure of the university; autonomy, devolved or decentralised structures (UK universities only).
- Portal ownership and management (Saudi and The UK).
- Intervention in other campus constituents' jobs and responsibilities. (Saudi and The UK).

The first and second issues were only identified in the UK universities, and were not evident in the Saudi case studies. The variation between the universities in the two countries could be attributed to two main reasons. First, the state regime: decentralised polities (The UK) versus centralised polities (Saudi Arabia). According to Scott (2001,p.140) it is evident that governance systems for the society as an entirety will affect governance systems for other sectors in that society. Meyer et al (2005,p.13) elaborate and argue that "the organisational structures of higher education reflect political institutional frames rather than educational ones". Second, the degree of the institutionalisation of these universities in both countries. For example, UK universities tend to be more institutionalised than do their counterparts in SA. This is due to the fact that the structure of UK universities tends to be autonomous, devolved or decentralised structures. They are self-governing and have intellectual and academic freedom (QAA, 2011). In contrast, Saudi universities tend to be more centrally structured and authorised. In this regard, Peter (2000,p.8) reported that organisations and institutions that are not dependent upon other organisations or institutions and have the capacity to make and implement their own decisions, can be described as more institutionalised.

In considering the organisational and institutional structures and their impact on CPs adoption and implementation, another difference between Saudi and UK universities can be observed. In the Saudi case studies, the participants have appreciated the important role of centralised institutional structures in driving the agendas for a central university portal. For example, the direct involvement of chancellors facilitated many aspects related to the project including funding, resources and communication. In contrast, it was found in the UK universities that the concept of 'academic freedom' and the structure of the UK universities (as they tend to be decentralised institutions) were main issues that affected

several aspects related to the development and management of a central university portal. This finding is inconsistent with Butler (2003,p.209) who reported that top-down implementation strategies give rise to several problems and more conflicts than bottom-up approaches.

In considering the wider environment, it can be said that the UK higher education system is infused with various institutional logics and principles that have already prevailed in the academic field (organisational field) for long time that emphasise the academic freedom, self-government, autonomy and transparency. These institutional logics and principles "embody the organising principles that underpin how field participants carry out their work" (Currie and Guah 2007,p.237). Figure 9.4 illustrates the main issues associated with the development of a central university portal in the UK universities studied.

Figure 9.4: Institutional Issues Affecting Portal Development (UK Cases).
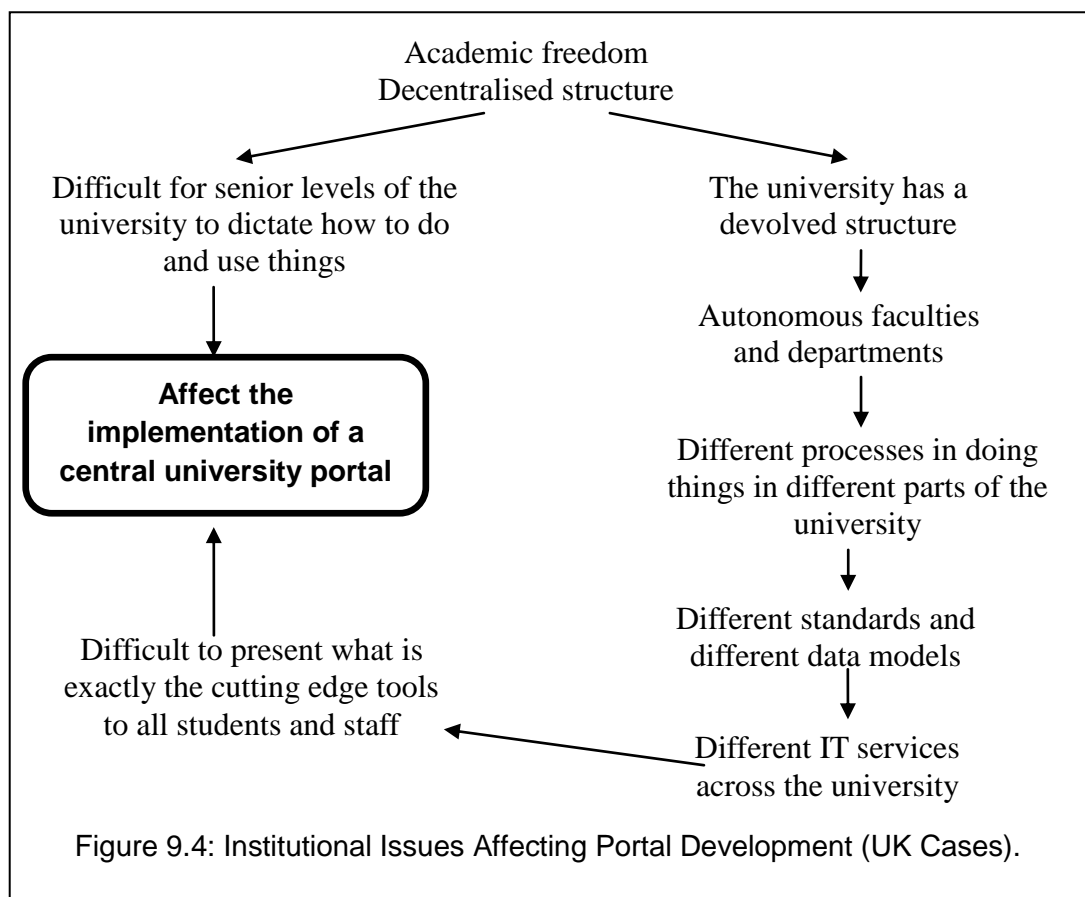
Having discussed the institutional structures of universities and their impact on CPs adoption and implementation, the researcher has a final comment of this

issue. According to the principles of enterprise portals design, some authors including (Thomas 2003,p.121; Klein 2006,p.175) have emphasised the importance of developing a central portal, that brings all institutional services, resources and information together in one place via a SSO. The question that may arise from this discussion is the following: what are the appropriate institutional structures that help to drive the adoption and implementation of a centralised university portal: decentralised or centralised structures? This issue needs further consideration and elaboration.

Other issues that have been identified that caused institutional arguments and conflicting of some institutional logics were portal ownership and portal management. According to the findings, the development of CPs has caused several institutional arguments between portals teams and other service providers, such as students' services, the registry, the library system, the financial department, and the HR department, all of which hold data and information related to the university and its members. Examples of these issues include uncertainty over:

- Responsibility for, and management of, the portal.
- Ownership of content.
- Overlaps with other systems and applications.
- Additional workload requirements for other service providers.

These issues have affected several aspects related to the development and management of CPs such as establishing wider co-operation and co-ordination between portals teams and other service providers, content sharing and management, systems integration, and meeting users' needs and expectations. There are many plausible explanations for this result. First, it could be attributed to the institutional misalignment of the portal with current works and practices in the universities studied. For example, it is surprising to know that none of the universities studied has developed a detailed and integrated strategy that addresses these issues. This is consistent with the findings from other research including (Green 2003,p.4; Klein 2006,p.173; Rahim 2007,p.8). The downside of not doing so would be to make the portal project in isolation of the university strategy and needs. This is because a project like the portal is cross-functional

and touches almost all parties in the campus, which requires to be aligned effectively to achieve business objectives. The misalignment between the incumbent institutional logics and those encoded in the new system could lead to resistance to the use of the new system, uncertainty about its benefits to the organisation's members and lack of interest in accepting and using the system (Gosain 2004,p.166). Second, it might be related to the fear of taking the content from other service providers, and as a result they lose their power and authority. Franklin (2006,p.28) argued that in many institutions, the owners of systems attain their institutional power and authority from that ownership and reluctant to let go. Third, it could be related to the power relationships that exist between different institutional actors, as the portal may attract the attention of senior management in the university and service providers may fear that resources will be directed to the portal rather than to their specific business (Landqvist and Stenmark 2006,p.178). This could be true in the Saudi case studies. Finally, systems integration could raise the power tension and other political issues over who has the right to control the processes related to portal and content management (Themistocleous and Irani 2001,p.328; Landqvist and Stenmark 2006,p.178).

Another issue that is related to the institutional argument was the contradiction between various institutional norms, beliefs and opinions among various stakeholders, mainly to do with the users and the implementers. For example, whereas some universities' actors such as portals implementers claimed that one of the main motivations for portal development was to respond to and meet users' demands, requirements and expectations, those users including students, academics and staff raised several issues regarding these matters. The main objection of many users is the lack of user involvement and poor communication. Many of these issues were discussed in Chapter 8, section 8.3. In order for CPs to be institutionalised and collectively accepted, some participants call for a participative approach by involving people in the critical design stages of the system, for example, prior, during and post implementation stages.

It can be said that the introduction of CPs in universities could cause a clash with some institutional logics and will raise contradictions between various institutional norms, beliefs and opinions among various stakeholders. This agrees with previous research which has shown that the adoption and implementation of IT in organisations conflicted with institutional logics, for example (Sia et al 2002,p.23; Wanger 2003,p.140; Currie and Guah 2007,p.242; Jensen et al 2009,p.349).

These are complex issues that need to be negotiated at an institutional level. There are many techniques that can be used. For example, there is a need for a wider institutional policy or strategy that addresses various issues related to the portal and its content. This suggests that the portal should be aligned effectively and strategically to achieve business objectives (Gosain 2004,pp.174-175; Jensen et al 2009,p.349). The policy should be integrated into other organisational systems. Second, it is important for portal teams to work closely with other service providers and allow them to participate in managing the portal and its content. This offers an opportunity for negotiation between different institutional actors to reach a point of compromise on various issues related to the system (Wanger 2003,p.241). Third, communication is another important issue and it should not stop once the portal project is underway. Effective communication allows ideas and feedback to be shared directly and frequently, to ensure that CPs meet the needs of stakeholders (Thomas 2003,p.121). According to Butler (2003,p.227) a high level of communication between different organisational actors helps to resolve various problems regarding conflicts, especially those related to users. Finally, top management support can play a significant role in facilitating co-operation and collaboration between portals teams and other service providers.

9.4   Conclusion

This chapter has discussed the findings from an institutional theory perspective. The following conclusions can be drawn. First, the adoption and implementation of CPs were affected by many institutional factors related to the internal and external environments. Second, there are some differences and similarities. Concerning the differences, it was found that coercive and mimetic pressures

influenced the technology adoption and implementation in the Saudi universities, whereas normative pressures were found in the UK ones. Another difference was the university structure. A decentralised university structure (UK universities) does not help to develop a central university portal, whereas (as in the Saudi case studies) a centralised structure was found to be helpful. With respect to the similarities, it was found that coercive pressures have been exerted on users to adopt and use the system. Furthermore, institutional pressures in the form of competitive pressures were found to influence portal implementations. Third, the introduction of CPs could lead to a clash of some institutional logics and contradictions between various institutional norms, beliefs and opinions among various stakeholders. Specifically, institutional arguments are likely to arise between portal teams and other campus constituents such as service providers and users.

Finally, it was found that the use of institutional theory is highly informative and offers useful insights and comments. This study extends the line of research on the use of institutional theory to study the adoption and implementation of IS in organisations and in particular CPs.

The following Chapter (10) summarises the main findings and describes the final outcome of the research, which is presented in a framework that illustrates the factors affecting the adoption, implementation and utilisation of campus portals from both the implementers and the users' perspectives.

Chapter 10: Conclusions and Recommendations

10.1 Introduction

This study investigated the factors that affect the adoption, implementation and utilisation of CPs in some Saudi and UK universities. This chapter describes how the research aims and objectives have been achieved and how the research questions have been answered. It summarises the main findings and describes the research contributions to the body of knowledge. Thereafter, it provides some recommendations for decision makers. Then, the chapter highlights the limitations of the research, and concludes with suggestions for future research avenues.

10.2 Research Aims and Questions Revised

This research aimed to investigate the factors affecting the adoption, implementation and utilisation of CPs in Saudi and UK universities. This was achieved by reviewing the available literature as a theoretical background to build a framework for the research, and by collecting qualitative data including interviews and documentation. The research questions posed in Chapter 1 have been answered as follows:

RQ1: What are the key factors that affect the adoption, implementation and utilisation of campus portals?

The findings show that the adoption and implementation of CPs are affected by many factors including: technological, organisational, environmental, financial, innovation and user related factors. Coercive and mimetic pressures influenced the technology adoption and implementation in the Saudi cases, whereas normative pressures were found in the UK ones. Competitive pressures were found in all five universities (Chapter 9). Some of these factors are similar to those reported in the literature, and this confirms previous findings. Furthermore, other new factors have been found to be specifically related to this study. The factors that affect portal adoption and implementation were discussed in section 8.2.4.

RQ2: How are campus portals being adopted and implemented in higher education institutions?

This was answered by reviewing the existing body of literature (Chapter 2) and by analysis of the case studies. The findings revealed that CPs have received wide attention in the academic environment and many universities worldwide have invested in this technology, including the universities studied. Furthermore, there are different strategies for CPs implementation and there was a difference between the universities. The Saudi universities bought ready-made solutions, whereas the UK ones developed portals in-house. This difference was due to many factors including organisational, technological, financial and innovation factors. These issues were discussed in section 8.2.2.

RQ3: What are the barriers and enablers associated with the adoption and implementation of campus portals in Saudi and UK universities?

The findings showed that there were both similarities and differences. Regarding the barriers, it was found that Saudi universities experience more challenges than their counterparts in the UK, especially with the technological issues. Common barriers among the universities in both countries included: systems integration, the lack of identity and access management systems, change management, content management, portal and content ownership, user acceptance, uncertainty regarding portal technology and meeting users' requirements and expectations. Concerning the main differences in barriers, it was found that Saudi universities were lack of in-house technical expertise, deficient IT infrastructure, ongoing co-operation, costs of maintaining the portal, and users' training. In the UK cases, it was found that they were lack of resources including staff and money, inadequate top management support, independence of IT project management and the lack of internal co-operation. In addition, academic freedom and content sharing were major issues, with academic professional not wanting to share their content without control over what happens to it. See section 8.2.4.5.3 and section 9.3.

In terms of enablers, the UK case studies showed that technology readiness, in-house technical expertise, staff commitment, external co-operation, perceived benefits of the system and users' uptake were very important factors and

contributed positively to the project. Regarding the Saudi universities, it was found that top management support, internal co-operation, staff commitment, external co-operation, vendor support, the current trend of ICT adoption in the country and the current health of the Saudi economy were the most important enablers. These issues were summarised in section 8.2.4.

RQ4: Why do universities and academic institutions invest in establishing and developing campus portals?

A number of motivations or reasons that led the universities studied to adopt and implement CPs were identified. The findings showed that the universities studied sought to achieve several objectives by developing CPs. These areas of motivation included: technological, organisational, educational, geographic, administrative, economic, environmental and meeting users' expectations. The administrative motivation was only identified in the Saudi universities, and was not evident in the UK cases.

RQ5: What are the similarities and differences between and among UK and Saudi universities in terms of adoption and implementation of campus portals?

This investigation was a comparative study, aiming to identify similarities and differences between Saudi and UK universities. Several similarities have been identified. The universities had common issues in their motivations for the development of CPs. Furthermore, the universities in both countries experienced some similar challenges such as systems integration, the lack of identity and access management systems, change management, content management, content ownership, technology acceptance, and meeting users' requirements and expectations. Another similarity was the fact that none of the universities studied developed a detailed policy or strategy. Moreover, institutional pressures in the form of competitive pressures affected the decision to adopt and implement CPs. A final similarity was the fact that there were two main gaps between users and the people who manage the CPs: a communication gap and an expectations gap.

Regarding the differences, many issues have been identified. For example, it was found in Saudi universities that portal initiatives came from top management where senior people introduced the concept of portalisation to the university. In contrast, the UK cases showed that it was a grass roots initiative from IT departments. Another difference was the implementation strategy: ready-made solutions versus in-house development. The Saudi universities bought ready-made solutions, whereas the UK ones developed portals in-house. Furthermore, chancellors in Saudi universities are involved directly with portal development and management by chairing the portal committee, whereas in the UK there was no evidence that suggested top management involvement. Another difference was the issue of bilingual portals (Arabic and English). It was only identified in the Saudi case studies. This issue is unique to this study and has not been discussed or reported in the previous literature. It was discussed in section 8.2.4.5.2.1

Institutional theory argues that institutional pressures affect portal implementations. It was found that coercive and mimetic pressures influenced technology adoption and implementation in the case of Saudi universities, whereas normative pressures were found in the UK ones. Another difference was the impact of the institutional structure (centralised versus decentralised structures). Whereas implementers from Saudi universities appreciated the important role of centralised processes in driving the agendas for a central university portal, those in the UK universities claimed that devolved or decentralised structures were the main issue that affected several aspects related to the development and management of a central university portal. Some further similarities and differences between the universities regarding the obstacles and enablers were reported above as answers to RQ 3.

RQ6: What are the attitudes and perceptions of students, academics and support staff towards the adoption and utilisation of campus portals?

The study identified three main broad issues: system quality, content quality, and service quality. Although users in both countries had a positive attitude towards CPs, they raised some concerns regarding their use. It is interesting to observe that there were close similarities between the views of end users in

both countries. Few differences were identified. Moreover, the study has identified two main gaps between users and the people who manage CPs: a communication gap and an expectations gap. As a result, users complained about a lack of user involvement and poor communication. These issues were discussed in section 8.3.2.

Overall

The final outcome of this study is an integrated framework that describes the factors affecting the adoption, implementation and utilisation of CPs from both the implementers and the users' perspectives. Figure 10.1 illustrates the research framework according to the case studies findings and analysis. All of the issues presented in the framework were discussed in Chapters 8 and 9. This framework can be described as an inclusive structured checklist of different issues to guide further work in this area, rather than a process model to inform implementation.

