eGovernment in Saudi Arabia: an investigation from information architecture perspective

by

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Abstract:

These days, the term of eGovernment is widely used in almost all countries around the world to describe the use of information communication technology in the public sector. In fact, the eGovernment phenomenon has been seen as a tool that can help government to increase transparency, improve government services and save government finance, especially in the light of the global financial crisis. Yet, the percentage of successful eGovernment initiatives globally is low, in particular in developing countries. Several reasons have been identified in several areas including: ICT Infrastructure, political, social and organisational that can lead to a total or partial failure. Moreover, the concept of eGovernment is to provide government information and services online, therefore, the information architecture of eGovernment websites is significant and need to be addressed in order to insure the success of the eGovernment project. In fact, information architecture issues are affected by several non-technical barriers and addressing them in the context of the country would be the best way.

In developing countries, in particular Arab countries, the most prevalent factors causing the failure of eGovernment initiatives have been linked to the non-technical and technical website design issues as these countries have inexperienced on large ICT projects, and the fact that their awareness of website design issues is inadequate, as seen in the available Arabic literature in general and in relation to government websites design in particular. Therefore, the present study has strived to investigate eGovernment in Saudi Arabia from information architecture perspectives to provide a clear picture of eGovernment in Saudi Arabia, with reference to the country-specific factors that need to be considered when developing government websites.

Acknowledgements:

In the name of Allah, the most Compassionate, the most Merciful

List of abbreviations:

AGIMO	Australian Government Information Management Office
ALECSO	Arab League Education, Culture and Social Organisation
ASIST	American Society of Information Science and Technology
BBC	British Broadcasting Corporation
CCG	Cooperation Council for the Arab States of the Gulf
CDOSI	Central Department of Statistics and Information
CEC	Commission of the European Communities
CEN	EUROPEAN COMMITTEE FOR STANDARDIZATION
CIM	The Chartered Institute of Marketing
CITC	Communication and Information Technology Commission
COI	Central Office of Information
ESCWA	Economic and Social Commission for Western Asia
EU	European Commission
FICCI	Federation of Indian Chambers of Commerce and Industry
GAO	United States General Accounting Office
GIPL	Global Internet Policy Initiative
IA	Information Architecture
ICO	Information Commissioner's Office
ICT	Information Communication Technology
ICT	Information and Communication Technologies
IDA	Interchange of Data between Administrations Programme
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens
IS	Information System
IT	Information Technology
KAUST	King Abdullah University of Science and Technology
MICT	Ministry of Communication and Information Technology
MOCI	Ministry of Commerce and Industries
MOEP	Ministry of Economic and Planning
MOFA	Ministry of Foreign Affairs
MOHE	Ministry of Higher Education
MOHE	Ministry of Higher Education
NAA	National Archives of Australia
NAO	National Audit Office
NZSSC	New Zealand State Services Commission
OECD	The Organisation for Economic Co-operation and Development
OeE	Office of the e-Envoy
OMB	Office of Management and Budget
UNDP	United Nations Development Programme
UNESA	United Nations Department of Economic and Social Affairs
UNESCO	United Nations Educational, Scientific and Cultural Organization
WSIS	World Summit on the Information Society
WUIER	Waseda University Institute of e-Government

Publications arising from thesis:

Alasem, A.(2009) 'An overview of eGovernment metadata standards and initiatives based on Dublin Core', *Electronic Journal of eGovernment*, 7 (1), pp. 1-10.

Alasem, A. (2009). Towards a common Gulf Co-operation Council eGovernment metadata standard. In *Proceedings of the 13th International Business Information Management Association Conference*. Marrakech. 9 - 10 November, pp.669-674.

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Introduction

1.1 Research Background

The term 'eGovernment' was first used officially in 1993 by the US National Performance Review, and the actual beginning of this concept was with a campaign in the United States by Al Gore in the late 1990s. He declared that by 2003, almost all US government services would be online. Four factors were direct facilitators in making this movement: advances in the Internet's infrastructure, the integration of technologies, the convergence of media and an increase in Internet users and other Internet applications usage. Around the year 2000, the term eGovernment came into use in several developed countries around the world (e.g., UK, France and Germany). At this time, many countries were embarking on eGovernment initiatives to take advantage of the developments of information and communication technology (Silva, 2006; OnTheIssues, 2000; Cellary and Strykowski, 2009 and Hung, 2006).

eGovernment is defined as 'the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees' (Silcock, 2001, p.88). It is a recent innovation and seen as a natural result of the development of Information and Communication Technology, which has been used in many sectors, especially business (known as eCommerce), and which has been among the most popular activities on the Internet to improve services provided to customers and to reach a broader range of the population (Shih at el., 2002). For this reason, the business sector was the first sector to invest in technology, and the public sector trailed behind for a while. However, in the last few years, the public sector has become aware of the importance of technology and been more eager to invest in technology; for instance, in the United Kingdom, £675 million was made available for the establishment of an eGovernment initiative (OeE, 2003).

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eGovernment can play a significant role in increasing transparency, reducing administrative barriers, improving service delivery, improving civil service performance, and empowering and saving government finances (Bhatnagar, 2004). Certainly, in light of the global financial crisis, the financial benefits of eGovernment are tangibly significant. For example, in the United States, state governments are saving up to 70% by moving services online; in Alaska, the cost of vehicle registration has dropped from $7.75 per vehicle to only $0.91 on account of using an online system (Atallab, 2001). Moreover, citizens are saving money by using eGovernment services. In Australia, a 2003 study conducted by the AGIMO shows that 45% of the people surveyed confirmed that they had saved money by using eGovernment services (e.g., indirect cost, such as travelling expense). According to the 2010 United Nations' eGovernment Survey, nearly 98% of the countries of the world have adopted some kind of eGovernment projects. These projects have benefited from the development of ICT and improved the countries' economies and the lives of their citizens (UNESA, 2005 and 2010).

Sound eGovernment is universally accepted as good, but the most worrisome thing that has been reported in the literature is that more than 60% of eGovernment initiatives around the world fail to meet their overall objective due to a number of non-technical and technical website design issues (Gartner, 2002, cited in Shetty, 2003 and Shetty, 2003). Therefore, the emergence of these soft issues has encouraged many researchers to study and examine these barriers at different levels. Cultural, social and political issues, the digital divide, trust, availability of human resources, leadership support, marketing and workplace issues have all been discussed as non-technical barriers in the developed world, where the concept of eGovernment was born. For example, the Breaking Barriers to eGovernment in Europe project identified seven keys barriers to European eGovernment, including: leadership failures, financial inhibitors, digital divide and choices, poor coordination, workplace and organisational inflexibility, lack of trust and poor technical design (EC, 2007a).

Moreover, although developed countries have a long history of experience in website design and electronic content management as many of the electronic initiatives (e.g.,

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eCommerce, digital libraries and eLearning) have developed in those countries, the issues of technical web design, including government websites usability, accessibility and information architecture, have been studies in depth under the topic of technical website design issues in order to identify the best practice in government website design. This is because eGovernment is something unique in terms of its objectives and in terms of the number of people involved either as a providers or users. These soft issues have been seen as crucial to the success of eGovernment projects in those countries. Therefore, it has been recommended that they should be given as much attention as technical issues, for in many cases, these issues have been directly linked to the success of eGovernment projects. Furthermore, many researchers, experts and organisations see these issues as barriers that might obstruct the adoption of eGovernment projects, or at least limit the use of available electronic government services (Ebrahim and Irani, 2005; Dam et al., 2005; Leitner and Kreuzeder, 2005; Schwester, 2009; Dada, 2006 and Ndou, 2004).

This shows that the failure of eGovernment projects, even in developed countries, is not due to technical barriers alone, as these countries are classified as advanced nations in terms of ICT infrastructure and the use of technology. Instead, they face some kind of non-technical and technical web design failures. Potentially, eGovernment is more than using technology; it is about reform in all aspects of life. In developing countries, including the Arab countries, there is a great desire to catch up with advanced nations in the area of eGovernment. However, many studies show that because of serious problems in both areas of non-technical and technical website design, developing countries face many challenges in the development of eGovernment initiatives as well as severe limitations in the use of existing eGovernment services (Pons, 2004; Kostopoulos, 2004; Salem, 2006 and Elsheikh and Cullen, 2008). Yet, there is no study that has brought these two areas into a single study for better understanding of the eGovernment phenomenon as the ultimate goal of eGovernment is to make government information and services easy to access and easy to use over the Internet. The majority of available studies on eGovernment implementation in Saudi Arab generally focus on one aspect of eGovernment implementation, eGovernment adoption from the perspective of government agencies, which primarily includes the availability of trained staff and public

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sector culture and structure. Also, the few studies that have addressed government website design focus mainly on content accessibility or the maturity of Saudi government websites (Alhazani, 2008; Alatoi, 2009 and Buraggy, 2010). Therefore, this study attempts to bridge the gap between the two areas of non-technical barriers and technical website design and show how they are interrelated and need to be treated in a significant way in order to ensure that the money being spent on eGovernment will actually achieve the overall project objectives, which is to make the access and use of government resources easy, convenient, and readily available to all.

1.2 Research Problem Statement

Saudi Arabia is a developing country, and there are several factors that enable Saudi Arabia to be at the top of the growing regional computer and IT market in the Middle East. According to AMEinfo (2009), Saudi Arabia currently classifies as the biggest IT market in the Middle East, with a huge government investment on ICT projects. In addition, the ESCWA (2003) classified Saudi Arabia as one of the countries with the youngest population in the world. However, the high rate of eGovernment projects that fail in developing countries, as only 15% of eGovernment projects are successful (Heeks, 2003). Several studies indicate that, firstly, every country has its own characteristics in terms of cultural, social and political issues, as well as the availability of human and financial resources, Internet technology infrastructure and usage. Davison et al., (2000) argued that developed countries including countries in Western Europe, North America as well as a few more in East and South East Asia and Australasia significantly surpassed developing countries in terms of technology use for several reasons, including the lack of human and financial resources and incompatibilities between cultures and technologies. Also, the UNDP report on Arab Knowledge (2009, p.159) argued that 'despite the importance of the ICT infrastructure, cognitive and behavioural factors such as user skills, political will, and the commitment of leaders in the relevant administrations have more influence on eGovernment initiatives'. Secondly, the cost of failure is massive, not only with regards to monetary investments, but also many other factors. Heeks (2003) lists six categories of eGovernment failure cost: direct financial costs (e.g., money spent

on equipment and training programmes) and indirect financial costs including time and effort. Additionally, there is opportunity cost, which refers to the money spent on eGovernment that could have been better spent in other ways, and there are political costs, such as the loss of image for individuals, organisations and nations involved in failure. Beneficiary costs are represented in the loss of benefits that could have been brought by a successful implementation of eGovernment. Finally, there are future costs; for instance, the increased barrier for future eGovernment projects.

These two factors of the high rate of eGovernment failure in developing countries, and the causes of the failure, are the motives for this research. This study primarily attempts to investigate and explore non-technical barriers and technical web design issues in Saudi Arabia as these two have been identified as reasons for the failure of eGovernment initiatives in particular in developing countries. Moreover, these two areas are interrelated; for example, in order to develop a government website, issues such as government agencies' requirements and capacities need to be considered (e.g., availability of qualified staff and availability of legislations). On the other hand, knowing the society, such as cultural and social issues and the digital divide, is fundamental to understanding the users of eGovernment in the country, as well as their needs to designing government website based on their needs and expectations. This study, hence, does not intend to go into technical issues regarding the implementation of an eGovernment system or into how to design a specific government website.

1.3 Research Objectives

This study primarily aims to explore the key non-technical barriers that effect eGovernment adoption and diffusion, as well as the government technical website design issues in order to help eGovernment team to understand these issues effectively. From the overall aim of this project, a set of objectives has been established:

- Investigate the fundamental concept of eGovernment, as well as the reasons and motivations for eGovernment adoption globally;

- Review the experiences of developed and developing countries to identify the key barriers in relation to eGovernment adoption from Information Architecture perspective;

- Review the experiences of developed countries in relation to eGovernment websites' design;

- Study and explore the current government websites from an Information Architecture perspective.

1.4 Research Questions

In order to meet the study objectives, the research aims to answer the following questions:

- What are the major non-technical barriers that face eGovernment initiatives globally and in reference to Saudi Arabia?

- What are the core functions of government websites that encourage users to use them globally and in reference to Saudi Arabia?

- How Saudi government websites being developed/redeveloped over time?

- What elements need to be considered when developing Saudi government website?

1.5 Research Outcomes

As previously mentioned, this study aims to address the non-technical barriers that can hinder the development of eGovernment, as well as the technical website design of government websites in Saudi Arabia. Based on the available literature on these areas, which often relies on other people's experiences, especially those from countries classified as the best in terms of eGovernment services, analysis of major non-technical barriers and technical website design issues that face eGovernment will be studied within the context of Saudi Arabian eGovernment.

The study attempts to achieve the following outcomes:

- Identification of eGovernment expected user characteristics;
- Identification of the major non-technical barriers and their relation to Information Architecture to uptake eGovernment in Saudi Arabia;
- Identification of the major technical website design issues within Saudi Arabia government websites;
- Identification of the elements that need to be considered when developing government websites with a focus on metadata development.

1.6 Significance of the Research

The importance of this study lies in its attempt to add significant input to knowledge by shedding light on the importance of understanding the fundamental concept of eGovernment compared to other IT projects and also the understanding of non-technical barriers to the success of eGovernment projects, as well as the technical website design of government websites. Firstly, it is going to identify the major non-technical barriers that face the eGovernment initiatives globally and then within Saudi Arabia, which have not yet received much in depth study. Secondly, it is going to give an in-depth analysis of the Saudi government websites from an information architecture perspective, as the issues of technical website design cannot be discussed without a background in issues including the availability of qualified staff within government agencies, the availability of legislation that directs government agencies on specific areas related to website design.

This study is unique because it looks for the development of eGovernment in Saudi Arabia and tries to put all components of eGovernment together for the better understanding of how eGovernment should be reviewed. It aims to help eGovernment in Saudi Arabia to be more likely to succeed and to make government information and services easy to find and easy to use. The results of this study will directly help project teams as they reconsider the major barriers, that they might have not noticed previously. Moreover, the private sector can also benefit from this research because it faces similar

problems. Finally, it is believed that other developing countries in particular Arabic countries can get benefit from the study as Arab countries share similarity (Kostopoulos, 2004; Busaidy and Weerakkody, 2009 and Pons, 2004). Therefore, knowing these key issues would be significant.

1.7 Research Methodology

eGovernment is a new area of knowledge and the research method in the area of eGovernment has not yet matured. In addition, descriptive studies are dominant in much of the studies in this field with a focus on technical issues. Although there are some studies which address eGovernment in Saudi Arabia, most of these studies address eGovernment implementation from technological and organisational perspectives, as most of these studies stem from information system research. However, eGovernment differs from the traditional information system discipline. Therefore, because of the nature of this study, the use of different research methods is required. Hence, so as to cover all the study components, a mixed research design that is comprised of quantitative and qualitative methodologies was adopted. The strategy used in this study can be classified under the concurrent triangulation strategy when the researcher use two or more different research methods in attempt to confirm, explain and corroborate finding within a single study.

Firstly, an evaluation of government websites was conducted in two rounds, in 2008 and 2010. This was used to identify the current situation of Saudi government websites and to see what Saudi government websites were being developed in those two years. An instrument was developed after investigating the government website design literature in particular publications published by offices responsible for eGovernment in developed countries including the US, UK, New Zealand and Australia. The object of this investigation was to identify the core function of government websites, with much attention being placed on the use of metadata and controlled vocabularies in government websites for description purposes. On the other hand, a questionnaire survey was designed and developed to be distributed to expected users in Saudi Arabia only. This is

because there is a dearth of studies on eGovernment users in the country, so with the aim of this present study it was essential to identify the expected eGovernment users in order to make sure that people participate in this study are most likely to be eGovernment users. The questionnaire aimed to create a profile of eGovernment users and their opinion regarding the use of government website and the non-technical barriers as well. Simistructure interview and documents analysis were used to refine, elaborate and compare the finding of the questionnaire regarding non-technical barriers.

1.8 Thesis Limitations

This study has a limited scope in terms of the areas where the questionnaires were distributed, where the interviews with key official staff took place and when the government websites were checked.

- Subject limits: The study cannot go into back-end regarding the implementation of an eGovernment system, such as databases standardized and the development of privacy and security technology tools.
- Geographical limits: The study's questionnaire was distributed in Riyadh, the capital city of Saudi Arabia, and was completed only by male Saudi nationals (more details are provided in the research design chapter). Also, the official staff interviews took place only in Riyadh because the targeted official staff are in that city.
- Temporal limits: The forty government websites were checked twice for the same objective; the first round study was the period of 10-30 March 2008, and the second round study was in 10-30 March 2010.

1.9 Thesis Structure

The thesis is divided into nine chapters, in order to meet the stated objectives and to cover all problems dealt in the present study. These chapters are:
- **Chapter Two**: Fundamentals of eGovernment:

The purpose of this chapter is to identify and highlight the fundamental concepts of eGovernment using a conceptual framework to analyse in detail the relevant concepts, such as how eGovernment is defined, its applications and stages and how it becomes a value-adding force. This chapter also briefly addresses eGovernment implementation. Also, assessment and monitoring eGovernment locally and globally are addressed.

- **Chapter three**: Literature Review

   This chapter is divided into two sections; a section that identifies the major non-technical barriers that have been reported in the literature which can lead to eGovernment completely or partial failure and a section that discusses government website design.

- **Chapter four**: Saudi Arabia's Background

   This chapter presents a number of facts about Saudi Arabia, followed by a discussion of the current Saudi situation related to information communication technology, including electronic projects introduced and a presentation of the eGovernment initiative introduced in 2005.

- **Chapter five**: Research Method

   This chapter provides greater detail about the research plan, the process method used, data collection and the data analysis techniques used in the study.

- **Chapter Six**: Data Analysis

   This chapter presents the results of the questionnaire, interviews, Saudi government website evaluations and document analyses.

- **Chapter Seven**: Discussion

   In this chapter the findings of the study are discussed alongside chapters two, three and four for better understanding of major issues facing eGovernment in Saudi Arabia in both areas of non-technical and technical website design.

- **Chapter Eight**: Elements to be considered when designing Saudi government website

  This chapter addresses the general issues that need to be considered when planning to develop or re-developing the Saudi government websites.

- **Chapter Nine**: Conclusion and Recommendations

  The discussions in each chapter will be summarized here. The goal and the objective of this study are accomplished in this chapter by highlighting its main findings, listing the major. The conclusion also includes a list of themes requiring further study and suggestions of topics that can be replicated in other geographical settings.
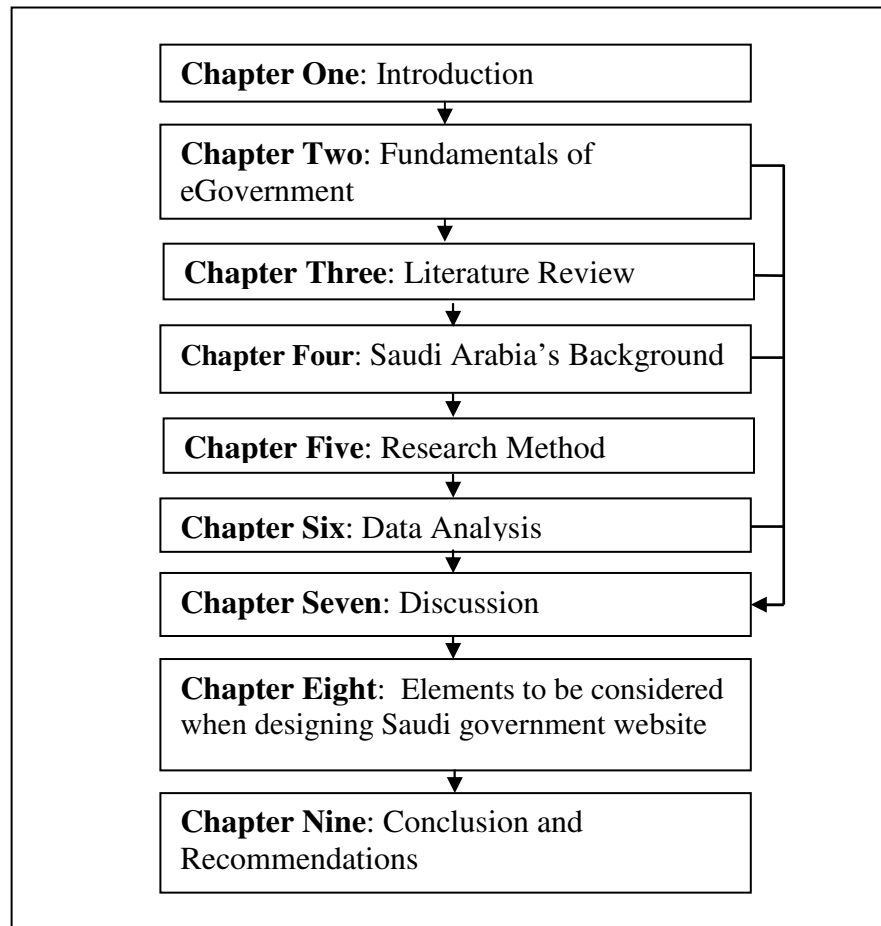
Figure 1-1: Thesis Structure

Fundamentals of eGovernment

This chapter seeks to highlight and identify the fundamental concepts of eGovernment, including its definition, applications types and stages. This is followed by an enumeration of the benefits of eGovernment for all involved stakeholders. Then a general view of eGovernment implementation is presented to show the fundamental requirements. The last section of this chapter addresses monitoring and assessing eGovernment projects nationally and globally.

2.1 Definition of eGovernment

There are disagreements on the precise definition of eGovernment, as it means different things to different people. This is because of the different perspectives held by experts, organisations and governments about what eGovernment actually is. This could be due to the fact addressed by AL-Busaidy and Weerakkody (2009) that eGovernment is generally defined according to the context and the study objective. For example, while some have defined eGovernment in a few words that purely focus on technological aspects, others like Ndou (2004) believed that eGovernment should be defined broadly in order to develop a well-set and effective strategy. However, even with the differences in defining eGovernment, there is a consensus about the core functions of the term and, this section will flow out of that consensus of thought.

Morison (2002, p.6) defines eGovernment as the process that 'involves using the power of information and communication technology to help transform the accessibility, quality and cost-effectiveness of public services and to help to revitalize the relationship between citizens and government through improved consultation and participation in governance'. Silcock (2001, p.1) defines eGovernment as 'the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees'. Gordon (2002) defines eGovernment as 'the use of ICT to improve the

process of government'. According to the United Nations, eGovernment is 'utilizing the Internet and the World-Wide-Web for delivering government information and services to citizens' (Torres et al., 2005, p. 218). The AGIMO (2003) gives another definition for eGovernment that is 'the process of transforming government, so that the use of the Internet and electronic processes are central to the way government operates. The EC ([no date]) defined eGovernment as 'using the tools and systems made possible by Information and Communication Technologies (ICTs) to provide better public services to citizens and businesses'. Finally, the UK government defines eGovernment 'as the exploitation of the power of the ICT to help transform the accessibility, equality and cost-effectiveness of public services and to help revitalize the relationship between customers and citizens and the public bodies who work on their behalf' (Cabinet Office, 2000).

As can be seen, these definitions reflect the definition of eGovernment from different perspectives, including experts, nations, and international organisations. Based on the above functional definitions, and on what has been written in the area of eGovernment, it can be summarised that the core concept of eGovernment is the use of Information Communication Technology to improve the government's performance for better public services that can be accessed online. Moreover, there are three areas of knowledge that can be found within these definitions: 1) an information communication technology perspective, represented by the use of computer networks etc; 2) a management perspective, represented by the processes of transforming government functions into electronic formats so as to support information sharing; and 3) an information organisation perspective, represented by the accessing and delivery of government information and services. By considering these areas, eGovernment can be defined as a future of government where information and communication technology (ICTs) is used in conjunction with a reformation of public sector processes in a way that ultimately makes government information and services easy to access and easy to use electronically for all stakeholders to achieve social and economic objectives. Here, ease of access and ease of use have been included to reflect the main objective of establishing eGovernment projects as information technologies that have already for some time been used in the public sector. It should also be noted that the main goal of eGovernment is to make government

information and services available for stakeholders to access online. Basically, the best example to distinguish these two primary functions of eGovernment is to consider the difference between e-business and eCommerce. Although these two terms are sometimes used interchangeably, there is a difference between them. While e-business refers to the utilization of technologies to improve internal business performance, eCommerce refers to online buying and selling activities, and is therefore seen as an output of e-business (Andam, 2003 and Chaffey, 2008). These two functions can also be seen in eGovernment. For example, Bhatnagar (2004) sees the term of eGovernment as equivalent to eCommerce as these two terms are related to online activities. So what about the equivalent term of e-business? In the literature, the term of e-administration could be the equivalent term to e-business, which refers to automation of the internal process of the public sector processes (Heeks, 2001). To some extant this is true because information technology has been used in the public sector since 1950s, but the use of the term of eGovernment as addressed earlier in Chapter One started when government information and services become available online in the 1990s. For example, according to Chan et al., (2008) in Singapore technology has been utilized to improve the government's internal operations by automating the work process since 1980s, however, by 1999, as a result of the emergence of the Internet, the Singapore eGovernment action plan was developed and approved in 2000, and by 2003 most of government services could be accessed online.