Implementers' Perspective

Technological Factors
IT infrastructure
Systems integration
Identity management systems

Financial Factors
Project funding
On-going cost

Environmental Factors
External co-operation
ICT adoption in the country
Support from the vendor

Organisational Factors
Top management support
In-house technical expertise
Organisational structure
Staff commitment
Internal co-operation
Change management

Innovation Factors
Perceived benefits of the system
Uncertainty regarding portal technology
Conflict with other systems
Content management (bilingual content)
Portal and Content ownership

User-related Factors
Resistance to change
Technology acceptance
Users' requirements
Users' expectations
Training

Motivations

Technological
Organisational
Educational
User Expectations
Geographic
Administrative
Environmental
Economic

Campus Portals Adoption, Implementation and Utilisation

Institutional Analysis

Coercive Pressures
Mimetic Pressures
Normative Pressures
Competitive Pressures
Institutional logics
Rationalised myths

Gaps
Communication Gap
Expectations Gap

Users' Satisfaction

Users' Perspective

System Quality
Portal design
Provision of e-services
Extended services
Conflict with other systems
Portal security
Portal mobility
Systems integration
Networking issues
Portal Availability

Content Quality
Content structure and organisation
Lack of content
Irrelevant content
Content update
Content accuracy
Service Quality
Communication
Training
User involvement
Benchmarking campus portals

Figure 10.1: A Framework of the Factors Affect the Adoption and Implementation of Campus Portals from the Perspective of the Implementers and the Users

10.3 Recommendations for Decision Makers Involved with Portal Adoption and Implementation

Based on the findings, the following recommendations for decision makers involved with portal development and management are proposed.

- A strong business case must be established from the outset of the project to drive the portal agendas and address all aspects related to the project. The downside of not doing so would be isolating the portal project from the university strategy and needs.

- Portal implementations might cause institutional arguments between portal teams and other service providers regarding content management, ownership and portal governance. Consequently, it could conflict some institutional logics and values, especially in where university structures are more devolved or decentralised (such as in the UK). To overcome these issues, the portal must be aligned effectively and strategically to achieve business objectives.

- The adoption and implementation of a portal is a cross-functional project touching almost all parties in the organisation. It requires co-operation and co-ordination between portal teams and other organisational departments and units. This must be addressed properly.

- This study identified two main gaps between the implementers and the users: communications and expectations gaps. To bridge these gaps, universities must invest in resources such as staff, money, time and effort. The following sub-recommendations should be considered.

  - There should be strong communication between portal teams and other stakeholders, such as service providers and users. Internal communication is crucial to convey the message of the portal, its objectives, scope and most importantly the added value that it can bring.

  - Portal implementers should conduct usability tests and evaluation studies periodically to evaluate CPs and determine users' requirements and needs. This can improve user experience

and enhance users satisfaction while allowing portal implementers to get direct feedback and input from users.

- End users should be involved in the processes of portal adoption and implementation to determine their requirements and needs. This should be prior to, during and after implementation of the system. Portal initiatives must start with user participation. The downside of ignoring users' requirements is low user satisfaction and poor adoption and use of the system.

- One way to improve CPs is to benchmark them against best practise. Two main methods can be used: 1) benchmarking against web or commercial portals, 2) benchmarking against other academic institutions. Benchmarking allows universities to determine the best practice and to learn from others.

- A project like the portal requires continuous support strategically and financially. To get this support and have the necessary resources, portal implementers need to demonstrate clear business benefits and advantages to top management.

- An important issue needing consideration is the SSO features. Although CPs in the universities studied have integrated many systems and applications, there are many other systems that need to be integrated into the portals, so users do not need to have many accounts and to keep logging into these systems separately. This was a concern to many participants from both countries.

- Security and privacy were major concerns to many users. Universities should address these issues by establishing different institutional policies and procedures, and other technical mechanisms to ensure that the system is dependable and capable of protecting data and information.

- Universities should consider making CPs accessible from mobile communication devices. Accessibility to information services via mobile devices has become common. With the widespread use of mobile computing and the decrease in the prices of mobile devices and

services, the demand for access via these technologies could increase greatly.

- Universities providing bilingual portals may find it difficult to manage, support and handle content. Content within the portal is likely to grow over time, making the issue more significant and requiring the establishment of translation policies, tools and applications, qualified staff speaking two languages, money and other resources. Therefore, this issue should be addressed from the outset of the project.

- Since Saudi universities operate under The of Ministry Higher Education, there should be a small organisation or a committee at the ministry level to facilitate co-operation and co-ordination between universities. This will help other universities and provide guidance, support and expertise for the management of CPs.

- The need to train end users has been identified only in the Saudi case studies. It is important for Saudi universities to consider this issue and provide training to potential users or users who are less computer literate on how the portal works and how to use it to get the maximum benefits from the system.

10.4 Research Contributions

This study has made a number of contributions:

- The theoretical contribution of this research is the adaptation of institutional theory as a theoretical lens to understand and interpret the findings of the research. This has provided useful insights and comments on the factors that affect the adoption and implementation of CPs. It was found that portal implementation is affected by the wider institutional context. In this research, it was found that institutional isomorphism in the form of coercive, mimetic, normative and competitive pressures affects the adoption and implementation of CPs. Furthermore, the introduction of CPs could lead to a clash of institutional logics among various stakeholders. Institutional arguments are likely to arise between portal teams and other campus constituents such as service providers and users. These results could not be found without the use of institutional

theory. Consequently, this study extends the line of research on the use of institutional theory to study the adoption and implementation of IS in organisations and in particular CP technology in universities.

- Another contribution is the development of the research framework that presents the factors that affecting the adoption, implementation and utilisation of CPs in universities (illustrated in Figure 10.1). This framework combines and integrates the views of both the implementers and the users. There is very little research that combines these perspectives. Some of the factors presented in the framework are similar to, and confirm, those reported in the literature. Furthermore, other new factors have been found to be specifically related to this investigation.

- This investigation was a comparative study between UK and Saudi universities. It highlighted some important issues and differences between the universities and showed how environmental, economic, social, technological and institutional factors affect the adoption and implementation of portal technologies. There is scarce research that compares portal implementations in organisations and, in particular CPs, and more specifically the comparison between developed countries and their counterparts in the developing countries. This study fits in this lacuna.

- An important contribution of this study is that it has identified several issues related to the development of bilingual portals in academic institutions. This research argues that providing a bilingual portal could represent a key challenge to universities and has several implications, beyond those that exist for a single portal. For example, it requires many resources such as qualified staff speaking two languages, translation policies and standards, the need for quality assurance of the content being delivered in more than one language and other issues related to content management and user acceptance. All of these requires effort, time and money, and are significant additions to the workload of portal teams. The need to provide a bilingual or multilingual portal, thus, is a significant barrier to CP adoption, even if it has been overcome in the

well-resourced Saudi universities studied. These issues were discussed in Chapter 8, section 8.2.4.5.2.1.

- Finally, to the best of the researcher's knowledge, this study is the first regarding the implementation of portal technologies in Saudi universities. As a result, the outcomes from this study, and specifically from the Saudi case studies as an example of the developing world, contribute to the existing body of knowledge on the factors that affect the adoption, implementation and utilisation of ICTs, including CPs.

10.5 Limitations of the Study

It can be said that any research is subject to many limitations either with respect to time, resources, methods used and other issues. Limitations of this research include:

- This research is restricted to two countries: the UK and SA. 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 with similar or different characteristics.

- A more general concern with the use of qualitative research is generalisation. Results of a qualitative study are restricted to particular people, events, groups, and organisations. A small number of individuals or cases cannot be representative of others, which makes the generalisation of the results more difficult (Bryman 2008,p.391). In fact, generalisations of results are not sought in this study. Rather, it can offer the opportunity for resonance regarding the research findings (see section 5.3.2.1). However, the findings of this research must be taken with some caution. Thus, it is important to consider the findings of this research and validate by using other research methods, in order to ensure they are consistent with other research findings.

- The current study is situated and bounded in a specific, academic, context. It would be interesting to study other contexts, industries and sectors.

10.6 Suggestions for Further Research

Based on the research limitations, the researcher provides some suggestions and recommendations for future research avenues.

- One of the findings was that users wished to have access to external e-services from organisations that their university deals with on a regular basis, requiring integration of services from a third party into the university portal. This issue has not been investigated before, and it can be considered for further research.

- Another interesting area is a comparative study between CPs and other commercial portals available on the Internet. The findings suggested that CPs should be benchmarked against best practice. Thus, the question that may arise is: what can be learnt from web portals on the Internet to improve CPs?

- A prominent area is to conduct usability and evaluation studies by involving users. Such research could identify several issues that concern users regarding the adoption of CPs. Furthermore, several evaluation methods can be borrowed from the web design field which include: heuristic evaluation, checklist review, navigation stress test, usability testing and metric analysis (Kalbach 2007,p.155).

- Another potential area is to investigate the organisational or institutional structures and their impact on the development and management of CPs. The findings showed that in the Saudi case studies, the participants have appreciated the important role of centralised processes in driving the agendas for a central university portal, whereas in the UK cases, it was found that devolved or decentralised structures was a main issue that affected several aspects related to the development and management of a central university portal. Thus, the question that may arise is: what are the appropriate organisational or institutional structures that help to drive the adoption and implementation of a central portal: decentralised or centralised structures?

- In order to support the findings of this study, further research is needed.

10.7 Conclusion

This study investigated the factors that affect the adoption, implementation and utilisation of CPs in some Saudi and UK universities from the perspective of both the implementers and the users. This study adopted an interpretive-qualitative research approach to carry out the investigation. This chapter has reviewed how the research aim and objectives have been achieved and how the research questions have been answered.

It was found that some factors identified in this study have already been reported in the literature, and this confirms previous research and findings. In addition, new factors have emerged from this investigation, which were integrated with those from the literature in the research framework presented in figure 10.1.

This study has provided several new contributions to the existing body of knowledge and provided recommendations that should be considered by decision makers involved with portal adoption and implementation in organisations including universities.

Developing a successful institutional portal is a complex process which requires many resources such as money, dedicated staff, effort, time, technical expertise and wider co-operation between portal teams and various organisational departments and units. There is more to it than this, though: crucially, institutional isomorphism in the form of coercive, mimetic, normative, and competitive pressures fundamentally affect decisions to adopt and in implementing CPs.

References

Abanumy, A. and Mayhew, P., 2005. Information provision assessment and difficulties @ ministries website.gov.sa. E-government Workshop (eGOV05), Brunel University, UK.

Adams, D., Nelson, R. and Todd, p.,1992. Perceived usefulness, ease of use, and usage of information technology: a replication. *MIS Quarterly*, 16, (2), pp. 227-247.

Agarwal, R. and Prasad, J., 1999. Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30, (2), pp. 361-391.

Aiken, M. and Sullivan, D., 2002. *Best practices in enterprise information portal adoption: 5 key drivers*. Available from:
http://www.providersedge.com/docs/km_articles/Best_Practices_in_EIP_Adoption_-_5_Key_Drivers.pdf [Accessed 20/01/11].

Aitkenhead, T., 2005. Web portals in government services. In: Tatnall, A (ed) *Web portals: the new gateways to internet information and services*. London: Idea Group, pp. 212-229.

Aladwani, A., 2001. Change management strategies for successful ERP implementation. *Business Process Management Journal*, 7, (3), pp. 266-275.

Aladwani, A., 2006. An empirical test of the link between website quality and forward enterprise integration with web consumers. *Business Process Management*, 12, (2), 178-190.

Al-Badi, A., Al-Majeeni, A., Mayhew, P. and Al-Rashdi, A., 2009. Development of an educational portal to enhance the data accuracy of the institution repositories. *Journal of Enterprise Resource Planning*, pp. 1-9. Available from:
http://www.ibimapublishing.com/journals/JERPS/2009/101115.pdf[Accessed 13/12/10].

Al-Busaidi, K., 2010. Revealing the strengths and weaknesses of a corporate portal. Communication of the IBIMA,pp. 1-9. Available from:
http://www.ibimapublishing.com/journals/CIBIMA/2010/369810/369810.pdf   [Accessed 21/01/11].

Al-Gahtani, S., 2004. Computer technology acceptance success factors in Saudi Arabia: an exploratory study. *Journal of Global Information Technology Management*, 7, (1), pp. 5-29.

Al-Mashari, M., Al-Mudiningh, A., and Zairi, M., 2003. Enterprise Resource Planning: A taxonomy of critical factors. *European Journal of Operational Research*, 146, pp. 352-364.

Al-Mudimigh, A. and Ullah, Z., 2011. Effective implementation of portals: best practice model. *International Journal of Business and Management*, 6, (2), pp. 46-51.

Al-Mudimigh, A., Ullah, Z and Alsubaie, T., 2011. A framework for portal implementation: a case for Saudi organizations. *International Journal of Information Management*, 31, pp. 38-43.

Alriyadh Newspaper., 2010. *11 million internet users and 6,5 million mobile devices*. Available from: http://www.alriyadh.com/2010/10/31/article573002.html [Accessed 18/02/11].

Al-Shehry, A., 2008. *Transformation towards E-government in The Kingdom of Saudi Arabia: Technological and organisational perspectives.* Unpublished thesis (PhD), De Montfort University.

Al-Sobhi, F., Weerakkody, V. and Kamal, M., 2010. An exploratory study on the role of intermediaries in delivering public services in Madinah city: case of Saudi Arabia. *Transforming Government: People, Process and Policy*, 4, (1), pp.14-36.

Altameem, T., 2007. *The critical factors of e-government adoption: an empirical study in the Saudi Arabia public sectors*. Unpublished thesis (PhD), Brunel University.

Al-Turki, S. and Tang, N., 1998. Information technology environment in Saudi Arabia: a review. *Work report. Leicester University Management Centre, UK*.

Al-watan Newspaper., 2009. *The higher education budget increased from $80 million to $3.5 billion.* Available from: http://www.alwatan.com.sa/news/newsdetail.asp?issueno=3125&id=98569&groupID=0 [Accessed 26/03/11].

Alvarez, I., 2008. *An investigation into the issues influencing the adoption of e-business within the Portuguese subsidiaries of the pharmaceutical industry*. Unpublished thesis (PhD), De Montfort University.

Alvarez, R. 2002. The myth of integration: a case study of an ERP implementation. In: Nah, F (ed) *Enterprise Resource Planning Solutions and* Management. Hershey: Idea Group, pp. 63-88.

Alves, P. and Uhomoibhi, J., 2010. Issues of e-learning standards and identity management for mobility and collaboration in higher education. *Campus-Wide Information Systems*, 27, (2), pp. 79-90.

Amoako-Gyampah, K., 2004. ERP implementation factors: A comparison of managerial and end-user perspectives. *Business Process Management Journal*, 10, (2), pp. 171-183.

Amoako-Gyampah, K. and Salam, A., 2004. An extension of the technology acceptance model in an ERP implementation environment. *Information & Management*, 41, (6), pp.731-745.

Angell, P., 2007. *Business communication design: creativity, strategies and solutions*. 2nd ed. Boston: McGraw-Hill.

Ast, S. and Gerfen, C., 2003. Building virtual campus. In: Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges*. Hershey: IRM Press, pp. 238-255.

Atiyyah, H., 1989. Determinants of computer system effectiveness in Saudi Arabian public organisation. *International Studies of Management and Organisation*, 19, (2), pp. 85-103.

Bailey, J. and Pearson, S., 1983. Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, 29, (5), pp. 530-545.

Bajec, M., 2005. Educational portals: a way to get an integrated, user centric university information system. In Tatnall, A (ed*). Web portals: the new gateways to internet information and services.* London: Idea Group, pp. 252-269.

Bajwa, D., Rai, A., Brennan, I., 1998. Key antecedents of executive information system success. *Decision Support Systems*, 22, (1), pp. 31-43.

Baptista, J., 2009. Institutionalisation as a process of interplay between technology and its organisational context of use. *Journal of Information Technology*, 24, (4), pp. 305-319.

Barki, H. and Hartwick, J., 1994. Measuring user participation, user involvement, and user attitude. *MIS Quarterly*,18, (1), pp. 59-82.

Barley, S. and Tolbert, P., 1997. Institutionalisation and structuration: studying the links between action and institution. *Organisation Studies*, 18, (1), pp.93-117.

Baskerville, R. and Wood-Harper, T., 2002. A critical perspective on action research as a method for information systems research. In: Myers, M. and Avison, D. (eds). *Qualitative research in information systems: a reader.* London: Sage, pp.129-145.

Batson, T., 2000. Campus portals and faculty development. *Paper presented at Syllabus 2000: New Dimensions in Educational Technology Conference*. Boston.

Bauer, H., Hammerschmidt, M. and Falk, T., 2005. Measuring the quality of e-banking portals. *International Journal of Bank Marketing*, 23, (2), pp. 153-175.

BBC., 2010. *United Kingdom: country profile*. Available from: http://news.bbc.co.uk/1/hi/world/europe/country_profiles/1038758.stm [Accessed 19/03/11].

Benbasat, I., Goldstein, D. and Mead, M., 1987. The case research strategy in studies of information systems. *MIS Quarterly*, 11, (3), pp. 369-386.

Benbya, H., Passiante, G. and Belbaly, N., 2004. Corporate portal: a tool for knowledge management synchronization. *International Journal of Information Management*, 24, pp. 201-220.

Berg, B. and Stylianou, A., 2009. Factors considered when outsourcing an IS system: an empirical examination of the impacts of organisational size, strategy and the object of a decision. *European Journal of Information Systems*, 18, pp. 235- 248.

Bishop, A., 2003. Building a campus portal: a strategy that succeeded. In: Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges*. Hershey: IRM Press, pp. 186-200.

Blaxter, L., Hughes, C. and Tight, M., 2006. *How to research*. 3rd ed. Maidenhead: Open University Press.

Bleicher, J., 1980. *Contemporary hermeneutics: hermeneutics as method, philosophy and critique*. London: Routledge and Kegan Paul.

Blundel, R. and Ippolito, K., 2008. *Effective organisational communication: perspectives, principles and practices*. 3th ed. Essex: Pearson Education Limited.

Boddy, D., Boonstra, A. Kennedy, C., 2002. *Managing information systems: an organisational perspective*. Essex: Pearson Education Limited.

Boland, R., 1985. Phenomenology: a preferred approach to research on information systems. In: Mumford, E. et al (eds) *Research methods in information systems*. Amsterdam: North-Holland, pp. 193-201.

Boland, R., 1991. Information system use as a hermeneutic process. In: Nissen, H. et al (eds) *Information systems research: contemporary approaches and emergent traditions*. Amsterdam: North-Holland, pp. 439-464.

Bolton, S., 2008. *Web redevelopment project: higher education sector research report on institutional portals*. Available from: http://www.york.ac.uk/media/communications/weboffice/documents/York_SB_portal_report_lists.pdf [Accessed 14/09/2010].

Bouwman, H., Hooff, B., Wijngaer, L & Dijk, J., 2005. *Information and communication technology in organisations*. London: Sage.

Bradford, M and Florin, J., 2003. Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems*, 4, pp. 205–225.

Brakel, P., 2003. Information portals: a strategy for importing external content. *The Electronic Library*, 21, (6), pp. 591-600.

Brown, A. and Grant, G., 2005. Framing the frameworks: a review of IT governance research. *Communications of the Association for Information Systems*, 15, pp. 696-712.

Brown, C., 1997. Examining the emergence of hybrid IS governance solutions: evidence from a single case site. *Information Systems Research*, 8, (1), pp. 69-94.

Brown, S., Massey, A., Montoya-Weiss, M. and Burkman, J., 2002. Do I really have to? User acceptance of mandated technology. *European Journal of Information Systems*, 11, (4), pp. 283-295.

Browne, G. and Ramesh, V., 2002. Improving information requirements determination: a cognitive perspective. *Information and management*, 39, pp. 625-645.

Bryman, A., 2008. *Social research methods*. 3rd ed. Oxford: University of Oxford.

Bunt, R., Pennock, L., 2006. Of portals, policies and poets. *Educause Quarterly*, (2), pp. 41-47.

Burgess, S. and Tatnall, A., 2007. A business-revenue model for horizontal portals. *Business Process Management Journal*, 13, (5), pp. 662-676.

Burrell, G. and Morgan, G., 1979. *Sociological paradigms and organisational analysis: elements of the sociology of corporate life*. London: Heinemann Educational.

Burt, S., 1982. Toward a structural theory of action: network models of social structure, perception and action. In: Teo, H., Wei, K and Benbasat, I., 2003. Predicting intention to adopt interorganisational linkages: an institutional perspective. *MIS Quarterly*, 27,(1), pp. 19-49.

Business Monitor International, 2011. *Saudi Arabia information technology report*. Avaialbe from: http://proquest.umi.com/pqdweb/?did=2254762331&sid=4&Fmt=2&clientId=27520&RQ T=309&VName=PQD [Accessed 22/03/2011].

Bussen, W. and Myers, M., 1997. Executive information systems failure: a New Zealand case study. *Journal of Information Technology*, 12, pp. 145-153.

Butler, T., 1998. Towards a hermeneutic method for interpretive research in information systems. *Journal of Information Technology*, 13, pp. 285-300.

Butler, T., 2003. An institutional perspective on developing and implementing intranet and internet based information systems. *Information Systems Journal*, 13, pp. 209-231.

Campbell, J., 2001. *The case for creating a scholars portal to the Web: a white paper*. Available from: http://www.arl.org/bm~doc/portal.pdf [Accessed 06/04/2010].

Campbell, K. and Aucion, R., 2003. Values-based design of learning portals as new academic spaces. In: Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges*. Hershey: IRM Press, pp. 162-185.

Chaffey, D. and Wood, S., 2005. *Business information management: improving performance using information systems*. Essex: Pearson Education Limited.

Chau, P. and Tam, K., 1997. Factors affecting the adoption of open systems: an exploratory study. *MIS Quarterly*, 21, (1), pp. 1-24.

Chiou, J. and Shen, C., 2006. The effects of satisfaction, opportunism, and asset specificity on consumers' loyalty intention toward internet portal sites. *International Journal of Service Industry Management*, 17, (1), pp. 7-22.

Chou, T., Hsu, L., Yeh, Y. and Ho, C., 2005. Towards a framework of the performance evaluation of SMEs' industry portals. *Industrial Management & Data Systems*, 105, (4), pp.527-544.

Cheung, C. and Lee, M., 2009. User satisfaction with an internet-based portal: an asymmetric and nonlinear approach. *Journal of the American Society for Information Science and Technology*, 60, (1), pp.111-122.

Chua, W., 1986. Radical developments in accounting thought. *The Accounting Review*, 61, (4), pp.601-632.

Clarke III, I. and Flaherty, T., 2003. Web-based B2B portals. *Industrial Marketing management*, 32, pp.15-23.

Cobb, C., Riley, R. and. Earley, S., 2002. *LSE for you: London School of Economic portals case study*. Available from: http://www.jiscinfonet.ac.uk/InfoKits/infokit-related-files/lse-for-you-case-study [Accessed 15/03/2011].

Cohen, L., Manion, L. and Morrison, K., 2000. *Research methods in education*. 5th ed. London : Routledge Falmer.

Cole, M. and Avison, D., 2007. The potential of hermeneutics in information systems research. *European Journal of Information Systems*, 16, pp.820–833.

Collins, H., 2003. *Enterprise knowledge portals: next generation portal solutions for dynmic information access, better decision making and maximum results*. New York: Amacom.

Connolly, C., 2000. From static web site to portal. *Educause Quarterly*, 2, pp.38-42.

Cooper, H., 2010. *Research synthesis and meta-analysis: a step-by-step approach*. 4th ed. Los Angeles: Sage.

Corbeil, J. and Valdes-Corbeil, M., 2007. Are you ready for mobile learning? *Educause Quarterly*, 30, (2), pp. 51-58. Available from: http://net.educause.edu/ir/library/pdf/eqm0726.pdf [Accessed 19/03/11].

Corbin, J. and Strauss, A., 2008. *Basics of qualitative research: techniques and procedures for developing grounded theory*. 3rd ed. Thousand Oaks: Sage.

Cox, A., 2007. Beyond information-factors in participation in networks of practice: a case study of web management in UK higher education. *Journal of Documentation*, 63, (5), pp. 765-787.

Cox, A. and Emmott, S., 2007. A survey of UK university web management: staffing, systems and issues. *Campus-Wide Information Systems,* 24, (5), pp. 308-330.

Creswell, J., 1998. *Qualitative inquiry and research design: choosing among five traditions*. Thousand Oaks: Sage.

Creswell, J., 2005. *Educational research: planning, conducting, and evaluating quantitative and qualitative research*. 2nd ed. New Jersey: Upper Saddle River.

Creswell, J., 2007. *Qualitative inquiry and research design: choosing among five approaches*. 2nd ed. Thousand Oaks: Sage.

Crook, C. and Kumar, R., 1998. Electronic data interchange: a multi-industry investigation using grounded theory. *Information and Management*, 34, pp. 75-89.

Cunliffe, D., 2004. *Promoting minority language use on bilingual web sites*. Available from: http://www.aber.ac.uk/mercator/images/cunliffefinal.pdf [Accessed 03/01/11].

Cunliffe, D. and Herring, S., 2005a. Introduction to minority languages, multimedia and the web. *New Review of Hypermediaand Multimedia*, 11, (2), pp. 131-137.

Cunliffe, D. and Herring, S., 2005b. Promoting minority-language use in a bilingual online community. *New Review of Hypermedia and Multimedia*, 11, (2), pp. 157-179.

Cunliffe, D., Jones, H., Jarvis M., Egan K., Huws, R. and Munro, S., 2002. Information architecture for bilingual web sites. *Journal of the American Society for Information Science and Technology*, 53, (10), pp. 866-873.

Currie, W., 2009. Contextualising the IT artefact: towards a wider research agenda for IS using institutional theory. *Information Technology and People,* 22, (1), pp. 63-77.

Currie, W. and Guah, M., 2007. Conflicting institutional logics: a national programme for IT in the organisational field of healthcare. *Journal of Information Technology*, 22, (3), pp. 235–247.

Daft, R., 2010. *New era of management.* 9th ed. Australia: Cengage Learning.

Daigle, L., Cuocco, M., 2002. Portal technology opportunities, obstacles, and options: a view from the California State University. In: Katz, R., et al (eds) *Web portals and higher education: technologies to make IT personal.* San Fransisco: Jossey-Bass, pp.109-123.

Damsgaard, J.,2002. Managing an internet portal. *Communications of the Association for Information Systems*, 9, pp. 408-420.

Daniel, E. and Ward, J., 2005. Enterprise portals: addressing the organisational and individual perspectives. In: *Proceedings of the 13th European Conference on Information Systems.* Regensburg, 2005. Available from:
https://dspace.lib.cranfield.ac.uk/bitstream/1826/4253/1/Enterprise_portals.pdf
[Accessed 18/02/10].

Daniel, E. and Ward, J., 2006. Integrated service delivery: exploratory case studies of enterprise portal adoption in UK local government. *Business Process Management Journal*, 12, (1), pp. 113-123.

Davis, C., Fuller, R., Tremblay, M. and Berndt, D., 2006. Communication challenges in requirements elicitation and the use of the repertory grid technique. *Journal of Computer Information Systems*, 46, (5), pp. 78-86.

Davis, F., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*,13 (3), pp. 319-340.

Davis, F., Bagozzi, R. and Warshaw, P., 1989. User acceptance of computer technology: a comparison of two theoretical models*. Management Science*, 35, (8), pp. 982-1003.

Davis, G., 1991. Agents without principles? The spread of the poison pill through intercorporate networks. *Administrative Science Quarterly*, 36, (3), pp. 583-613.
Davies, R., 2006. Library portals. In: Cox, A. (ed) *Portals: people, processes and technology.* London: Facet, pp. 115-122.

De Freitas, S. and Oliver, M., 2005. Does e-learning policy drive change in Higher Education? A case study relating models of organisational change to e-learning implementation. *Journal of Higher Education Policy and Management,* 27, (1), pp. 81-95.

De Freitas, S., Oliver, M., Mee, A. and Mayes, T., 2008. The practitioner perspective on the modeling of pedagogy and practice. *Journal of Computer Assisted Learning*, 24, pp.26-38.

DeLone, W. and McLean, E., 1992. Information systems success: the quest for the dependent variable. *Information Systems Research*, 3, (1), pp. 60-95.

DeLone, W. and McLean, E., 2003. The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*, 19, (4), pp. 9-30.

Denscombe, M. 2007. *The good research guide for small-scale social research projects*. Maidenhead: Open University Press.

Denzin, N., 1970. *The research act in sociology: a theoretical introduction to sociological method*. London: Butterworths.

Denzin, N. and Lincoln, Y., 2005. *The sage handbook of qualitative research*. 3rd ed. Thousand Okas: Sage.

Department for Business Innovation and Skills., 2009. *Digital Britain*. Available from: http://webarchive.nationalarchives.gov.uk/+/http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf [Accessed 21/12/10].

Detlor, B., 2000. The corporate portal as information infrastructure: towards a framework of portal design. *International Journal of Information Management*, (20), pp. 91-101.

Detlor, B., 2004. *Towards knowledge portals: from human issues to intelligent agents*. Dordrecht : Kluwer Academic Publishers.

Detlor, B., Hupfer, M. and Ruhl, U., 2008. Adoption and use of community municipal portals. In: *Proceedings of the 29th International Conference on Information Systems*. Paris 2008.

Dias, C., 2001. Corporate portals: a literature review of a new concept in information management. *International Journal of Information Management*, 21, pp. 269-287.

DiMaggio, P. and Powell, W., 1983. The iron cage revisited: institutional isomorphism and collective rationality*. American Sociological Review*, 48, (2), pp.147-160.

DiMaggio, P. and Powell, W., 1991. The iron cage revisited: institutional isomorphism and collective rationality in organisational fields. In: Powell, W and DiMaggio, P. (eds) *The new institutionalism in organisational analysis*. Chicago: The University of Chicago Press, pp. 63-82.

Dolgonas, J., 2003. In: Graves, W., Hale, K., 2003. Portals: your institution's reputation depends on them. In: Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 37-50.

Doll, W. and Torkzadeh, G., 1988. The measurement of end-user computing satisfaction. *MIS Quarterly*, 12, (2), pp. 259-274.

Dolphin, I. and Sherratt,R., 2003. *Developing port.hull: the University of Hull portal.* Available from: http://www.jisc.ac.uk/uploaded_documents/Hull_case_study.pdf [Accessed 20/08/08].

Duffner, R., 2003. Portals unlock knowledge that drives business value. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges*. Hershey: IRM Press, pp. 202-219.

Dutta, S. and Mia, I., 2010. *The global information and technology report: ICT for sustainability*. Avaialbe from:
http://www.networkedreadiness.com/gitr/main/fullreport/index.html[Accessed 13/11/10].

Easterby-Smith, M., Thorpe, R. and Lowe, A., 2002. *Management research: an introduction.* 2nd ed. London: Sage.

Ehrmann, S., 2003. Keeping your eyes on the prize: using inquiry to increase the benefits of institutional portals. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 28-36.

Eisler, D., 2003. Campus portal strategies. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 68-88.

Eisler, D., 2003a. *Campus portal security: access, risks and rewards.* Available from http://www.educause.edu/Resources/CampusPortalSecurityAccessRisk/152747 [Accessed 14/04/09].

Ellis, B., 2005. *Employees' reaction to the introduction of enterprise resource planning system*. Unpublished thesis (PhD), Regent University.

Ely, D., 1990. Conditions That Facilitate the Implementation of Educational Technology Innovations. *Journal of Research on Computing in Education*, 23, (2), pp. 298-305.

Englert, B., 2003. *Portals trends in higher education*. Available from:
http://www.educause.edu/Resources/AccentureIncPortalTrendsinHigh/161167 [Accessed 19/05/08].

Etesse, C., 2003. Portals technology and architecture: past, present and future. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 220-237.

Fink, D. and Shoeib, A., 2003. Action: the most critical phase in outsourcing information technology. *Logistics Information Management*, 16, (5), pp. 302-311.

Finlay, L., 2006. Rigour, ethical integrity or artistry? Reflexively reviewing criteria for evaluating qualitative research. Available from: http://www.lindafinlay.co.uk/BJOT_evaluating_research_new.doc [accessed 16/11/11].

Fisher, J. and Craig, A., 2004. From websites to portals: success factors for business community portals. In: *Proceedings of the 12th European Conference on Information Systems*. Finland, 2004. pp. 1-12.

Flick, U., 2009. *An introduction to qualitative research.* 4th ed. Los Angele: Sage.

Fontana, A and Frey, J., 2003. The interview: from structured questions to negotiated text. In: Denzin, N and Lincoln, Y (eds) Collecting and interpreting qualitative materials. Thousand Oaks: Sage, pp. 645-672.

Forger, G., 2004. Found in translation: creating bilingual websites. In Nall J. and Robson, R. (eds.) *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Chesapeake, 2004.* pp. 630-633.

Franklin, T., 2004. *Portals in higher education: concepts and models.* Available from: http://www.uoc.edu/rusc/3/1/dt/eng/franklin.html [Accessed 16/04/2008].
Franklin, T., 2006. Portal architectures. In Cox, A. (ed) *Portals: people, processes and technology.* London: Facet, pp. 24-37.

Frazee, J., Frazee, R., Sharpe, D., 2003. Begin with the end user in mind: planning for the San Diego State University campus portal. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 127-161.

Friedland, R. and Alford, R., 1991. Bringing society back in: symbols, practices, and institutional contradictions. In: Powell, W and DiMaggio, P. (eds) *The new institutionalism in organisational analysis.* Chicago: The University of Chicago Press, pp. 232-263.

Fuangvut, T., 2005. *Campus portals: a framework for development accommodating end-users' online activities.* Unpublished thesis (PhD), University of Wollongong.

Fustes, M., 2005. *The portal promise.* Available from: http://www.eimagazine.com/xq/asp/sid.0/articleid.52A5EB1D-AEAC-4C65-A8BB-5BC7EC2078AC/qx/display.htm [Accessed 25/02/08].

Gadamer, H., 1976. The historicity of understanding. In: Connerton, P. (ed.) *Critical sociology: selected readings.* Harmondsworth: Penguin, pp.117-133.

Gallivan, M. and Oh, W., 1999. Analysing IT outsourcing relationships as alliances among multiple clients and vendors. *In: Proceedings of the 32nd Hawaii International Conference on System Sciences*, 1999, pp. 1-15.

Gartner., 2009. *Key Issues in Enterprise Portals* 2009. Available from: http://www.gartner.com/it/content/787300/787313/key_issues_in_enterprise_portals.pdf [Accssed 25/04/11].

Glandon, T., Glandon, S. and Boyd, M., 2008. Reducing perceptual differences in end users: potential and possibilities for continuing training programs. *Academy of Information and Management Sciences Journal*, 11, (1), pp. 1-12.

Glaser, B. and Strauss, A., 1967. *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine de Gruyter.

Gorman, G. and Clayton, P., 2005. *Qualitative research for the information professional: a practical handbook*. 2nd ed. London: Facet.

Gosain, S., 2004. Enterprise information systems as objects and carriers of institutional forces: the new iron cage. *Journal of the Association for Information Systems*, 5, (4), pp.151-182.

Gounaris, S. and Dimitriadis, S., 2003. Assessing service quality on the Web: evidence from business-to-consumer portals. *Journal of Services Marketing*, 17, (5), pp. 529-548.

Graves, W., Hale, K., 2003. Portals: your institution's reputation depends on them. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 37-50.

Green, K., 2003. *Tracking the progress of portals and web-based services*. Educause, 8, 1-12. Available from: http://www.educause.edu/ECAR/TrackingtheProgressofPortalsan/157491 [accessed 19/02/10].

Grover, V. and Goslar, M., 1993. The initiation, adoption, and implementation of telecommunications technologies in US organisations. *Journal of Management Information Systems*, 10, (1), pp. 141-163.