Also, by looking to the eGovernment stages (section 2.3) it is clear that there is near agreement that the first stage of eGovernment is the publishing of government information on the Internet, which means that before government information and services go online the term of eGovernment cannot exist even if there have been some government services have been provided before the Internet was introduced, such as Interactive Voice Response System (IVRS) services. Melitski (2006) clarifies the differences between the use of information technology (IT), information system (IS) and information communication technology (ICT) in the public sector; he reveals that (IS) is a border area that includes IT, which represents 'people, procedures, inputs, outputs, and processing all working together to produce accurate and timely information' (O'Leary

and Williams, 1989, cited in Melitski, 2006, p.770). He did not mention the use of ICT directly, but he indicates that the maturation of the World Wide Web has encouraged the movement to what is called eGovernment where government information and services can be accessed over the Internet. This is why some researchers believe that eGovernment is more than just using information technology. It is about communication, which is the component that had been added to the term of information technology in 1997 by Dennis Stevenson to reflect the interactive nature of the Internet (Kelly, 2000). Therefore, In the United Nation's global eGovernment survey (section 4.4.4.1) the percentage of Internet users, mobile phone users and fixed phone users under Telecom Index category are used to assess the eGovernment maturity. This is also why some believe that the lack of a succinct definition of eGovernment has contributed to the failure of eGovernment projects in many countries (Lisa 2004; OECD, 2003 and Alotaibi, 2006). The following figure shows the history of the use of information technology in the public sector, based on what has been reported in the literature.
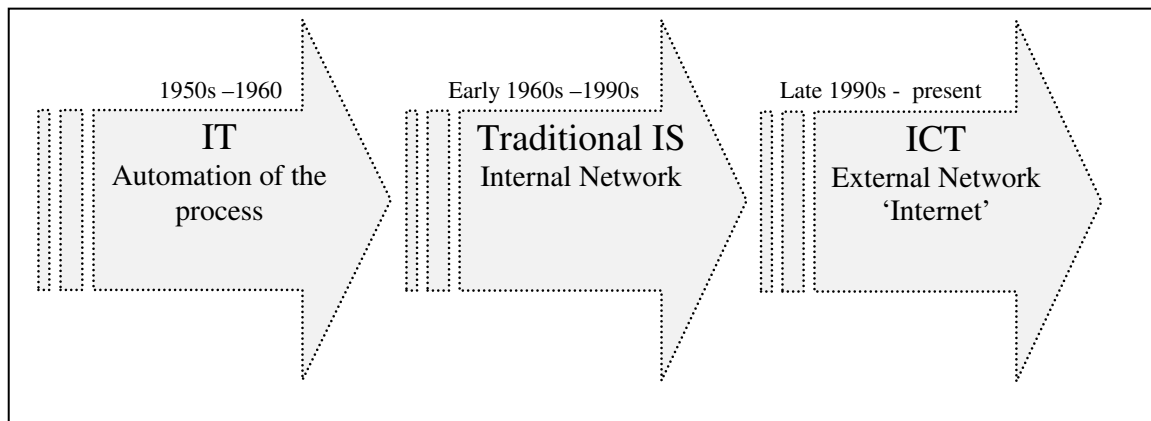
Figure 2-1: The use of information technology in the public sector

2.2 eGovernment Application Types

eGovernment definitions effectively divide the application of eGovernment into four types, according to their activities: Government to Citizens (G2C), Government to Business (G2B), Government to Employee (G2E) and Government to Government (G2G), as noted by Pascual (2003). However, since the G2E can be considered a subset

of G2G, various researchers have excluded it from eGovernment applications (Seifert, 2003; Mahmood, 2009 and Almarabeh and Abuali, 2010).

2.2.1 Government to Citizen (G2C)

G2C is classified as one of the most significant applications of eGovernment. The concept is rooted in providing access to government information and services through multiple channels. In the G2C application, the system is designed around making electronic transactions with the government possible, such as paying taxes, renewing a passport or applying for benefits. There are two ways associated with this application in terms of providing government services and information. Offering government services within one government agency through their website, and in more advanced applications, an electronic portal is developed as a starting point for a one-stop eGovernment website, which allows users to complete full transactions involving multiple government agencies in one place.

The motivation behind this application can be classified into two categories. Firstly, the Internet has become the most popular social, educational and commercial communication channel in the world, so introducing this application will inevitably engage people, especially younger people. Second, there is an economic motive for both the providers of the services and the users; as mentioned earlier in Chapter One, electronic transactions can save both governments and users both money and time (Seifert, 2003).

2.2.2 Government to Business (G2B)

Government to business is the second major application of eGovernment. The aim of this application is primarily to build a system that is designed to deal with business electronically, such as the development of e-procurement systems, so that the government can conduct online transactions with national and international businesses. Moreover, G2B is intended to provide up-to-date government information for local and foreign companies to attract investments. For example, Kassim and Hussin (2009) reveal that e-procurement is one of the most significant G2B applications that aim at reducing operational cost and improving the efficiency of the procurement cycle. According to the

CEC European e-Procurement Action Plan (EC, 2004, p.3), 'if online procurement is generalised, it can save governments up to 5% on expenditures and up 50 to 80% on transaction costs for both buyers and suppliers'. Moreover, as stated in Chapter One, the business is the most popular activity on the Internet. Therefore, the government to business application is as useful as the government to citizens application, and has therefore been given just as much attention as G2C.

2.2.3 Government to Government (G2G)

The government to government application is the backbone of the eGovernment system, and G2C and G2B can be seen as the outcome of G2G's internal interaction and cooperation, and thus G2G could therefore be called e-administration (Siau and Long, 2005). Also, G2G can be seen from another side, the side of interaction and cooperation between different levels of government within a country where more than one government exists. For instance, the U.S. system has three levels of government: federal, state and local governments. Also, G2G can be on a supranational level, yet this application is still in an early stage of development, and there are several G2G projects currently being undertaken. For example, the European Commission, which was formed in 1999, has an action plan of introducing eGovernment (Schweighofer, 2003). The vision statement of the programme states:

> *'In the European Union's internal market, people are able to move freely – either for work or for private reasons – and consequently they have to be able to deal with public services outside their home country more and more. If eGovernment services are to provide significant added value to citizens and business, then it is crucial that different government bodies, both within a country and in different EU Member States, are able to share information easily and co-operate in serving citizens'. (EC, 2009).*

2.3 e Government Stage model

Although there are several eGovernment stages models proposed by either organisations or individual experts (InfoDEV, 2002; Layne and Lee, 2001; Belanger and Hiller, 2006; Deloitte Research, 2000, UNESA, 2003; Mahmood, 2009), as models for eGovernment adoption, they generally share many characteristics under different names with strengths and weaknesses for each model (Siau and Long, 2005). Layne and Lee (2001) reveal that these models help the public administrators to get a clear picture of the stages of implementation of eGovernment. Also, these stages are based on the level of interaction between the government and the beneficiary of the system. Here, the model proposed by Gartner's four-stage model is discussed as it has been used by several governments to measure their situations, such as in New Zealand and Australia.

UN's model	UK's model	The World Bank Group model	Gartner's four-stage model
Network Presence	Joined-up e-governance		
Transactional Presence	A Transactional Web-site		Transformation
Interaction Presence	Interactive e-publishing	Transact	Transactional
Enhanced Presence	Electronic publishing	Interact	Interaction
Emerging Presence	A basic site	Publish	Presence

Figure 2-2: The eGovernment Stages

Stage I: *Presence*. Government agencies are involved in creating their own websites to post information about themselves, such as contact information, services, policies, regulations, reports and so forth. There are certain recommendations in this stage presented by infoDEV (2002) to assist the government in marketing their services and encouraging the public to use them including posting valuable information for the public,

information that they really need in their daily lives. It is insufficient for government agencies to simply post their information and services on the Internet. Issues regarding technical website design including accessibility, usability and findability should be taken into consideration to ensure easy access and use of available information.

Stage II: *Interaction*. In this stage two-way communication between the government and users is available, starting with basic government services, such as sending email, filling e-forms and providing feedback forms that allow users to submit comments (infoDEV, 2002). Soon, downloadable forms and audio and video capabilities will also be provided for relevant public information (UNESA, 2005). The recommendations present by infoDEV (2002) for this stage includes informing web users about the outcome of their online comments and queries and encouraging citizens to take part in the design and development process of government website.

Stage III: *Transaction*. This is the beginning of the complex stages of providing eGovernment services, as this stage allows two-way interaction between citizens and the government. In this stage, website users can perform full transactions with the government transactions such as paying taxes or applying for identity cards and birth certificates. 'This stage presents government on the Internet as an active respondent' (Signore et al., 2005, p.4).

Stage IV: *Transformation*. This is where all government processes and operations are carried out in an electronic environment. Databases across different functional areas will communicate with each other and, ideally, share information obtained to propagate through all government functions (Signore et al., 2005).

2.4 Benefits of eGovernment

eGovernment applications seem to have a great potential for all the three stakeholders concerned, people, businesses and governments. This is evident in terms of the nations where the eGovernment process has been launched and is, by and large, showing signs of progress (Reffat, 2004; Misra, 2006; OMB, 2002; West, 2008; Cabinet Office, 2000 and

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Pascual, 2003). eGovernment, thus, show a tendency to save users' time and effort by providing them with access to services and information 24 hours a day, 7 days a week. Consequently, there is no doubt that a great deal of attention has been paid to establishing eGovernment projects around the world. The general broad benefits, and some may call it reasons, of eGovernment implantation that have been addressed in the literature focus on four aspects: social (e.g., equality and quality), economic (users and providers), political (trust and participant) and managerial (transparency and simplifies of process). The following section outlines how eGovernment can be a significant contributor to these aspects.

As far as citizens are concerned, eGovernment tends to change people's lives and their relationship with the government. eGovernment offers unprecedented opportunities to access government information and services 365 days per year, with a wide range of delivery options (e.g., digital TV, the Internet and mobile phone). These convenient channels of delivering services directly and indirectly affect many aspects of citizens' lives. For example, socially, eGovernment provides the same opportunities for all groups to access government resources and reap the benefits of 24/7 availability. This can result in the provision of high quality services for all citizens, and can enable them to participate in developing future government services.

However, this opportunity, as mentioned previously, can only be realised through a strong plan that considers all related issues (technical, non-technical and technical website design). This is described briefly in Section 2.5 and in greater depth in Chapter Three. These efforts ensure that citizens with disabilities and other groups, such as those with low levels of education and income, are not left behind. On the economic side, as addressed before in Chapter One using government eServices save people money. Also, Gordon (2002) believes that the growth of the eGovernment market will help to create new job opportunities in the private sector. Regarding the value for businesses and commercial service providers, eGovernment information and services help companies conduct their business far more effectively, expeditiously and with greater transparency. It gives businesses a more 'convenient and transparent way of doing business with [the]

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government through e-procurement, with better control over movement of goods through online monitoring' (Misra, 2006, p.4).

Regarding government itself, although the term 'benefits' may not be entirely appropriate when speaking of governments, there are many reasons why eGovernment projects are needed. The iDABC (2005) outlined seven reasons why eGovernment is needed for the European Union: improved quality of information and information supply, reduction of process time, reduction of administrative burdens, cost reduction, improved service level, increased efficiency and increased customer satisfaction. The same source provides several examples of the benefits of eGovernment. For example, in the financial arena, 10% of all operating costs can be saved when 45% of the population uses government electronic services. Also, up to 5% of all operating costs can be saved if online procurement is generalized. Nationally, Evans (2003) indicates that in the United Kingdom, if 90% of car drivers used electronic services to pay their road taxes, there would be administrative cost savings of 25%. The same sources also discussed the risks associated with available government online services not being used, or being used by fewer people than expected, noting that such a situation would raise the cost of the service. The following figure shows the drivers, reasons and benefits of eGovernment summarised from the available literature on eGovernment.

Drivers	Reasons	Benefits
- Advances in the Internet's infrastructure	Political	- Trust and participation
- Integration of technologies	Economic	- Save cost of providers and users
- Convergence of media	Social	- Equality and quality
- Increase in Internet users and other Internet applications usage	Managerial	- Transparency and simplifies of process

Figure 2-3: Drivers, Reasons and Benefit of eGovernment

2.5 eGovernment implementation critical issues

An eGovernment project requires a great deal of work and a firm, broader strategy and clear vision to ensure success. infoDEV (2002, p.5) argued that 'the success of eGovernment requires fundamental changes in how the government works and how people view the ways in which the government helps them'. Thus, there are three essential pillars for the success of eGovernment that have been reported in the literature on the eGovernment implementation, two of them have been addressed in the previous quote, which are the government and the people, and the third pillar is something that contacts both of them Information and Communication Technologies. Each of these pillars include sub pillars in the form of studies that have been conducted to provide a better understanding of the eGovernment phenomenon. The following section outlines the major principles in the area of eGovernment implementation.

Firstly, there is the government's desire to establish eGovernment. This is not an easy decision, as it involves radical changes in the government structure and in the relationship between the government and its citizens, as well as businesses (Lowery, [no date]). Therefore, the decisions for establishing eGovernment are generally either made or supported by the highest authorities in the country. This can be clearly seen in several examples, such as the UK, USA, and even in developing countries, such as Saudi Arabia. This could be called the role of political leadership support, which, as OECD (2003,p.5) claims, 'makes eGovernment a priority and guides transformation by putting it in a broader context'. Lau (2003) bears witness to the significant role that political leadership in Mexico plays in supporting the implementation of eGovernment. The same source also reveals that it is vital for the administrative leadership at all levels to transfer their vision into action plans by setting strategies and managing the change.

Moreover, the ability of the government to invest in technology requires investing a large amount of money, as seen in several developed countries. For example, In the United States, according to the eGovernment Strategy, the federal government spent $48 billion on Information Technology in 2002 with the aim of simplifying the delivery of

government services to US citizens (OMB, 2002). It has been argued that advance in ICTs infrastructure is linked directly with the fast growth of eGovernment projects globally (Ifinedo, 2007 and Mahmood, 2009). Moreover, a part of the investment is the ability of the government to attract skilled staff as such eGovernment initiative requires a huge number of skilled staff in several areas, such as the area of information technology and management. Finally, the ability to design user-centric services which are usually built around four key concepts: flexibility, accessibility, quality and security (IDA, 2004).

Secondly, there are the people who will not only use such government services, but who will also support and promote such initiatives, and in many cases, it is clear that in theory eGovernment initiatives around the world place people first when introducing their eGovernment initiatives (EC, 2007b; NZSSC, 2006 and Cabinet Office, 2000). Encouraging people to use government electronic services, however, is not an easy job. Several examples even in developed countries show that people sometimes prefer to interact with government in the traditional ways for cultural or other reasons. For example, in the UK British people like to interact by phone or face to face, and they think that money being spent on eGovernment should be invested to improve these services (BBC, 2002). Here, the role of government to encourage people to use eGovernment services is needed. Reffat (2004, p.1) reveals that 'successful eGovernment should be able to attract citizens who are already connected online; move people online who are not already there'. As can be seen here there are two kinds of people (Have and Have-Nots). Kostopoulos (2004, p.5) in his example clarifies the issue with people who are Have Nots, he states that 'when a government builds a superhighway, soon after its completion the motorists flood it; it is because they have a car and know how to drive. However, when a government builds its eGovernment superhighway, the question yet stands as to whether or not the citizens will use it. Of course, this relates to the digital divide, which exists not only between nations, but which also can be found within a country.

Then again, moving people who 'Have' requires considering related issues that can stand in the way of adopting eGovernment services; for example, technical website design can be seen as a reason for not using eGovernment. Maurer (2006) points out that if a system

is difficult to use, users will react to it in one of several ways. The first reaction is that they will not use it at all, the second being that they will carry out their tasks elsewhere. Thirdly, they might use the eGovernment service as little as possible, or they will need more time and support to learn how to use it. This point is shared by Margetts (2006) as she believes that in the UK, in order increase the users of eGovernment who are already connected to the Internet, the government should improve the quality of their online services.

2.6 Assessment and Monitoring of eGovernment

An introduction to the concept of eGovernment necessitates an understanding of eGovernment assessment and monitoring. The assessment and monitoring of an eGovernment project is important for eGovernment policy makers to ensure that the money being spent on the project provides commensurate value. It is also needed in order to identify successful eGovernment projects and success factors for replication and scaling up, and so as to identify why projects fail and the reasons for failure, so that they may be avoided in the future (Bhatnagar, 2000).

Globally speaking, monitoring the movement of eGovernment projects around the world gives a clear picture of what is going on in the world, not only in terms of using technology (the digital divide) and the availability human and financial resources, but also because this includes political, economic and social issues. Monitoring also facilitates comparisons between nations and regions. For example, since 2003, the top 20 countries in the UNESA eGovernment survey have been from a single category, the developed world (industrially, economically and technologically, speaking). However, in 2010, Bahrain, which is a member of The Gulf Cooperation Council (GCC), has made a significant improvement, from 42nd place in 2008 to 13th place in the 2010 in the United Nations eGovernment survey. To clarify, other GCC countries, including Kuwait, Saudi Arabia, Qatar and the United Arab Emirates, are among the richest countries in the world, yet they are still behind Bahrain by more than 35 places. Therefore, the question must be asked, why is this so? What are the differences in terms of society, politics, availability of

IT staff and leadership support and so forth? The most obvious issue, at least in Arab societies, is that, in the last few years, Bahrain has witnessed a political reform. This can be seen as an argument that Arab countries should follow and strengthen their principles of democracy and transparency (UNDP, 2006).

2.7 Summary

Overall, there is great hope associated with the emergence of eGovernment programmes, but it is still too early to state conclusively whether this is merely wishful thinking or a reality. This chapter has reviewed the fundamentals of eGovernment in order to highlight the background and concepts in the field of eGovernment in general. Several issues also need to be discussed in more detail, specifically issues that relate to the areas of non-technical and technical web design, which is the focus of this study.

Literature Review

This chapter presents the background of major barriers to eGovernment implementation and the related findings of previous studies. It is structured around two main themes: 1) non-technical barriers, including culture, trust, leadership support, and IT skilled staff; and 2) technical website design issues of government websites, including issues such as web accessibility, content availability and findability.

3.1 Non-technical barriers

There is no doubt that on account of the continuing development of ICT, and primarily the advent of the Internet, the world has changed dramatically in the last few years. Since the mid-1990s, this phenomenon has created a fertile area for academic studies. Tan and Teo (1998) surveyed 500 business organisations in Singapore to identify the major factors influencing the adoption or non-use of the Internet within these organisations. Their findings revealed that the main reason given for not adopting the Internet at that time was concern with staff issues, mainly the fear of employees wasting time by surfing the Internet instead of performing their organisational duties.

However, today the Internet is used in almost all modern governments and private organisations around the world. Furthermore, the technology acceptance models, which were developed first in the 1980s to see how individuals come to except and use of new technology, such as the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB) (Venkatesh et al., 2003) have been adopted and new models have been developed based on these models to see how individuals come to except and use the Internet in various domains. In general these models are designed to answer the questions of 'how and why' individuals adopt new information communication technology' (Venkatesh et al., 2003,p. 427). Several factors have been identified either as an intention to use a new technology or as a hindrance to the use of new technology. For

example, Wangpipatwong et al., (2008) adopted the Technology Acceptance Model (TAM) alongside a computer self-efficacy factor, which refers to the ability of individual to use computers to finalize task in order to understand factors that influencing the citizens to use government website. Their results show that the three factors: perceived usefulness which is refers to the degree in which a person believed that using a particular system would enhance job performance, perceived ease of use which refers to the extent to which a person believed that using a technology will be free of effort and computer self-efficacy significantly influence citizen's continued intention to use eGovernment.

The term 'eGovernment barriers' has been used to describe the 'characteristics-either real or perceived-of the legal, social, technological or institutional context which work against developing eGovernment. These barriers are identified as such because they either impede demand, by acting as a disincentive or obstacle for users to engage with eGovernment services, or because they impede supply, by acting as a disincentive or obstacle for public sector organisations to provide eGovernment services' (EC, 2007a, p.3). The term has been used to describe three areas within the eGovernment domain: 1) technical areas such as ICT infrastructure, which refers to the basic requirements for establishing eGovernment services such as hardware and software; 2) non-technical areas related to cultural and social issues, trust, staff and leadership support and marketing (Henari and Mahboob, 2008; Li, 2003 and Chen et al., 2006); and 3) technical website design issues including usability, accessibility, and information architecture. In the area of eGovernment it has been argued that addressing non-technical barriers and technical web design issues is vital and should therefore be addressed as part of the eGovernment plan and given as much attention as technical issues.

This review of eGovernment literature was carried out in order to identify the key non-technical barriers that have been part of the success of eGovernment initiatives. There is almost general agreement on these barriers. Furthermore, these barriers overlap each other, and this can be clearly seen in many cases. For instance, change in public sector culture cannot be discussed in isolation from gaining the support of high level decision-makers to overcome this issue; Schwester (2009) has called this the 'stop and go' of the

eGovernment implementation process. Also, these barriers vary from country to country, especially between the developed and developing world. Chen et al. (2006) identify five main differences between developed and developing countries when addressing eGovernment, difference including history and culture, availability of technical staff, infrastructure, citizens and government officers. The following subsections address the most frequently identified non-technical barriers in the literature.

3.1.1 Culture

The Cambridge Advanced Learner's Dictionary, (2010) defines culture as 'the way of life, especially the general customs and beliefs, of a particular group of people at a particular time'. In many studies, issues such as the digital divide have been addressed as a cultural issue (Carter and Weerakkody, 2008; Evans and Yen, 2005 and Vassilalkis et al., 2005). This may not be entirely accurate, since the digital divide along with culture are all subcategories of eGovernment non-technical adoption barriers, and thus placing them under one category may lead to the failure of addressing these barriers in an effective manner. For example, the digital divide can be caused by cultural issues, but it is not fundamentally an issue of culture as it can be broken by learning and practice. Therefore, culture should be reviewed with the general customs and beliefs of the country in full view. In the area of eGovernment, for example, the Oxford Internet Survey (2009) shows that the usage of eGovernment online services 'interactions' in the UK is low compared to other online activities; for example, the percentage of Internet users who paid for government taxes, fines and services was 6% in 2005 and 20% in 2009 compared to the 74% and 80% who were buying products in 2005 and 2009 (Dutton at el., 2009). Likewise, in New Zealand 70% of those surveyed on eGovernment use prefer to use traditional methods in person, by letter or by phone to contact their government (Gauld et al., 2010). Also, in Japan only 13% of the population used eGovernment services in 2006 (Nyaboga and Mwaura, 2006).

Regionally, according to Lassnig and Markus (2003), about 51% of the European population feels that government electronic services on the Internet are not as safe as traditional methods and the usage of eGovernment services in general is low. All the

above facts reflect the influence of culture on the adoption of eGovernment in developed countries where there is a ubiquitous use of technology. What about developing countries where there are high rates of illiteracy and a low e-literacy rate with additional specific cultural and social characteristics? For example, Yasin and Yavas (2007) reveal that oral communication is the favorite communication channel among Arabs, so face to face and phone interaction are the preferred methods. They provide an example of electronic bank services in Jordan where people prefer to visit the bank instead of using their available electronic service to complete a transaction. AL-Safi and Weerakhody (2009) found that social attitudes had a significant impact on the use of the electronic services provided by the government of Qatar. Similarly, Alawadhi and Morris (2009) identified 'Wasta', an Arabic word that refers to two things 'who you are' and 'who you know' in relation to getting things done quickly, easily and even contrary to the system, as a primary factor that affects the use of eGovernment services in Kuwait.

It seems to be that, since contacting government in traditional methods has been seen as a social life habit people have practiced for a while, switching to using eGovernment could need more time. This can be seen clearly, since from the 1990s to this day, the most popular activity on the Internet has been online shopping. Even though online shopping provides multiple options for the shopper, including the ability to compare prices and to buy products at lower prices, there are still social reasons, such as social interaction and the shopping experience, that have maintained the practice of traditional shopping (Ngoen, 2010 and Margetts, 2006). Lokken (2003, p. 131, cited in Ngoen, 2010) believes that the 'traditional retail shopping will not be reduced or replaced by online shopping in the future'.

So how long it will take for people to change their view of eGovernment services? It is too early to answer this question, for many of the eGovernment initiatives around the world have relatively short histories of about seven years. It is useful at this point to clarify that studies related to culture and social issues should be developed within the country context, or at least within countries that are markedly similar as comparison between a country in the developed world with a country in the developing world,

especially when addressing culture and social issues, is not significant (Chen et al., 2006); developed countries have long histories of democracy and more transparent government rules and policies, and this has reflected on their citizens and national cultures.

3.1.2 Access and Skills

According to Carter and Weerakkody (2008, p.476), the digital divide refers to the 'difference between those who have Internet access and computer skills and those who do not'. It is a result of the rapid development of information and communication technology, as well as global telecommunication networks such as the Internet (Sukkar, 2004). The term 'digital divide' was first used in the 1990s to describe a split between those with access to personal computing and the Internet and those without access (Rebecca et al., 2004).

At first it was solely concerned with the availability of the ICT infrastructure between countries (mainly between developed and developing countries); this is now called the 'global digital divide'. Later the term 'digital divide' has been used to address the situation within one country, for example, between urban and rural. Another development of the term is called the 'social class digital divide', reflecting the differences in personal computing and Internet use between men and women and high income and low-income earners. For example, in the UK, men, students, highly educated and high-income earners were found to be more likely to use the Internet than women, retirees, disabled, less educated individuals, and low-income earners (Dutton and Helsper, 2007). In the US, ethnicity has been identified as a major marker of the social class digital divide, especially regarding eGovernment adoption (Carter and Weerakkody, 2008).

Another development of the concept of digital divide is called 'skills divide' which refers to the ability to use the Internet as a tool for pursuing a better life (Belanger and Carter, 2006, cited in Carter and Weerakkody, 2008 and Camacho 2006). This point is shared by Riley (2004), who revealed that in its current context, the digital divide is caused by more than a lack of access to new technologies. In the eGovernment domain, the digital divide

is more than having access to the Internet, but it is also the ability to use available government electronic services. The example provided in section 2.5 highlighted this issue by stating that citizens will use eGovernment services if they firstly have access to the Internet and secondly possess the skills they need in order to use the available services. Bélanger and Carter (2009) argued that four areas can be founded under the concept of skills divide, including computer experience, general Internet use, online purchases and online information search.

Although the digital divide exists in developed countries, primarily as a social class digital divide between rich and poor, man and women, this is not equally comparable to the situation in the rest of the world. For example, in the Arab world, the digital divide cannot be addressed without first considering the rate of literacy. According to the ALECSO report of 2006: in six Arab countries the rate of literacy is less than 50%; in nine countries, it is between 60% and 80%, which includes Saudi Arabia at 78.8%; and in seven countries the literacy rate is more than 80%. Moreover, there is a lack of studies in the area of Internet literacy, but the available statistics show that only 18.9% of the Arab population uses the Internet, of which 26% are in the GCC countries (Internet World Stats, 2010). In terms of using technology, these statistics indicate that there are substantial differences between Arab countries. Four out the six Arabian Gulf countries (Saudi Arabia, Qatar, Kuwait and United Arab Emirates) are among the richest Arabic countries, and are the top Arab countries in terms of using the Internet (Aladwani, 2003). However, as shown in section 4.2.4 a low usage of the Internet was found across all regions in Saudi Arabia, and in some regions the Internet usage did not exceed 4% of the population. The digital divide was addressed by several studies on eGovernment in Arab countries as either a challenge or a reason for the failure of the eGovernment project in those countries (Salem, 2006; Elsheikh and Cullen, 2008; Gharibi and Anan, 2008 and Alomari, 2006).

3.1.3 Users trust

Privacy and security are always discussed together under the name of user trust which is addressed in the literature as a technical barrier. Also, as non-technical barriers mainly

users believe in government privacy practice and government website security (AL-Sobhi and Weerakkody, 2009). AL-Busaidy and Weerakkody (2009, p.380) reveals that 'trust refers to the user's belief in security and privacy in using electronic transactions via an official government website'.

In the eGovernment context privacy 'refers to the credible government protection of the personal information of citizens' (Lebech, 2003, p.4). Similarly, the GIPL (2003) reveals that in the context of eGovernment and eCommerce, the right to privacy is the right to control the use of personal information that is disclosed to others. On the other hand, website security refers to protecting government website from external attack and misuse. Ebrahim and Irani (2005) identified several kinds of eGovernment security threats including hackers, intruders, Viruses, Worms, and Trojans. Several reasons for committing electronic crime were identified by Interpol: financial reasons ranked highest at 66%, followed by political reasons at 17%; research access at 7%; damaging others at 5%; and revenge at 4% (Interpol, 2005, cited in Alqasim and Alhmdan 2008). eGovernment websites began to be attacked by hackers soon after they came online. For example, since 1999 about 694 government websites within the 'gov.uk' domain have been attacked (Zone-h website, 2010).