Gu, Y. and Salvendy, G., 2002. A metadata filter for intranet portal organisational memory information systems. *International Journal of Human-Computer Studies*, 56, pp. 525-537.

Guimaraes, T., Igbaria, M. and Ming-Te, L.,1992. The determinants of DSS success: an integrated model. *Decision Sciences*, 23, (2), pp. 409-429.

Hantrais, L. 1996. Comparative research methods. *Social Research Update*. Available from: http://sru.soc.surrey.ac.uk/SRU13.html [Accessed 07/03/10].

Harcourt, M., Lam, H and Harcourt, S., 2005. Discriminatory practices in hiring: institutional and rational economic perspective. *International Journal of Human Resource Management,* 16, (11), pp. 2113-2132.

Harrison, A., 2010. Call for higher university fees to create market. Available from: http://news.bbc.co.uk/1/hi/education/8508071.stm [Accessed 09/03/10].

Harrison, A., 2010. Universities prepare to raise fees amid protest pledge. Available from: http://www.bbc.co.uk/news/education-11967809 [Accessed 21/12/10].

Hartwick, J. and Barki, J., 1994. Explaining the role of user participation in information systems use. *Management Science*, 40, (4), pp. 460-465.

Harvey, L. and Myers, M., 2002. Scholarship and practice: the contribution of ethnographic research methods to bridging the gap. In: Myers, M. and Avison, D (eds) *Qualitative research in information systems: a reader*. London: Sage, ,pp.169-180.

Haveman, H., 1993. Follow the leader: mimetic isomorphism and entry into new markets. *Administrative Science Quarterly*, 38, pp. 593-627.

Heeks, R., 2001. *Building e-Governance for development: a framework for national and donor action*. Available from:
http://unpan1.un.org/intradoc/groups/public/documents/NISPAcee/UNPAN015485.pdf
[Accessed 21/02/10].

Henn, M., Weinstein, M. and Foard, N., 2006. *A short introduction to social research*. London: Sage.

Herriott, R. Firestone, W., 1983. Multisite qualitative policy research: optimising description and generalisation. *Educational researcher*, 12, pp. 14-19.

Hickey, A. and Davis, A., 2004. A unified model of requirements elicitation. *Journal of Management Information Systems*, 20, (4), pp. 66-84.

Higher Education System in Saudi Arabia., 2007. Available from
http://hec.mohe.gov.sa/BOOKvIEW.aspx [Accessed 19/01/11].

Hislop, D., 2009. *Knowledge management in organisations: a critical introduction*. 2nd ed. Oxford: Oxford University Press.

Holt, R. and Oliver, M., 2002. Evaluating web-based learning modules during an MSc programme in dental public health: a case study. *British Dental Journal*, 193, (5), pp.283-286.

Howitt, D., and Cramer, D., 2011. *Introduction to research methods in Psychology*. 3rd ed. Harlow: Pearson.

Hoxmeier, J. and DiCesare, C., 2000. System response time and user satisfaction: an experimental study of browser based application. In: *Proceedings of the Association of Information Systems Americas Conference,* Long Beach. Available from:
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.99.2770&rep=rep1&type=pdf
[Accessed 19/11/10].

Hsu, C. and Lin, J., 2008. Acceptance of blog usage: the roles of technology acceptance, social influence and knowledge sharing motivation. *Information and Management*, 45, pp. 65-74.

Hu, Q., Hart, P. and Cooke, D., 2007. The role of external and internal influences on information systems security: a neo-institutional perspective. *Journal of Strategic Information Systems*, 16, pp. 153-172.

Huang, R., Zamud, R. and Price, R., 2010. Influencing the effectiveness of IT governance practices through steering committees and communication policies. *European Journal of Information Systems*, 19, pp. 288-302.

Hunter, G., 2004. Qualitative research in information systems: an exploration of methods. In: Whitman, M and Woszczynski, A (eds). *The handbook of information systems research*. Hershey: Idea Group, pp. 291-303.

Hunton, J. and Beeler, J. 1997. Effects of user participation in systems development: a longitudinal field experiment. *MIS Quarterly*, 21, (4), pp. 359-388.

Igbaria, M., Guimaraes, T and Davis, G., 1995. Testing the determinants of microcomputer usage via a structural equation model. *Journal of Management Information Systems*, 11, (4), pp. 87-114.

Internet world statistics., 2010. *United Kingdom*. Available from: http://www.internetworldstats.com/europa.htm#uk [Accessed 12/01/11].

Isakowitz, T., Bieber, M., and Vitali, F., 1998. Web information systems. *Communication of the ACM*, 41, (7), pp. 78-80.

Ivancevich, J., Konopaske, R, and Matteson, M., 2005. *Organisational behaviour and management*. 7th ed. Boston: McGraw Hill.

Ives, B., Olson, M. and Baroudi, J., 1983. The measurement of user information satisfaction. *Communications of the ACM*, 26, (10), pp. 785-793.

Jafari, A., 2003. *Designing portals opportunities and challenges*. Hershey: Idea Group.

Jarvenpaa, S. and Ives, B., 1991. Executive involvement and participation in the management of information technology. *MIS Quarterly*, 15, (2), pp. 205-227.

JA-SIG uPortal community Website., 2010. Available from: http://www.jasig.org/uportal [Accessed 23/02/11].

Jennex, M. and Adelakun, O., 2003. Success factors for offshore information system development. *Journal of Information Technology Cases and Applications*, 5, (3), pp. 12-31.

Jensen, T., Kjaergaard, P. and Svejvig, P., 2009. Using institutional theory with sensemaking theory: a case study of information system implementation in healthcare. *Journal of Information Technology*, 24, (4), pp. 343-353.

Jepperson, R., 1991. Institutions, institutional effects and institutionalism. In: Powell, W and DiMaggio, P. (eds) *The new institutionalism in organisational analysis*. Chicago: The University of Chicago Press, pp. 143-163.

Jick, T., 1979. Mixing qualitative and quantitative methods: triangulation in action. *Administration Science Quarterly*, 24, pp. 602- 611.

Jin, Y. and Peng, J., 2009. Information portal development and practice at Shanghai Jiao Tong University library. *Online information review*, 33, (3), pp.537-547.

Joint Information Systems Committee (JISC)., 2009. *Extending access management into business and community engagement: scoping study*. Available from: http://www.jisc.ac.uk/media/documents/programmes/bce/extendingaccessmanagement report.pdf [Accessed 21/02/10].

Joint Information Systems Committee., 2010. Available from: http://www.jisc.ac.uk/ [Accessed 21/02/10].

Joint Information Systems Committee., 2011. *JISC's strategic objectives*. Available from: http://www.jisc.ac.uk/aboutus/strategy.aspx [Accessed 09/02/11].

Jones, N., Provost, D & Pascale, D., 2006. Developing a university research web-based knowledge portal. *International Journal of Knowledge and Learning*, 2, (1-2), pp. 106-118.

Jun, K. and Weare, C., 2008. The adoption of municipal web sites: on efficiency, power, and legitimacy. In: *Proceedings of the 9th International Conference on Digital Government Research*, Montreal, 2008, pp. 272-281.

Kakumanu, P. and Mezzacca, M., 2005. Importance of portal standardization and ensuring adoption in organizational environments. *Journal of American Academy of Business*, 7, (2), pp. 128-132.

Kalbach, J., 2007. *Designing web navigation*. Beijing: Oreilly.

Kalle, L., Newman, M. and A, Al-muharfi., 2009. Institutionalizing enterprise resource planning in the Saudi steel industry: a punctuated socio-technical analysis. *Journal of Information Technology*, 24, (4), pp. 286-304.

Kamis, A. and Stohr, E., 2006. Parametric search engines: what makes them effective when shopping online for differentiated products? *Information and Management*, 43, (7), pp. 904-918.

Karlsbjerg, J., Damsgaard, J. and Sheepers, R., 2003. A taxonomy of intranet implementation strategies: to make or to buy. *Journal of Global Information Management*, 11, (3), pp. 39-62.

Karlsson, K and Olsson, J., 2008. University web portals quality assurance. Available from:http://gupea.ub.gu.se/bitstream/2077/10544/1/gupea_2077_10544_1.pdf [Accessed 10/01/09].

Keat, R. and Urry, J., 1975. *Social theory as a science.* 2nd ed. London: Routledge and Kegan Paul.

Khalifa, M. and Davison, R.M. 2006., SME adoption of IT: the case of electronic trading systems. *IEEE Transactions on Engineering Management*, 53, (2), pp. 275-284.

Kim, C. and Peterson, D., 2001. Developers' perceptions of information systems success factors. *The Journal of Computer Information Systems*, 41, (2), pp. 29-35.

Kincheloe, J. and McLaren, P., 1994. Rethinking critical theory and qualitative research. In Denzin, N and Lincoln, Y. (eds) *Handbook of qualitative research*. Thousand Oaks: Sage, pp.138-157.

King, J., Gurabaxani, V., Kraemer, K., McFarlan, F., Raman, K. and Yap, C., 1994. Institutional factors in information technology innovation. *Information Systems Research*, 5, (2), pp.139-169.

King, N., 1994. The qualitative research interview. In: Cassell, C and Symon, G., (eds) *Qualitative methods in organisational research: a* practical guide. London: Sage, pp.14-36.

Klein, H. and Myers, M., 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 23, (1), pp. 67-94.

Klein, Y., 2006. Portal implementation in UK higher education institutions. In Cox, A. (ed) *Portals: people, processes and technology.* London: Facet, pp. 167-187.

Kraatz, M. and Zajac. E., 1996. Exploring the limits of the new institutionalism: the causes and consequences of illegitimate organizational change. *American Sociological Review*, 61, (5), pp.812-836.

Kuo, T., Lu, I., Huang, C. and Wu, G., 2005. Measuring users' perceived portal service quality: an empirical study. *Total Quality Management*, 16, (3), pp. 309-320.

Kuper, A., Lingard, L., Levinson, W., 2008. *Critically appraising qualitative research*. Available from: http://www.bmj.com/content/337/bmj.a1035.full#ref-3 [Accessed 16/11/11].

Kyro, P., 2003. Revising the concept and forms of benchmarking. *Benchmarking: An International Journal,* 10, (3), pp.210-225.

Lacity, M and Janson, M., 1994. Understanding qualitative data: a framework of text analysis methods. *Journal of Management Information Systems*, 11, (2), pp.137-155.

Lacity, M. and Willcocks, L., 1998. An empirical investigation of information technology sourcing practices: lessons from experience. *MIS Quarterly*, 22, (3), pp.363-408.

Lammers, J. and Barbour, J., 2006. An institutional theory of organisational communication. *Communication Theory*, 16, pp. 356–377.

Landqvist, F. and Stenmark, D., 2006. Portal information integration and ownership misfits: a case study in a tourism setting. In: *Proceedings of the 39th Annual Hawaii International Conference on* System Sciences Kauai. Available from: http://www.viktoria.se/~dixi/publ/final.pdf [Accessed 20/08/08].

Langdon, C., 2006. Designing information systems capabilities to create business value: a theoretical conceptualization of the role of flexibility and integration. *Journal of Database Management*, 17, (3), pp. 1-18.

Laudon, K. and Laudon, J., 2006. *Management information systems: managing the digital firm*. 9th ed. Upper Saddle River, Pearson Education.

Laudon, K. and Traver, C., 2008. *E-commerce: business, technology and society*. 4th ed. London: Pearson Education.

Leclercq, A., 2007. The perceptual evaluation of information systems using the construct of user satisfaction: case study of a large French group. *The Database for Advances in Information Systems,* 38, (2), pp. 27-60.

Lee, A., 1994. Electronic mail as a medium for rich communication: an empirical investigation using hermeneutic interpretation. *MIS Quarterly*, 18, (2), pp. 143-157.

Lee, H., Choi, Y. and Jo, N., 2009. Determinants affecting user satisfaction with campus portal services in Korea. *Journal of Internet Banking and Commerce*, 14, (1), pp. 1-18.

Lee, Y., Kozar, K. and Larsen, K., 2003. The technology acceptance model: past, present, and the future. *Communications of Association for Information Systems*, 12, (50), pp. 752-780.

Legris, P., Ingham, J. and Collerette, P., 2003. Why do people use information technology? A critical review of the technology acceptance model. *Information and Management*, 40, pp.191-204.

Leonard-Barton, D. and Sinha, D., 1993. Developer user interaction and user satisfaction in internal technology transfer. *Academy of Management Journal*, 36, (5), pp. 1125-1139.

LeRouge, C. and Webb, H.,2003. Managing training in a technology context. *In: SIGMIS CPR '03 Proceedings of the 2003 SIGMIS conference on Computer personnel research*, Philadelphia.

Li, S., Wood, W., 2005. Portals in the academic world: are they meeting expectations. *The Journal of Computer Information Systems*, 45, (4), pp. 50-55.

Li, S., Wood, W., 2008. A cluster analysis of campus portal implementation. *Issues in Information Systems*, IX, (2), pp. 163-170.

Liang, H., Saraf, N., Hu, Q. and Xue, Y., 2007. Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management. *MIS Quarterly*, 31, (1), pp. 59- 87.

Lin, C. and Wu, S., 2002. Exploring the impact of online service quality on portal site usage. In: *Proceedings of the 35th Hawaii International Conference on System Sciences*, Big Island, pp. 2654-2661.

Lin, F. and Rohm, T., 2009. Managers' and end-users' concerns on innovation implementation: a case of an ERP implementation in China. *Business Process Management Journal*, 15, (4), pp. 527-547.

Lin, Y., 2009. Doubling the authentication factor. *Information Security Now*, 3, (4), pp. 6-7.

Linder, J. and Cantrell, S., 2002. BPO big bang: turning theory into practice. *Competitive Financial Operations: The CFO Project*, 1, pp. 1-5.

Little, J., 2001. A librarian's perspective on portals. *Educause Quarterly*, 2, pp. 52-54.

Liu, C., Sia, C. and Wei, K., 2008. Adopting organizational virtualization in B2B firms: an empirical study in Singapore. *Information and Management*, 45, (7), pp. 429-437.

Liu, Y., Han, S. and Li, H., 2010. Understanding the factors driving m-learning adoption: a literature review. *Campus Wide Information Systems*, 27, (4), pp. 210-226.

Liz, P., 2003. Our student stakeholders: requirements for institutional portals. *VINE*, 33, (1), pp.11-16.

Looney, M., and Lyman, P., 2000. Portals in higher education: what are they, and what is their potential? *Educause Review, 35, (*4), pp. 29-36.

Lukaitis, S. and Cybulski, J., 2004. A hermeneutic analysis of the Denver international airport baggage handling system. In: Proceedings of the Information Systems Foundations Workshop: Constructing and Criticising. Australian National University, Canberra. Available from: http://epress.anu.edu.au/info_systems/part-ch06.pdf [Accessed 18/01/10].

Lundgren, T., 1998. End-user support. *The Journal of Computer Information Systems*, 39, (1), pp. 60-64.

Lyytinen, K. Rose, G., and Welke, R., 1998. The brave new world of development in the internetwork computing architecture (InterNCA): or how distributed computing platforms will change systems development. *Information Systems Journal*, 8, pp. 241-253.

Madeja, N. and Schoder, D., 2003. Designed for success: empirical evidence on features of corporate web pages. In: *Proceedings of the 36th Hawaii International Conference on System Sciences*, Big Island.

Maheshwari, B., Kumar, V., Kumar, U. and Sharan, V., 2007. E-government portal effectiveness: managerial consideration for design and development. Available from: http://www.iceg.net/2007/books/1/27.pdf [Accessed 21/01/11].

Mahmood, M., Burn, J., Gemoets, L. and Jacquez, C., 2000. Variables affecting information technology end-user satisfaction: a meta-analysis of the empirical literature. *International Journal of Human-Computer Studies*, 52, (4), pp. 751-71.

Marcus, A. and Gould, E.,2001. Cultural dimensions and global Web user-interface design: What? So what? Now what? Available from: http://www.amanda.com/cms/uploads/media/AMA_CulturalDimensionsGlobalWebDesign.pdf [Accessed 19/04/08].

Marshall, C and Rossman, G., 2006. *Designing qualitative research*. 4th ed. Thousand Oaks: Sage.

Mason, J., 1996. *Qualitative researching*. London: Sage.

Mason, J., 2002. *Qualitative researching*. 2nd ed. London: Sage.

Masrek, M., 2007. Measuring campus portal effectiveness and the contributing factors. *Campus-Wide Information Systems*, 24, (5), pp. 342-354.

May, T., 2001. *Social research: issues, methods and process*. Buckingham: Open University.

McGlynn, H., et al (Eds)., 2001. *The Hutchinson dictionary of computing and the internet*. Oxford: Helicon.

McKinney, V., Yoon, K. and Zahedi, F., 2002. The measurement of web-customer satisfaction: an expectation and disconfirmation approach. *Information Systems Research*, 13, (3), pp. 296-315.

McLean, R. and Stahl, B., 2007. *Cooking up critical research: some thoughts on theory, practice and success criteria*. Available from: http://www.mngt.waikato.ac.nz/ejrot/cmsconference/2007/proceedings/theopenstream/ mclean.pdf [Accessed 12/01/11].

Metha, M., 2005. IT integration decisions during mergers and acquisitions. Unpublished thesis (PhD), University of Houston.

MCIT., 2009a. *Brief history of the Ministry of Communications and Information Technology*. Available from: http://www.mcit.gov.sa/english/AboutMCIT/BriefHistory/ [Accessed 19/02/11].

MCIT., 2009b. *The annual report of the national plan for information and communication technology: transformation to information society*. Available from: http://www.mcit.gov.sa/downloads/report3031.pdf [Accessed 19/02/11].

MCIT., 2010. *ICT Indicators in the Kingdom of Saudi Arabia*. Available from: http://www.mcit.gov.sa/english/Development/SectorIndices/ [Accessed 19/02/11].

Medawar, K., 2007. The restructuring of the portal at the institute Pasteur library: a case study. *Program: Electronic Library and Information Systems*, 41, (1), pp. 20-34.