Much has been written on users' belief in privacy and security, as they have been classified among the greatest eGovernment barriers (Lebech, 2003; Cullen, 2009; GIPL, 2003; Lau, 2003 and Regan, 2008). A study conducted in 2007 by the AGIMO on Australians' use and satisfaction with eGovernment services indicated that government agencies can encourage up to 6% of Internet users to use the available government electronic services by considering privacy issues and having visible privacy statements. Also, Taylor Nelson Sofres (2001) in their annual global report on online eGovernment found that 23% of eGovernment users felt unsafe concerning providing personal information, and this increased to 25% in 2003. The concern about privacy is subject to not only individuals but also businesses. For example, 21% of Small and Medium Sized Enterprises (SMEs) in the UK were most concerned about privacy, and 28% were concerned about security when conducting transactions with the government through

electronic means (Adeshara et al., 2004). The result of these studies supports Culnan and Armstrong (1999, cite in Carter and McBride, 2010, p. 11), who believed that 'citizens are more likely to disclose personal information once they have been informed of the agency's privacy practices.'

These studies show the significance of these issues among eGovernment users in countries that have long histories of practicing privacy since the 1960s and early 1970s (McMenemy et al., 2007). Thus, the Data Protection Act has been adopted across many developed countries across the world. For example, in the UK the Data Protection Act of 1998 was approved to repeal the Data Protection Act of 1984 and the Access to Personal Files Act 1987. It has eight principles covering manual and automatic processes of personal data, which are based on three concepts: purpose of collecting personal data, fairness to be collected for legitimate purposes and transparency the right of users to have which data collected (McMenemy et al., 2007 and ICO, 2007). Interestingly, in some parts of the world the privacy concept is seen as a Western concept (Cullen, 2009). This could be true as this part of the world has a long history of democracy and has several pieces of legislation that have been approved accordingly.

However, many people around the world do not share this same history of democracy, and yet they now share many things in common with Western societies, and thus several concepts that which were born in developed countries have become global concepts as a result of the development of ICT and the advent of the Internet, and this includes the privacy concept. What was previously of no concern in several developing countries has become a necessity. Hussein (2006), in his study on eGovernment in Jordan, indicated that there is a concern among citizens about privacy, because the government collects a large amount of personal information about its citizens, which could be used inappropriately. In Bahrain, Henari and Mahboob (2008) found that 82% of Bahraini residents who did not participate in eCommerce, refrained from doing so due to non-technical barriers including privacy issue. Shalhoub (2006) revealed that only 49 out of 183 company websites surveyed in the GCC countries had a privacy statement.

3.1.4 Leadership support and management issues

Strong leadership at different levels and a clear vision have been identified as critical factors for the successful implementation of eGovernment initiatives (Kerby, 2005; Ndou, 2004; Leitner and Kreuzeder, 2005; Bjorn and Fathul, 2008 and Jellinek et al., 2005). Parks (2005) argued that most of the obstacles to eGovernment adoption are non-technological, and he included the lack of leadership support as one of these obstacles. Moreover, it is believed that the availability of skilled leaders is linked directly to the success of eGovernment initiatives. For example, on the European scene, leadership failures were identified among the seven barriers to the development of eGovernment (EU, 2007a). At the political level, as mentioned before in Chapter Two, the decision of moving online is usually made or supported by high authorities (Rotthier, 2004). However, as eGovernment projects are huge, complex and involve more than one constituent during the implementation, it requires a skilled leadership to facilitate and promote the implementation of a successful eGovernment project, which is described by Evangelidis et al., (2002) as a person who has a mixture of ICT and managerial skills:

> *'When an IT expert with little or no business management experience is placed in a leading managerial position of a huge eGovernment project, there may be an increased possibility of the risk of failure. Equally, someone with business and project management skills alone with no background in ICT may not be the appropriate person to head or lead an ICT or an eGovernment project' (p.398).*

According to Hai and Thanh (2008) since the 1990s, developed countries felt the need for skilled leadership in order to ensure the success of their electronic projects in the public sector; hence, the Government Chief Information Officer (GCIO) position was created to manage the use of technology in the public sector in an effective manner. This is something like what has been done in the private sector, as the position of GCIO was derived from the idea of the Chief Information Officer (CIO) position in the private sector. In the US the GCIO has become mandatory in all government agencies. The same resource reveals that the differences between developed and developing countries in

GCIO practice is that the GCIO position in developed countries was created as a result of the development of the use of ICT in the public sector, which is not the case in developing countries where this position, in many cases, was created at the same time that government electronic projects were introduced.

The role of leaders in the public sectors identified by John Higgins, who is the Director General of Intellect Technology Association, the leading trade association in the UK, is to achieve organisation policies at minimum cost and risk, and facilitate the fastest delivery of benefits (Computing, 2008). Management issues, such as resistance to change, are big challenges that need a skilled leader to manage the change and minimize the risk of change. Resistance to change, has been described as a 'natural and normal response to change because change often involves going from the known to the unknown' (Bovey and Hede, 2001). Salem (2006) reveals that Arabic countries are inexperienced in managing large ICT projects, as the development and use of ICT in business, as well as government, is still at an early stage. Thus, they are, in general, facing the common challenges related to eGovernment implementation, including the lack of top management leadership support.

3.1.5 Availability of human resources

Electronic government projects are usually large and complex, and their implementation requires a large number of skilled staff within the public sector. The availability of human resources is described by Sutanta et al., (2010) as the heart of any organisation. Indeed, upon taking into account the intense competition between the public and private sectors to attract skilled people, it is quickly evident that such competition can seriously affect the expansion of government electronic projects. OECD (2001) reveals that the reasons for the reluctance of skilled IT people to work in the public sector include low wages and the lack of incentives. Based on the fact that skilled personnel tend to find working in the private sector more attractive, the lack of skilled staff in the public sector has been viewed as a hidden threat to the implementation of government electronic projects (Evangelidis et al., 2002; Ndou, 2004 and Thanh, 2008).

Attracting skilled IT staff is a significant concern for decision-makers. For example, in the UK, by 1993 £500 million was being spent annually to attract IT skilled staff (Margetts, 2006). Similarly, in the US the demand for IT staff is growing dramatically over the years, and the need for computer system analysts, engineers, and scientists was expected to double between 1998 and 2008 (GAO, 2001). According to the same source, the increasing number of government projects outsourced to the private sector increased the competition between the public and private sectors for skilled IT employees.

If countries that have a long history of using technology in almost all areas of life (e.g., education, healthcare, business), countries that have a reputable education systems, and maybe most importantly, countries that are the birthplaces of most of these technologies still suffer seriously from the lack of available skilled staff in the public sector, what about other countries that have just begun to use information communication technology? What about developing countries? Whether due to the competition between private and public sectors or the inability to provide a sufficient number of skilled staff due to the fact that government electronic projects are large, the fact remains that the issue of the lack of skilled staff has been identified in the literature as the biggest challenge to implementing eGovernment in developing countries (Altawil, [no date]; Kostopoulos, 2004; Elsheikh and Cullen, 2008 and AL-Busaidy and Weerakkody, 2009). For example, with the low numbers of skilled IT workers, Arab countries are not excluded from private sector competition. Salem (2006) described the migration of skilled IT staff in the Arab world from the public sector to the private sector as a 'brain drain'. Also, almost all government agencies suffer from low IT literacy (Alhaidan, 2009 and Alarishi, 2008).

3.1.6 Marketing

Marketing is defined as 'the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods, and services to create exchanges that satisfy individual (customer) and organisational objectives' (Burnett, 1998, cited in AGIMO, 2004a, p.3). The marketing of government electronic services is seen as an essential element to insure that users are aware of the electronic services being developed, as well as to ensure their user satisfaction (Owei et al., 2006 and WUIER, 2009). In the

eGovernment domain, marketing usually refers to marketing government eServices, which is different from marketing goods and marketing services of other sectors since government agencies are non-profit organisations, and because users from other sectors can select from more than one service provider; government online services, however, are provided in many cases by one provider (Adrian, 2005; AGIMO, 2004a; CIM, 2009 and Reffat, 2004). As can be seen, there are two areas of government eServices marketing that must be addressed; one can be discussed under non-technical barriers, which is increasing awareness of the government eServices being developed, while the second is related to users satisfaction, that is something to do with website design, such as the eServices design.

Regarding increasing the awareness of government electronic services, several recommendations have been proposed, including the use of media (e.g., local newspapers, road shows and television). Raising public awareness also can be achieved by organising events and exhibitions (Owei et al., 2006). For example, the UK government's digital service for people in England and Wales website, 'Directgov', has used the media to raise awareness of available government services that can be accessed through the Directgov website. For example, the Directgov website utilised £1 million for TV ads in 2010 (Hawkins, 2009). According to an email from Directgov FOI team (2011), the number of visitors had increased from 211,472,281 in 2009 to 319,876,091 in 2010. Moreover, about 73% of the web visitors between December 2009 and the end of January 2010 recalled the Directgov advert (Appendix A). Similarly, in Singapore, road shows and media have been used by the government to increase the awareness of government eServices. Also, in order to encourage people to use electronic government services in Singapore citizens pay less fees by using eServices, for example, $50 instead of $60 when applying for a passport (Chan et al., 2008).

3.2 Technical website design issues

The previous section addressed non-technical barriers that have been seen in the literature as reasons for the wholesale, or at least partial,failure of eGovernment projects. Here, technical website design issues are discussed as these issues are crucial to all Internet applications and become more important in the area of eGovernment, as government websites aim at equality of access to government websites. In another words, government websites should be developed in effective ways that helps Internet users find and use available government resources more easily while also encouraging people who are not connected to the Internet to get online. Clearly, government websites have been studied and evaluated from several perspectives, including the availability of content, the availability of online services, web design and so forth. The following table [extracted from Panopoulou al et., (2008)] shows the general axis of five studies in government website evaluation.

Table 3-1: General axis of government website evaluation

Axis	Garcia et al. (2005)	Smith (2001)	Holzer and Kim (2005)	Henriksson et al. (2006)	West (2007)
Content	✓	✓	✓	✓	✓
Navigation	✓	✓	✓	✓	✓
Public outreach	✓	✓	✓	✓	✓
Accessibility	✓	✓	✓	✓	✓
Privacy and security	✓	✓	✓	✓	✓
Online services		✓	✓	✓	✓
Citizen participation			✓	✓	

In website design, information architecture, usability and accessibility are discussed as components of eGovernment technical website design. However, the overlap among these components, especially between usability and information architecture, make it quite difficult to distinguish them. For example, Barker (2005) viewed usability as a broad concept and information architecture as more specific, whereas Lash (2002) argued that usability is a subset of information architecture. The latter view is shared by Kennedy (2007), who believes that information management (IM), experience design (XD), user

experience (UX), information design (ID), usability engineering (UE), interaction design (IxD), and human computer interaction (HCI) are all facets of information architecture.

3.2.1 Information architecture versus usability

Information architecture (IA), as a field of knowledge, is as new as the first book entitled 'Information Architecture', published in 1996 by Richard Saul. In 2000, ASIST organised the first information architecture conference. In Europe, information architecture, as a subject for conferences and workshops, began in 2003, when an online information conference took place in London (Gilchrist and Mahon, 2004 and White, 2004). Therefore, there is no single definition of IA, and it is still growing as a field. While several definitions are available in the literature, all of them generally share the same concepts of focusing on information findability, accessibility and management (Batley, 2007 and Morville and Rosenfeld, 2006). Some IA definitions are the following:

'The combination of organisation, labelling, search, and navigation system within web site and intranets' (Morville and Rosenfeld, 2006, p.4)

'Term used to describe the structure of a system, i.e. the way information is grouped, the navigation methods and terminology used within the system' (Barker, 2005, p.1).

'Structuring and organising information on websites to assist people to achieve their information needs' (AGIMO, 2004b, p.3)

Usability is identified as:

'The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in specified context of use' (ISO 92411-11, cited in Maurer, 2006, p.1).

'A quality attribute that assesses how easy user interfaces are to use. These attributes include:

- *Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the design?*
- *Efficiency: Once users have learned the design, how quickly can they perform tasks?*
- *Memorability: When users return to the design after a period of not using it, how easily can they re-establish proficiency?*
- *Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?*
- *Satisfaction: How pleasant is it to use the design?' (Nielsen, [no date]).*

The above definitions make it difficult to distinguish concepts. However, the IA literature reveals that these definitions share similar concepts of system design to help users find and use available information and services (Nielsen, 2000; Batley, 2007; Preece, 1993; Wodtke, 2002 and Morville and Rosenfeld, 2006). White (2005) clarifies this issue by noting that before 1997 or 1998 awareness of the term 'information architecture' was limited. Moreover, the aspect of information architecture typically addressed in the literature is the creation of metadata to be used for multiple purposes, including resource management, resources description, recourse discovery and interoperability (Gilchrist and Mahon, 2004).

It can be said that both usability and information architecture aim to help users find and use online information and services easily, and this can be seen clearly in the literature on how to develop a website while considering usability and information architecture; in this case, issues such as the aim of the site, knowing your audience and their needs, finding information and eServices design are commonly used in both area. Some may say usability is concerned with front function 'interface' and information architecture with back function, but by looking at the early publications on usability it can be seen that some addressed the use of metadata for discovery purposes (Bevan, 1998 and Nielsen, 2000). It does seem to be that the use of metadata for resource discovery was the main objective of addressing metadata in the usability literature, whereas in information architecture metadata is addressed with multiple functions including resources discovery.

This could be a result of the emergence of the development of portals websites that were built based on the needs of various fields (e.g., digital libraries and education and government portals) to search and manage their collections. Liu (2004) reveals that in China, research about metadata started in 1997, motivated by the first national digital library project. Similarly, Quam (2004) sees the use of metadata and controlled vocabularies in government portals as a revolution that can make searching and navigating more comfortable for users. From the above discussion, it is now clearer that information architecture and usability can be seen as two sides of the same coin; they both aim at meeting the users' needs. Therefore, based on the above discussion and for the purpose of the study, information architecture is defined as a term that is used to describe steps and techniques that support information findability (within a website and through web-based search engines).

According to Morville (2005 p.4) findability is 'the degree to which a particular object is easy to discover or locate'. In general, searching and browsing are the basic two approaches used to locate information on the Internet (Batley, 2007). Section 3.2.2 discussed the use of metadata and controlled vocabularies as a back function to support findability in both searching and browsing on government websites. In searching, the search system is designed to search the metadata elements, which are in turn supported by controlled vocabularies for the subject's elements. In addition, an effective subject browsable category can be created to allow the users to follow links until they reach the specific information they need, as not all websites may need a search facility. On government websites it has been recommended that if the agency's website contains more than fifteen pages, the use of search facilities in government websites is needed (AGIMO, 2004d). The following figure shows the basic anatomy of a search system (Defense of Search, Semantic Studios, cited in Morville and Rosenfeld, 2006, p.150).
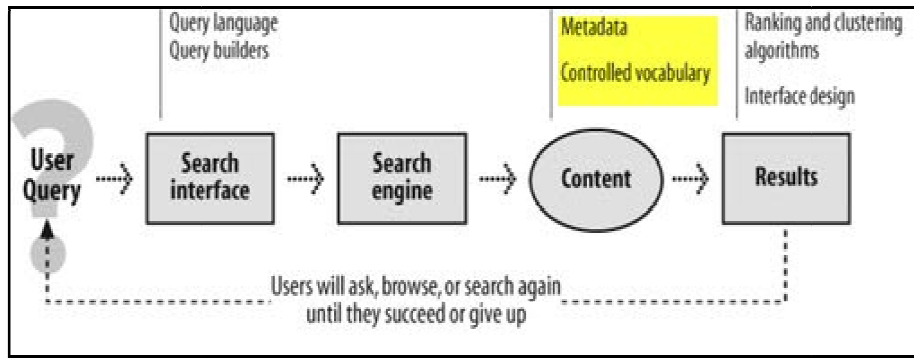
Figure 3-1:The basic anatomy of a search system

Increased findability through the interface design can be achieved through the use of effective navigation methods and organisation schemes, which Morville and Rosenfeld (2006) call an organisation system (section 3.2.3), and by the use of other supplemental findability tools (e.g., Frequently Asked Questions FAQs) (section 3.2.4). Web accessibility, which is addressed in this study as a component of technical website design is significant when addressing findability (section 3.2.5). In addition, the availability of content is another element that need to be considered not only for increasing findability but also to satisfy the government websites users (section 3.2.6). Interestingly, these components are seen a matter to increase information findability through web-based search, which is now could be the first place that Internet users turn to when searching for government information and services. For example, according to AGIMO ([no date]) only 15% of Australian eGovernment users access government websites by typing the URL of the site and 4% by following links from other websites. Similarly, in the UK about 48% of the Direct.gov visitors come from search engine websites (Alpha.gov, 2011). This is because these search engines provide tools such as query builders and spell checking. They also allow specific domain searches, and some countries have taken advantage of this feature. For example, the domain www.newzealand.govt.nz is driven by the Google search engine service. (Chau et al., 2007; Batley, 2007; Hwei and Smeltzer, 2000; Dawson and Hamilton, 2006; the New Zealand Government Portal, 2011, and AGIMO, 2004d). For example, 200 elements are used to decide on how important a website is, including the quality of the content, website structure and linking coming from other websites (Google, 2010). Hagans (2005) sees the accessibility of a website is a

matter in SEO; his opinion is to consider search engines as a user of the website. The only things that is not addressed in these components in order to increase findability through web search engines is the use of HTML title tag effectively as it the only HTML tag used by most of the search engines (Dawson and Hamilton, 2006).

3.2.2 Metadata

Popular definitions of metadata used in the literature are 'data about data' or 'information about information' (Robertson, 2008; Tambouris and Tarabanis, 2004 and Liu, 2001). More specifically, metadata is 'data about other data or objectives used to describe digitized and non-digitized resources located in a distributed system in a network environment' (Haynes, 2004, p.8). It is a new term representing an old concept that dates back to the 1960s, when the Machine Readable Cataloguing (MARC) was used for bibliographic records. At first, there was attempts to use library's cataloguing standard (MARC and Anglo-American Cataloguing Rules AACR2) to catalogue Internet resources, such as Building a Catalogue of Internet Resources projects introduced by Online Computer Library Center (OCLC) in 1994; however, due to the fact that the nature of websites, the use of traditional library tools is inefficient as creating records for electronic resources located in the Internet needs time and skilled staff taking into consideration the fast growth of Internet resources. Therefore, the motivation for introducing metadata was to organise electronic resources on the Internet by making it easy for creators to describe their work in such a way that it would be easily discovered by Internet users. This was a move away from the complex procedure of MARC and the detailed rules of Anglo-American Cataloguing Rules (AACR2) to a simple way of describing electronic resources. Several other metadata standards have been developed, for example, IEEE-Learning Object Metadata (LOM), a standard that was developed mainly to be used in education domain (Al-Khalifa and Davis, 2005; Nair and Jeevan, 2004; Strutt, 1997; EL-Sherbini and Klim, 2004; Fisher, 2004 and Mathes, 2004).

In the eGovernment domain, metadata is recognized as significant in building the government collection, as well as in helping users locate and retrieve government information and services more easily (Tambouris et al., 2007; Office of the e-Envoy,

2001; Quam, 2004 and AGIMO, 2004c). Moreover, the Dublin Core Initiative (DCI), which is the outcome of a 1995 joint workshop held in Dublin, USA by the Online Computer Library Center (OCLC) and the National Center of Supercomputing Applications (NCSA) is one of the most-widely used metadata standards in the area of eGovernment. Subsequently, there are many nationwide eGovernment metadata standards based simply on Dublin Core (DC), standards such as those in the UK, Australia, New Zealand, Canada, Ireland, France, Finland, Denmark, and the Netherlands. Moreover, a DC survey shows that most countries that have not adopted DC are in the process of establishing a nationwide standard based on ISO 15836:2003. (Dublin Core, [no date] and Sugimoto and Rollitt, 2005). Simple DC proposes a set of fifteen elements, which are shown in the table below.

Table 3-2: Simple DC metadata elements

Element	Definition
Title	The name given to the resource.
Subject	The topic of the content of the resource.
Description	An account of the content of the resource.
Type	The nature or genre of the content of the resource.
Source	A reference to a resource from which the present resource is derived.
Relation	A reference to a related resource.
Coverage	The extent or scope of the content of the resource.
Creator	An entity primarily responsible for making the content of the resource.
Publisher	The entity responsible for making the resource available.
Contributor	An entity responsible for contributing to the content of the resource.
Rights	Information about rights held in and over the resource.
Date	Date associated with an event in the cycle of the resource.
Format	The physical or digital manifestation of the resource.
Identifier	An unambiguous reference to the resource within a given context.
Language	Language(s) of the intellectual content of the resource

As mentioned previously, a number of nationwide eGovernment metadata standards (See Figure 3.2 and 3.3) were developed based on simple DC to be used across the public information system. For example, the UK eGovernment Metadata Standard (eGMS) was developed in 2001 to make government information easy to find and use as well as to

develop electronic records management with an additional six elements. In 2003, version 2.0 of the standard was published with an additional four elements, making a total of 25 elements, some of which are mandatory, conditional, recommended, and optional to use.

In the 2003 version, the only changes were refining the elements and including an encoding scheme for the metadata's elements (Coles, 2003; Powell, 2000; Cumming, 2001; Cabinet Office, 2006 and Cabinet Office, 2001). Similarly, Australian Government Locator Services (AGLS) and New Zealand Government Locator Services (NZGLS) were based on simple DC with an additional four elements to improve the usability, accessibility, and interoperability of government information and services through the provision of standardized web-based resource description (Wilson, 2002; Booth, 2002; Barham, 2002; NZSSC, 2005 and NAA, 2006).

In Arabic countries, although several electronic projects have been introduced in Arabic countries, particularly electronic government initiatives, not enough concern has been given to the development of nationwide eGovernment metadata standards for government resource description. Metadata has not become a major topic of interest within the Arabic literature. Most of the literature that is available merely serves as an introduction to metadata, discusses the benefits of using metadata or recounts the history of metadata with a focus on DC standards. (Ahmad, 2010; Alshowaish 2005; Alarabi, 2009; Zain, 2005). Additionally, the usage of metadata in Arabic websites is very low. For example, Mohamed (2006) examined 300 Arabic websites. Among these, only 1.4% had implemented metadata standards.

3.2.2.1 Metadata development

By reviewing the available literature, especially those publications published by government offices that are in charge of the development of eGovernment metadata standards in several countries, it is clear that the development of nationwide metadata went through more than one phase. It starts with the establishment of a metadata working group (MWG). The working group is designed in a way that encourages experts, private sector entities, government agencies and users to work together to determine the aims of

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developing nationwide metadata that will be used across government agencies. This is exactly what was done in New Zealand; a group of 32 members, comprised of IT specialists, librarians, DC expert and mangers of government agencies were involved (Booth, 2002). The outcome of this phase will be a metadata process plan that identifies the aim of the metadata (e.g., resource discovery, sharing).

The next phase requires further studies in order to identify the requirements of government resource providers as well as user needs to determine what metadata elements are needed. Rothenberg et al. (2005), in their comprehensive study on designing a National Standard for Discovery Metadata for the Dutch government, stated that all related issues had been addressed, such as other projects related to metadata on the European level, the national level, the kind of government information and services already provided on Dutch government websites, encoding schemes used, readiness of government agencies and users' needs (e.g., citizens and businesses).

Evaluating existing international and national metadata is the third phase, as there are several metadata standards available. Metadata can, therefore, be built based entirely on international standards, as was done with the Ireland Government Metadata Standard (IGMS) without any additional elements, or with additional element, such as UK and Australia Government Locater Services. Also, it can be based on both national and international metadata standards, as what was done in New Zealand, where NZGLS is based their metadata system on DC and Australia Government Locater Services, also, new elements can be created that meet the countries needs.

Finally, the last phase is to define each metadata's element and identify the qualifiers for each element including the element refinements and encoding schemes to be used with each element. Also, at this point the condition of the elements (e.g., mandatory, conditional, recommended, and optional) must be determined. Additionally, which pages should have metadata must be decided. For example, In Australia, the government agency's website home page, pages that provide online service and government

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publications should have a metadata (Tambouris, 2007; CEN, 2003; Rothenberg et al., 2005 and AGIMO, 2004c).

3.2.2.2 Controlled vocabularies

In the eGovernment area, the development of controlled vocabularies to be used within metadata elements is essential, especially since government websites get bigger and bigger in terms of their collection. Also, as addressed earlier, making government information and services easy to find without much knowledge on who is the provider of information and services is fundamental, and in order to achieve this aim, metadata should be supported by the use of controlled vocabularies.

A controlled vocabulary is a simple list that can take several forms; it can be synonym rings, taxonomies, authority files and thesaurus. The choice of what sort of controlled vocabularies to be used in a website is usually made based on several considerations, among these being the size of the website and the size of information resources. Also, the aim of using controlled vocabularies (e.g., searching, browsing), end users' needs and the availability of skilled staff who will do the job of tagging (Morville and Rosenfeld, 2006; Garshol, 2004 and Warner, 2004). According to Clarke (2004), in the UK, the first option was to develop a pan-government thesaurus to be used for indexing and tagging government resources; however, as using a thesaurus requires skilled and trained staff, the decision was changed to use a simple browsing tool mainly taxonomy instead of thesaurus.

Taxonomy refers to a subject tree that allows the users of a website to follow links until reaching the level that contains the information they are looking for (Batley, 2007; Saeed and Chaudhry 2002; Gilchrist 2004 and Woods 2004). Basically a taxonomy has top levels and sub-levels, and theoretically there is no limit to the number of levels (Woods, 2004). The traditional or sometimes called classic taxonomy has been described by Garshol (2004) as 'a subject-based classification that arranges the terms in the controlled vocabulary into a hierarchy without doing anything further'. As reported in the taxonomy literature, several objectives can be achieved by using a classic taxonomy, including

making browsing easier, improving search result, organising the content of the website providing keywords to be used with metadata's subject element and knowledge sharing 'interoperability'. (Ungar, 2004; Woods, 2004; Saeed and Chaudhry, 2002 and Gilchrist, 2004).

The general rules of building a taxonomy that have been addressed in the literature discuss several issues, such as the number of levels. For example, Woods (2004, p.13) points out that with too many levels 'the user becomes lost navigating down to the bottom level.' He furthermore identifies that: 'A narrow taxonomy also forces users to make a navigation decision with too little information and to have to work through too many layers before knowing if they are following the right path'. According to the same source 'the general consensus is that breadth taxonomy is better than depth as far as usability is concerned'. This view is shared by Batley (2007, p.84), who argues that 'the depth of the hierarchy should not exceed five levels'.

Moreover, the use of terminology should be understandable for both users and the member staff of the organisation. Furthermore, identify the approaches that will be used to build the taxonomy, such as top – down, down – top and middle out. The middle out approach has been recommended by Batley (2007) and Gilchrist (2003) as the best approach to developing a taxonomy, as it allows control over the number of levels that need to be created. The general sources that can be used to identify the topic, as well as to break it down, can be subject lists, related Internet websites, thesauri, taxonomies and classifications schemas. For example, several studies have been written that address the use of Dewey Decimal Classification (DDC), thesauri and taxonomies as means for building a taxonomy. For example, Saeed and Chaudhry (2002), in their paper titled 'Using Dewey Decimal Classification for building taxonomies for knowledge organisation', developed a taxonomy for computer science using the three main classes of computer science of DDC: 004 Computer Science, 005 Computer Programming and 006 Special Computer Methods and the IEEE web thesauri. Similarly, Wang et al., (2007) used DDC, three taxonomies and three thesauri to build a taxonomy for an information studies domain. The eGovernment domain uses almost the same process used to develop

a taxonomy for library digital collection or a websites for a specific field of knowledge. However, since a government taxonomy will be used to describe specific kinds of information resources, chiefly government information and services, it is expected to be less complex and easier to use. This is exactly what has been done in the UK when they planned to develop a controlled vocabulary to be used to describe government information and services as addressed earlier.

The UK stands as an ever-ready example. Ever since 2000, the development of controlled vocabularies to be used in tagging metadata's subject element in the UK was carried out by the metadata working group by developing the Government Category List (GCL). Completed in 2002, it is a taxonomy of about 375 preferred terms. Also, there is the Local Government Category List (LGCL), developed by the Local Authority Websites (LAWs) UK National Project in 2003. Finally, the Integrated Public Sector Vocabulary (IPSV) was formed from these three controlled vocabularies in 2005 with 3.000 preferred terms and 4.000 non-preferred terms, it has become mandatory that all government agencies should use at least one term of IPSV with information resources that are shared with citizens, businesses, and other public sectors (Cabinet Office, 2006; LAWs, 2004; Cabinet Office, 2009 and Cabinet Office, 2002).

The aim of developing these controlled vocabularies is to make it easier for users to find government information and services, as well as easier for managing government resources. Figure 3.4 shows the top level of GCL, LGCL and IPSV. In Australia, New Zealand, Ireland and other countries, controlled vocabularies have been similarly been developed to be used when describing government information and services.

UK

Creator	
Subject	*IPS
Title	
Date	W3C Format
Accessibility	
Identifier	Mandatory if applicable
publisher	
Coverage	
Language	ISO 639-1

Aggregation	Type
Audience	Rights
Contributor	Status
Description	Relation
Digital Sig	Preservation
Disposal	
Format	
Location	
Mandate	

Mandatory

Conditional

Recommended

Option

Ireland

Creator	
Subject	*PST
Title	
Identifier	
publisher	
Date	ISO 8601
Type	
Description	*IPSDT
Source	
Language	ISO 639-1
Contributor	
Format	
Relation	
Right	
Coverage	

Figure 3-2: Summery of UK, Irish and NZ Metadata

New Zealand

Creator	
Function	*FONZ
Subject	*SONZ
Title	
Type	
Availability	
Identifier	
publisher	
Audience	
Date	W3C Format
Mandate	
Language	ISO 639-1
Contributor	
Format	
Coverage	
Relation	
Source	
Right	

Mandatory: when adding an agency, service, or offline document. Optional: when adding an online document.

Mandatory: for online resources, otherwise recommended when available.

Mandatory: for document resources

* IPSV: Integrated Public Sector Vocabulary.
* FONZ: Thesaurus and Function of New Zealand.
* SONZ: Subject of New Zealand.
*PST: Public Services Thesaurus.
*IPSDT: Irish Public Service Document Type.

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<meta name="DC.subject" xml:lang="en" scheme="eGMS.IPSV" content="Public administration" />
<meta name="eGMS.identifier.systemID" content="DG_044214" />
<meta name="DCTERMS.created" scheme="DCTERMS.W3CDTF" content="2006-06-05" />
<meta name="DC.language" scheme="DCTERMS.ISO639-1" content="en" />
<meta name="DC.description" content="Directgov - the official UK government website for citizens" />
<meta name="DC.title" content="English Home Page" />
<meta name="xWebsiteSection" content="en:75" />
<meta name="DC.type" scheme="Directgov.ContentType" content="Navigation" />
<meta name="DC.creator" content="Central team" />
<meta name="DC.publisher" content="Directgov, Hercules House, 6 Hercules Road, London, SE1 7DU.
helpdesk@directgov.gsi.gov.uk" />
```



```
<meta name="DC.title" lang="en" content="New Zealand Government Portal Home" />
<meta name="DC.subject" lang="en" content="New Zealand Government Portal" />
<meta name="DC.description" lang="en" content="A directory of New Zealand government agencies and a search
engine of New Zealand government websites; including information on immigration, tourism, passports, jobs and
education. " />
<meta name="DC.publisher" lang="en" content="New Zealand Department of Internal Affairs" />
<meta name="DC.contributor" lang="en" content="New Zealand Department of Internal Affairs" />
<meta name="DC.source" lang="en" content="http://newzealand.govt.nz/home" />
<meta name="DC.language" lang="en" content="en-NZ" />
<meta name="DC.coverage" lang="en" content="New Zealand" />
<meta name="DC.rights" lang="en" content="http://newzealand.govt.nz/about/copyright" />
```

Figure 3-3: UK and New Zealand government portal metadata

```
LGCL Top Level

    • Business
    • Community and living
    • Council, government and
      democracy
    • Education and learning
    • Environment
    • Health and social care
    • Housing
    • Jobs and careers
    • Legal services
    • Leisure and culture
    • Policing and public safety
    • Social issues
    • Transport and streets
```

```
GCL Top Level

    • Agriculture, environment and
      natural resources
    • Arts, recreation and travel
    • Business and industry
    • Crime, law, justice and rights
    • Economics and finance
    • Education, careers and
      employment
    • Government, politics and public
      administration
    • Health, nutrition and care
    • Information and communication
    • International affairs and defence
    • People, communities and living
    • Science, technology and
      innovation
```