Meingast, M., Roosta, T. and Sastry, S., 2006. Security and privacy issues with health care information technology. Proceedings of the 28th IEEE EMBS Annual International Conference. New York, USA. pp. 5453-5458.

Meyer, J., Ramirez, F., Frank, D. and Schofer, E., 2005. *Higher Education as an Institution*. Available from: http://www.economics.smu.edu.sg/events/Paper/ramirez_0505.pdf[Accessed 25/11/11]

Meyer, J. and Rowan, B.,1977. Institutional organisations: formal structure as myth and ceremony. *American Journal of Sociology*, 83, (2), pp.340-363.

Meyer, J. and Rowan, B.,1991. Institutional organisations: formal structure as myth and ceremony. In: Powell, W and DiMaggio, P. (eds) *The new institutionalism in organisational analysis*. Chicago: The University of Chicago Press, pp. 41-62.

Mignerat, M. and Rivard, S., 2005. *Positioning the institutional perspective in information technology research*. Available from: http://neumann.hec.ca/chairegestionti/cahiers/cahier0501.pdf [Accessed 20/11/10].

Mignerat, M. and Rivard, S., 2009. Positioning the institutional perspective in information systems research. *Journal of Information Technology*, 24, (4), pp. 370-390.

Miles, M. and Huberman, M., 1994. *Qualitative data analysis: an expanded sourcebook*. 2ed. Thousand Oaks: Sage.

Ministry of Higher Education Portal., 2010. (http://www.mohe.gov.sa/en).

Ministry of Higher Education., 2010. *Higher education structure and organisation*. Available from: http://wwww.mohe.gov.sa/ar/about/Pages/MoheChart.aspx [Accessed 21/02/11].

Ministry of Higher Education., 2011a. *About the minister of higher education.* Available from:http://www.mohe.gov.sa/en/Ministry/Excellency-Of-The-Ministe/Pages/default.aspx [Accessed 21/02/11].

Ministry of Higher Education., 2011b. *Higher education in Saudi Arabia: achievements and aspirations.* Available from: http://www.mohe.gov.sa/en/aboutus/Pages/Achievements-and-aspirations.aspx [Accessed 21/02/11].

Morgan, T., 2006. *Enterprise portal market expected to grow immensely*. Available from: http://www.itjungle.com/tfh/tfh090506-story09.html [Accessed 11.04.11].

Morville, P. and Rosenfeld, L., 2007. Information architecture for the World Wide Web. Beijing: O'reilly.

Murray, R., 2003. Information portals: casting a new light on learning for universities. *Campus-Wide Information Systems*, 20, (4), pp. 146-151.

Muylle, S., Moenaert, R. and Despontin, M., 2004. The conceptualization and empirical validation of website user satisfaction. *Information and Management,* 41, (5), pp. 543-560.

Myers, M., 1994. A disaster for everyone to see: an interpretive analysis of a failed IS project. *Accounting, Management and Information technologies*, 4, (4), pp. 185-201.

Myers, M.,1995. Dialectical hermeneutics: a theoretical framework for the implementation of information systems. *Information Systems Journal*, 5, (1), pp. 51-70.

Myers, M., 2004. Hermeneutics in information systems research. In: Mingers, J. and Willcocks, L (eds) Social Theory and Philosophy for Information Systems. Chichester: John Wiley and Sons, pp. 103-128.

Myers, M. and Avison, D., 2002. An introduction to qualitative research in information systems. In Myers, M. and Avison, D. (eds) *Qualitative research in information systems: a reader.* London: Sage, pp.1-12.

Myers, M. and Klein, H., 2011. A set of principles for conducting critical research in information systems. *MIS Quarterly*, 35, (1), pp. 17-36.

Nah, F., Lau, J. and Kuang, J., 2001. Critical factors for successful implementation of enterprise systems. *Business Process Management Journal, 7,(3),* pp. 285-296.

Nah, F., Zuckweiler, K. and Lau, J., 2003. ERP implementation: chief information officers' perceptions of critical success factors. *International Journal of Human-Computer Interaction*, 16, (1), pp. 5-22.

Neuman, W., 2006. *Social research methods: qualitative and quantitative approaches*. 6th ed. Boston: Pearson.

Neuman, W., 2011. *Social research methods: qualitative and quantitative approaches*. 7th ed. Boston: Pearson.

Ngwenyama, Q., 2002. *The critical social theory approach to information systems: problems and challenges*. In Myers, M. and Avison, D. (eds) Qualitative research in information systems: a reader. London: Sage, pp.115-126.

Nicholson, B and and Sahay, S., 2009. Deinstitutionalization in the context of software exports policymaking in Costa Rica. *Journal of Information Technology*, 24, (4), pp. 332-342.

Nielsen, J.,1994. Heuristic evaluation. In Nielsen, J., and Mack, R. (eds) *Usability Inspection Methods*. New York: John Wiley & Sons, pp. 25-62.

Nielsen, J., 2000. *Designing web usability: the practice of simplicity*. Indianapolis: New Riders.

Norris, G. and Duray, D., 2002. The Outside-in Portal. *Intelligence Enterprise*, pp. 32-35.

Oblinger, D. and Goldstein, L., 2002. The business challenges. In: Katz, R., et al (eds) *Web portals and higher education: technologies to make IT personal*. San Fransisco: Jossey-Bass, pp.69-85

Ocasio, W., 1997. Towards an attention-based View of the Firm. *Strategic Management Journal*, 18, pp. 187-206.

Ofcom., 2011. Figures about communications in the UK today. Available from: http://media.ofcom.org.uk/facts/ [Accessed 21/02/11].

Oliver, C., 1991. Strategic responses to institutional processes. *Academy of Management Review,* 16, (1), pp. 145-180.

Oliver, M., 2002. What do learning technologists do? *Innovations in Education and Teaching International,* 39, (4), pp.245-252.

Oliver, M. and Harvey, J., 2002. What does 'impact' mean in the evaluation of learning technology? *Educational Technology and Society*, 5, (3), pp.18-26.

Oliver, M. and Conole, G., 2003. Evidence-based practice and e-learning in higher education: can we and should we. *Research Papers in Education*, 18, (4), pp. 385-397.

Orlikowski, W. and Barley, S., 2001. Technology and institutions: what can research on information technology and research on organizations learn from each other? *MIS Quarterly,* 25, (2), pp.145-165.

Orlikowski, W. and Baroudi, J., 1991. Studying information technology in organizations: research approaches and assumptions. *Information Systems Research*, 2, (1), pp.1-28.

Oxford Dictionary, 2011. Portal. Available from: http://oxforddictionaries.com/definition/portal [Accessed 26/01/11].

Palmer, J., 2002. Web site usability, design and performance metrics. *Information Systems Research*, 13, (2), pp. 151-167.

Pan, K., Baptista, N. and Peng, G., 2011. Risks affecting ERP post-implementation: insights from a large Chinese manufacturing group. *Journal of Manufacturing Technology Management*, 22, (1), pp. 107-130.

Parasuraman, A., Zeithaml, V. and Malhotra, A., 2005. E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7, pp.1-21.

Pare, G., 2004. Investigating information systems with positivist case study research. *Communications of the Association for Information Systems*, (13), pp. 233-264.

Parsons, D., 2007. Mobile portal technologies and business models. In: Tatnall, A. (ed) *Encyclopedia of Portal Technologies and Applications*. Hershey: IGI Global, pp. 583-586.

Patten, B., Sanchez, I. and Tangney, B., 2006. Designing collaborative, constructionist and contextual applications for handheld devices. *Computers in Education*, 46, (3), pp. 294-308.

Patterson, M. and Williams, D., 2002. Collecting and analyzing qualitative data: hermeneutic principles, methods and case examples. *Advances in Tourism Applications* Series. Champaign: Sagamore Publishing. Available from: http://www.fs.fed.us/rm/pubs_other/rmrs_2002_patterson_m001.pdf [Accessed 15/10/09].

Patton, M., 2002. *Qualitative research and evaluation methods*. 3rd ed. Thousand Oaks: Sage.

Pearce, L., 2003. *Institutional portals: a review of the outputs*. Available from: http://www.fair-portal.hull.ac.uk/downloads/iportaloutputs.pdf [Accessed 15/07/08].

Pearce, L., Carpenter, L. and Martin, R., 2003. Stakeholder requirements for institutional portals. Available from: http://www.fair-portal.hull.ac.uk/downloads/stakereq.pdf [Accessed 15/07/08].

Peter, B., 2000. *Institutional theory: problems and prospects*. Available from: http://www.pdf-searcher.com/Institutional-Theory:-Problems-and-Prospects.html [Accessed 22/01/11].

Petter, S., DeLone, W. and McLean, E., 2008. Measuring information systems success: models, dimensions, measures, and interrelationships. *European Journal of Information Systems*, 17, pp. 236-263.

Philliber, S., Schwab, M. and Samsloss, G., 1980. *Social research: guides to a decision-making process*. Itasca: Peacock.

Phillips, N. and Brown, J., 1993. Analyzing communication in and around organizations: a critical hermeneutic approach. *Academy of Management Journal*, 36, (6), pp.1547-1576.

Pickett, R. And Hamre, W., 2002. Building portals for higher education. In: Andreea, M. Luan, S (eds) *New directions for institutional research*. Chichester: Wiley, pp. 37-55.

Pienaar, H., 2003. Design and development of an academic portal. *Libri*, 53, pp.118-129.

Pitt, L., Watson, R. and Kavan, C., 1995. Service quality: a measure of information systems effectiveness. *MIS Quarterly*, 19, (2), pp. 173-187.

Polit, D., 2004. *Nursing research: principles and methods*. 7th ed. Philadelphia: Lippincott Williams & Wilkins.

Pool, D., 2005. Civil society: active or passive? In Burnell, P and Randall, V (eds) *Politics in the developing countries*. Oxford: Oxford University Press, pp. 286-296.

Portio Research., 2008. *Worldwide mobile penetration will reach 75% by 2011.* Available from:
www.portioresearch.com/next_billion_press.html [Accessed 10/03/11].

Premkumar, G. and King, W., 1994. Organizational characteristics and information systems planning: an empirical study. *Information Systems Research*, 5, (2), pp. 75-109.

Premkumar, G. and Ramamurthy, K., 1995. The role of interorganisational and organisational on the decision mode for adoption of interorganisational systems. *Decision Sciences*, 26, (3), pp. 303-336.

Presley, A. and Presley, T., 2009. Factors influencing acceptance and use of academic portals. *Journal of Computing in Higher Education*, 21, (3), pp. 167-182.

Price, S. and Oliver, M., 2007. A framework for conceptualising the impact of technology on teaching and learning. *Educational Technology and Society*, 10, (1), pp.16-27.

Punch, K., 1998. *Introduction to social research: quantitative and qualitative approaches.* London: Sage.

Punch, K., 2005. *Introduction to social research: quantitative and qualitative approaches.* 2nd ed. London: Sage.

Queiroz, A., 2007. *Motivations for use of organisational social practices: commitment, calculation and caring*. Unpublished thesis (PhD), University of Pittsburgh.

Rahim, M., 2006. *Understanding adoption and impact of B2E E-business systems: lessons learned from the experience of an Australian University*. Available from:
http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.98.4951 [Accessed 21/06/09]

Rahim, M., 2007. Identifying barriers to using Business to Employee (B2E) portals. In Proceedings of the 40th Hawaii International Conference on System Sciences, Waikoloa, 2006.

Rahim, M., Sugianto, L., Shameem, N., 2005. Understanding the adoption of business to employee (B2E) portals. University. In: *Fifth International Conference on Electronic Business*, Hong Kong. 2005.

Rajao, R. and Hayes, N., 2009. Conceptions of control and IT artefacts: an institutional account of the Amazon rainforest monitoring system. *Journal of Information Technology*, 24, (4), pp. 320-331.

Rao, S., 2001. Portal proliferation: an Indian scenario. *New Library World*, 102 (1168), pp. 325-331.

Remenyi, D., Williams, B., Money., A. and Swartz, E., 1998. *Doing research in business and management: an introduction to process and method*. London: Sage.

Remus, U., 2007. Critical success factors for implementing enterprise portals. *Business Process Management Journal*, 13, (4), pp. 538-552.

Rezqui, Y., Wilson, I.,Miles, J. and Hopfe, C., 2010. Federating information portals through an ontology-centred approach: a feasibility study. *Advanced Engineering Informatics*, 24, pp. 340-354.

Richardson, H., 2010. University budget cuts revealed. Available from http://news.bbc.co.uk/1/hi/education/8491729.stm [Accessed 15/12/10].

Riessman, C., 1993. *Narrative analysis*. California: Sage.

Robson, C. 2002. *Real world research: a resource for social scientists and practitioner-researchers.* 2nd ed. Oxford: Blackwell.

Robson, C. 2011. *Real world research: a resource for users of social research methods in applied settings.* 3rd ed. Chichester: John Wiley.

Rogers, E., 2003. *Diffusion of innovations.* 5th ed. New York: Free Press.

Rondeau, P., Ragu-Nathan, T. and Vonderembse, M., 2010. The impact of IS planning effectiveness on IS responsiveness, user training, and user skill development within manufacturing firms. *International Management Review*, 6, (1), pp.42-57.

Rose, J., 2003. The joy of enterprise portals. *The information management journal*, 37, (5), pp. 64-70.

Rouibah, K., Hamdy, H. and Al-Enezi, M., 2009. Effect of management support, training, and user involvement on system usage and satisfaction in Kuwait. *Industrial Management & Data Systems*, 109, (3), pp. 338-356.

Sahadev, S. and Purani, K., 2008. Modelling the consequences of e-service quality. *Marketing Intelligence and Planning*, 26, (6), pp. 605-620.

Sampson, D. and Manouselis, N., 2005. A flexible evaluation framework for web portals based on multi-criteria analysis. In Tatnall, A. (ed.) *Web portals: the new gateways to internet information and services*. Hershey: Idea Group Publishing, pp.185-211.

Sampson, H., 2004. Navigating the waves: the usefulness of a pilot in qualitative research. *Qualitative Research,* 4, pp. 383-402.

Saudi e-Government National Portal., 2011. *Facts About the Kingdom*. Available from: http://www.saudi.gov.sa/wps/portal/espp [Accessed 13/01/11].

Saunders, M., Lewis, P. and Thornhill, A., 2007. *Research methods for business students*. Harlow: Pearson Education Limited.

Schaupp, L., Fan, W and Belanger, F., 2006. Determining success for different website goals. *In: Proceedings of the 39th Hawaii International Conference on System Sciences* Kauai, Hawaii 2006.

Scheepers, R., 2006. A conceptual framework for the implementation of enterprise information portals in large organizations. *European Journal of Information Systems,* 15, pp. 635-647

Schultze, U., 1998. *Investigating the Contradictions in Knowledge Management.* Available from: www.informatik.uni-hamburg.de/SWT/attachments/LVTermine/schultze.pdf [Accessed 15.06.08].

Schwandt, T., 2001. *Dictionary of qualitative inquiry*. 2nd ed. Thousand Oaks: Sage.

Scott, W., 2001. *Institutions and organisations.* Thousand Oaks: Sage.

Scott, W., 2004. *Institutions theory: contributing to a theoretical research program.* Available from: http://icos.groups.si.umich.edu/Institutional%20Theory%20Oxford04.pdf [Accessed 23.02.11].

Sedera, D. and Gable., 2004. A factor and structural equation analysis of the enterprise systems success measurement model. *In: Proceedings of the 25th International Conference on Information Systems, Washington*, USA, 2004, pp. 449-464.

Seidman, I.,1991. *Interviewing as qualitative research: a guide for researchers in education and the social sciences*. New York: Teaching College Press.

Serenko, A. and Bontis, N., 2004. A model of user adoption of mobile portals. *Quarterly Journal of Electronic Commerce*, 4, (1), pp. 69-98.

Sharma, R., Apoorva, S., Madireddy, V. and Jain, V., 2008. Best practices for communication between client and vendor in IT outsourcing projects. *Journal of Information, Information Technology, and Organisations*, 3, pp. 61-93.

Sheehan, M. and Jafari, A., 2003. *Designing portals opportunities and challenges*. Hershey: Idea Group.

Sheffield, J., 2005. The evaluation of GSS-Enabled interventions: a Habermasian perspective. *In: Proceedings of the 38th Hawaii International Conference on System Sciences. Big Island, Hawaii 2005*. Available from:
http://www.computer.org/portal/web/csdl/doi/10.1109/HICSS.2005.594
[Accessed 05/11/09].

Shelly, G., Cashman, T. and Rosenblatt, H., 2006. *Systems analysis and design*. 6th ed. Australia: Thomson Course Technology.

Sherer, S., 2010. Information systems and healthcare: an institutional theory perspective on physician adoption of electronic health records. *Communication of the Association for Information Systems*, 26, (1), pp.127-140.

Shi, W., Shambare, N., Wang, J., 2008. The adoption of internet banking: an institutional theory perspective. *Journal of Financial Services Marketing*, 12, (4), pp. 272-286.

Shilakes, C. and Tylman, J., 1998. Enterprise information portals. New York: Merrill Lynch Inc.

Shum, P., Bove, L. and Auh, S., 2008. Employees' affective commitment to change: the key to successful CRM implementation. *European Journal of Marketing*, 42, (11-12), pp. 1346-1371.

Si, L., O'Brien, A. and Probets, S., 2010. Integration of distributed terminology resources to facilitate subject cross-browsing for library portal systems. *Aslib Proceedings: New Information Perspectives*, 62, (4/5), pp. 415-427.

Sia, S., Tang, M., Soh, C. and Boh, W., 2002. Enterprise resource planning (ERP) systems as a technology of power: empowerment or panoptic control? *Database for Advances in Information Systems*, 33, (1), pp. 23-37.

Silius, K., Tervakari, A. and Pohjolainen, S., 2003. *A multidisciplinary tool for the evaluation of usability, pedagogical usability, accessibility and informational quality of web-based courses*. Available from:
http://matwww.ee.tut.fi/arvo/liitteet/PEG2003.pdf [Accessed 17/03/11].