```
IPSV Top Level

    • Business and industry
    • Economics and finance
    • Education and skills
    • Employment, jobs and careers
    • Environment
    • Government, politics and
      public administration
    • Health, well-being and care
    • Housing
    • Information and
      communication
    • International affairs and
      defence
    • Leisure and culture
    • Life in the community
    • People and organisations
    • Public order, justice and rights
    • Science, technology and
      innovation
    • Transport and infrastructure
```

Figure 3-4: Top level of GCL, LGCL and IPSV

3.2.3 Organisation system

Navigation refers to three fundamental questions addressed by Batley (2007) Where am I? where have I been? Where can I go next? Because government websites in general are large in terms of the availability of content, the issue of navigation becomes more significant. There are several recommendations on how navigation system should be designed. For example, in the USA and Australia it has been recommended that global navigation which is usually located at the top of the page should appear on each page, including the homepage (Queensland Government, 2011and Usability.gov). For local navigation, which is usually located on the left of the website as the way to explore the website content, several recommendation have been proposed to be considered in government websites. For example, the use of text instead of using graphics and images, as graphics need more time to be loaded. Also, users should not have to scroll down to view the navigation bar. This can be done by placing secondary and tertiary menus together. Also, the use of clear navigation labels (AGIMO, 2004e and Usability.gov)

On the other hand, organisation schemes refer to how the content of a website is grouped with the aim to improve findability (Morville and Rosenfeld, 2006; Batley, 2007 and Ungar, 2004). It is clear that the majority of government websites use some kind of organisation scheme, particularly a scheme determined by audience, so that the users of the website can identify which group they belong to (figure 3.5). Additionally, organisation by topic, audience and task is largely used, such as those of Australia, the UK, and New Zealand portals, which attempted to increase findability by organising government information and services. For example, a subject tree is applied within the section 'Do it online', which is used with Directgov to direct users of available electronic services. Another example from the Australian government portal is the label 'I am …', which identifies twenty expected users of their portal and provide links to related information.
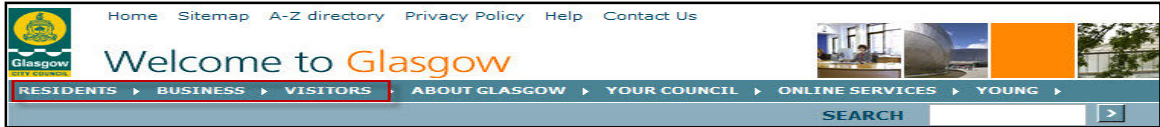
Figure 3-5: Glasgow City Council's website

Moreover, an alternative navigation tool is the sitemap, which is a single page showing the structure of the website. Users can get an overview of the site structure by looking at the sitemap page. Donna et al., (2008), in their two-round study on sitemap usability, found that an increasing number of websites recently include a sitemap. Moreover, after the first round in 2001, a great deal of attention was paid to sitemap design in order to improve sitemap usability. Also, they found that, in general, users do not use sitemaps much, but that sitemaps help some users, that sitemaps help search engines to index the website and, that, probably most importantly, sitemaps are inexpensive to design. Also, creation of an A to Z page is a significant aid in showing users the terms used within the website.

3.2.4 Supplemental findability tools

Because government websites and their users are unique, additional tools have to be used to supplement content findability in government websites. Frequently Asked Questions (FAQs) which is a list of common questions on a specific topic and their answers is a very useful component of government websites. Since government agencies generally receive a large number of questions every day, FAQ pages can help users find answers to their questions and thus reduces the amount of effort needed to answer users' questions. For example, in the UK, a FAQ page is one of the ten access key standards recommended by the Cabinet Office to be provided in UK government websites in order to build universal government websites (Cabinet Office, 2007). Rahel (2007) identified nine points that should be considered in order to develop a functional FAQ page. These points include analysing users' needs, writing effective questions and answers, and grouping questions by topic.

3.2.5 Web content accessibility

According to the World Wide Web Consortium W3C, accessibility means that all groups of people, including those with personal limitations such as visual disabilities, and hearing impairment, can use the web. Moreover, the web content should be accessed by all web-browsing devices. The issue of accessibility was a concern in several countries before the use of technology. The UK Disability Discrimination Act (DDA) outlined almost all issues related to the accessibility of disabled people to everyday activities. The DDA indicates that service providers have an obligation to make their services accessible, which in many cases requires only a minor change. Therefore, reducing the impact of personal limitation (disabilities) in using technology has been an ongoing topic for years in developed countries, and much effort has been made to reduce the information gap and to enable everyone to gain the full benefit of the Internet (Nielsen, 2000; Brewer, 2004; Al-Badi and Mayhew, 2009; Hong et al., 2008 and W3C, 1994).

The W3C has developed Web Content Accessibility Guidelines 1.0, which consists of 14 guidelines and 65 checkpoints grouped into three priorities to help web developers design accessible websites (W3C, 1999). A web content accessibility check can be done automatically thorough the use of available tools, such as a web-based accessibility checker or accessibility checker software; also, it can be done manually by accessibility experts or user's experience (Hassanzadeh and Navidi, 2009). The same resource identified both advantages and disadvantages of both methods, and the authors' expressed their belief that it is best to apply two approaches in order to address all accessibility issues, as using one methods will not guarantee a trustworthy accessibility evaluation. Another issue associated with the evaluation of accessibility is whether or not it is enough to merely evaluate the website's homepage when checking for accessibility' (Hackett and Parmanto, 2008)

For ethical and legal reasons, the issue of web content accessibility becomes more significant when we are addressing government websites. Because eGovernment is intended to reach every citizen, the design of government websites should reflect slogans such as 'eGovernment is for everyone'. In fact, eGovernment offers a great opportunity

for people with personal limitations to access the government and to benefit fully from technology. Many studies have been written to investigate government website accessibility and to identify the best practices in this area (Huang, 2002; Yan and Zaphiris, [no date]; Hanapi et al., 2010; Abanumy et al., 2005 and Lee et al., 2007). Also, those responsible for electronic government have developed several web accessibility guides in several countries. Friedman and Bryen (2007) see this as essential, and they state that 'individual countries need to enact their own standard or legislation because these legal regulations carry the force of the law rather than voluntary guidelines' (Friedman and Bryen, 2007, cite in Kuzma, 2009, p.3).

These guides may be classified as the best practice in government website design for accessibility. An example is the Guide for UK Government Websites, which was first published in 1999. Section 2.4 of the guide addresses accessibility issues that should be considered by government agencies when developing their websites in order to achieve equality. In the US, section 508 of the Rehabilitation Act outlines accessibility requirements for government websites.

However, despite efforts to improve government website accessibility, there is still a gap between reality and aspiration. In a comprehensive study on 1,687 government websites in 198 countries, West (2007) found that only 23% of the websites surveyed were entirely accessible. Yet, it was clear that the majority of accessible government websites were in developed countries, for example, UK 70%, Australia 73%, New Zealand 73%, US 54%, Singapore 47% , and the large percentage of inaccessible government websites applied to developing countries, for instance, only 3.4% government websites were accessible in the Arab countries.

3.2.6 Content availability

From several studies, Panopoulou et al. (2008, p.519) reveals that 'the content of a government website concept refers mainly to the completeness of information provided online, to relevancy, accuracy, reliability and usefulness of information, to frequent updating and currency of the provided information and to the consistency of information

and its clear formulation according to the audience'. As addressed in section 2.3, the first stage of the development of government websites is presence. In this stage the government agency creates its own website and posts valuable information for the website users, and in the eGovernment domain, web content has been used to measure the performance of government websites, along with other elements (Table 3.1). Therefore, it has been recommended that it should be planned carefully, considering all related issues. In fact, the topical users of government websites need enough information to make a decision or to start using available government eServices and without these information users may continue to use the traditional method to contact government agencies. For example, in Australia, the Australian Government Information Management Office (AGIMO) conducted a study on 'Australians' Use of and Satisfaction with eGovernment Services'. It was conducted three times, in 2004, 2005 and 2007, to identify the issues related to eGovernment use in Australia, and the issue of content availability was identified as reasons users of government websites dissatisfaction. The major issue regarding the availability and quality of government content is that they can be judged only by users. Hence, getting users' feedback is one method that can be used to ensure that the content has met the users need. For example, in Directgov website each section has a feedback facility asking users on how useful the information is (see figure 3.6).

Generally the literature on this area of content creation and development is rich and several recommendations have been proposed including keeping the text short and using plain language and considering writing content usability issues (e.g., the size and colour). In government websites, additional to the general recommendations on how to create a website content, several issues should be taken into consideration, among them is the need to make sure the content of the website is clear and does not conflict with other content on the website or with other government websites (GSA's Office of Citizen Services and Innovative Technologies 2011). Also, good content is important for SEO, so that the website will be ranked at or near the top of the Internet search result. According to SEOMOZ (2010) 'developing great content may be the most oft-repeated suggestion in the SEO world'. It is significant for website developers to understand how Internet search engines work in order to develop a website that follows SEO recommendations.

Figure 3-6: directgov's feedback facility

The following table is a summary compiled from government website design guidelines from several publications from the UK, US, and Australia. These publications include: the ACT Government Website Guidelines published by the Office of Information Technology and Multimedia; Website Navigation; Information Architecture and Implementing an Effective Website Search by Australian Government Information Management Office in 2005; www.usability.com, which is a guide for developing usable & useful US government websites; Guidelines for UK government websites: Framework for local government (2003); Quality Framework for UK Government Website Design: Usability issues for government websites (2003); and, Guidelines for UK Government websites: Illustrated handbook for Web management teams (2004).

Table 3-3: A summary compiled from government website design guidelines

Category		Guideline	UK	US	AU	Notes
Accessibility	Content accessibility	- WCAG A.	✓		✓	- By 2014, Australian government websites have to meet the WCAG AA.
		- Section 508.		✓		
	Use of other languages	- As required (e.g., bilingual website, a single PDF and selected WebPages).	✓	✓	✓	- In the UK, Welsh and English languages must be treated on a basis of equality.
	Browser compatibility	- Government website must be programmed to work with all browsers.	✓	✓	✓	

	Text based version website	- Provide a text based version website	✔	✔	✔	
	Content written style	- Use an appropriate writing style for the web (e.g., plain language and Scannable).	✔	✔	✔	- In the UK, web text should be at last 50% shorter than the equivalent text in print.
Privacy	Privacy Statement	- Each website must have a visible privacy statement.	✔	✔	✔	
Metadata & CVs	Metadata	- Metadata should be used in government websites for multiple purposes, including resource discovery.	✔	✔	✔	- In Australia, nine types of pages should have metadata, including the homepage and pages containing online services and applications forms.
	CVs	- Develop controlled vocabulary to be used to describe online government resources.	✔	✔	✔	
Homepage	Homepage design	- Design the homepage to fit within a single screen		✔	✔	
		- Size of the homepage should be minimal.	✔	✔	✔	- In Australia, the total size of the homepage should not exceed 70kb.
		Include primary navigation options (e.g., search box, sitemap, A to Z and FAQs).	✔	✔	✔	- In the US sitemap must be available for a web that have many pages
Navigation bar	Navigation bar design	- Text navigation better than graphic navigation.		✔		
		- Users should not have to scroll down to view navigation options.	✔	✔		
		- Use clear and understandable labels.	✔	✔	✔	
		- Use a hierarchical rather than flat structure for directories	✔			
Se	Search system	- Government website should have search system.	✔	✔	✔	- In Australia, if the site is more than fifteen

						pages it should have a search system. In the UK it is recommended for any government website, especially large websites.
		Advanced searching should be available	✔		✔	

3.3 Summary

It is clear that although the history of eGovernment is quite short, more attention has been given to eGovernment initiatives globally, and this can be seen clearly in the available literature. This could be due to the fact that eGovernment is more than using technology. eGovernment is about social, political and economic reform, which makes eGovernment a unique phenomenon. Moreover, it is clear that there is a huge difference between developed and developing countries in terms of the availability of human and financial resources, legislation, and degree of the country's e-readiness. Developing countries are trying to catch up with developed countries in terms of using technology to deliver better government services, but technology is not a magic tool that can solve all government issues, and more work should be done to ensure the success of eGovernment initiatives in both areas.

Saudi Arabia Background

The aim of this chapter is to provide a general background of Saudi Arabia in the areas of geography, population, politics, culture, and economy. An emphasis on the ICT sector status in the country is presented. This in-depth description of ICT is based on government publications, national and international organisation publications, and relevant literature so as to provide a clear picture not only of Saudi Arabia's ICT status but also the electronic initiatives that have been introduced in Saudi Arabia over the last few years.

4.1 Overview of Saudi Arabia

Saudi Arabia occupies an area of 2.250.000 square kilometers, almost 80% of the Arabian Peninsula (MOFA, 2006a). It shares borders with the Republics of Yemen and of Oman to the south, the United Arab Emirates, Qatar and the Arab Gulf to the west, Jordan, Iraq and Kuwait to the north, and the Red Sea to the east. Saudi Arabia, together with United Arab Emirates, Oman, Qatar, the Kingdom of Bahrain, and Kuwait comprise the Gulf Cooperation Council (GCC), which was formed in 1981. The vision statement of the GCC is '… to effect coordination, integration and inter-connection between Member States in all fields, strengthening ties between their peoples, formulating similar regulations in various fields such as economy, finance, trade, customs, tourism, legislation, administration, as well as fostering scientific and technical progress in industry, mining, agriculture, water and animal resources, establishing scientific research centres, setting up joint ventures, and encouraging cooperation of the private sector' (CCG, 2005). The following sections describe in more detail the geography, population, demographics, political system, and economy of Saudi Arabia.

4.1.1 Geography and Regions

Saudi Arabia is divided into thirteen regions and each administrative region is divided into several governorates. The governorates are divided into municipalities that are administratively related to the governorates of 'Emarah', with Riyadh as its capital city. However, these are merely the administration divisions, as the government is run at a national level (MOFA, 2006a). Figure 4.1 shows the Saudi Arabia's regions and governorates.

Figure 4-1: Saudi Arabia's regions

Source: http://www.saudiembassy.or.jp/DiscoverSA/administrativeregions.htm. Last access 12 November 2010.

4.1.2 Population and Demographics

According to the newest census issued by the Central Department of Statistics and Information in October 2010, Saudi Arabia had a population of 27.136.977 million with a growth rate of 2.1%, a birth rate of 29.1/1000, an infant mortality rate of 12.4/1000, and a life expectancy of 75.9 years. 31% of the population are foreigners, and the population

density per square mile is 33. The following figure shows the Saudi national population, grouped by age class according to the 2008 census (CDOSI, 2008).
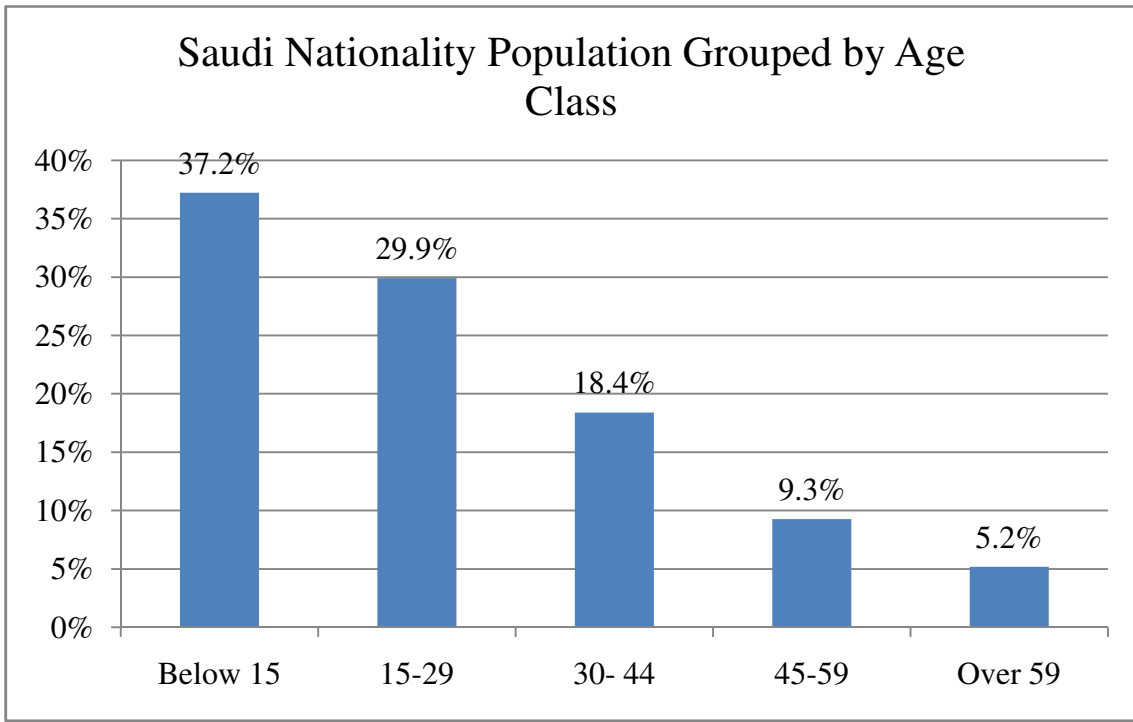
Figure 4-2: Population Grouped by Age (2008)

According to the available raw data in the 2008 statistical yearbook published by the Central Department of Statistics and Information 2008, the illiteracy rate among the Saudi population was 13.7% in 2008 in which 73% were female. Moreover, it was clear that the percentage of illiteracy varies from region to region; for example, while in some regions the percentage was as high as 23.5%, Riyadh scored the lowest with a percentage of 9.9%. The issue of illiteracy is not unique to Saudi Arabia alone, but is also shared by all Arab countries as addressed in section 3.1.2. Figure 4.3 and 4.4 show the Saudi national population aged 10 years and over by education level and the illiteracy percentages in the Saudi Arabia's thirteen regions.
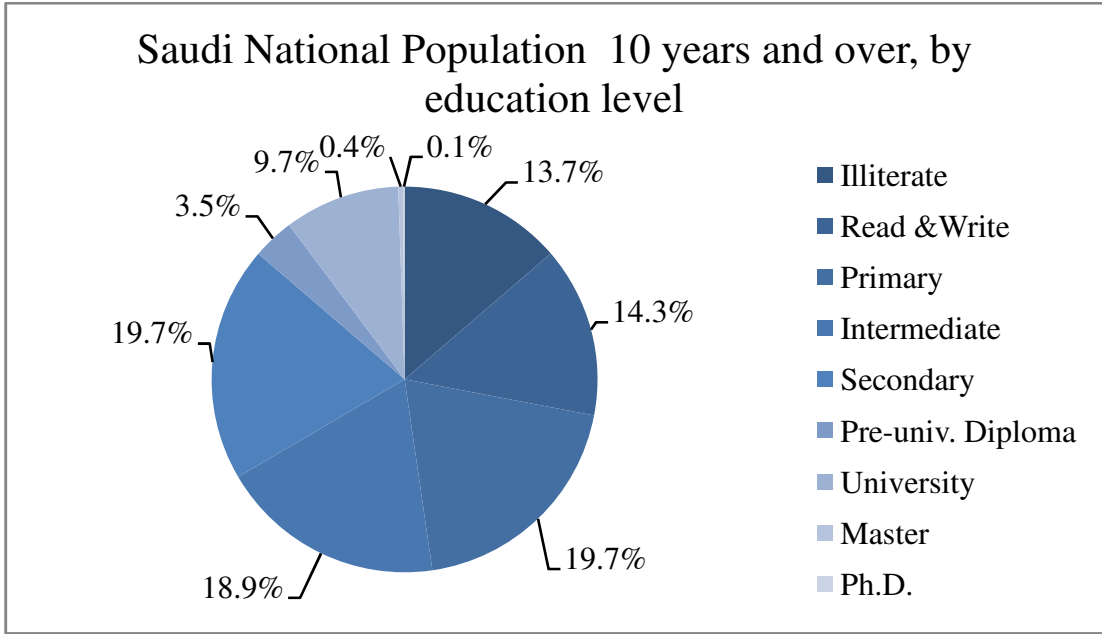
Figure 4-3: Saudi National Population 15 years and over, by education level (2008)
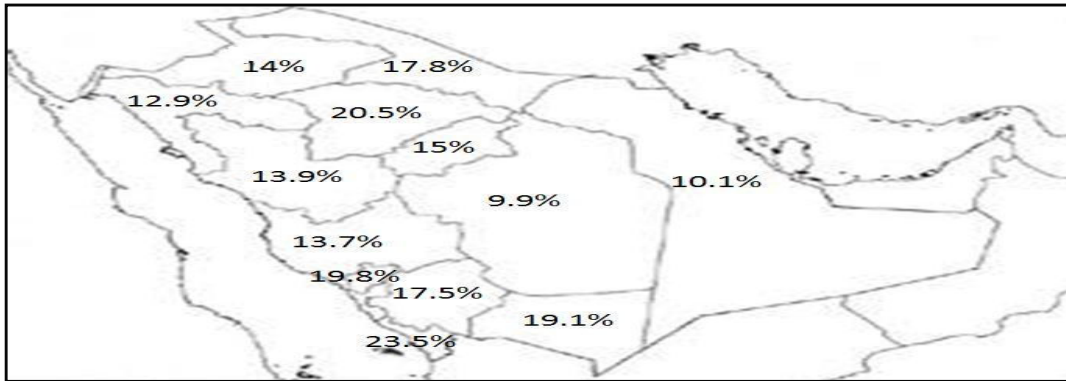
Figure 4-4: Percentages of illiteracy in the Saudi's thirteen regions

4.1.3 Political System

The political system of the Kingdom of Saudi Arabia is a hereditary monarchy based on Islamic law and it has no political parties. The head of government is now King Abdullah Bin Abdulaziz Al Saud, who is also the prime minister and the commander in chief of the military. The Crown Prince is second in line to the throne and is appointed by the king from the royal family. The government of Saudi Arabia has twenty-three ministries,

which all have their own websites with differing degree of maturity. Cabinet ministries and government officials are selected by the king to assist in the management of the government for four-year terms. The king also has the right to appoint the members of the Consultative Council, which is called Majlis Al-Shura. It consists of 150 members. The Consultative Council has an advisory function to create new laws and amend existing ones. In 1993, the administrative regional division of the Kingdom of Saudi Arabia was made, dividing the Kingdom of Saudi Arabia into thirteen regions, with a governor (Muhafed) and deputy governor in each. Each region has its own council that advises the governor and deals with the development of the region. In 2005, the first municipal election was introduced, which is a part of the Saudi government's response to the progressive movement calling for political reform. All Saudi males over the age of 21 years were invited to participate and vote for half of the members of their municipal council (MOFA, 2006b).

4.1.4 Economy

General Information:

- Saudi Arabia's currency is the Rial (1 Rial is equivalent to about $0.266656).
- Saudi Arabia's budget for the year 2009/2010 is around $146 billion.
- As of 2007, 9.21 million barrels of petroleum are produced daily (Saudi Arabian Monetary Agency, 2010).

Saudi Arabia is one of the world's 25 largest economies, and it is the largest in the Middle East. Furthermore, it ranks fourth in the world for fiscal freedom and seventh for having the freest labour market systems in the world (Saudi Arabia General Investment Authority, 2010). The Saudi economy relies heavily on petroleum and natural gas, as it is the world's largest producer and exporter of oil (9.21 million barrels per day).

However, the Saudi government realises the importance of other sectors for the country's economic development, and the long-term goal of the government is to reduce dependency on the oil industry. This is seen clearly in the five-year development plan that was drafted in the late 1960s at the suggestion of International Monetary Fund (IMF)

advisers. The first plan became effective from 1970 to 1975 (Metz, 1992). The objective of the five-year planning system is to determine the direction of development plans in the country over five years, in accordance with the country's economic needs at that time. Throughout the last seven five-year plans, the government has been working to build the required infrastructure for non-oil industry. For example, the ICT sector has been given a high priority by the government, in particular during the sixth five-year plan (1995-2000) (MOEP, 2000). The diversification of the economy has achieved remarkable success and it has increased contributions to the gross domestic product (GDP). Saudi Arabia has been a member of the World Trade Organization (WTO) since December 2005, which gives Saudi products greater access to global markets (MOCI, 2005).

4.1.5 Culture

Without any doubt culture plays a major role in many aspects of individual's live and this become more significant within cultures that are based on religion, and this is exactly the case of Saudi Arabia where the culture of Saudi Arabia is based on Islamic beliefs and values which greatly impact several aspects of Saudi lifestyle. For example, education and workforce systems are operated on the basis of the separation of males and females. Regarding the use of technology, although Islam does not forbid the use of technology or the pursuit of reaping benefits from modern innovations, there are still some fairly widespread misunderstandings regarding the use of technology. Even twelve years after the Internet was introduced in Saudi Arabia, some people still considered the Internet as a bad thing for the society (ASBAR, 2004). The second characteristic of Saudi culture is that the traditional family still exists as the societal norm in Saudi Arabia, and social relationships and family ties play a significant role in everyday life (Alshehry et al., 2006).

These two things are the foundations of the structure of Saudi society. However, in recent years, especially after 9/11attack on the World Trade Center in America, where the majority of the terrorists involved were from Saudi Arabia, the international media become more interested in learning more about Saudi Arabia, and as a result of this unprecedented talk about Saudi Arabia, several issues have arose and have been

discussed internationally. This has accelerated some changes in several aspects of Saudi culture. For example, before 2004, women were not able to get identification cards for religious reasons, primarily because of the requirement of having a picture on the ID. Also, in 2009 a new university was created, King Abdullah University of Science and Technology, where male and female students study together (KAUST, 2009). However, there is currently a lively discussion about education, workforce systems and the right for women to operate motor vehicles, as women are not currently allowed to drive in Saudi Arabia.

4.2 ICT Sector in Saudi Arabia

Although Saudi Arabia has taken into account ICT since the institution of the five-year development plans in 1970, the real start to reform in this sector was during the seventh five-year plan (1995-2000). In particular, ICT reform began in 1998, when the government set the main goal to bridge the technological gap between Saudi Arabia and the developed world by 2020 (WSIS, 2003). Since then, the Saudi government has pursued the goals of the development plans and strategies and invested in the ICT sector to the greatest extent possible, given the financial and human resources available. The United Nations Economic and Social Commission for Western Asia (WSIS) Report, National Profile for the Information Society in Saudi Arabia, described Saudi's ICT policies and clear strategies, and the government's understanding of the role that ICT can play in the country's economic development (WSIS, 2003).

> *'The seventh development plan in Saudi Arabia includes a clear vision of the role of information technology in the economy. The plan envisages, among other things, a national plan for the use of information technology (IT) for scientific and economic development. The IT plan would include programmes aimed at facilitating the availability of and easy access to the most recent information, determining the roles of data producing and data collection entities, information integration, establishing information systems within the national information*

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network, and making information technology and information services accessible

to all segments of the society' (p 4).

The following figure shows the timeline of the major ICT developments and telecom sector reform since 1998 until 2005 as the major development was in this period.
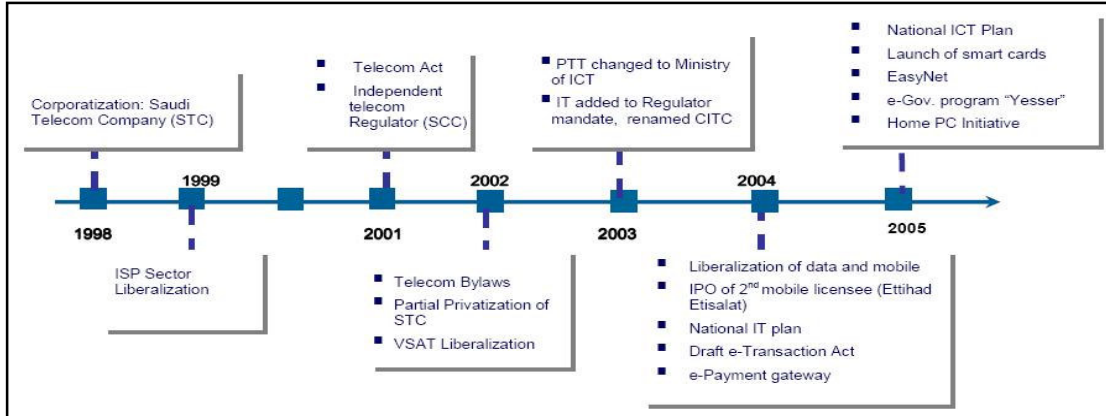
Figure 4-5: Timeline of major ICT developments and telecom sector reform

Sources: http://www.yesser.gov.sa/documents/ksa-to-information-society.pdf.

In early 1998, the government transformed the ICT utility and its components, as well as its technical and administrative facilities into a joint stock company. Instead of having a Ministry of Post, Telegraph and Telephone (PTT), these functions were to be operated on a commercial basis. In parallel, the Saudi Telecom Company (STC) was established, which was owned by the government until 2002, and in the early in 2003 the Saudi Cabinet issued a decree to convert it from a purely government company into a public one by divesting a 30% stake in the company to the public (CITC, 2005a).

Between 2001 and 2004, several resolutions were issued that supported the reform of the sector. The first was the new national ICT plan, prepared by the Saudi IT Association in 2001 and this was before the creation of the Ministry of Communication and Information Technology. Also, the new Telecommunication Act of 2001 was approved, as well as the establishment of the Saudi Communication and Information Technology Commission (CITC) as a regulator for communication and technology sectors in the country. Moreover, the commission was put in charge of facilitating the gradual liberalisation of the telecommunication sector that had been enacted earlier in 2001 (ESCWA, 2003). In

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2003, the Ministry of Communication and Information Technology (MCIT) was created to replace the PTT and to formulate and develop new ICT policies and projects. Partial liberalization started in 2004 when the ICT market was opened for competition. Also in 2004, the MCIT becomes responsible for the Saudi ICT plan, which was approved in 2007 as the country ICT vision and strategy. Until 2004, the Saudi Telecom Company (STC) had a monopoly on all telecom services provided in the country except for Internet services which was liberated in 1999. In 2004, the liberalisation of other telecommunications services started by opening the market for competition and the second services liberated was mobile phone service. 2008 was the year that the government of Saudi Arabia called for the liberalisation of all ICT services (CITC, 2005a).

4.2.1 2007 NCITP Vision and Strategy

Clear indications show that the government of Saudi Arabia has worked hard to develop the ICT sector in the country since the 1990s. As a result of this ceaseless work, the Saudi national ICT plan was approved by the decision of the Council of Ministers in 2007 to guide the Kingdom's continued transformation into a knowledge-based society and economy.

This plan was prepared firstly by the Saudi IT Association in 2001, and this was before the creation of the Ministry of Communication Information and Technology in 2003, so the ministry had to revise the first draft of the plan, and added to it the aspects related to communications. It aimed to develop a long-term vision (general strategy) for the development of the ICT sector in Saudi Arabia in more than one phases. The first NCITP Five-Year Plan (2005-2009) consisted of seven general objectives and twenty-six specific objectives, sixty-two policies and ninety-eight projects to achieving these objectives. The following table is extracted from the National Communications and Information Technology Plan: the vision towards the information society, which shows the general NCITP Five-Year Plan (2005-2009) objectives and specific objectives (MICT, 2007a).

Table 4-1: General NCITP objectives and specific objectives

First General Objective: Raising the productivity of all sectors, dissemination of governmental, commercial, social and health services electronically for all people, encouraging teleworking through best possible utilization of ICT.

Specific Objectives:

1. Securing the financial and human resource support for ICT projects in the governmental sector.
2. Apply e-Government in the Government Sector.
3. Application of quality concepts and techniques and the development of capabilities to realize the best possible benefits from ICT.
4. Dissemination of e-Business applications.
5. Employing ICT to Build new patterns of health services and work.

Second General Objective: Regulate the ICT sector in a form that guarantees impartiality, stimulation and attracts investments.

Specific Objectives:

1. Issuing licenses for providing ICT services.
2. Applying appropriate regulatory controls to guarantee efficient, fair competition in providing ICT services.
3. Raising the Security Level of ICT Networks and Protecting Privacy.
4. Optimal Use of Numbering resources.
5. Optimal Use of the Frequency Spectrum.
6. Provide ICT Services in all Regions of the Kingdom.
7. Conformity of ICT equipment to standard specifications.
8. Provide high quality information services.

Third General Objective: Build a solid ICT industry that is capable of competing locally and internationally and become a major source of income.

Specific Objectives:

1. Development of ICT industries with emphasis on certain strategic domains.

Fourth General Objective: Utilization of ICT in education and training at all levels.

Specific Objectives:

1. Employment of ICT in supporting education and training and adoption of e-learning.
2. Preparation of all people involved in the education process (teachers, administrators, students) for the use of ICT in education.
3. Development of the infrastructure in educational institutes.

Fifth General Objective: Enable all sectors of the society, in all areas of the country to deal with ICT easily and efficiently in order to bridge the digital divide.

Specific Objectives:

1. Dissemination of Arabic digital content on the Internet to ease access to information and knowledge.
2. Raising awareness of the importance of ICT for all individuals and organizations, small and Medium enterprise.

Sixth General Objective: Utilization of ICT in serving the Arabic language and consolidating the civilizational mission of Islam.

Specific Objectives:

1. Coordination and motivation of government and charity efforts to employ ICT in the service of Arabic and Islamic culture.
2. Employment of ICT in the service of Islamic studies, religious practices and Da'wa.
3. Employment of ICT in the dissemination of Islamic culture and consolidation of the Islamic and Arabic identity.

The Seventh General Objective: Provide qualified and trained, male and female human resources in the various ICT specializations through the preparation of national manpower as well as attracting international expertise.

Specific Objectives:

1. Estimating the size of national manpower and international experts needed to transform to the information society and facilitate their recruitment.
2. Establishment of Specialized programs to prepare high level ICT manpower.
3. Provide support for the qualification of ICT manpower to render them capable of getting high paying jobs.
4. Increase the efficiency and quality of the educational and training programs in the area of ICT.

There are several indicators which shows that some of the specific objectives have been achieved. According to the NCITP newsletter issued by the MICT (2010) about 30% of the projects have been implemented, 25% under implementation, 21% under study and 24% still need to be studied. The same source shows that the majority of the implemented projects were related to the second general objective.

Moreover, it is clear that the number of Internet users has increased dramatically in the last few years in the main cities, but not in all regions (section 4.2.4). Also, several projects have been implemented, including eGovernment programme, increasing Arabic content on the Internet and so forth. However, some areas of the plan that can be classified as the most important pillars of the plan, mainly the seventh general objective, no specific projects have been completed yet. According to the annual NCITP report

published by the MICT (2009) no projects related to attracting qualified staff have been implemented, the same source shows that the number of projects that have been implemented was 0%, 20% under implementation, 33% under study and 47% still need to be studied taking into consideration that electronic projects including eGovernment in general requires a large number of skilled staff as discussed in section 2.5. Despite the facts that the plan had not met all its objectives, it is still remains one of the most developed sectors in the country.

4.2.2 The country's e-readiness

E-readiness is defined as the 'ability to use Information and Communication Technologies (ICT) to develop one's economy and to foster one's welfare' (Web Definition, 2010). Since 2000, the Economist Intelligence Unit has carried out an assessment of seventy of the world's largest economies' ability to use ICT for economic and social benefits. Of course, Saudi Arabia has been included in this assessment.

The first criterion used in this assessment is the examination of the connectivity and technology infrastructure, which equals 20% of the total 100% of the assessment percentage. This criteria is concerned with the ability of individuals and businesses to access mobile networks and the Internet, as well as the ability to access digital services. The second criterion is the business environment, including 74 sub-indicators used with this measurement, and this criterion comprises 15% of the assessment. It addresses factors that support economic development, such as political stability and competition policies. The third criterion is the social and cultural environment, which accounts for 15% of the total evaluation. This criterion is based on education, the use of ICT 'Internet literacy' and research and innovation. The legal environment is the forth criterion, and it comprises 10% of the study. This function of the assessment is concerned with noting the availability of effective legislation and laws that support movement into the digital age. Fifth is the government policy and vision, and this criterion accounts for 15% of the assessment and is concerned with the clarity of ICT vision and strategy, including electronic initiatives (e.g. eGovernment strategy). Finally, the last 25% of the assessment addresses consumer and business adoption, and this measurement looks at the actual use

of ICT by businesses' and individuals' online activities, including the use of available public online services and online purchasing (EIU, 2009). The following table shows Saudi Arabia's e-readiness ranking in 2009 compared with other Arabic countries included in the report.

Table 4-2: Saudi Arabia E-readiness

Six category scores					
Connectivity	Business environment	Social and Cultural Out of	Legal Environment	Government policy and vision	Consumer and business adoption
4.30 (out of 20%)	6.16 (out of 15%)	5.50 (out of 15%)	4.75 (out of 10%)	5.50 (out of 15%)	3.90 (out of 25%)
Country		E-Readiness Rank (out of 70)		E-Readiness Score (out of 10)	
United Arab Emirates		34		6.12	
Jordan		50		4.92	
Saudi Arabia		51		4.88	
Egypt		57		4.33	
Algeria		67		3.46	

4.2.3 Overview of the Current ICT Situation

The government's desire to make full use of available technology as well as to transform Saudi Arabia into a knowledge-based society began to emerge clearly over the last few years. There are several indicators that can be used to identify the reality of the ICT situation in Saudi Arabia. This section reviews statistical data and existing governmental electronic projects.

Firstly, fixed telephone services started in the 1970s with a total of only 76.600 lines (FICCI, 2003). However, although the Saudi Telecom Company (STC) had a monopoly on the fixed telephone service until 2008, the number of lines has increased in the last ten years to 4.2 million in 2009, as a result of the liberalization of the telecommunications market. Secondly, mobile services were started in 1995 with a total of 16,000 subscriptions (FICCI, 2003), and the number has increased dramatically over the last few years as a result of the liberalization of mobile services and the opening of the market for

competition in 2004. Finally, Internet services became available to the public in 1998 with around 350,000 users (FICCI, 2003). It was managed and controlled by the King Abdulaziz City for Science and Technology (KACST) until 2005, when the Communications and Information Commission (CITC) became responsible for Internet services in the country. According to the OpenNet Initiative (2004), Saudis used sophisticated content filtering systems, mainly focusing on obstructing pornography, drugs, gambling, religious conversion, and politics. The latest statistics show 9.8 million Internet users in 2009 (CITC, 2009). Figure 4.6 shows the fixed telephone, mobile phone and the Internet evolution between 2001 and 2009.

In the area of skilled ICT workers, there are no recent statistics on the percentage of ICT workers or ICT qualifications in Saudi Arabia. However, according to the statistics issued in 2004, around 21.500 Saudis held ICT qualification, representing about 0.59% of the workforce in the country (CDOSI, 2008). Moreover, according to the CITC (2005b), there were 6,630 Saudi ICT workers reported in the ICT market in 2003, compared to 32,370 non-Saudis. Therefore, the ICT national plan hoped that by the end of the first five years in 2005, 5% of college and university students would specialize in ICT, as well as train 200 thousand of government staff on how to deal with technology. (MICT, 2007a). It is also important to consider that until 2000 there were just three universities offering computing courses, compared to the 28 universities and colleges that did so in 2010 (MOHE, 2009). The following table shows the number of universities and colleges of higher education offering computing courses during the past two decades.

Table 4-3:Number of Universities and Colleges Offering Computing Courses

Number of Universities offering Computing Courses		
1989-2000	2001-2005	2006-2010
3	7	18
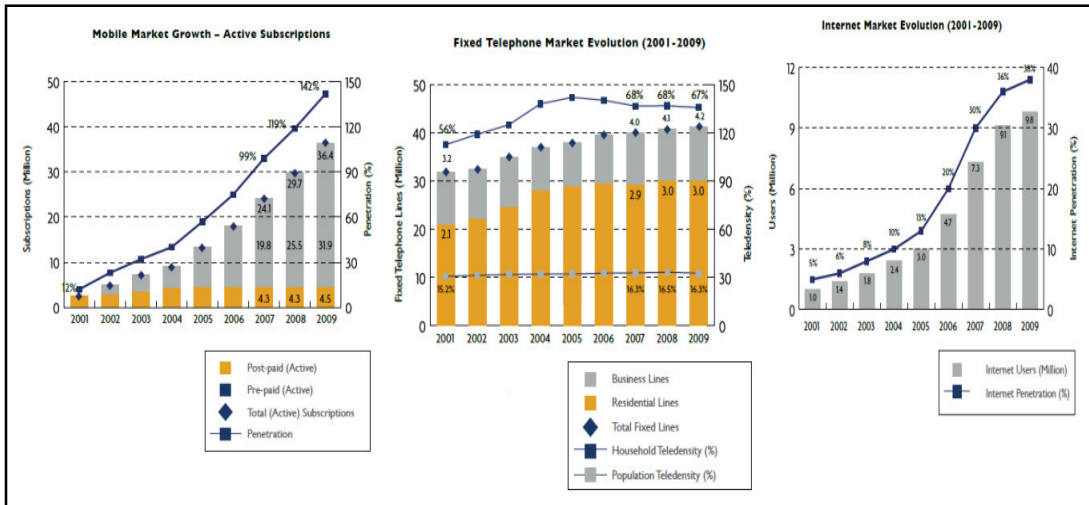
Figure 4-6: Fixed telephone, mobile phone and the Internet evolution between 2001 and 2009

Source: http://www.citc.gov.sa/NR/rdonlyres/F976018F-B482-4E08-AB79-9666C1E C40F4/0/ EnglishCITC2009.pdf.

4.2.4 Internet usage in Saudi Arabia

As mentioned earlier, the Internet was introduced in Saudi Arabia in 1998, and as is normal in Saudi Arabia, there was controversy about the Internet as a tool that can destroy the nation's culture. Such a controversy is not only subject to the Internet, but is also subject to almost all new technology introduced. For example, in 1993 there were arguments made by religious people about satellite dishes, and as a result in 1994 a decision to prevent the import, sale and use of satellite dishes in the country was made (The Independent, 1994). Similarly, in 2002 the import and sale of cell phones with built-in cameras was prevented for the same reasons (Shihri, 2004). However, all of these bans no longer stand, as other decisions have been made which focus more on controlling such new technology rather than banning it.

As can be seen, Saudi Arabia's reaction to the Internet was in no way unique to how the country has reacted to other new technology. According to CITC report (2007), culture and social issues are sometimes barriers to using the Internet, as 8% of those surveyed indicated that their family did not allow an Internet connection to be installed in their

home. This issue is similar reflected in ASBAR (2005) their study on Internet usage in Saudi Arabia demonstrated that 23% of the population in the Qaseem region stated that they do not use the Internet for social and religious reasons. Also, it was clear that the percentage of Internet use in general is low among all regions due to several non-cultural reasons, with the lack of skills in using the Internet ranked at 34% and the lack of finances to obtain the Internet ranked at 19% (i.e. the Internet connection affordability) (CITC, 2007). Moreover, according to CITC (2008) the percentages of Internet usage varies significantly from region to region. For example, the highest rate of Internet usage was in Riyadh at 24.6%, but in eight other regions the percentages of the Internet usage does not exceed 4% of the population, these regions being Baha, Najran, Jizan, Hail, Tabuk, Qaseem and Jouf with lowest percentage being Arar at 1.1%. By looking back at figure 4.4, it is clear that the highest rates of illiteracy were also found in these regions where the Internet is least used. Also, these regions with low Internet usage can be classified as less developed regions in the country in term of the availability of ICT Infrastructure (AL-Saltani, 2008).

Furthermore, gender, age, education levels and income were found to be significant factors that played into the use of the Internet (CITC, 2007; ASBAR, 2004; Alsheha, 2007 and CITC, 2008). Furthermore, regarding the use of the Internet applications, such as eCommerce and eGovernment, the CITC (2007 and 2009) study showed that only 29% of the population knew about the eCommerce concept and that 39% believed that using the Internet for shopping is not safe. These issues are critical, and as it has been addressed by Reffat (2004), eGovernment should be a tool to reduce the gap between the two primary classes of people (have and haves not).

4.3 Legislation pertaining to online transactions and copyright law

According to ESCWA (2003), legislation pertaining to ICT in Saudi Arabia still fails to meet some basic standards of the Agreement on Trade-Related Aspects of Intellectual

Property Rights (TRIPS Agreement) and the standards set by the World Intellectual Property Organization (WIPO). The copyright law was issued in 2004, but it is still in the early stages of application. In the area of online transactions, IT criminal law and e-transaction law were promulgated in March 2007 to control the organisation and provision of a legal framework for electronic transactions and signatures as well as to fight crimes consequent to the abuse of IT, computers, and the Internet (MICT, 2007b). Other legislations including privacy act are planned to be created, but until now this act has not been approved. According to International Privacy (2007), only one Arab country has a privacy act, that being Dubai, which is one of the emirates in the UAE.

4.4 Electronic initiatives

According to the Arab Advisors Group (2007), Saudi Arabia is the largest IT market in the Gulf region, with huge investments in ICT projects, such as eLearning, eCommerce, eGovernment, and healthcare services. After the government set its goal as bridging the technological gap between Saudi Arabia and the developed world by 2020, several electronic initiatives have been established. Here is a quick review of the major electronic initiatives with a focus on the eGovernment project and its applications.

4.4.1 eLearning

Utilisation of information communication technology at all levels of education has been one objective of the Saudi national ICT plan. Therefore, several initiatives revolving around the concept of eLearning have been presented by different bodies in the country. However, unlike eCommerce and eGovernment, no regulations related to eLearning have been issued as of yet. The Ministry of Higher Education introduced its eLearning and Distance Education National Centre in 2006, and this ministry aims to promote the propagation of eLearning and distance education concepts and applications, to support eLearning and distance education studies and research, to develop quality standards for eLearning and distance education, to build and disseminate educational software that will serve the eLearning process and to cooperate with international organisations and bodies in the area of eLearning and distance education in higher education. Moreover, several

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projects have been established by the centre including JUSUR, which is a Learning Management System to manage the eLearning process in higher education. Also, the National Repository for Learning Objects (MAKNAZ) aims to archive, share and reuse learning objects. Another project is the Saudi Digital Library (SDL) which is a collection of about 90 thousand resources (e.g., e-books and articles) from national and international publishers. SDL is available now for the university students and faculty staff (National eLearning Centre, 2010).

Also, since 2001 the Ministry of Education launched a comprehensive eLearning project to enhance the public education environment by promoting curricula, preparing teachers, developing student skills and capabilities to deal with ICT, and establishing computer clubs in each school. Several initiatives have been established, including Prince Abdullah Ibn Abdulaziz Computer Project for Students Watani http://www.watani.org.sa, which was established in 2001 and aims to improve the computer skills of teachers and students. 'The project envisages provision of a computer per ten students, connecting all schools with national network, and providing LAN services in each school' (WSIS, 2003). It is sponsored by the Ministry of Education and UNESCO.

Another project is Ta'heel for Training High School Students in the Area of Informatics http://www.taheel.org.sa/default.htm. It is a joint project between the Saudi Computer Association and other private sector companies established in 2001. It aims to prepare secondary school graduates in the five areas of information technology: desktop techniques; system development; the Internet; computer network; and computer maintenance. Finally, there is the School Libraries Development into Learning Resources Centres (LRC) Project http://www.informatics.gov.sa/lrc/news.php, which aims to redesign school libraries in both government and private educational institutes so that they can become eLearning resource centres and provide the latest technology to support the education process. Unfortunately, to the best of the researcher's knowledge there are no studies on these projects either in physical or digital formats. Moreover, all the websites listed in this section are not available any longer since late 2008.

4.4.2 eCommerce

A royal directive was issued on 14 February 1999 for the establishment of a standing committee on eCommerce to follow up recent developments in the field of eCommerce and so as to be able to take the necessary steps to cope with these developments as well as to take advantage of international experience in this area and to identify necessary needs and requirements for harnessing eCommerce technology and applications so that follow up steps could be taken and a periodical progress report prepared (MOCI, 2001).

In 2001, the general framework of the plan of action for eCommerce was published. This included establishing a Public Key Infrastructure (IKP), developing payment systems, establishing a legal and legislative framework and privacy act, providing eGovernment information and services, establishing a government e-procurement system, developing ICT infrastructure, establishing a marketing website for national companies and factories, promoting the propagation of eCommerce, providing related support services for eCommerce applications, promoting awareness of eCommerce, investing in the training of national human resources, and undertaking studies and research on eCommerce in the country (MOCI, 2001).

The government of Saudi Arabia believes that the private sector is a true partner that will play a great role in the development of ICT in the country, and in particular eCommerce development. Therefore, in the sixth five-year development plan, the government focused heavily on the role of the private sector by encouraging ICT investment and by opening the ICT market to competition. As of 2004, there were around 2000 companies operating in the field of ICT in Saudi Arabia, most of them working on the assembly of computers, system development and programming (CITC, 2005b). Although ESCWA (2003) pointed out that the major e-business applications and infrastructure are either already developed or in their final stage of development, there are currently a small number of companies that exclusively provide online services (e.g. e-banking and e-travel) (MICT, 2007).

4.4.3 ICT Awareness and Digital Arabic Content

To increase the number of Internet users in the country, several projects have been introduced. Among these initiatives is the Saudi Arabia Home Computer Initiative Project (Tawasul). This initiative, introduced in 2005 by the Saudi Communication and Information Technology Commission, aims to increase the number of computer users in Saudi Arabia and to deliver one million PCs to Saudi homes within 4-5 years (CITC, 2005c). On the other hand, Arabic content on the Internet is quite small compared to content in other languages, being between 0.3 and 1% of the overall Internet content. Naturally, it was recommended that Arabic countries should be concerned with the development of Arabic content on the Internet, including government information (ESCWA, 2004 and Deek, 2010). As a result, initiatives aiming at increasing Arabic content on the Internet emerged in several Arabic countries. Among those initiatives is the King Abdullah initiative for Arabic content, which was established in 2009, and other projects, such as the King Abdullah Digital Library and an Arabic Wiki that aims to translate 2000 articles from Wikipedia into the Arabic language (King Abdullah initiative for Arabic content, 2009).

4.4.4 eGovernment

The idea of an eGovernment project appeared in Saudi Arabia's government agenda in 2003 and was implemented as a joint programme between the Ministry of Finance, Ministry of Communication and Information Technology, and the Saudi Communication and Information Technology Commission in 2005. A large part of the vision of the ICT plan adopted by the government was to achieve sustainable development and to improve all aspects of life. The eGovernment initiative began in May 2005, and the mission was named 'Yesser', the Arabic word meaning 'simplify'. A budget of US$800 million was assigned by the government to launch this project. Its aim was to build the infrastructure needed for eGovernment as well to develop electronic services that had already been introduced in some government sectors. The target was to provide 150 government eServices in 40 government sectors by the end of 2010.

> *The Yesser vision statement is 'by the end of 2010 everyone in the kingdom will be able to enjoy - from anywhere and at any time - world class government services offered in a seamless, user-friendly and secure way by utilizing a variety of electronic means'.*

According to the programme the four objectives of Yesser are to raise the productivity and efficiency of the public sector, to provide better and easier-to-use services for individuals and business customers, to increase the return on investment (ROI) and to provide the required information in a timely and highly accurate fashion.

The action plan of the eGovernment programme is based on a decentralised approach, divided into two tracks. The fast track aims to achieve a number of quick results during the first two years of establishing the programme. This will be achieved by providing the basic programme requirements and by carrying out a number of pilot eGovernment projects selected according to three criteria: high revenue, quick results, and relatively low-cost implementation. The second track starts at the beginning of the five-year programme, and consists of three primary objectives: to formulate the programme plan and set the priorities; to formulate the eGovernment policies, procedures, and regulations; and to implement the eGovernment plan at each of the government agencies (Yesser , 2006).

4.4.4.1 eGovernment Readiness Ranking

As mentioned in section 2.6, the assessment and monitoring of eGovernment is one of the most important indicators that is used to assess the strengths and weaknesses of eGovernment initiatives on local, national and international levels. Established in 2003, the United Nation's global eGovernment survey is one of the most important international instruments for the assessment and monitoring of eGovernment on a global scale. Its primary purpose is to assesses the eGovernment readiness of the UN members based on three criteria: first, web measure, which looks at government websites and methodologically rates them as emerging, enhanced, interactive, transitive, or networked; second, telecommunication infrastructure, which is based on a number of factors, such as

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the percentage of Internet users, mobile phones, and fixed phone; and the final criteria of this assessment is human capital, and this factor includes two indicators adult literacy and the ratio of those enrolled in education (UNESA, 2003).

Based on the UN eGovernment Survey in 2003, 2004, 2005, 2008, and 2010, Saudi Arabia has made a significant improvement in about 47 positions since 2003. The following table shows the Saudi Arabia eGovernment Readiness in the UN eGovernment survey since 2003 to 2010.

Table 4-4:eGovernment Readiness Reports 2003, 2004, 2005, 2008, and 2010.

2003			
E-gov Readiness Ranking (of 179)	Web Measure (of 1)	Telecom Index (of 1)	Human Cap Index (of 1)
105- Score (0.338)	0.183	0.119	0.71
2004			
E-gov Readiness Ranking (of 191)	Web Measure (of 1)	Telecom Index (of 1)	Human Cap Index (of 1)
90 Score (0.3858)	0.309	0.139	0.71
2005			
E-gov Readiness Ranking (of 179)	Web Measure (of 1)	Telecom Index (of 1)	Human Cap Index (of 1)
80-Score (0.4105)	0.3769	0.1445	0.7180
2008			
E-gov Readiness Ranking (of 192)	Web Measure (of 1)	Telecom Index (of 1)	Human Cap Index (of 1)
70-Score (0.4935)	0.4649	0.2110	0.8056
2010			
E-gov Readiness Ranking (of 192)	Online service Component (of 1)	Telecommunication Infrastructure Component (of 1)	Human capital Component (of 1)
56-Score (0.5142)	0.1058	0.3330	0.2754

4.5 Saudi Arabia government websites stages

There is no available statistics as to the exact number of Saudi government websites, but about 120 government websites are listed on the Saudi eGovernment National Portal in the government agencies directory section in 2008. These websites vary in terms of the

degree of maturity, which is measured by looking at the website within the stages of eGovernment shown in figure 2.2. For example, the ministry of Higher Education provides users with full electronic transactions through their websites. According to the Ministry of Higher Education, more than 50,000 scholarship requests have been processed electronically since 2008. Also, as part of this ministry's development, another electronic project to provide education services was established in 2009, that being the Saudi Oversees Students Portal. The aim of this portal is to serve overseas students with all of the tasks they need electronically.

However, the majority of government agency websites, like the ministry of Interior, provide several electronic services that can be classified in the second stage, such as making online appointments, e-forms and electronic requesting. A few studies have examined the maturity of Saudi government websites. For example, in a recent study on Saudi Municipality websites, Alatoi (2009) found that the majority of these websites are either at the first or second stage. Similarly, in her study on Saudi Ministry websites, Alhazani (2008) reveals that only five ministries' websites provide some kind of electronic services that can be classified under the third stage of eGovernment stages model with no e-payment availability and the rest still in the first or second stage.

4.6 Critical issues in eGovernment in Saudi Arabia

There are several pieces of evidences which shows that the eGovernment project in Saudi Arabia is suffering from several issues in all areas (ICT technical infrastructure, non-technical berries and technical website design issues). This section presents the major issues identified by reviewing the general findings presented in the previous sections and the related literature on these two areas of non-technical berries and technical website design issues.

4.6.1 Culture

As mentioned earlier the Saudi culture is a mixture of customs and traditions that build on religious beliefs, which makes the Saudi culture unique. How might Saudi culture affect

the adoption of eGovernment? In fact, more than one elements that can affect the use of eGovernment. First and foremost is that some people still believe that the Internet can damage the society, hence, they do not use it and do not allow their family members to have it in their home. According to ASBAR (2004) about 10% of Saudis did not used the Internet for religious reason. Similarly, the CITC (2008) report on the Internet use in Saudi Arabia shows that 12% indicate that their family did not allow for Internet connection at home compared to 17% in 2007. The same source shows that about 9% believe that the Internet is a bad thing for children compared to 15% in 2007. Secondly, Saudi society is classified as cash-based society. Until about ten years ago most government agencies paid their employees each month in cash or by cheque, and even today several government agencies are still cash-based (AL-Fagih, 2011). Therefore, the use of eGovernment that requires paying electronically can be used less among some government services.

Finally, social relationship and family position significantly impact individual's lives. This issue cannot be ignored, as it is seen as a part of the culture that has deep roots in the country. For example, the King Abdullah Scholarship Programme is an electronic project that students can apply electronically if they meet the requirements of the programme, however, year after year there are more and more debates reported in Saudi newspapers and Saudi online forums claims that some of the students who receive scholarships did not meet the programme requirements. The question is, how were they accepted if they did not meet the programme requirements? It is unusual that any press report or interview about the programme, unless user comments are included, would address the issue of 'Wasta' as a means of obtaining a scholarship (AL-Halahi, 2011).

However, while these cultural and social issues can be viewed as barriers, they might also be seen as reasons to speed up the implementation of eGovernment. For example, Alshehry et al. (2006) argued that eGovernment is needed in Saudi Arabia precisely because of cultural and social reasons such as the separation of men and women in the systems of education and the workplace. They argue that the adoption of eGovernment would be a way for women, in particular, to access government information and services

easily. Also, eGovernment can be seen as a tool to achieve equality among the society members as well as a way to reduce Wasta.

4.6.2 Digital divide

In many cases the growing number of Internet users is one of the main drivers for establishing eGovernment in several countries. In the UK, this factor was one of the main drivers for starting eGovernment, as in 2001 about 40% of households had access to the Internet, which arrived to 82.5% in 2010 (NAO, 2002 and Internet World State, 2010a). In the case of Saudi Arabia the eGovernment initiative was established officially in 2005, where only 13% of the population had access to the Internet compared to 38% in 2010 (CITC, 2009a and Internet World State, 2010b).

Moreover, it was seen in section 4.2.4 that the largest number of Internet users come from the main cities in the country, with Riyadh, the capital city, claiming the largest number of Internet users at 24%, while in some regions (seven out of thirteen) the percentage of the Internet users does not exceed 4%. This refers to the national access digital divide between regions in the country. Social class digital divide is another concern in Saudi Arabia as shown in the same section. The existence of a social class digital divide is significant in Saudi Arabia, especially between male and female, educated and non-educated and high income and low income people. Also, the skills divide is a significant element when addressing eGovernment, as the use of government electronic services requires some level of skills in order to get benefit from it.

In Saudi Arabia the other Internet applications, in particular eCommerce, are still in the first step of development. Currently, the two popular businesses available online are banks and travel industries, which are used by only 1% of the population (CITC, 2009b). The reason behind this could be the fact that these sectors are selling services that can be completed online without needing to be sent to the customers. The postal services in the country are inefficient, so for almost all other businesses that sell products in the country their websites are still at the first stage of the eCommerce stages model. According to Bhatnagar (2004) an eCommerce website can be a site that performs anything from

publishing to completing transactions and deliveries. AL-Solbi and Mayhew (2005) point out that about 94% of private organisations reveal that the absence of an efficient postal system is the main reason affecting eCommerce in Saudi Arabia. Another reason for the delay in the adoption of eCommerce in Saudi Arabia addressed by AL-Solbi and Mayhew (2005) is the lack of regulations related to eCommerce. In several examples the growth of eCommerce website usage was another driver for establishing eGovernment, such as UK and Singapore, which is absolutely not the case of Saudi Arabia; as shown in section 4.2.4 only 29% of the population knows about the concept of eCommerce (NAO, 2002 and Chan et al., 2008). Also, as shown in figure 4.2, the country score only 3.90% out of 25% regarding the actual use of ICT by businesses' and individuals'. Therefore, these two factors may cause citizens and the business sector to be slow to embrace government electronic services.

4.6.3 User trust

Several studies show that trust becomes an issue to Saudi people when connecting with eCommerce and eGovernment in two ways: Internet trust and government trust. In the area of Internet trust the CITC (2007) report shows that 29% believed using the Internet for shopping is not safe. Alharby (2006) in his study on eCommerce in Saudi Arabia found out that privacy and security were among the greatest barriers to eCommerce adoption in the century. Likewise, Alotaibi (2006), in her study on eGovernment trust, found that the majority of Saudi Internet users surveyed were concerned about privacy and security when connecting with government online, also the level of trust varies from government agency to government agency because of personal experience and stories or reported stories from family, friends or the media. Also, Sait et al., (2004) found a positive relationship between Internet users who strongly support the adoption of eCommerce in the country and the privacy and security issues.

However, the attention, which has been given to these issues clearly is still not at the desired level. Alhazani (2008) in her study on Saudi government websites, primarily the Saudi ministries, found out that only four of the twenty-two ministries provide a visible privacy policy statement on their website. This is another issue, as no privacy act has

been developed yet in Saudi Arabia (Mittman, 2007). Thus, under which privacy act will personal information data be treated on these websites? In the area of website security, according to the Zone-h website (2011), the number of Saudi website with 'gov.sa' domain that have been hacked since 2000 is 712 in which 65 websites were hacked in middle of 2011. In fact, the issue of Saudi government website security is a hot topic in the Saudi local press since such a large number of Saudi government websites have reported hacking. According to Alshehri and Drew (2010) about 47% of the respondents participated in their study believed that Saudi government eServices websites are not secure enough to protect their personal information.