Skidmore, S. and Eva, M., 2004. *Introducing systems development*. Basingstoke: Palgrave.

Smith, M., 2004. Portals: toward an application framework for interoperability. *Communication of the ACM*, 47, (10), pp. 93-97.

Son, J. and Benbasat, I., 2007. Organizational buyers' adoption and use of B2B electronic marketplaces: efficiency and legitimacy-oriented perspectives. *Journal of Management Information Systems*, 24, (1), pp. 55-99.

Spencer, L. Ritchie, J. and Connor, W., 2003. Analysis: practices, principles and process. In: Ritchie, J. and Lewis, J. (eds) *Qualitative research practice: a guide for social science students and researchers*. London: Sage, pp. 199-218.

Standing, C., Sims, I. and Love, P., 2009. IT non-conformity in institutional environments: E-marketplace adoption in the government sector. *Information and Management*, 46, (2), pp.138-149.

Stevens, R., 2009. *Britain: government announces £400 million education cuts for new year 2010.* Available from: http://www.wsws.org/articles/2010/jan2010/univ-j05.shtml [Accessed 11/02/10].

Stoffel, B. and Cunningham, J., 2005. Library participation in campus web portals: an initial survey. *Reference Services Review*, 33, (2), pp. 144-160.

Strauss, A. and Corbin, J., 1990. *Basics of qualitative research: grounded theory procedures and techniques*. California: Sage.

Strauss, H., 2002. All about Web portals: a home page doth not a portal make. In: Katz, R., et al (eds) *Web portals and higher education: technologies to make IT personal*. San Fransisco: Jossey-Bass, pp. 33-40

Sugianto, L. Rahim, M. and Alahakoon, D., 2005. B2E portal adoption: a conceptual model. *In: Proceedings of the International Conference on Information and Automation*, Colombo, 2005. pp. 37-42.

Sugianto, L. and Tojib, D., 2006. Modeling user satisfaction with an employee portal. *International Journal of Business and Information*, 1, (2), pp. 239-255.

Sugiantoa, L. and Tojib, D., 2007. Measuring user satisfaction with B2E portals. *Monash Business Review*, 3, (1), pp. 1-8.

Sullivan, D., 2004. *Proven Portals: best practices for planning, designing and developing enterprise portals*. Boston: Addison Wesley.

Sun, Q., Wang, C. and Cao, H., 2009. Applying E-S-QUAL scale to analysis the factors affecting consumers to use internet banking services. *In: Proceeding of IITA International Conference on Services Science, Management and Engineering*, 2009. pp. 242-245.

Svejvig, P., 2009. *Literature review of enterprise systems research using institutional theory: towards a conceptual model*. Available from: http://www.hha.dk/man/is/wp/WP_2009_01_PER_SVEJVIG.PDF [Accessed 21/02/11].

Tan, W., Cater-Steel, A. and Toleman, M., 2009. Implementing IT service management: a case study of focussing on critical success factors. *Journal of Computer Information Systems*, 50, (2), pp. 1-12.

Tashakkori, A. and Teddlie, C., 2003. *Handbook of mixed methods in social and behavioral research*. Thousand Oaks: Sage.

Tate, M. et al., 2007. Perceived service quality in a university web portal: revising the E-Qual instrument. *In: Proceedings of the 40th Hawaii International Conference on System Sciences*, Big Island, Hawaii, 2007.

Tatnall, R., 2005. *Web portals: the new gateways to Internet information and services*. Hershey: Idea Group.

Teixeira, C., Pinto, J. and Martins, J., 2008. User profiles in organisational environments. *Campus-Wide Information Systems*, 25, (3), pp. 128-144.

Telang, R. and Mukhopadhyay, T., 2005. Drivers of web portal use. *Electronic Commerce Research and Applications*, 4, pp. 49-65.

Teo, H., Wei, K and Benbasat, I., 2003. Predicting intention to adopt interorganisational linkages: an institutional perspective. *MIS Quarterly*, 27, (1), pp. 19-49.

Terra, J. and Gordon, C., 2003. *Realising the promise of corporate portals: leveraging knowdlege for business success*. Amsterdam: Butterworth-Heinemann.

The Longman: Dictionary of Contemporary English, 2003. Essex: Pearson Education.

The Higher Education Coordinating Board., 2009. Higher Education Portal Workgroup Report 2009. Available from: http://www.hecb.wa.gov/news/newsreports/documents/PortalReport-2009PDFBinder.pdf [Accessed 21/11/09].

The Higher Education Funding Council for England (HEFC)., 2010. Guide to funding. Available from: http://www.hefce.ac.uk/pubs/hefce/2010/10_24/10_24.pdf [Accessed 21/08/10].

Themistocleous, M., 2002. *Evaluation of the adoption of enterprise application integration in multinational organisations*. Unpublished thesis (PhD), Brunel University.

Themistocleous, M., 2004. Justifying the decisions for EAI implementations: a validated proposition of influential factors. *Journal of Enterprise Information Management*, 17, (2), pp. 85-104.

Themistocleous, M. and Irani, Z.,2001. Benchmarking the benefits and barriers of application integration. *Benchmarking: An International Journal*, 8, (4), pp. 317-331.

The National Centre for e-learning and Distance Learning., 2010. Available from: http://www.elc.edu.sa/portal/ [Accessed 28/11/10].

The Quality Assurance Agency for Higher Education., 2011. Quality assurance in UK higher education: a guide for international readers. Available from: http://www.qaa.ac.uk/international/studentGuide/English_readers.asp [Accessed 13/01/11].

The World Fact Book., 2011. *Saudi Arabia.* Available from: https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html [Accessed 09/04/11].

The World Fact Book., 2011. United Kingdom. Available from: https://www.cia.gov/library/publications/the-world-factbook/geos/uk.html [Accessed 23/03/11].

Thomas, J., 2003. Indian university's enterprise portals as a service delivery framework. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 102-126.

Tojib, D., Sugiant, L. and Sendjaya, S., 2008. User satisfaction with business-to-employee portals: conceptualization and scale development. *European Journal of Information Systems*, 17, pp. 649-667.

Tolbert, P. and Zucker, L., 1996. The institutionalization of institutional theory. In: Clegg, A., et al (eds) Handbook of Organization Studies. London: Sage, pp.175-190.

Tornatzky, L. and Fleischer, M. 1990. The processes of technological innovation. Massachusetts: Lexington Books.

Trepper, C., 2000. Content currency is key to a successful web site. *Information Week*, 108-112.

Turoff, M. and Hiltz, S., 1998. Superconnectivity. Communication of the ACM, 42, (7), p.116.

UK Trade and Investment., 2010. ICT infrastructure in the UK. Available from: http://212.137.70.163/investintheuk/whytheuk/item/106766.html [Accessed 18/04/11].

Urbach, N., Smolnik, S and Riempp, G., 2010. An empirical investigation of employee portal success. *Journal of Strategic Information Systems*, 19, pp. 184-206.

Venkatesh, V., Morris, M., Davis, G. and Davis, F., 2003. User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27, (3), pp. 425-478.

Voge, S., 1998. NOAH: New York online access to health: library collaboration on bilingual consumer health information on the Internet. *Bulletin of the Medical Library Association*, 86, (3), pp. 326-334.

Wagner, E., 2003. *Narrating an organizational matter of fact: negotiating with enterprise resource planning technology to achieve order within a traditional academic administration.* Unpublished thesis (PhD), University of London.

Wali, E., Winters, N. and Oliver, M., 2008. Maintaining, changing and crossing contexts: an activity theoretic reinterpretation of mobile learning. *ALT-J: Research in Learning Technology,* 16, (1), pp. 41-57.

Walsham, G.,1993. *Interpreting information systems in organisations*. Chichester: John Wiley.

Walsham, G.,1995. Interpretative Case Studies in IS Research: Nature and Method. *European Journal of Information Systems*, 4, (2), pp. 74-81.

Wang, Y., Wu, M. and Wang, H., 2009. Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, 40, (1), pp. 92-118.

Ward, J. and Daniel, E., 2006. *Benefits management: delivering value from IS & IT investments*. Chichester: John Wiley.

Ward, J. Griffiths, P., 2000. *Strategic planning for information systems. 2nd ed. Chichester*: John Wiley.

Watkins, J., 2003. Developing a portal channel strategy. In Jafari, A. and Sheehan, M. (eds) *Designing portals opportunities and challenges.* Hershey: IRM Press, pp. 51-67).

Webb, L. and Laborde, J., 2005. Crafting a successful outsourcing vend/client relationship. *Business Process Management*, 11, (5), pp. 437-443.

Webb, P. and Pollard, C., 2006. Demystifying a hermeneutic approach to IS research. *Australasian Journal of Information Systems*,13, (2), pp. 31-48.

Weerakkody, V., Dwivedi, Y. and Irani, Z., 2009. The diffusion and use of institutional theory: a cross-disciplinary longitudinal literature survey. *Journal of Information Technology*, 24, (4), pp. 354-368.

Williams, M., 2000. Interpretivism and Generalisation. *Sociology*, 34, (2), pp. 209-224.

Wixom, B. and Todd, P., 2005. A theoretical integration of user satisfaction and technology acceptance. *Information Systems Research*, 16, (1), pp. 85-102.

Woznica, J. and Healy, K., 2009. The level of information systems integration in SMEs in Irish manufacturing sector. *Journal of Small Business and Enterprise Development*, 16, (1), pp.115-130.

Wu, J.-H., Wang, Y.-M., 2006. Measuring KMS success: A respecification of the DeLone and McLean's model. *Information and Management,* 43, (6), pp. 728-739.

Yang, K., 2010. Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services. *Journal of Consumer Marketing*, 27, (3), pp. 262-270.

Yang, S., 2009. OntoPortal: an ontology-supported portal architecture with linguistically enhance and focused crawler technologies. *Expert Systems with Applications*, 36, pp. 10148-10157.

Yang, S., Yang, M. and Wu, J., 2005. The impacts of establishing enterprise information portals on e-business performance. *Industrial Management and Data Systems*, 105, (3), pp. 349- 368.

Yang, Z., Cai, S., Zhou, Z., and Zhou, N., 2005. Development and validation of an instrument to measure user perceived service quality of information presenting Web portals. *Information and Management*, 42, (4), pp. 575-589.

Yin, R., 2003. *Case study research: design and methods.* 3rd ed. Thousand Oaks: Sage.

Yin, R., 2009. *Case study research: design and methods.* 4th ed. Thousand Oaks: Sage.

Yoon, D., Cropp, F. and Camerson, G., 2002. Building relationships with portal users: the interplay of motivation and relational factor. *Journal of Interactive Advertising*, 3, (1), pp. 1-11.

Yvonne, D. and Scott, D .,2002. Qualitative research in practice: stories from the field. Buckingham: Open University Press.

Zahir, S., Dobing, B. and Hunter, M., 2002. Cross-cultural dimensions of internet portals. Internet research: *Electronic Networking Applications and Policy*, 12, (3), pp. 210-220.

Zawya., 2010. *Saudi IT market to hit USD 3.3 billion in 2010, sustain positive growth to reach USD 4.6 billion by 2014.* Available from: http://www.zawya.com/story.cfm/sidZAWYA20100915081655/Saudi%20IT%20market%20to%20hit%20$3.3%20billion%20in%202010/ [Accessed 17/01/11].

Zazelenchuk, T., Boling, E., 2003. Considering user satisfaction in designing web-based portals. *Educase Quarterly*, (1), pp. 35-40.

Zhu, K., Kraemer, K., Xu, S., 2003. Electronic business adoption by European firms: a cross-country assessment of the facilitators and inhibitors. *European Journal of Information Systems*, 12, pp. 251-268.

Zhu, K., Kraemer, K., Xu, S.and Dedrick, j., 2004. Information technology payoff in E-business environments: an international perspective on value creation of E-business in the financial services industry. *Journal of management Information Systems*, 21, (1), pp.17-54.

Zimmerman, A., Specht, M. and Lorenz, A., 2005. Personalization and context management. *User Modelling and User-Adapted Interaction*,15, pp. 275-302.

Zuboff, S., 1988. *In the age of the smart machine: the future of work and power.* Oxford: Heinemann.

University A

University A was established in the 1950s. It is a large and complex organisation. It operates in different locations in the Kingdom and has many branches around the country. The university aims to be a world class university and a leader in developing and building the knowledge society in the country. The university mission is to provide unique education, generate creative research, serve society and contribute in building the local knowledge economy. Teaching and research are the core businesses of the university and they are organised within many faculties including: Engineering, Science, Social Sciences, Humanities and Medicine (University A website, 2010).

Over its history, the university has developed different corporate information systems that have handled its business needs and operations. These systems include administrative systems, learning systems and platforms, business intelligence systems, CRM, research systems, HR and others. Many of these systems and applications were purchased from different companies. These systems lack flexibility and integration with each other. Most importantly, such systems are no longer appreciated by students, academics and staff who are familiar with Internet and computer technologies.

In early 2007, the university came under new management with the appointment of a new chancellor, who brought his personal expertise and knowledge; and made a decision to change traditional ways of working in the university through the use of a new innovative technology (DOC1A). Part of the new chancellor's vision was to develop an online portal with a user-centric approach. The university selected Microsoft SharePoint portal which according to a project document has been designed to be a knowledge gateway for its faculty members, students and staff. The portal went live in May 2007 (DOC1A). The aim of the project was to develop a bilingual portal in Arabic and English, and provide users with single sign-on access to various services, resources and information (DOC2A,DOC4A and DOC5A).

The documents showed that the portal has provided the university with the following benefits:

- Improved and enhanced communication within the university.
- Speeded up and improved the process of content management.

- Improved the quality of campus life.

- Streamlined business and administrative processes.

- Improved the access to services, resources and information in and off campus.

The portal provides access to following services, resources and information:

- Access to the email system.

- Academic calendar.

- Library resources.

- Courses information and timetabling.

- Access to online communities such as forums.

- Learning management systems.

- News and announcements channel.

- SMS communication.

- E-services and online request.

- Access to internal directories such as contacts details.

University B

University B was established in the 1970s. Currently it has more than 24,000 students and 1,300 faculty members. The University comprises many colleges including: the Colleges Law, Mass Communication, Informatics and Computer Sciences, Social Sciences, and Science. The University has many branches around the country and abroad.

Prior to the portal development, the University had various systems and applications that handled the University operations and activities. These systems included: student record systems, staff management systems, finance, HR, learning systems, the library system, CRM and others. Furthermore, there are some web-based applications including departmental intranets. Each department and unit in the University had developed its own systems and projects. Most of these systems and applications were purchased from different IT vendors, which resulted in each department and units having a different environment.

The development of the portal can be traced back to the mid of 2006, when top management requested IT staff to conduct a review of how web-based technologies could be used to improve the work of the university (DOC2B). The focus was on the university website, because it provides a lot of information and services to students,

academics and staff. The review concluded that the university website was weak in terms of design, content, functionality and capability, and did not fulfill the requirements of end users. Then, the management decided to develop a web-based system and the choice was to invest in a campus portal that would integrate various information systems, resources and services in one place. The University selected Microsoft SharePoint portal. According to a project document, the aim of the portal is to utilise e-business technology and provide services and resources to the academic community in an electronic way (DOC1B). The portal is seen as a single gateway to access various systems and applications, in a secure and integrated environment. The portal went live on November 2007, with many services and resources available to academics and students.

The documents (DOC1B,DOC2B) showed that the University wanted to achieve several objectives by investing in a campus portal, among those included:

- To provide users with centralised, secure and integrated access to the university's systems, services and information.
- To implement workflow applications and facilitate the administrative processes and procedures.
- To improve communication within the university and provide users with various communication channels.
- To provide users with e-services and e-transactions
- To integrate different corporate systems and bring them in one place.

The portal provides the following services and resources to students, academics and staff:

- Webmail.
- Access to the library system.
- E-learning platforms such as WebCT and Blackboard.
- Some e-services and e-transactions such as filling forms online, register courses, request a break.
- SMS for students, academics and staff to communicate with each-other.
- Calendar and personal management tools.
- Course information: course details, timetabling, exam results.
- News and announcements.
- Contact details and information.
- Online academic advisor or tutor.

- Links to social groups and activities.

(DOC4B,DOC5B)

University C

University C was established in the beginning of 1960. It is one of the most prestigious universities in the Arab Gulf region and the Middle East and is a leading institution in Science and Engineering programs and research. Teaching and research at the University are organised into several colleges that include: Sciences, Engineering Sciences and Applied Engineering, Computer Science and Engineering, Industrial Management, Environmental Design, and Applied and supporting Studies. (University C website,2010). The university has branches in various locations throughout the country.

The development of the portal at this university was a result of the business need. Prior to the portal development, the University like other large and complex organisations, had developed various information systems and applications, which were large and decentralised. These included administrative systems, learning systems and platforms, business intelligence systems, research systems, HR, finance, CRM and other systems. These systems were purchased from different companies. Furthermore, they were located in different departments around the university, and the benefits from these systems for the University as a whole were very limited. In order to achieve better utilisation of systems and applications, the University decided to invest in a new system that would bring the university's systems together in one place. The decision was made by the management to utilise portal technologies, as these solutions were considered to be the best option for the University. The choice was made to select Luminis Portal, provided and supported by SunGard.

The portal went live on January 2007. According to a project document, the mission of the project was to develop, enable and integrate administrative and academic processes of the University by adopting the best information technology (DOC5C). The portal solution is seen by the University as a single point of access to all university services, information and resources that can be accessed on a day to day basis. Furthermore, the portal is regarded as a shared environment where students, faculty members and staff can co-operate and communicate with each other (DOC1C). The launch of the system was a remarkable event and was described as "Big Bang", in that all university's systems, applications and resources had been integrated and combined in one place and ready for usage by users (DOC2C).