4.6.4 Leadership support and management issues

Leadership support at all levels has been identified as one of the main factors in eGovernment implementation success. At the political level it is clear that the eGovernment initiative in Saudi Arabia is supported by the highest authority, with an unlimited budget allocated for the government electronic projects implementation (Al-Solbi and Al-Harbi, 2008). Yet, according to WSIS (2003) the success of eGovernment in Saudi Arabia has been linked with administrative leadership support. The reasons behind this could be inferred from the previous sections where the lack of IT skills and high rate of ICT illiteracy exist. According to AL-Shehri and Drew (2010) the lack of qualified IT staff in the Saudi public sector exists at all levels, including programmers, computer technicians and web designers. Therefore, with the limitation of qualified IT staff, as well as high rate of ICT illiteracy among government employees, a leadership with a mixture of IT, management and personal communication personnel is crucial for promoting and facilitating the implementation of government electronic projects in the Saudi public sector and for overcoming management issues, such as resistance to change. For example, according to AL-Fahhri et al., (2008) about 33% of government employees indicate that they have not had an opportunity to participate in their agency's eGovernment plan.

4.6.5 Skilled IT staff

Skilled and well trained IT staff are considered a fundamental part of any electronic projects. As mentioned before, the rapid development in the field of ICT has created a high demand for IT specialists worldwide, in both the public and private sectors. In the public sector, with the increased number of government electronic projects and competition from the private sector, investment in attracting skilled IT staff as well as training staff in the use of ICT is essential. In Saudi Arabia, as addressed in section 4.2.3, it is clear that there is a lack of IT staff as a result of the fact that until 2000 only few universities offered IT computing courses (CITC, 2009b). The same source reveals that the lack of human resources was the main barriers to the development of the ICT sector in the country, for example, 63% of governmental and private sectors' mangers indicate that the lack of skilled IT staff has a great impact on their organisations.

In the area of eGovernment AL-Makki (2009) found out that the lack of professional staff in the area of eGovernment is one of the main berries facing eGovernment implementation in Saudi Arabia. Also, the high rate of ICT illiteracy among government staff is a real threat in Saudi Arabia, as reflected in a report published by the Saudi government were more than 1,500 staff member in the Saudi public sector with the job title of 'Director General' or 'Director' were reported as illiterate (Aljmai, 2008). These illiterate staff members are high-level officials in their agencies, yet how will they communicate with the Saudi eGovernment programme 'Yesser'? How will they promote eGovernment implementation in their agencies and reduce the risk of failure? In order to overcome the issue of high ICT illiteracy in the government agencies, Yesser established a training programme named 'Capacity Building Initiative' in 2009 aimed to increase the number of government staff who can deal with technology at a basic level. The target of the programme is to train 30,000 government employees annually over three years (Yesser , 2009).

4.6.6 Marketing

The lack of awareness among citizens has been addressed as a challenge for the adoption of eGovernment, particularly in developing countries. In Saudi Arabia, the lack of awareness is not only subject to citizens but also to government employees. AL-Fakhri et al., (2008) reveals that more than 50% of government employees who participated in their study indicated that they did not know about the implementation of electronic projects in their agencies. Regarding citizens, Alsobhi (2010), in his study on the e-office delivery of public services in Saudi Arabia's Madinah city, found that the lack of a marketing campaign was the main challenge facing the online government project, and he suggested that media should be used to increase the awareness of this service among citizens of Madinah city.

4.6.7 Technical web design

Unfortunately, the number of studies in this area is relatively few; however, almost all available studies agree that most Saudi government website are suffering from serious web design issues in almost all areas, such as content accessibility, usability and findability. For example, AL-Fakhri et al. (2008) argued that most of the Saudi government agencies' websites are inefficient. Eidaroos et al. (2009) in their heuristic evaluation of two Saudi government websites, concluded their study by pointing out that the two websites being evaluated were inappropriate in terms of web design and would not encourage users to utilize eGovernment services. Similarly, Buraggy (2010) used a subjective assessment to assess the accessibility and usability of two Saudi government websites compared with results obtained from using electronic web assessment tools. Both results indicated that these two websites suffered severely from accessibility and usability issues and it was recommended that more attention should be given to Saudi government website design.

4.7 Summary

This chapter provided background on Saudi Arabia and described in detail the state of the ICT sector, government initiatives, and projects related to the ICT field in Saudi Arabia. The discussion presented in this chapter showed that ICT in Saudi Arabia has been developed significantly in the last few years and that there are many ongoing initiatives and projects underway that are intended to meet the main goal set by the government, which is to bridge the technological gap between Saudi Arabia and the developed world by 2020. However, it also showed that a number of issues still need to be resolved in order to ensure that eGovernment projects succeed. Introduced among these issues was Internet usage in the country as well as the availability of skilled staff.

Research design and methodology

The aim of this chapter is to detail the research procedures followed throughout the study. It begins with an overview of the research design approaches reported in the research methods literature. This is followed by a discussion of the research design selected, which includes quantitative and qualitative approaches, along with the data collection methodologies developed in this study. Sampling techniques and other related issues are also presented.

5.1 Research design

Research design refers to the types of data being collected (O'Leary, 2004). In the literature on research methods, three types of research design approaches have been reported: quantitative, qualitative and mixed methods. The quantitative approach is defined as 'the techniques associated with the gathering, analysis, interpretation, and presented of numerical information' (Teddlie and Tashakkori, 2009, p.5). The research strategies used with this kind of research design are generally surveys and experiments (Creswell, 2003). Furthermore, this research design is seen by Pickard (2007) as the preferred approach for new researchers. Qualitative design is defined as 'the techniques associated with the gathering, analysis, interpretation, and presented of narrative information' (Teddlie and Tashakkori, 2009, p.5). The research strategies used in this research design include: case studies, Delphi Study, action research and ethnographies. Finally, in a mixed-method research design, both quantitative and qualitative data are collected and analysed in a single study (Creswell, 2003). This is traditionally known as a multiple research design approach (Oates, 2006).

5.2 Selection of the research design

According to Creswell (2003), there are three criteria that play a significant role in the selection of research design approaches: research problems, the researcher's personal experience and audience's experience. In this study, the research problem factor had a significant impact in terms of the selection of the research design from two perspectives.

Firstly, several studies have pointed out that the eGovernment domain is new and that the use of research methods in this area has not yet matured. Moreover, descriptive studies are dominant in much of the studies in this field, with a prevalent focus on technical issues (Hovy, 2007; Grönlund, 2007; Löfstedt, 2005 and Heeks and Bailur, 2007). In addition, although the area of eGovernment research is relatively new, it has been studied in several academic fields, such as computer science, business/management, public administration, political science, library and information science, information systems and commercial vendors of ICT. Within library and information science, much of the studies look at information organisation on the government websites (Hovy, 2007 and Eschenflder et al., 1997). Secondly, there have been relatively few studies on eGovernment in Saudi Arabia in general, and relating technical website design in particular.

Therefore, because of this present study's aim and objectives, a mixed method research design comprising quantitative and qualitative methodologies has been adopted as recommended by Heeks and Bailur (2007). According to Greene and Caracelli (1997, cited in Teddlie and Tashakkori, 2009) the strategy associated with mixed method design can be classified under one of the following designs: component, triangulation, complementarity, expansion, integrated, iterative, embedded or nested, holistic and transformative'. In this study, a concurrent triangulation strategy, which is described by Olsen (2004, p.3) as the use of 'mixing of data or methods so that diverse viewpoints or standpoints cast light upon a topic' was adopted. Creswell (2003, p.217) highlights the advantages of using this strategy by stated that 'it is familiar to most researchers and can result in well validated and substantiated finding'.

The research methodology used in this study included the collection of quantitative and qualitative data. An assessment of website methodology was used to identify the major technical website design issues of forty government websites in a two-round study conducted in 2008 and 2010. By using this method, the researcher was able to compare the findings of the first round of Saudi government evaluations with the findings of the second round. Additionally, the progress of Saudi government website development was able to be observed over these two years. Also, to identified the types of information provided, as well as the format used to provide such this information in these websites. The questions on the instrument used in this study sought quantitative data, except questions seven and eleven of the instrument, which sought qualitative data as well.

In addition, a survey was adopted to generate a profile of the expected users of eGovernment in Saudi Arabia and to identify the major concerns related to technical website design issues and non-technical barriers from eGovernment expected users prospective. A questionnaire instrument containing twenty questions was developed in order to create the profile of expected users of eGovernment in the country. All the questions were analysed quantitatively, except part two of question seventeen which was analysed qualitatively for the aim to know how eGovernment users search for online government resources (words and sentences used). Furthermore, a semi-structured interview and documents analysis were conducted with the aim to refine, elaborate and compare the finding of the web evaluation and the questionnaire. The following figure shows the research activities that were conducted.

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Data collection methodology   **Sample**   **Findings**

Data collection methodology	Sample	Findings
Questionnaire (August - September 2009)	250 participants of expected users	Profile of eGov expected users with identification of most non-technical barriers and technical website design
Phase 1: (March 2008) Government Website evaluation — Phase 2: (March 2010) Government Website evaluation	40 government websites	Major issues of Saudi government website design (comparison Saudi government website development over two years)
Semi-Structured Interviews (September - October 2009)	7 key government official staff members	Barriers faced by government agencies in both areas of non-technical and web design technical
Document research (May 2005 – May 2010)	Online Riyadh newspaper	Major non-technical barriers and technical website design

Conclusion & Recommendations

Figure 5-1: The Research Structure

5.3 Data collection methodologies

As can be seen in Figure 5.1, this study used multiple data collection methodologies, which is described by Denscombe (2003) as the use of more than one data collection tool in a single study. This enables the production of different kind of data, each looking at the topic under investigation from a different perspective. The next sections describe the data collection techniques adopted in the study in more detail.

5.3.1 Questionnaires

A questionnaire is a data collection instrument described as 'a pre-defined set of questions (sometimes called items), assembled in a pre-determined order' (Oates, 2006, p. 219). This is regarded as one of the most popular data collection instruments in any research dealing with humans as subjects (Pickard, 2007). Questionnaires are usually associated with the survey research strategy, and generally seeking quantitative data, but can also be used to gather qualitative data through open-ended questions. The

questionnaire, like all data collection instruments, has advantages as well as disadvantages. Among its advantages is the fact that it allows a large number of respondents in different places to be reached in an efficient manner in terms of cost and time. In addition, it is a useful tool when asking for straightforward information, which, for example, might be difficult or impossible to ask in a personal interview. This is an important matter in this study, as the research relates to the government, and in Saudi Arabia there are reservations concerning giving information that has to do with government issues; this hesitancy is the result of the general political system in the country and the absence of political parties, as addressed in section 4.1.3. Alotaibi (2006) points out that although the political reform which took place in Saudi Arabia in the last few years has given people more freedom to talk and discuss political issues, there is still concern about sharing personal opinions regarding government performance in general.

The disadvantages of the questionnaire include the fact that if the respondents misunderstand some of the questions, they may skip them. In addition, for the same reason, respondents may answer the questions in a random manner. However, considering questionnaire design issues will help the researcher to reduce their negative impact (Busha and Harter, 1980; Oates, 2006; Burton, 1999; Denscombe, 2003 and Williamson et al., 2002). A number of methods can be used to administer the questionnaire, for example personal delivery and collection, as was carried out in this study. Other options include administering the questionnaire by telephone, email, post or the web (Blaxter et al., 2006 and Oates, 2006).

In this study, a questionnaire template (see Appendix B) was developed to complement other data collection methodologies in order to meet the aim and objectives of the study. Information was gathered on the expected users' attitudes, beliefs and behaviours when using government websites, and determining the level of satisfaction on Saudi Arabia's eGovernment performance was the reason for using the questionnaire. The process of developing a questionnaire suggested by Denscombe (2003) and Blaxter et al., (2006) was taken into account in the design of the questionnaire; this process included avoiding leading questions, using clear language and short questions, avoiding too many open-

ended questions, giving an introduction to each section of the questionnaire and providing a cover letter including information about the researcher, the aims of the questionnaire, information about confidentiality and thanks.

The questionnaire was comprised of different types of questions, such as those requiring yes/no responses, multiple choice responses and Likert scale responses. All questions were closed-ended, except question seventeen. The questionnaire was divided into six sections (figure 5.2). As can be seen from the figure, these sections covered various topics such as personal background, Internet literacy, and eGovernment awareness and use. Moreover, as recommended by Burton (1999), the questionnaire started with relevant general questions and led to more specific questions. The English language was used to draft the questions, which were then translated into Arabic, as this is the official language in Saudi Arabia.
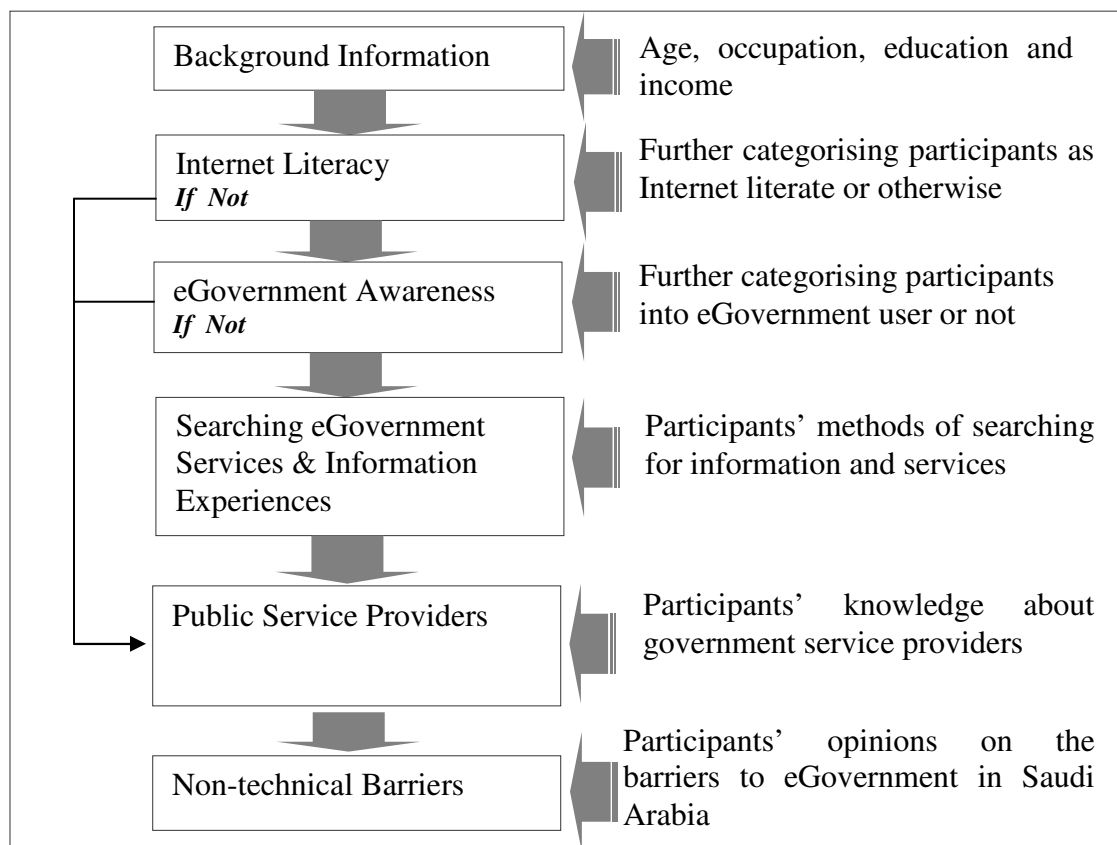
Figure 5-2: Questionnaire Structure

5.3.1.1 Piloting the questionnaire

In order to improve and refine the questionnaire, more than one review was carried out with the researcher's supervisor. In addition, in the research literature it is recommended to conduct a pilot study before the questionnaire is distributed to ensure that it is clear and understandable. According to Oates (2006), piloting the questionnaire helps the researcher determine if respondents have difficulties in answering specific questions, whether there are ambiguous questions, how the different question types are answering and the length of time needed to complete the survey. In this project, the pilot study was conducted after the questionnaire was translated into Arabic to refine unclear wording and to ensure the clarity of instructions concerning skipping questions. The questionnaire was piloted with five people from each group (government officials, university lecturers, secondary school teachers, private sector workers and university students) using the non-probability sampling technique represented in convenience sampling, which is seen as the most used methods when pre-testing questionnaires. Piloting the questionnaire revealed the questionnaire took between 10 and 15 minutes to complete. Also, according to the participants comments on question seventeen a minor change were done in terms of wording to aid participants' understanding.

5.3.1.2 Questionnaire sampling

A representative sample is the usual goal of using sampling techniques; therefore, the sample technique needs to be planned precisely to increase the validity of the study. In the research methods literature, there are two such techniques: probability and non-probability sampling. For each of these, there are several methods to choose from. The researcher has the right to select the appropriate methods, which will play a significant role in the research investigation. (Pickard, 2007; Blaxter et al., 2006 and Alasaf, 2000). In this study, a probability sampling technique was employed using the stratified sampling method. In stratified sampling, the researcher divides the population into groups or strata within the population (male and female, educated and non-educated) and a random selection within each group has to be made. There are two types of selection: proportional and disproportional. Here, a disproportional stratified method was used,

which is described by Johnson and Christensen (2008) 'when the subsamples are not proportional to their size in the population'. In the research method literature there is disagreement on how big the size of the sample should be. The aim of using this method was to get a clear picture of the Saudi eGovernment initiative from people who would benefit directly.

The process of selecting the sampling went through four stages. Firstly, the sample was narrowed down from the general Saudi Arabian population to only those of Saudi nationality. The reasons for excluding those of non-Saudi nationality were that in some Gulf countries, including Saudi Arabia, the foreign labour system is built based on what is called 'kafala', where the employers keep the passports of their workers for the duration of their contracts. Thus, all contact with government agencies is generally made by the employers themselves or through paid intermediary offices, which are also popular with those of Saudi nationality. In addition, the government programme in Saudi Arabia is still at an early stage of development and most of the services being developed have been designed for those of Saudi nationality (Yesser, 2006).

Next, the Saudi nationality was divided into two groups: male and female. Females were excluded from the sample due to the fact that the sexes are educated and work separately at all levels of the Saudi Arabian education system and in the majority of the workplace environments; therefore, accessing female spaces is not possible and requires female volunteers. In addition, in Saudi Arabia males are traditionally the guardians of females. This system makes women dependent on men in many aspects of their lives, and their benefits from eGovernment will be indirect. For example, without permission from their guardian (e.g., father, brother, husband), women cannot apply for a passport or identification card. Also, for some government eServices women have to meet some requirements in order to use them, for example, in order to apply for a loan from the Real-Stat Development Fund an eligible woman must be over 40 years old and never married, widowed, or divorced for two or more years.

As a result of these facts, only the Saudi national male group was chosen. Within this group, selected subgroups were also chosen so as to provide valuable information for this

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study. Here, the researcher's knowledge of the society played a significant role in the choices made, and this was the final stage of the sampling selection for the questionnaire. The following explains why specific groups were selected.

- Government Officials: The research assumes that all government agencies use computers in their daily tasks; therefore, government officials should have the ability to use computer applications, including the Internet.

- University Lecturers: Computers are used in all Saudi universities, and recently many universities have begun to offer some kinds of electronic services. It is also assumed that technology is a part of the university lecturers' preparation.

- Secondary School Teachers: In Saudi Arabia, computers are used in all secondary schools, and recently several projects have been established, i.e., School Libraries' Development into Learning Resources Centres and the International Computer Driving License (ICDL), which has been introduced as a requisite for becoming a teacher.

- Private Sector Workers: The private sector in Saudi Arabia has made significant strides toward using technology; therefore, workers may be assumed to have considerable computer skills.

- University Students: Each university in Saudi Arabia provides some kind of online services through their websites, such as registration and online bulletin boards, so university students are assumed to use the Internet.

After identification of these groups, a non-probability sample was adopted, using a convenience sampling method to choose fifty responds from each group. Twenty-five copies of the questionnaire were delivered to two ministries (Ministry of Education and Ministry of Commerce & Industry), two secondary schools (Imam Aldao'h and AL-Shatby), two private sector organisations (Riyadh Chamber of Commerce & Industry and King Abdullah Research Centre) and two academic departments in Riyadh (Department of Information Studies and Department of Education at Imam Mohammad Ibn Saud Islamic University) for both university lecturers and university students. It was emphasized that the questionnaire was to be answered by Saudis nationality only (non-

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Saudis are working in most if not all Saudi government agencies including schools). In addition, these organisations offered excellent support to the researcher in distributing and collecting the questionnaire (see Appendix C). The issue which is usually addresses with convenience sampling is that using this method would exclude some members of the population. This is could be true, but it was not a problem in this study, because the target group participants were identified early and because the employment system in Saudi Arabia does not make differences among employment staffed. For example, each year the Ministry of Education announces teaching job opportunities for Saudis who have undergraduate degrees, and after differentiation between applicants for the job, the target number is selected. No one knows the place (city, town or village) where he will be appointed until his name is published either online through the ministry website or in the press. Because of this, almost all teachers in the country have the same degree except people who developed their skills by taking extra courses by themselves. This is almost the same with other government agencies; for instance, the Ministry of Civil Services from time to time announces job opportunities for Saudis in different government agencies. In addition, as the target was to have fifty respond from each group more than one visit to some of these organisations was required to reach the target number.

5.3.2 Interviews

According to Pickard (2007, p.172), 'interviews are usually used when we are seeking qualitative, descriptive, in depth data that is specific to individuals and when the nature of the data is too complicated to be asked and answered easily'. This exactly describes the main goal of the interviews utilised in this project, as it required certain details that interviews can supply in the area of non-technical barriers and technical website design issues encountered in eGovernment from the point of view of the programme decision makers, as well as the people who are responsible for eGovernment within government agencies. In addition, Morville and Rosenfeld (2006) revealed that the most valuable information about an organisation that can be collected by information architects is mostly in peoples' heads and has not been written down.

In the research methods literature, three types of interviews have been reported: structured, semi-structured and unstructured interviews (Denscombe, 2003; Bryman, 2004; O'Leary, 2004; Williamson et al., 2002 and Arksey and Knight, 1999). The choice of the type of interview depends on the researcher's experience and knowledge of the topic, as well as the information he or she wants to obtain. The structured interview, also called a standardised interview, is somewhat like a face-to-face survey questionnaire, so it is recommended that designing such an interview should follow the recommendations on writing a questionnaire (Denscombe, 2003; Pickard, 2007 and Williamson et al., 2002). Semi-structured interviews are seen by Williamson et al., (2002) as adjacent to unstructured interviews in terms of the in-depth data that can be obtained. The researcher prepares a list of issues and questions to be discussed with the interviewees. This style of interview gives extra freedom to discuss issues that may arise during the process of the interview. Finally, unstructured interviews are like semi-structured interviews without prepared questions; the researcher introduces themes or topics to the interviewees, and the questions are created accordingly during the interview.

There are both advantages and disadvantages to interviewing. Among the advantages is the researcher's ability to collect valuable data from the interviewees. On the other hand, among the disadvantages of interviewing is that the control of the interview can be lost, leading to the discussion of topics that are not salient to the research. This is especially the case in semi-structured and unstructured interviews (Williamson et al., 2002).

Reliability and validity are significant in interviews, and can be achieved through good preparation for the interview. Gorman, et al. (2005, p.130) states that 'the interviewer is the principal determinant of the value of any interview'. Therefore, providing a good explanation regarding why an interview method was chosen in the study, as well as the sampling technique used to choose the interviewees and the reasons behind the selection will increase reliability and validity (Devers and Frankel, 2000).

In this study, a personal semi-structured interview approach was chosen and employed to serve the study aims and objectives. As mentioned previously, the reason behind the selection of the semi-structure method is that it is flexible enough to discuss issues that

can arise during the interview. Also, it allows the researcher, when required, to ask for more details that provide in-depth information. Therefore, a list of questions were written out to be discussed with selected individuals, including a member of the Saudi eGovernment programme Yesser and key members of staff from selected government agencies. According to Yesser, an 'eGovernment Committee' must be established in each ministry to support the process of establishing electronic services, as well as working with the programme teams in general. The topics covered in the interviews dealt with non-technical barriers and technical website design issues (see appendix D). All interviewees were asked the same questions. In addition, the interviewees' answers were written down, as they did not want the interviews to be recorded. The recommendations for this method were followed, including trying to write down as much as possible, reviewing the interview with the interviewee soon after it is completed and reviewing the interview again after getting to your workplace (e.g., home, office) (Alasaf, 2000). An invitation letter (See appendix E) was issued from the Department of Information Science in Imam Muhammad Bin Saud University in Riyadh, where the researcher works, to support the researcher's attempt to access the selected people. The interviews took place in Riyadh from 15 September 2009 to 25 October 2009, and the interviews lasted about 60 to 90 minutes.

5.3.2.1 Interview sampling techniques

A non-probability sampling method representative of the purposive sampling technique was used to choose from various government agencies in addition to the Saudi eGovernment programme members (See table 5.1). Within each government agency, the selection of staff was made according to the individuals' job titles and responsibilities. As the selection was not random, a full description of the reasons for selection should be provided in order to enhance the validity of the data. First, the Ministry of Commerce and Industries was chosen due to its responsibilities related to eCommerce facilities in Saudi Arabia and because according to Pons (2004), issues facing eCommerce in the Arab world will continue to influence the development of eGovernment services. In addition, a Standing Committee on eCommerce in Saudi Arabia was established in 1999, as mentioned in section (4.4.2), so the ministry is in a good position to provide valuable

information on both areas of eCommerce and eGovernment. Second, the Ministry of Agriculture was selected because their website is the largest in terms of content availability, yet it is not structured appropriately, so finding information on their website is not easy task. Third, the Ministry of Education was chosen due to the fact that several electronic initiatives related to increasing the awareness of the use of technology within Saudi society have been introduced between 2001 and 2005 were introduced by the ministry or at least they took part of it (section 4.4.1). Also, about 51% of the government staff work in this sector (Central Department of Statistics and Information, 2008).

Table 5-1:Interview Participants by Site

Participant Site	Number of Participants
Yesser Programme	2
Ministry of Commerce and Industries	2
Ministry of Agriculture	1
Ministry of Education	2
Total	7

5.3.3 Documents

Documents are a valuable source of data, and they can exist in a written or visual format. Moreover, document content analysis is defined as 'a procedure designed to facilitate the objective analysis of the appearance of words, phrases, concepts, themes, characters, or even sentences and paragraphs contained in printed or audiovisual materials' (Busha and Harter, 1980, p.171). The use of the press is a kind of document research described by Denscombe (2003) as a valuable source for research. Moreover, the use of the press can give an indicator on the peoples' opinions on selected topics (Alasaf, 2000). In this study, for the reason mentioned in section 5.2, the use of the press was a good option, given that some Saudi newspapers provide up-to-data information on eGovernment in the country. In fact, newspaper reporting became a valuable source assisting in the discovery of issues related by users of eGovernment. Such sources also shed light on decision makers' points of view. Alriyadh newspaper http://www.alriyadh.com/, is the first daily newspaper in Riyadh city published since May 1965. Also, it is the highest selling newspaper in Saudi Arabia, as well as the top newspaper accessed online (Alriyadh, [no date] and Alexa,