The project has several strategic, technical, operational and financial benefits to the University, which can be summarised in the following points:

- To enhance organisational flexibility and improve decision making process.
- To provide users with secure single sign-on access to different business systems and applications.
- To provide users with an easy interface in Arabic and English, and offer them access anywhere at anytime.
- To deploy e-services and e-transactions and improve administrative processes through the implementation of workflow applications..
- To improve access to services, resources and organisational information.
- To reduce costs and increase return on investment (ROI).

(DOC2C,DOC5C,DOC7C and DOC8C).

The portal provides access to the following services, resources and information:

- Email.
- Financial information.
- Academic calendar.
- Contact details and information.
- Health care information.
- Access to housing and accommodation services.
- Course information: course details, timetabling and exam results.
- Document management tools.
- Learning environment such as WebCT.
- Library.
- University's news and announcements.
- Academic and social groups.
- Counselling and advising.
- Faculty and personal affairs.
- Research and projects information.

(DOC1C,DOC6C).

University D

The University was established in the late of 1890s, since when it has gone through substantial growth and development. Today, the University is one of the most popular universities in the UK and has a good reputation in both teaching and research. The University is organised into the following six faculties: Arts, Engineering, Medical and Veterinary Sciences, Medicine and Dentistry, Science and Social Sciences and Law. It is not a campus based university and its faculties and academic departments are spread around the city in a number of locations.

Over its history, the university has developed various information systems and databases to serve the academic community and to handle daily business and operations. These include: students' records, CRM, timetabling, HR, library system, VLE, payroll, and finance. Many of these systems were developed separately by different IS divisions in the University. In addition, prior to the development of the portal, academic support services were provided by a number of different service providers. These services were geographically and organisationally separated and there was a need to bring them all together in one place.

The development of the campus portal at the University can be traced back to 2003 when the University launched a small pilot portal that was directed at staff and was focused on student administration. Following that, a number of portal versions were released with some limited web-based services and resources directed at both staff and students. The current portal went live to students and staff in October 2007 (DOC3D). The portal, which is web based, personalised, secure and integrated, is seen as a single point of access to information and services (DOC6D and DOC11D). According to a project document, the portal's priority has been rated as 'top' to the university on a scale of, 'mandatory', 'top', 'highly desirable' and 'nice to have' (DOC1D). In addition, the same document revealed that the university perceives many benefits and advantages associated with the development of a portal technology. These include:

- To provide a similar service to that which is being offered by other rivals and competitors in other HE institutions.
- To change to a user-centric approach to the provision of information and IT services.

328

- To provide opportunities and possibilities for collaborative work across the university.
- To expose users to key applications for learning and teaching such as Blackboard and other eLearning platforms from a centralised location.
- To improve the efficiency of Information Systems at the University for both students and staff.
- To provide users with centralised access and a personalised view of the university's applications.
- To streamline the use of those applications and make them more accessible.
- To enable and develop workflow-based applications.

The same document (DOC1D) highlighted the risks that might result if the portal had not been developed. They included:

- Loss of competitive advantage:
  - Many universities around the country have developed portals with larger development teams.
  - Today's students are familiar with Internet technologies and come to universities with the expectation of web-based applications being available for communication and learning. and.
  - The university will lag behind its competitors if the portal project is not continually supported and developed.
- The development in an ad hoc and non-integrated manner of portals by other individual departments and support services, which requires significant amount of resources and higher levels of local development and maintenance expenses.
- Difficult and time-consuming methods for various stakeholders to access detailed information held in the University's corporate systems.
- A lost opportunity to develop a user-centric system that meets users' requirements and needs.

According to (DOC1D) the University portal helps to support the following parts of the University's strategy:

- To offer students who study at the University a rewarding experience.

- To respond to students' needs and requirements in all aspects of university life and to ensure that students' views, and the views of academics, are taken into account in academic, social and cultural matters.
- To coordinate in the development and implementation of an eLearning strategy across the University that includes both educational and infrastructure needs.
- To develop information services and resources that are innovative and service-oriented, and to provide access to the best available information and other computing resources.
- To refine and develop information systems to support the administration of collaboration.
- To adopt and implement integrated and well-supported information systems that can eliminate duplication.
- To improve IT facilities and resources to support teaching, learning and research.
- To achieve integrated information systems, which in turn will improve the access to various information services and resources.

In addition, it was found in (DOC1D) that the University portal supports a key element of the University's Information Strategy that emphasises the fact that information should be available, shared and accessible unless there are good reasons not to do so.

According to a project document (DOC2D) users at the University including students, academics and support staff can access the following services and resources via the university portal:

- Webmail.
- Library account.
- Blackboard.
- My documents.
- PDF converter.
- Print credit account.
- Student / Staff Info to update personal information.
- My students bookmarks.
- Calendar.
- My contacts, newsfeeds and bookmarks.
- Course information.
- Exam information.

- Weather.
- Web and map search.
- Travel information.

In addition, the portal allows users, with certain limitations, to select and arrange content as well as change the design and presentation of the pages.

University E

This University, which was established in the 1990s, is a large, distributed, multi-campus institution that has gone through substantial growth and change over recent years. Teaching and research at the University are organised into five faculties: Art and Design, Business and Law, Health and Life Sciences, Humanities, and Technology. The university has about 20,500 students and around 3,240 staff. (University E Website, 2010).

ICTs are considered to be crucial tools in supporting the student learning experience, research development and the administration of the University. The development and management of the core ICT projects is the responsibility of the Information Services and Systems Division (ISASD). According to (DOC2E) the mission of this division is to provide valuable and well-organised ICTs for the university. It has several objectives, which include:

- To develop ICTs and other related strategy and policy for the University.
- To provide the core communications infrastructure for the university.
- To provide technology and other related software and crucial services to support various data sets and systems in the university, including; PC equipment for students and staff, student records, virtual and managed learning environments, human resources, finance and other web-based applications such as Internet, Intranet and e-mail.
- To support faculties and other divisions and units around the university in the provision of many services to students including development and management of servers and provision of various hardware and essential software tools.
- To provide desktop support for the academic community including students, academics and support staff.
- To ensure that the University data and information meet the legal requirements and obligations for security and protection purposes.
- To work closely with other IT service providers in the university to provide integrated services and resources for users.

Like other large and complex organisations, this university has multiple diverse information systems that handle students and staff information and other organisational data and information such as database systems, file systems, legacy information systems and applications including HR, student record systems, finance, marketing systems and some web-based applications. In addition, the majority of these systems and applications were developed separately over time in different faculties and departments, so that each was responsible for the development and management of its own IT projects and information systems.

According to (DOC3E), in 2000 the ISASD involved in a research project with other universities nationwide. The research project was funded and coordinated by JISC. The aim of the project was to develop a MLE system that would bring various learning services, resources and support tools into a single place and provide a personalised learning environment. After that, the ISASD thought that the MLE project could be extended and developed into a portal. The University then made the decision to have a portal and to present data and information for students and staff in an electronic way. The portal was developed and went live for students in 2003-04 and for staff in 2004-2005. The portal is seen as a single sign-on gateway that allows users to access various IT services and resources with only one log in (DOC8E). According to the ICT plan at the University, the introduction of the portal to students and staff supporting students' experience has been well established (DOC9E).

Currently, for technical reasons, the portal is delivered in two forms, both using the same software. One is for students and the other for staff. According to (DOC1E) the portal provides access to the following services, resources and information:

• University news, announcements and messages.
• Update and modify personal information.
• Access to the webmail system.
• Access to students' marks and assessment results.
• View class timetables by course and module.
• Check examination timetables.
• Access to relevant information and learning materials on the learning system.
• Generate personal development records and record meetings with personal tutors.
• View financial account information.
• Link to the Students' Union website.
• Link to library resources and services.

• Review the university's regulations and handbooks.

• Access to accommodation and housing services.

• Link to sports services and information.

• Access and manage personal bookmarks.

(University E Website, 2010).

Appendix (3)

Interview Guide (Implementers)

Dear Participant,

This interview is a part of a project that I am researching regarding the factors affecting adoption and utilisation of campus portals in Saudi and UK Universities. This interview is the main tool for data collection which seeks more personal views about the topic. I want to reassure you that your responses will be anonymised and completely confidential. The interview will last no longer than 45 minutes.

This part of the interview is directed to the management of campus portals, including: management, IT managers, content providers, and other management personnel who are involved with portals adoption and implementation.

Do you mind if I record this interview? Please feel free to ask me to clarify anything during this interview.

General Information:

Personal Details:				
Name (optional):			Gender:	Male
				Female
Age:	under 30 31–40 41– 50 51-60 61 years or above			
Organisation (University):				
Department:				
Position held and years:				
Contact details:	Phone:		Email:	
Interview Details:				
Date and time:				
Duration:				
Place:				
Additional Information:				

Part One: General Questions

1-1 Does your university have a campus portal?

(   ) Yes   (   ) No

1-2 Why has your university adopted and developed a campus portal?

or: what motivated you to adopt and develop a campus portal?

1-3 When did your university adopt and implement the campus portal?

1-4 Where did the idea of the campus portal initiative and development come from?

1-5 Could you describe the current status of the campus portal at your university?

1-6 What services and resources are available through the portal?

Part Two: Campus Portal Adoption and Implementation Strategy

2-1 Did you develop your campus portal in-house, did you buy a ready-made product, did you use a combination of ready-made product and in-house development, or did you do something else? In all cases: Why did you choose this method?

2-2 What are the key issues that you are trying to address by adopting and developing a campus portal?

2-3 Do you have a strategy or policy for the management and development of the campus portal?   Yes (   )   No(   )

If yes, could you give some examples?

2-4 Did you get top management support? If yes, what kind of support? If no, why?

2-5 Was there any coordination and cooperation between you and other departments and units within your university or outside institutions and organisations during the process of adoption and development of the campus portal? If so, could you describe this issue?

2-6 What changes have been made to the academic environment after the adoption and development of the campus portal?

2-7 Did your university introduce a change management strategy during the process development, adoption and implementation of the campus portal? And how?

Part Three: Obstacles and Enablers Associated with Campus Portals Adoption

3-1 What are the challenges that you encountered when you adopted and developed the campus portal?

3-2 At present, what are the problems that you face with respect to managing the campus portal?

3-3 What are the factors that helped you during the process of portal development?

3-4 How have the technological factors, such as the IT infrastructure and information systems at your university, affected the adoption of the campus portal?

Part Four: Stakeholders and the Campus Portal

4-1 In your university, to whom t is he campus portal directed (stakeholders), and why?

4-2 Did you consider the stakeholder requirements and needs during the process of adoption, development and implementation of the campus portal? If so, please provide more details.

4-3 Were the users involved during the process of adoption and development of the campus portal? If so, how were they involved in the process?

4-4 What actions have you taken to understand users' perceptions and expectations of the development of the campus portals?

4-5 What do you expect that your users will be able to do on the portal?

4-6 Have they been doing what you were expecting?

4-7 Do you think that there is a gap between you (management of the portal) and the end-users? If yes, then:

4-8 What kind of gap(s) exist? and what can be done to bridge the gap(s)?

4-9 Could you describe how the portal was introduced to the users?

4-10 What was the impact of the campus portal on its users?

Part Five: Management and Development of the Campus Portal

5-1 What are your perceptions and expectations for the development of the campus portal?

5-2 Who is responsible for the management and development of the portal?

5-3 Who sets the direction for your portal and how is this communicated?

5-4 What approach is being used to manage the content of the portal? Is it a bottom-up or top-down kind of approach, and why?

5-5 What are the most important projects that you most yearn to initiate?

Are there any other issues that you want to talk about that have not been covered in connection with this interview? Finally, thank you very much for your co-operation and the time that I have spent with you.

Appendix (4)

Interview Guide (Users)

Dear Participant,

This interview is a part of a project that I am researching regarding the factors affecting adoption and utilisation of campus portals in Saudi and UK Universities. This interview is the main tool for data collection which seeks more personal views about the topic. I want to reassure you that your responses will be anonymised and completely confidential. The interview will last no longer than 45 minutes.

This part of the interview is directed to the users of campus portals, including: students, academics and staff.

Do you mind if I record this interview?

Please feel free to ask me to clarify anything during this interview.

General Information:

Personal Details:				
Name (optional):			Gender:	Male
				Female
Age:	Under 20 21-30 31 –40 41–50 51 years or above			
Organisation (University):				
Department:				
Occupation	An academic A student A member of staff			
Contact details:	Phone:		Email:	
Interview Details:				
Date and time:				
Duration:				
Place:				
Additional Information:				

Part One: Campus Portal Usage

1-1 Have you heard of a campus portal?

(   ) Yes   (   ) No

1-2 Do you use the campus portal?

(   ) Yes   (   ) No

If yes, then:

1-3 What motivates you to use the campus portal? Why do you use the campus portal?

1-4 What do you think about the ease of use of the campus portal?

1-5 What do you think about the usefulness of the campus portal?

1-6 Does the campus portal usage affect your study or job?

1-7 Do you use the portal off campus?

If not, then:

1-8 What are your specific reasons for not using the campus portal?

Part Two: Information, Content, Services and Resources on the Campus Portal

2-1 As an end-user, what do you expect from the management with respect to the development of the campus portal?

2-2 Are you satisfied with the services and resources that are provided through the campus portal?

(   ) Yes   (   ) No

2-3 Does the campus portal at your university satisfy your information need with respect to your study or work?

If yes, please give more details, if no, why?

2-4 What kind of services and resources do you usually use on the campus portal?

2-5 What do you think is missing that should be available in the portal?

2-6 Have your expectations of the portal changed overtime? If yes, please provide more details.

2-7 What are the features and characteristics that you have found useful and important on the campus portal?

Part Three: Obstacles and Enablers Associated with Campus Portals Utilisation

3-1 Do you encounter any difficulties when you use the campus portal?

If yes, could you provide more details?

3-2 If you face problems when you use the campus portal, what should be done to overcome such problems?

3-3 In your opinion, what improvements and developments could be made to the campus portal that would promote its usage?

Part Four: Training, Education and Support

4-1 Have you been given training programmes or courses on how to use the campus portal?   (   ) Yes   (   ) No

4-2 If so, was the training/ tutorial useful and relevant to your needs? Please provide more details.

4-3 What kind of training have you found useful?

4-4 What kind of training do you think would be useful?

4-5 What changes have been made to the academic environment, for example (your study, work) after the adoption and development of the campus portal?

4-6 What are the aspects that concern you with respect to the use of the campus portal? For example, information security and your personal details, privacy information quality on the portal and other issues.

Part Five: Users and the Management of the Portal

5-1 In your opinion, what are the aspects that the management of the portal should take into considerations when developing a campus portal?

5-2 Do you think that there is a gap between you as users and the management of the campus portal?   If yes, then:

5-3 What kind of gap(s) exist? and what can be done to bridge the gap(s)?

Are there any other issues that you want to talk about that have not been covered in connection with this interview? Finally, thank you very much for your co-operation and the time that I have spent with you.

Appendix (5)

The Informed Consent Letter

Dear Participant,

My name is Mohammed Altayar, a research student at De Montfort University in the UK. First of all, I would like to thank you for your participation in this study. I am conducting research on the adoption and utilisation of campus portals in Saudi and UK universities. This interview is part of my research project, which seeks to gain a personal view on this topic. The interview will last no longer than 45 minutes.

The purpose of this research is to investigate the factors affecting adoption and utilisation of campus portals. Your participation in this study is important and the findings of this study could provide an insight into how campus portals can be adopted and utilised effectively to support the academic community.

I would like to assure you that your responses will remain anonymous and confidential, and will be used only for research purposes. Your participation in this study is completely voluntary. You may decide not to answer any of the interview questions or answer them in any order you wish. You can withdraw at any stage during the interview or afterwards by emailing me at the email address below.

Finally, your participation is appreciated and again thank you very much for your time. If you would like to be sent the findings of this study, or have any questions regarding this study, please do not hesitate to contact me.

Your Sincerely,

Mohammed Altayar

Centre for Computing and Social Responsibility.
Faculty of Technology, Computer Science and Informatics.
De Montfort University - The Gateway
Leicester
LE1 9BH
Email: mohammed.altayar@myemail.dmu.ac.uk

mohd189@hotmail.com

I have read the information presented in the information letter about a study being conducted by Mohammed Altayar for a PhD project at De Montfort University.

I have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions, and any additional details I wanted.

I am also aware that excerpts from the interview may be included in the project paper to come from this research. Quotations will / will not be kept anonymous. I do/do not give permission for my identity to be revealed in research reports.

I was informed that I may withdraw my consent at any time by advising the student researcher.

With full knowledge of all foregoing, I agree to participate in this study.

Participant Name: _____

Participant Signature: _____

Interviewer Name: _____

Interviewer Signature: _____

Appendix (6)

Arabic Interview Guide (Implementers)

<div dir="rtl">

تبني وتطوير البوابات الالكترونية

عزيزي المشارك/ المشاركة

السلام عليكم ورحمة الله وبركاته

تمثل هذه المقابلة جزءاً هاماً من دراسة أقوم بها حالياً لمرحلة الدكتوراه حول إستخدام البوابات الإلكترونية في الجامعات السعودية والبريطانية. تعد هذه المقابلة الأداة الرئيسية لجمع المعلومات، والتي تهدف إلى التعرف على وجهه نظركم ورأيكم حول هذا الموضوع. أود التأكيد بأن المعلومات المقدمة من قبلكم سيتم استخدامها لأغراض البحث العلمي وسيتم التعامل معها بسرية تامة.

هل من الممكن أن أقوم بتسجيل هذه المقابلة؟

إذا أردت/أردتِ أي توضيح لأي سؤال أثناء هذه المقابلة فالرجاء إبلاغي بذلك.

				معلومات شخصية
ذكر أنثى		الجنس		الاسم (اختياري)
٦١ سنة أو أكثر	٥١-٦٠	٤١-٥٠	٣١-٤٠	أقل من ٣٠	العمر
				الجامعة
				القسم
				الوظيفة وسنوات الخبرة
بريد الكتروني:		تلفون:		معلومات الاتصال
				تفاصيل المقابلة
				تاريخ وزمن المقابلة
				مدة المقابلة
				معلومات إضافية

</div>

القسم الأول: أسئلة عامة

١-١ هل يوجد في جامعتكم بوابة إلكترونية؟

نعم ( ) لا ( )

٢-١ لماذا قامت الجامعة بإنشاء وتطوير البوابة الإلكترونية؟ ما هي دوافع الجامعة من إنشاء وتطوير البوابة الإلكترونية؟

٣-١ متى قامت الجامعة بإنشاء وتطوير البوابة الإلكترونية؟

٤-١ من أين أتت فكرة إنشاء وتطوير نظام البوابة الإلكترونية في الجامعة؟

٥-١ هل من الممكن تقديم صورة عامة عن الوضع الحالي للبوابة في جامعتكم؟

٦-١ ماهي أهم الخدمات المتاحة على البوابة في الوقت الحاضر؟

القسم الثاني: استراتيجية تبني وتطوير البوابة:

١-٢ هل قمتم بتطوير نظام محلي خاص بالبوابة أو شراء منتج الكتروني جاهز أو الجمع بينهما، أو هل قمتم بشي آخر؟ في جميع الحالات، لماذا اخترتم هذه الطريقة أو الأسلوب؟

٢-٢ ما هي المشاكل التي تريدون حلها من خلال تبني وتطوير البوابة الإلكترونية؟

٣-٢ هل لديكم استراتيجية أو سياسة لإدارة وتطوير البوابة الالكترونية؟

إذا كانت الإجابة بنعم ، يرجى التوضيح أكثر وإعطاء بعض الأمثلة.

٤-٢ هل حصلتم على دعم من الإدارة العليا بخصوص تطوير البوابة الإلكترونية؟ إذا كانت الإجابة نعم، ما هو نوع الدعم الذي حصلتم عليه. إذا كانت الإجابة لا ، لماذا؟

٥-٢ هل كان هناك تعاون وتنسيق بينكم (إدارة البوابة) وبين الإدارات والأقسام الأخرى داخل الجامعة أو مع جهات أخرى خارجية أثناء مرحلة إنشاء وتطوير البوابة الإلكترونية؟ اذا كان كذلك، يرجى إعطاء بعض الامثلة

٦-٢ هل حصل تغيير وتطور في البيئة الأكاديمية الجامعية بعد تبني وتطوير البوابة الإلكترونية؟

٧-٢ هل قمتم بنوع من التغيير الإداري خلال مرحلة إنشاء وتطوير البوابة الإلكترونية؟ إذا كانت الإجابة بنعم ، يرجى التوضيح أكثر وإعطاء بعض الأمثلة.

القسم الثالث: المشاكل والعوامل المساعدة في تبني وتطوير البوابات

١-٣ ما هي المشاكل والعقبات التي واجهتموها خلال عملية إنشاء وتطوير البوابة الإلكترونية؟

٢-٣ في الوقت الحاضر، ما هي المشاكل والعقبات التي تواجهونها فيما يتعلق بإدارة وتطوير البوابة الإلكترونية؟

٣-٣ ما هي العوامل المساعدة والتي كان لها تأثير ايجابي على تبني وتطوير وإنشاء البوابة الالكترونية؟

٤-٣ كيف أثرت العوامل التكنولوجية ، على سبيل المثال: البنية التحتية التقنية ونظم المعلومات في الجامعة على إنشاء وتطوير البوابة الإلكترونية؟

القسم الرابع: المستخدمين (المستفيدين) والبوابة الالكترونية:

١-٤ من هو الجمهور المستفيد (المستخدمين) من تطوير واستخدام البوابة الإلكترونية؟ ولماذا؟

٢-٤ هل أخذتم بعين الاعتبار متطلبات وحاجات المستخدم النهائي في مرحلة إنشاء وتطوير البوابة الإلكترونية؟ إذا كانت الإجابة نعم، يرجى التوضيح أكثر وإعطاء بعض الأمثلة.

٣-٤ هل تم إشراك المستخدم النهائي في عملية إنشاء وتطوير البوابة الإلكترونية؟ إذا كانت الإجابة نعم، يرجى التوضيح أكثر وإعطاء بعض الأمثلة.

٤-٤ ماذا عملتم لتفهم واستيعاب وجهات نظر وتوقعات مستخدمي البوابة؟

٥-٤ ماذا تتوقعون بخصوص ما يمكن أن يقوم به المستخدمين من الإفادة من البوابة الإلكترونية؟ إذا كان كذلك:

٦-٤ هل حصل ما كنتم تتوقعون؟

٤-٧ هل تعتقد أن هناك فجوة بينكم (هنا في إدارة البوابة) وبين المستخدمين والمستفيدين من البوابة؟

إذا كان كذلك:

٤-٨ ما نوع هذه الفجوات؟ وماذا يمكن عمله للحد من هذه الفجوات والتقليص منها؟

٤-٩ كيف تم تقديم البوابة الإلكترونية للمستخدمين في الجامعة؟

٤-١٠ هل أثرت البوابة الالكترونية على المستخدمين؟ وكيف؟

القسم الخامس: إدارة وتطوير البوابة الالكترونية:

٥-١ ما هي وجهه نظركم وتوقعاتكم من انشاء وتطوير البوابة؟

٥-٢ من هو المسؤول عن إدارة وتطوير البوابة الإلكترونية؟

٥-٣ من هو المسؤول عن تحديد مسار وتوجهه البوابة؟

٥-٤ ما هو الأسلوب المتبع في إدارة المحتوى الإلكتروني؟ هل هو من أسفل إلى أعلى أو العكس؟ ولماذا؟

٥-٥ ما هي أهم المشاريع التي تسعون لتحقيقها فيما يتعلق بتطوير البوابة؟

هل هناك أي معلومات تريد إضافتها فيما يتعلق بهذه المقابلة؟

وأخيراً شكراً جزيلاً لك ولتعاونك في الإجابة على أسئلة هذه المقابلة.

Arabic Interview Guide (Users)

استخدام البوابات الالكترونية

عزيزي المشارك/ المشاركة

السلام عليكم ورحمه الله وبركاته

تمثل هذه المقابلة جزءاً هاماً من دراسة أقوم بها حالياً لمرحلة الدكتوراه حول استخدام البوابات الإلكترونية في الجامعات السعودية والبريطانية. تعد هذه المقابلة الأداة الرئيسية لجمع المعلومات، والتي تهدف إلى التعرف على وجهه نظركم ورأيكم حول هذا الموضوع. أود التأكيد بأن المعلومات المقدمة من قبلكم سيتم استخدامها لأغراض البحث العلمي وسيتم التعامل معها بسرية تامة.

هل من الممكن أن أقوم بتسجيل هذه المقابلة.؟

إذا أردتَ/أردتِ أي توضيح لأي سؤال أثناء هذه المقابلة فالرجاء إبلاغي بذلك.

			معلومات شخصية
ذكر		الجنس	الاسم (اختياري)
أنثى			
٥١ سنة أو أكثر	٥٠-٤١	٤٠-٣١	٣٠-٢١	أقل من ٢٠	العمر
			الجامعة
			القسم
( ) طالب/ة	( ) موظف/ة	( ) اكاديمي/ة	الوظيفة
بريد الكتروني:	تلفون:		معلومات الاتصال
			تفاصيل المقابلة
			تاريخ وزمن المقابلة
			مدة المقابلة
			معلومات إضافية

القسم الأول: استخدام البوابة

١-١ هل يوجد في جامعتكم بوابة إلكترونية؟

نعم ( )   لا ( )

٢-١ هل تستخدم البوابة الالكترونية؟

نعم ( )   لا ( )

إذا كانت الإجابة بنعم،

٣-١ ما هي دوافعك لاستخدام البوابة الإلكترونية؟ لماذا تستخدم البوابة الإلكترونية؟

٤-١ ما هو رأيك في سهولة استخدام البوابة؟

٥-١ ما هو رأيك في فائدة البوابة؟

٦-١ هل للبوابة تأثير على دراستك أو عملك؟ وكيف؟

٧-١ هل تستخدم البوابة خارج حدود الجامعة؟ إذا كان نعم:

٨-١ فما هي دوافعك لاستخدام البوابة خارج حدود الجامعة؟

القسم الثاني: المعلومات، المحتوى، وخدمات ومصادر المعلومات المتاحة على البوابة

١-٢ كمستخدم للبوابة، ماذا تتوقع من إدارة البوابة أن تقدمه لك من خلال البوابة؟

٢-٢ هل أنت راضي عن الخدمات والمصادر والمعلومات المقدمة من خلال البوابة الإلكترونية؟

نعم ( )   لا ( )

٣-٢ هل تلبي البوابة الإلكترونية احتياجاتك المعلوماتية؟ إذا كانت الإجابة بنعم، يرجى التوضيح أكثر.

٤-٢ ما هي أهم الخدمات والمصادر التي غالباً تستخدمها في البوابة الإلكترونية؟

٥-٢ من وجهة نظرك، ما هو الشي المفقود والذي يجب أن يتوفر في البوابة الإلكترونية؟

٦-٢ هل تغيرت توقعاتك عن البوابة الالكترونية مع مرور الوقت؟ إذا كانت الاجابة نعم، يرجى التوضيح أكثر.

٧-٢ ماهي الخصائص والمميزات التي وجدتها مفيدة وهامة من خلال استخدام البوابة الإلكترونية؟

القسم الثالث: المشاكل المصاحبة لاستخدام البوابة

١-٣ هل تواجه أي مشاكل أو صعوبات عندما تستخدم البوابة الالكترونية؟ إذا كانت الإجابة نعم ، يرجى التوضيح أكثر؟

٢-٣ إذا كنت تواجه مشاكل أثناء استخدام البوابة، فمن وجهه نظرك: ماذا يمكن عمله لتفادى هذه المشاكل؟

٣-٣ في رأيك، ماهي الأشياء التي يمكن تطويرها والتي من شأنها دعم استخدام البوابة الإلكترونية؟

القسم الرابع: التدريب والتعليم والدعم:

١-٤ هل تم تدريبك من خلال برامج ودورات تدريبية على استخدام البوابة الإلكترونية؟ إذا كانت الإجابة بنعم:

٢-٤ هل كان التدريب مناسباً لاحتياجاتك ؟ يرجى التوضيح أكثر.

٣-٤ من وجهه نظرك: ما نوع التدريب الذي وجدته مفيداً؟

٤-٤ من وجهه نظرك: ما نوع التدريب الذي يمكن تقديمه والذي ترى أنه مناسباً؟

٥-٤ هل لاحظت أي تغيرات في البيئة الاكاديمية، على سبيل المثال بعد استخدام وتطوير البوابة الإلكترونية؟

٦-٤ ماهي الأشياء التي تهمك فيما يتعلق باستخدام البوابة الإلكترونية؟

القسم الخامس: المستخدمين وإدارة البوابة:

٥-١ من وجهة نظرك: ما هي أهم العوامل والأشياء التي يجب أن تأخذها الإدارة (إدارة البوابة) في عين الاعتبار حينما يتم تطوير وإنشاء بوابة إلكترونية؟

٥-٢ هل تعتقد أن هناك فجوة بينكم كمستخدمين وبين إدارة البوابة؟ إذا كانت الاجابة نعم:

٥-٣ ما نوع هذه الفجوات؟ وماذا يمكن عمله للحد من هذه الفجوات والتقليص منها؟

هل هناك أي معلومات تريد إضافتها فيما يتعلق بهذه المقابلة؟

وأخيراً شكراً جزيلاً لك ولتعاونك في الإجابة على أسئلة هذه المقابلة.

Appendix (8)

Arabic Informed Consent Letter

<div dir="rtl">

أقرار بمشاركة في بحث

عزيزي المشارك/ المشاركة

السلام عليكم ورحمة الله وبركاته ،،، تحية طيبة وبعد

أفيدكم أنا محمد بن صالح الطيار ، باحث في مرحلة الدكتوراه في قسم علوم الحاسب بجامعة دمنتفورت في بريطانيا. في البداية أتقدم إليكم بخالص الشكر والتقدير على مشاركتكم في هذه الدراسة. أقوم حالياً بدراسة حول استخدام البوابات الالكترونية في الجامعات ، حيث تعتبر هذه المقابلة جزءً هاماً من هذا المشروع البحثي ، والتي تهدف إلى التعرف على وجهه نظركم الشخصية. سوف تستغرق المقابلة ما يقارب ٤٥ دقيقة لإكمالها.

يهدف هذا البحث إلى دراسة العوامل المؤثرة في تبني واستخدام البوابات الإلكترونية في الجامعات السعودية والبريطانية. تعد مشاركتكم في هذه الدراسة مهمة ، حيث يمكن أن تقدم هذه الدراسة نتائج وتوصيات علمية مفيدة تساعد على فهم كيفية الإفادة من البوابات الإلكترونية لخدمة ودعم المجتمع الأكاديمي.

أود التأكيد بأن المعلومات المقدمة من قبلكم سيتم استخدامها لأغراض البحث العلمي وسيتم التعامل معها بسرية تامة. مشاركتكم في هذه الدراسة اختيارية ، كما أنكم لستم مطالبين بالإجابة على جميع الأسئلة في حال عدم رغبتكم في الإجابة على أسئلة معينة ، أو الإجابة عليها بأي ترتيب ترونه مناسباً. كما أود الإشارة بأنه يحق لكم الانسحاب من هذه الدراسة وعدم المشاركة في أي وقت خلال المقابلة ، أو من خلال إبلاغي بواسطة البريد الإلكتروني الموجود أسفل الصفحة.

مرة أخرى ، أشكركم على حسن تعاونكم في المشاركة بهذه الدراسة والتي سوف يكون لها دور في إتمام هذا البحث. إن كان لديكم أي استفسار، أو الرغبة في الحصول على نتائج هذه الدراسة ، فأرجو مراسلتي من خلال بريدي الإلكتروني.

وختاماً ، تقبلوا خالص الشكر والتقدير ،،، والسلام عليكم ورحمه الله وبركاته.

محمد بن صالح الطيار
</div>

Centre for Computing and Social Responsibility
School of Computing
Faculty of Computing Sciences and Engineering,
De Montfort University - The Gateway
Leicester
LE1 9BH
mohd189@hotmail.comEmail:

قمت بقراءة المعلومات الموجودة في هذا الخطاب والمتضمنة دراسة يقوم بها الباحث / محمد بن صالح الطيار في جامعة دمنتفورت في بريطانيا كمشروع بحثي لمرحلة الدكتوراه.

كانت لدي الفرصة لطرح أي أسئلة متعلقة بهذه الدراسة ، وفي المقابل فقد تلقيت إجابات مرضية وكافية لجميع أسئلتي واستفساراتي.

كما أنني على علم بأن بعض الاقتباسات والنصوص من هذه المقابلة قد يتم استخدامها في أوراق بحثية تنتج عن هذه الدراسة. الاقتباسات والنصوص سوف تكون / لن تكون سرية. أنا أوافق / لا أوافق على إظهار هويتي في التقارير والأبحاث التي سوف تنتج عن هذه الدراسة.

تم إبلاغي بأنه يحق لي الانسحاب من المشاركة في هذه الدراسة وذلك عن طريق إبلاغ الباحث.

أنا على علم ومعرفة واقر بما ورد أعلاه ، وأوافق على المشاركة في هذه الدراسة.

اسم المشارك / المشاركة: _____

توقيع المشارك / المشاركة: _____

اسم الشخص المقابل: _____

توقيع الشخص المقابل: _____

Appendix (9)

General Remarks and Notes from the Fieldwork

During the course of data collection, the researcher learnt a lot of good practices that would be helpful to other researchers wanting to study organisations and their members. From the experience of the current researcher in the fieldwork, many conclusions and recommendations can be drawn. These include:

- Getting formal permission from key people in organisations could play a major role in facilitating access to data and information and participants as well. Having formal permission reassures participants that the researcher is known to the organisation and his/her presence in the organisation is approved formally.

- It is important to develop a good rapport and relationship with participants during fieldwork. This issue has been reported in the literature (Yvonne and Scott 2002,p.54). This can be done by starting the interview with a general topic that the researcher has in common with participants. This has several advantages. For example, it could play a role in making participants more comfortable, physically relaxed and stress free, especially with students who may not have experienced this situation or been interviewed before. This in turn could reflect positively on participants' responses to the interview questions and good answers can be expected. Second, developing good rapport and relationships with participants could facilitate the access to data and information, especially at an organisational level and the researcher could be referred to key resources and other persons in the organisation and may have an opportunity to interview them. Lastly, developing a good rapport and relationship can serve the researcher when he/she needs to get back to the organisation again, for example to clarify some issues raised during interviews or to validate data and information at the final stage of the research.

- It is important for researchers to develop good techniques with respect to organising and scheduling interviews. Once an interview has been arranged, the researcher should contact the interviewee and confirm the interview time, for example one day in advance or if the interview is in the afternoon, confirmation should be sent in the morning. In this regard, technology can be used, for example sending an email or a text message to participants.

- The researcher should provide contact details to participants such as name, email address and mobile number, for example by giving them a business card that contains such information. It is also important that, when possible, the researcher gets similar details from participants so that they can be contacted again if more data and information are required. The current researcher has found this method very useful. For instance, some students and employees contacted the researcher after the interviews and provided him with useful data and information regarding the current investigation.

Appendix (10)

PULBICATION FROM THE RESEARCH

Altayar, M., Fairweather, B and McBride, N., 2010. An Investigation into the Adoption of Campus Portals in Saudi and UK Universities. *The 6th International Conference on Web Information Systems and Technologies (WEBIST),* Valencia, Spain 7-10 April 2010. pp. 167- 174.

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.

Altayar, M., Fairweather, B and McBride., 2010. Identifying Barriers and Challenges Associated with Campus Portals Adoption: A Comparative Study of Saudi and UK Universities. *The International Conference on IT-Enabled Innovation in Enterprise (ICITIE),* Athens, Greece, 29-31 July 2010. pp. 195-205.

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.