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2007 and 2011). The selection of Alriyadh newspaper was because it provides a full page on information communication technology five days a week. It also includes a general discussion on Saudi eGovernment programmes presented by people who are either responsible for eGovernment services in different government agencies, including Yesser members and IT specialists. This reporting incorporates interviews, reports and scientific articles.

The selection of Riyadh newspaper articles was done by searching their website as they provide an internal search system that allows visitors of the website to freely search the archives of the newspaper data back to 2001 by typing a single word or several words to retrieve all related articles. Articles here refers to all kinds of written format that can be founded including reports, interview, scientific article … etc. Also, users can limit their research by data, for example searching for eGovernment in a specific year or month. In addition, the system supports using quotation marks to retrieve only articles that contain the two words of 'Electronic Government" in the Arabic language 'الإلكترونية الحكومة' (which translated more literally is, 'government electronic'. Being able to use quotation marks in the search was critical, as these two words separately refer to many different things, as in English. English language searches are easier because a single word, such as 'eGovernment', can be used, as the *e* letter stand for electronic. After narrowing the research to be from May 2005, the year in which eGovernment initiative in Saudi Arabia was introduced, to May 2010, the results of the search showed that there were 276 articles on eGovernment. So a method of selection from these articles had to be implemented so as to select from this large group of articles appropriate articles for this study. The selection was built based on the article's relevance, narrowing the selection to articles that dealt with eGovernment directly (e.g., interviews with people who are well known in the area of eGovernment, such the Saudi GCIO, the minister of ICT and technology IT company mangers), reports on eGovernment events (e.g. conferences and workshops) and articles written by specialists. To do so, the researcher went over these articles one by one through reading the title and the brief description of the article presented in the search result. A total of eighteen articles, including reports, interviews and articles, were eventually selected (See appendix F).

5.3.4 Assessment of official government websites

Website assessment has been used as a means to measure the sophistication of a website according to a number of characteristics. In the area of eGovernment technical website design and evaluation, several studies have been conducted in the last few years focusing on eGovernment website evaluation in general, as well as within particular countries (Smith, 2001; Panopoulou al et., 2008; West, 2007; Sakowicz, 2003; Holzer and Kim, 2007; Eschenflder al et., 1997 and Garcia al et., 2005). Moreover, a focus on selected aspects of website design is what distinguishes such studies in the area of technical website design evaluation. Henriksson et al., (2006) reveal that government websites can be evaluated based on many available examples of guidance, or by developing guidance from general publications in a selected area. The instrument generated for this study was developed from several collections, particularly publications by offices responsible for eGovernment initiatives in advanced countries classified among the top countries in the area of eGovernment, such as the United Kingdom, New Zealand, US and Australia. These publications mainly focus on government website design. For example, Guidelines for UK Government Websites: Illustrated Handbook for Web Management Teams published by Cabinet Office in 2004, which is a comprehensive guide covering almost all technical website design issues. This publication is geared toward helping government agencies to develop an effective site which meets the web standards for UK eGovernment websites, as well as meeting the users' needs and expectations. In addition, there is the Guidelines for UK Government Websites: Framework for Local Government published in 2003 by the OeE. Also, the OeE published the Quality Framework for UK Government Web Design: Usability Issues for Government Websites in 2003, which aims to guide government web managers in usability issues and web design standards.

Furthermore, the Better Practice Checklist published by the AGIMO in 2004, which is a collection of 25 documents, each of which covers a specific area such as website navigation, the use of metadata for web resources and information architecture for websites. These documents have been created to help all organisations and people involved in the Australian eGovernment initiative to understand a range of government

website design issues. Moreover, The Australian Guidelines for State Government Website published by AGIMO, aims to support government agencies in developing, setting up and acting in accordance with Australian web standards.

Several reports and studies that provide good direction on information architecture issues have been used in this study as well. Examples include The Guide to Creating Website Information Architecture and Content published by Princeton University in 2008, which identifies seven steps to creating websites, considering information architecture issues, and The Best Practice Review: Local eGovernment Services by George et al. (2001), which is a report reviewing 225 US government websites in the area of government content availability, accessibility and web organisation. Also, this study uses several texts that examine IA issues, for example, Information Architecture: Blueprints for the Web by Wodtke (2003), Information Architecture: Designing an Information Environment for a Purpose by Gilchrist and Mahon (2004), Information Architecture for the World Wide Web by Morville and Rosenfeld (2004) and Information Architecture for Information Professionals by Batley (2007).

5.3.4.1 A note on methodology

In this study, a checklist of eleven indicators (See table 5.2) was developed, and the selected government websites were reviewed twice. The first round took place in the period 10-30 March 2008, and the second round was in 10-30 March 2010. The study was conducted in two rounds because the eGovernment initiative was established in 2005, and thus government websites were still at an early stage of development in 2008. It was therefore expected that changes would take place in several government websites during this two-year period. The checklist used yes/no answers for most of the indicators, as this was seen to offer a high degree of reliability. As addressed earlier, this method has been used by many researchers to evaluated government websites.

A total of 40 government websites out of 120, representing about 33% of government websites listed in the Saudi National eGovernment Portal in 2008, were chosen randomly by using random sampling methods described by Alasaf (2000) as each individual has an

equal chance of being chosen. Here, as the number of listed government websites in the Saudi eGovernment National Portal is relatively small, the simple approach of random sampling was adopted where each website was given a number (1 to 120) and then these numbers were mixed and 40 numbers were chosen. (See appendix G for all government websites being evaluated).

Table 5-2: Web evaluation checklist

Indicators	Definition
1- Type of site? (Web categories).	- Presence: This is a basic stage of eGovernment. In this stage, government agencies create their own websites and post information about the agencies, such as contact information, services available, their policies and regulations. Sites provide e-mail, feedback forms and downloadable forms that are seen by some researchers as interaction stages. These are included here, as offering e-mail contact is fundamental to the advancement of eGovernment. - Interaction: Agencies' websites provide two-way communication, such as e-forms submitted online; this allows information exchange between the government agencies and the sites' visitors. - Transaction: Basically, a two-way interaction that allow the sites' visitors to carry out a full transaction with the agencies, such as paying taxes or applying for a job. - Transformation: This represents the complex stage of eGovernment website development. Site visitors can fully interact with the website, which requires the system to contact other website systems. After browsing, select the type of website, identifying the types of information provided, identifying the format used to provide information.
2- Does the site have a privacy policy statement?	A legal statement that informs the website's users as to how the personal information they provide will be used, disclosed, and managed. If the site has a Privacy Policy Statement, mark Yes
3- Is the site accessible?	Web accessibility refers to the extent to which the site is accessible to all users. General W3C Priority 1: used online accessibility

	checker Available: URL http://checkwebsite.erigami.com/accessibility.html If the site passes the W3C Priority A, mark Yes.
4- Does the site have a language other than Arabic?	The official language of Saudi Arabia is Arabic; however, there are around 7 million residents with different backgrounds and, thus, different languages. If the site has another Language, mark Yes
5- Does the site have an internal search function?	Search system is a type of software design that enables users to search the content of the site. If the site has an internal search system, mark Yes
6- Does the available search system allow for advanced search?	Features search can improve the search result, such as narrow the search by data … etc. If the search system has advanced search, mark Yes
7- Does the site have any kind of metadata?	A basic definition of metadata is 'data about data'. If the site has metadata, mark Yes, and then look at the quality of it in terms of the effective use of its elements.
8- Does the site use any kind of information organisation methods?	Organisation of the content by using, for example topic, task, audience etc. If the site uses any kind of information organisation methods, mark Yes.
9- Does the site have FAQs?	A list of questions and answers that is supposed to be the most frequently asked questions in an organisation. If the site has FAQs, mark Yes.
10- Does the site have a sitemap?	A sitemap is a single page that shows the entire website, like a table of contents. If the site has a Sitemap or A-Z Index, Mark (Yes).
11- Are the external links provided reasonable and well described?	What others sites should be linked from the site, how relevant are these links to the current website, and how are these links described?

5.4 Data analysis strategies

As mentioned above, this study incorporated both quantitative and qualitative data. The qualitative data was analysed manually, and the quantitative data was analysed using the

Statistical Package for Social Sciences (SPSS) version 15.0. In addition, the qualitative data about non-technical barriers, which was obtained through the interview and the analysis of Riyadh articles, was then transferred to be quantitatively for comparison purposes. According to Creswell (2003) concurrent strategies data transformation can be done in order to compare the findings of two different data. Data of each methodology was analysed and presented separately in the Data Analysis and Presentation Chapter. This section gives a more detailed description of the procedure used to analyse both data formats.

5.4.1 Quantitative data analysis strategies

In this study, questionnaire surveys and evaluation of the government websites were analysed statistically using SPSS. Because of the nature of the second part of question seventeen on the questionnaire, it was exempted from this analysis, as was the second part of the checklist's indicator number seven and number eleven. The aim of the questionnaire was to create a profile of expected users of eGovernment in Saudi Arabia, as well as to identify the most non-technical and technical website design from expected eGovernment users perspective. Descriptive statistics, which is defined as 'the branch of statistics that includes the many and varied techniques used to summarise data' (Phelps et al., 2007, p.218) was performed and both charts and tables were used to display the findings, such as frequency distribution (e.g., age groups, education levels). Moreover, a weighted mean was used to measure how some factors affect the use of the Internet and the use of government websites as well. Also, further analysis was performed with the questionnaire to determine whether there were any relations between variables by using the cross-tabulation technique. The variables included age, education and income as independent variables and Internet literacy and eGovernment use, the technical website design factors affecting the use of government website and non-technical barriers as dependent variables. The following figure shows an example of the chart used in this study.
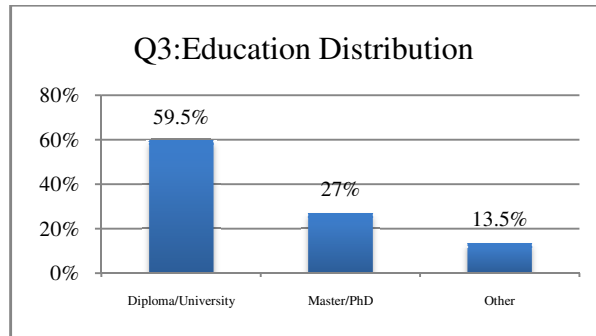
Figure 5-3: Example of some of the chart used in this study

Moreover, the aim of the government website evaluation was to create a profile of the current Saudi government websites. As addressed in section 4.3.4.1 the checklist mostly used yes/no answers, so descriptive statistics represented in frequency distribution was used. Tables were used to present the finding. The following table shows an example of the table used in the section of website evaluation.

Indicator		2008			2010	
FAQs		%	No		%	No
	Yes	24%	9	Yes	34%	13
	No	76%	29	No	66%	25

Figure 5-4: example of table used in web evaluation

5.4.2 Qualitative data analysis strategies

In this study, interviews were carried out with selected key official government staff members from particular government agencies. Several recommendations have been made for analysing qualitative data. These generally share the same concepts of qualitative data analysis and are developed around the three essential components of qualitative data analysis activities proposed by Miles and Huberman (1984): data reduction, data display and conclusion drawing/verification (Phelps et al., 2007; Creswell, 2003; Denscombe, 2003; Finch, 1990 and Williamson et al., 2002). Here, Creswell's (2003) qualitative data analysis steps were followed. Firstly, general reading through of the data obtained was carried out; this was done to become familiar with the data. The next step was to categorise the data by coding based upon themes. These themes were developed in advance around the study's aim and objectives, including non-technical barriers and technical website design issues. Categories were identified after

reading through the data obtained. After organising the data under the categories, each category of each case was summarised. In the final stage was to identify the relationships between categories and to report the finding. Quotations from the interviewees speech were used to support the findings. The documents, which were collected from Alriyadh newspaper website were organised according to their types (e.g., reports, interviews and articles) for easy retrieval. Then, they were analysed using the same steps used to analysis the interviews.

5.5 Ethical considerations

Although ethical issues are quite different among fields of knowledge, they need to be considered for all research processes, taking into consideration that the aim of caring research is to avoid harming the people involved in it (Busha and Harter, 1980). Therefore, in order to protect the questionnaire's participant confidentiality, a cover letter was attached to the survey which provided a brief introduction that detailed the researcher's name, position and contact information. This was followed by a brief section that addressed the aims and objectives of the study and the expected outcomes. Finally, a privacy and confidentiality statement was included. In addition, a letter was issued from the researcher's home department, outlining the research aims and objectives; this was presented to all government and private organisations contacted, as well as to the interviewees. Moreover, all interviewees were informed that their anonymity would be protected.

5.6 Summary

This chapter has presented the research design overview, including the description of the research design adopted and of the data collection instruments used. In addition, sampling techniques were discussed, along with the procedures for analysing qualitative and quantitative data.

Data Analysis and Presentation

This chapter aims to present the quantitative and qualitative data findings. The chapter begins by presenting the questionnaire findings, followed by the findings of the evaluation of government websites. It then presents the interview findings, and finally the document findings.

6.1 The questionnaire

This section presents the analysis of the questionnaire survey which was distributed in Riyadh, the capital city of Saudi Arabia, between August and October 2009 (See appendix H). As addressed in section 5.3.1, the questionnaire was administered to expected users in order to determine their attitudes, beliefs and behaviours when using government websites, as well as to determine the level of satisfaction with eGovernment performance in Saudi Arabia among users and to identify the major non-technical eGovernment barriers from the point of view of expected users, as well as the technical website design issues. As mentioned in section 5.3.1.2, the type of sample was chosen based on several elements in order to define those who are most likely to use eGovernment services in Saudi Arabia. This is because that the researcher conducted a pilot study at the end of 2008 to see at which level eGovernment websites are used as there is no much studies on eGovernment usage in Saudi Arabia.

For the pilot study, 80 pilot questionnaires were distributed randomly (to Saudis males) in Riyadh, and the result after excluding four uncompleted questionnaires showed that around 56% of respondents had not used government websites at all. Also, it was also noted that the concept of eGovernment was not sufficiently clear for some participants, as they see eCommerce services in some sectors, especially banking and travelling services (e.g., booking flights and hotels and paying mobile phone bills) as eGovernment services.

Therefore, the sample technique in this study was chosen accordingly in order to meet the study aim and objectives. 250 participants representing five categories were identified as potential participants in this study (see Table 6.1). The questionnaire consists of nineteen questions grouped into five sections (figure 5.2). They are all closed-ended questions except for question seventeen, which includes an open-ended question. Basic quantitative analysis methods were used across all the questions listed in the questionnaire. In addition, cross-tabulation was used between selected questions and independent variables (age group, education levels and monthly income). This section starts with a general profile of the participants, including background information on them, such as their age, education level, monthly income, Internet experience, and the factors affecting their Internet use. This is followed by an analysis of the participants' eGovernment use, as well as an identification of the factors that affect the use of government websites. Finally, non-technical eGovernment barriers were identified.

Table 6-1:Categories of participants according to responses to Q2

Categories of participants	Number of respond
University Students	50
Secondary School Teachers	50
University Lecturers	50
Government Staff	50
Private Sector Workers	50
Total	250

6.1.1 Participants' profiles

More than half of the participants, 57.6%, fell into the 20 to 30 year old age range, while about a quarter of the survey participants 23.6% fell into the 31 to 40 year old age range. Educationally, 59.5% of the participants held a diploma and an undergraduate degree (excluding those who were university students at the time). In Saudi Arabia, the diploma is a qualification that is gained in two years after secondary school. 27% of participants had a higher educational degree, either a Master's Degree or a PhD, and the other 13.5% (27 out of 200) had a primary, middle secondary or secondary school education. Of these, 13 out of 27 were working in the government sector. Furthermore, 31.2% had a monthly

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income of more than 8000 SR [about £1,330], and 16.4% earned less than 2000 SR [about £333] a month. This is simply because 20% (50 out of 250 participants) were university students and their monthly income, in general, does not exceed 840 SR [about £137] a month from a government grant. The data in Figure 6.1, Figure 6.2 and Figure 6.3 illustrate the distribution of all participants according to the key variables: age, education, and monthly income.
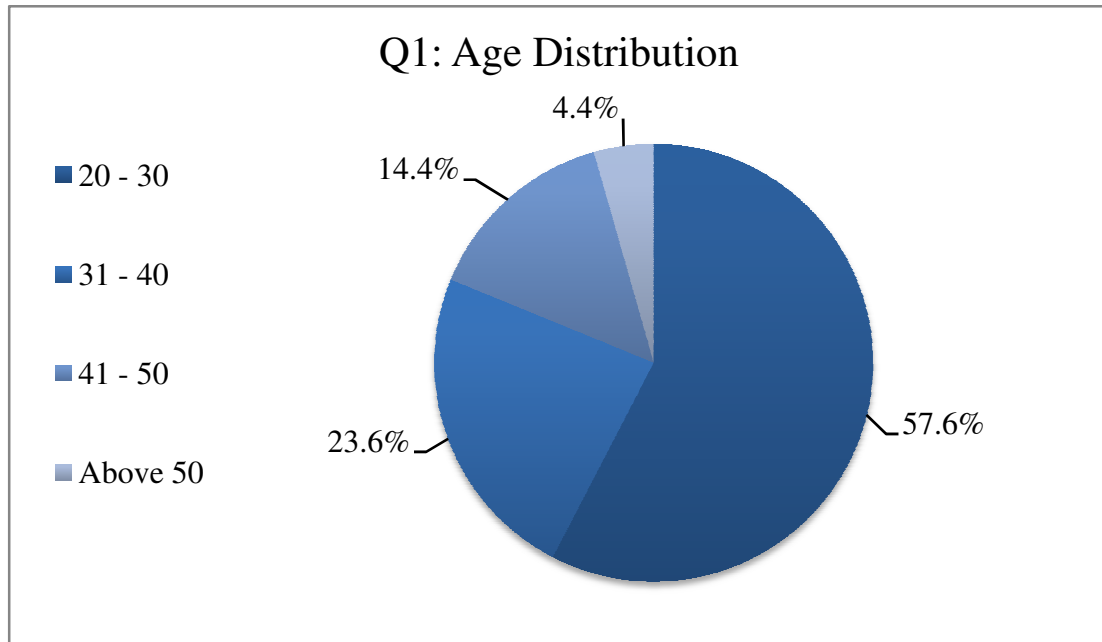
Figure 6-1: Age groups of participants

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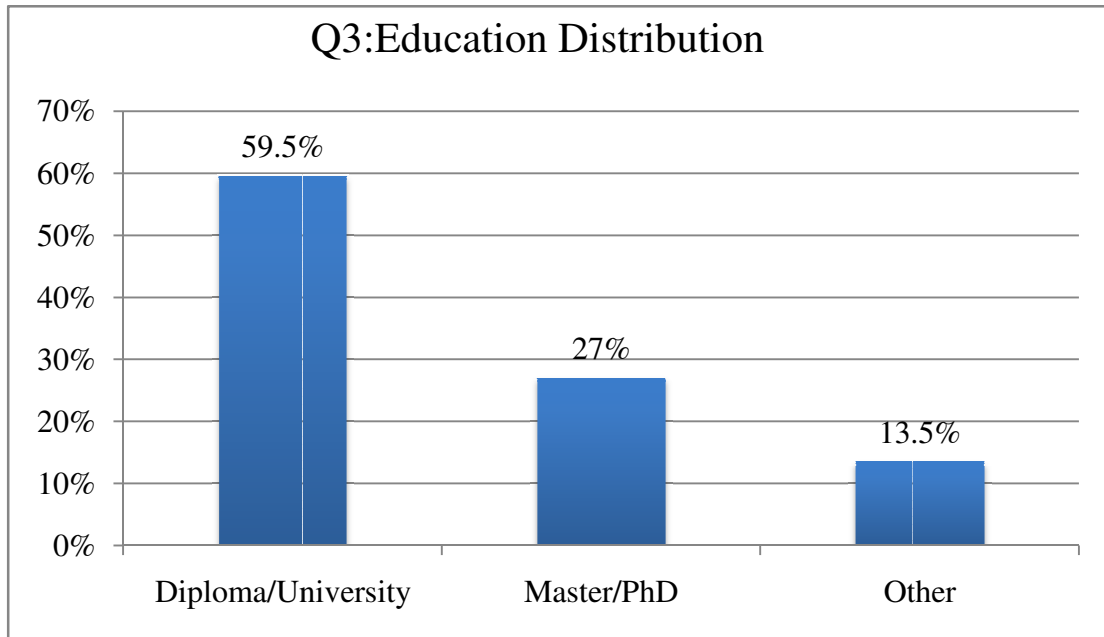
Figure 6-2: Education level of participants
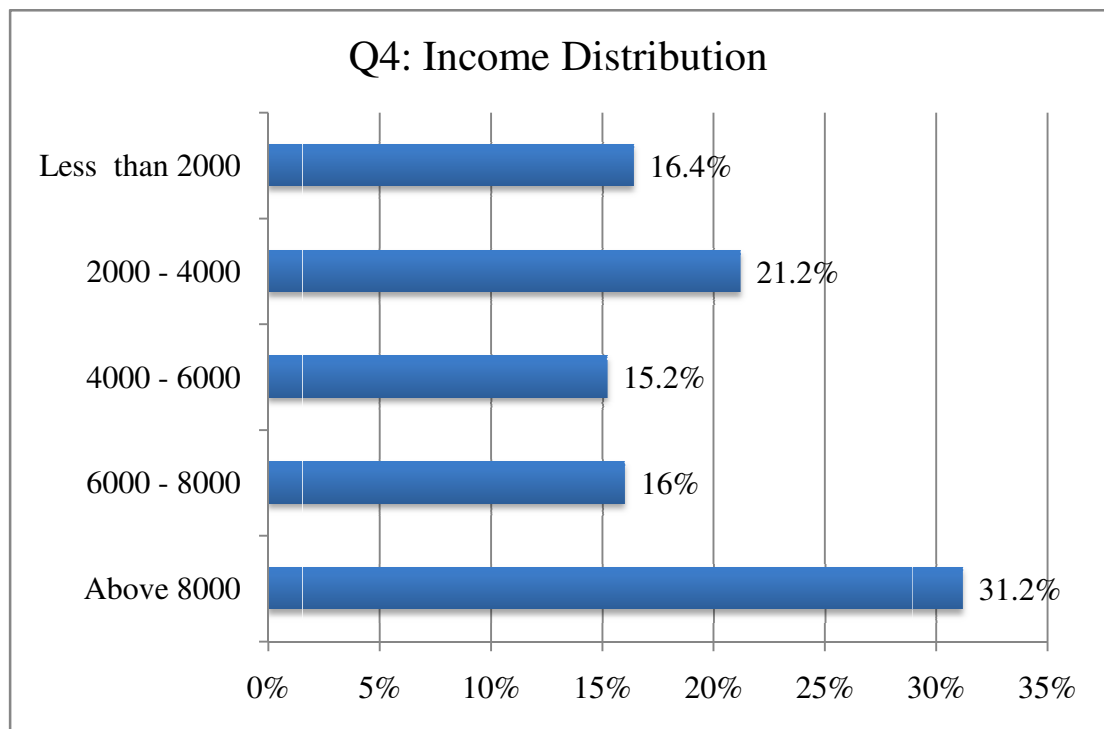
Figure 6-3: Monthly income level of participants

Table 6.2 shows the frequency distribution of all participants according to the two dependent variables of Internet literacy and eGovernment use. It can be seen that the Internet literacy rate among the participants was high, at 96.4%, and the rate slightly declined with regard to eGovernment use, which was 89.6%.

Table 6-2:Frequency distribution of all participants according to dependent variables (Internet literacy and eGovernment awareness and use)

Q5: Internet literacy & Q6 eGovernment users				
	Internet literate		eGovernment users	
Yes %	241	(96.4%)	216	(89.6%)
No %	9	(3.6%)	25	(10.4%)
Total	250	100%	241	100%

Here, a cross-tabulation between, age groups, education levels and monthly income and Internet literacy was carried out, and no strong apparent positive or negative indicators between Internet literacy and age groups except for people over 50 years old as 9% have not used the Internet. Regarding education levels, after excluding university students, participants with low level of education (below University and Diploma) were found to be less likely to use the Internet as about 15% of them have not use the Internet at all. Finally, after excluding university students for the reason mentioned previously only seven participants had a monthly income of less than 2000 SR where two of them had not used the Internet, which basically means 28% of the people with monthly income less than SR2000 were Internet Illiterate (see appendix H, p.244). Regarding the use of government website, again there was no strong positive or negative relation was found, however, the large number of non-users of eGovernment was found with the (41-50) and (over 50 years) age groups, and within low education levels participants (see appendix H, p.245).

Approximately one half of the eGovernment user participants, 48.6%, spend between one and three hours daily on the Internet. Moreover, among the eGovernment user participants, the top two primary uses for the Internet were found to be using e-mail and

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searching for information and knowledge, at 34.3%. This was followed by using e-mail and searching for information and knowledge and entertainment at 31.5%. Furthermore, home was found to be the place from which most participants, about 76.9%, preferred to access the Internet. Accessing the Internet at work came in second place, at 13.4%. Moreover, the majority of the participants 64.4% had been using the Internet for more than five years, and 43.1% of the participants indicated that their Internet knowledge and skills were good with just 0.9% and 2.8% noting that their Internet knowledge and skills were very poor and poor, respectively(see appendix H Q7 to Q 11).

Table 6.3 shows factors affecting Internet use. The mean was used to measure these factors. A high mean score indicates a significant effect. As can be seen from the Table, the weakness of the Internet infrastructure, represented by the slowness of the Internet connection, was found to be at the top of the list of obstacles that affected Internet use in Saudi Arabia, with a weighted mean of 3.93. This refers to the agreement among participants as to this factor being the most significant factor affecting the use of the Internet. Expensive Internet subscription was neutral, as it scored 3.18. However, participants disagreed on the third factor of the lack of computer skills, with of weighted mean of 2.48.

Table 6-3: Factors affecting Internet use

Q12: Factors affecting Internet use		Completely Disagree	Disagree	Neutral	Agree	Completely Agree	Weighted Mean
Slow Internet connection	N	12	10	35	81	77	3.93
	%	6%	5%	16%	38%	35%	
Expensive Internet subscription	N	34	22	68	49	40	3.18
	%	16%	10%	32%	23%	19%	
Lack of computer skills	N	62	43	69	25	15	2.48
	%	29%	20%	32%	12%	7%	

6.1.2 eGovernment use

As shown in Table 6.2, around 89.6% of the participants had used some eGovernment services, and printing out government forms was the eGovernment service most frequently used, at 72.7%. In addition, a cross-tabulation was preformed between occupation and the use of eGovernment services. The result showed that university lecturers were the top users of all listed eServices, except for using interactive government eServices, which was primarily used by the university students (see appendix H, p.246).This was expected, as almost all the universities in the country are considered to be at the top of the government sector that provides electronic services for their staff and students. Moreover, 75.5% of the participants who had searched for eGovernment information and services stated that they had used a known search engine to do so, and around 59.3% stated that they had to search several government websites to obtain the government information and services for which they were looking. Figure 6.4, Figure 6.5, and Figure 6.6 illustrate the frequency of eGovernment services used by participants, methods used to conduct the search, and participants' experience in searching government websites.
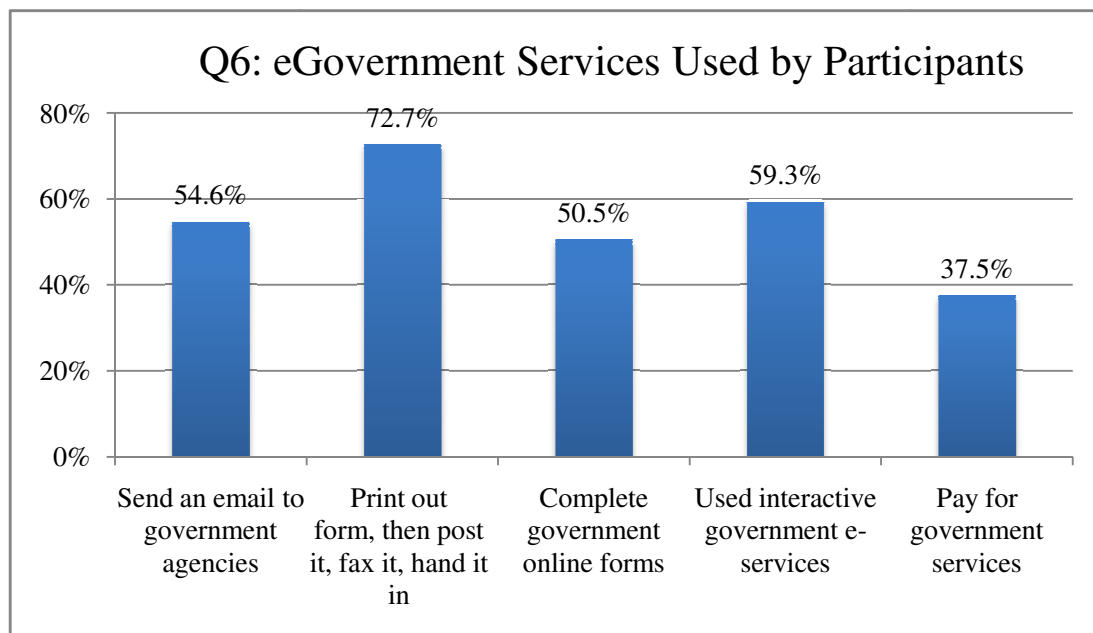
Figure 6-4: eGovernment services used by participants

Q13: Methods Used by Participants to Find eGovernment Information and Services

- 4.2%
- 1.9%
- 15.3%
- 0.9%
- 2.3%
- 75.5%

- ■ Searching using known search engine
- ■ Directly to the agency website link
- ■ Searching the Saudi National e-gov Portal
- ■ Searching using known search engine& Directly to the agency website link
- ■ Searching using known search engine & Searching the Saudi National e-gov Portal
- ■ Searching using known search engine & Directly to the agency website link & Searching the Saudi National e-gov Portal

Figure 6-5: Methods used to search eGovernment information and services

Q14: Participant's experience in searching eGovernment Websites

- Easy and I found what I was looking for: 36.6%
- I found the information I was looking for after a sevral attempts, in several places: 59.3%
- Difficult and I did not find what I was looking for: 4.2%
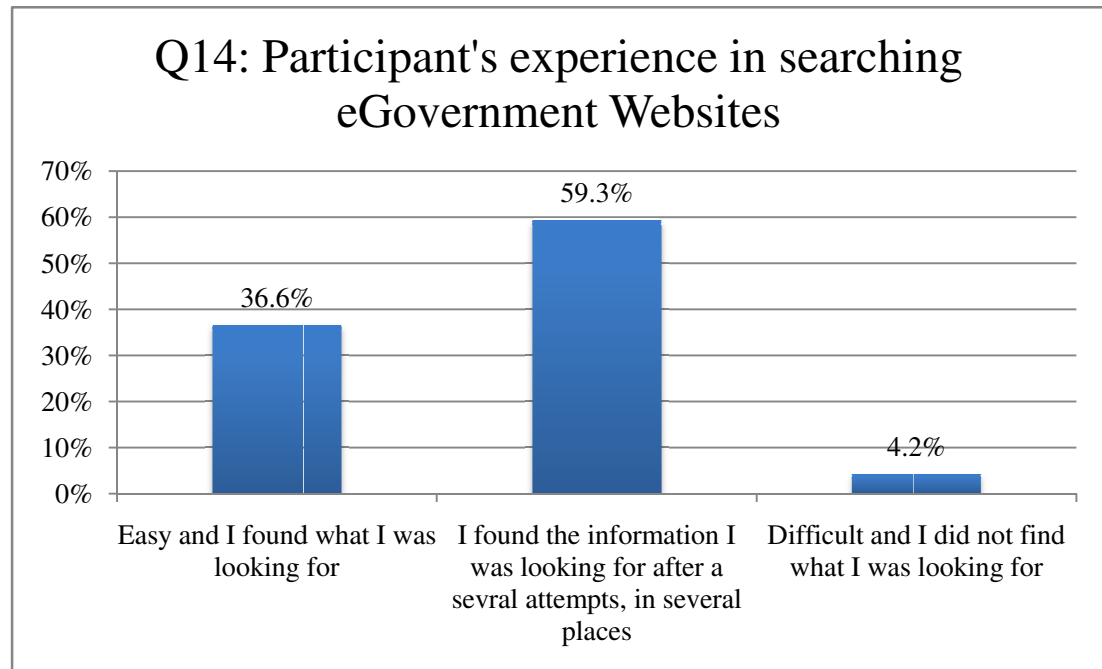
Figure 6-6: Participants' experience in searching eGovernment websites

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As illustrated in Figure 6.5, searching for eGovernment information and services using a known search engine was found to be the method most frequently used by participants. Additional analysis using cross-tabulation was performed to see if there was any relationship between age, education and search method usage. It was found that the majority of participants, across all age groups, used Internet search engines as the first option. For example, the largest age group of participants was in the 20 to 30 age group; therefore, this group was used as an indicator. Approximately 82% of the participants in the 20 to 30 age group used Internet search engines. Furthermore, 79% of participants with diplomas and university education including university students used Internet search engines to search for government information and services. The results of age and education level combined, with regard to question thirteen, shows that searching through the Saudi National eGovernment portal was the option least used by users compared to the other search methods (see appendix H, p.250). The same procedure was carried out to determine whether any group by age and education (including university students) found it easy to obtain government information and services, and it was discovered that the majority of participants in all age group, as well as in all education levels in general required more attempts to find what they looking for. The following table shows the result of the cross-tabulation.

Table 6-4: How easy to find government information and services

Q14 and age groups and education levels	Easy, and I found what I was looking for	I found the information I was looking for after several attempts, in several places	Difficult, and I did not find what I was looking for
By age groups			
20-30	36.6%	57.3%	6.1%
31-40	43.3%	54.4%	2.3%
41-50	36.7%	63.3%	0%
Over 50	0%	100%	0%
By education levels			
Diploma/ University	34%	61.2%	4.8%
Master/ PhD	40%	60%	0%
Other	47.4	42.1%	10.5%

6.1.3 Factors affecting the use of government websites

Table 6-5: Factors affecting eGovernment users when looking for government information and services

Q15: Factors affecting the use of eGovernment websites		Completely Disagree	Disagree	Neutral	Agree	Completely Agree	Weighted Mean
Lack of availability of government content	N	5	16	24	80	90	4.09
	%	2.3%	7.4%	11.2%	37.2%	41.9%	
Lack of information organisation schemas.(e.g. browsing by subjects, audiences, tasks)	N	15	38	63	72	26	3.26
	%	7%	17.8%	29.4%	33.6%	12.1%	
Absence of an effective search facility	N	22	33	64	63	34	3.25
	%	10.2%	15.3%	29.6%	29.2%	15.7%	
Poor presentation of the search result	N	26	40	71	49	29	3.07
	%	12.1%	18.6%	33%	22.8%	13.5%	
Difficulty in identifying which government agencies provide the information or service I require	N	57	36	71	37	15	2.62
	%	26.4%	16.7%	32.9%	17.1%	6.9%	
Difficulty in formulating the search query	N	71	47	50	35	13	2.41
	%	32.9%	21.8%	23.1%	16.2%	6%	

As can be seen from Table 6.5, the lack of availability of government content was found to be the main factor affecting participants when using government websites with a weighted mean of 4.09. The second most important factor influencing participants' ability to use government websites was the lack of website organisation schemas used within the websites (e.g. browsing by subject, audience, and tasks), which scored 3.26. The absence of an effective search facility was found to be the third most important factor affecting participants when using government websites, with a weighted mean of 3.25. The following section presents further analysis of the relationship between these top three

factors, participants' age groups (the over 50 age group was excluded, as there were only nine participants in this group) and education levels.
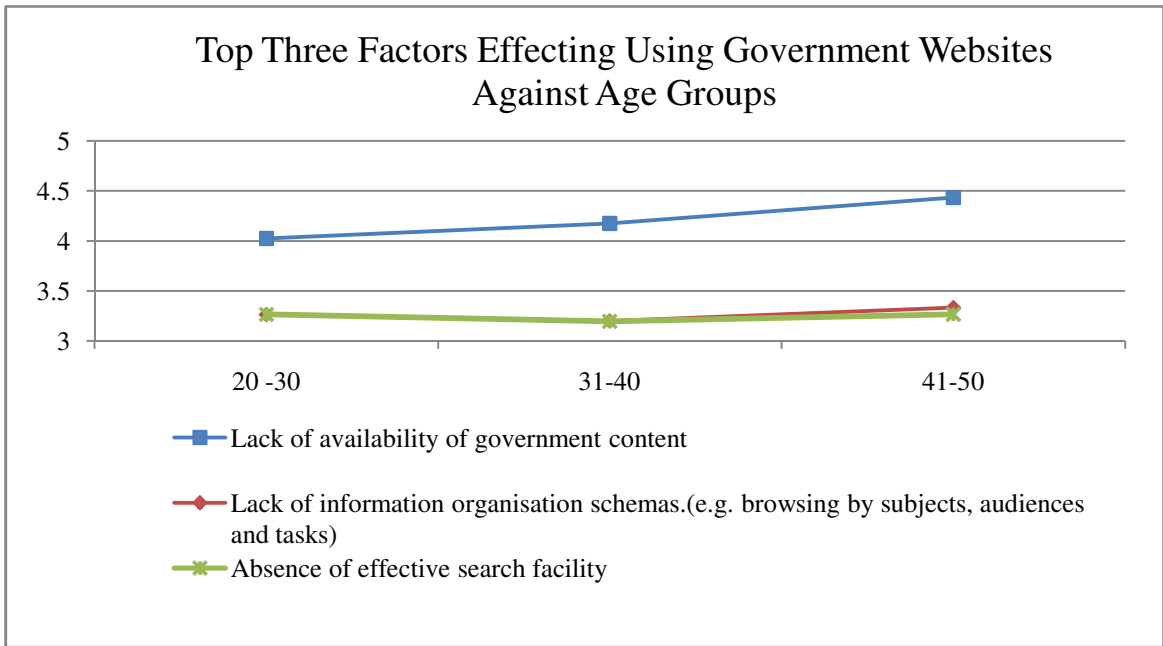
Figure 6-7: Top two factors affecting using government websites against age groups
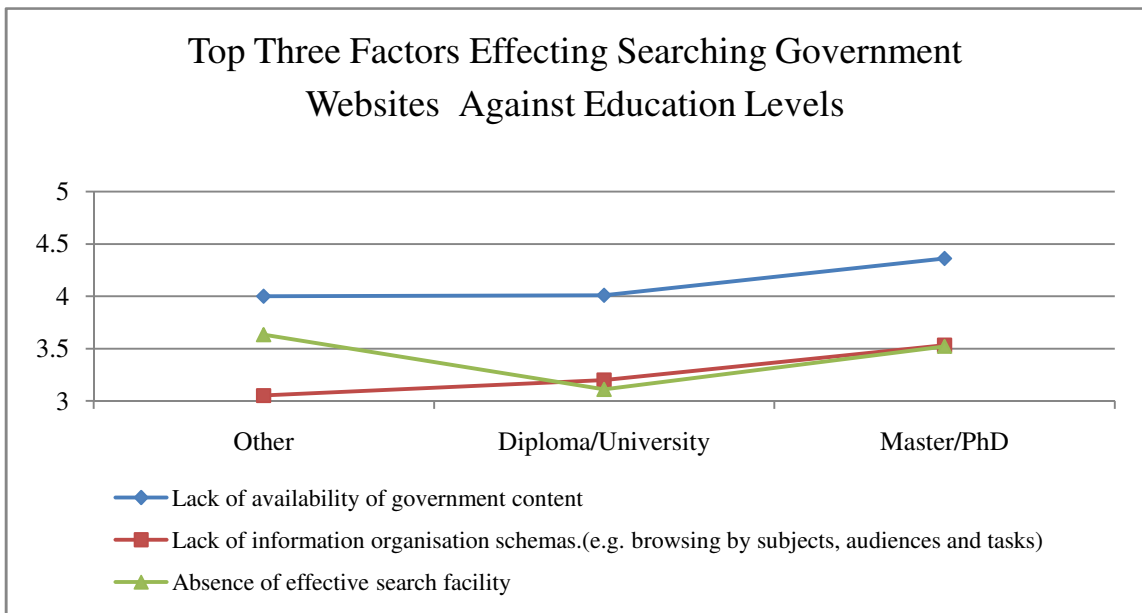
Figure 6-8: Top two factors affecting using government websites against education levels

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Figure 6.7 and Figure 6.8 show the average scores for the top three factors affecting a participant's ability to use government websites. Generally, there was a positive relation between the three factors and age groups, as well as education level, as shown in Figure 6.7 and Figure 6.8. The key findings of the result can be summarised as follows:

- In general, these three factors (lack of availability of government content, lack of information organisation schemas (e.g. browsing by subjects, audiences, tasks) and absence of an effective search facility) had affected the participants in all age groups and of all education levels.

- A positive relation was found between the lack of availability of government content and age groups and education levels.

- Participants with lower education were found to be more affected by the absence of effective search facility, whereas people with high education found to be more affected by the lack of the use of organisation schemes.

- Participants over 40 years of age were more affected by both the absence of effective search facility as well as the lack of the use of organisation schemes.

These three factors could be linked to the satisfaction levels of the eGovernment services users in Saudi Arabia, as shown from question sixteen, as almost half of them, 46.3%, indicated that they were unsatisfied with the level of eGovernment services provided, compared to 6.9% and 2.3% of participants who indicated that they were satisfied and very satisfied, respectively. Moreover, even though eGovernment websites put government information and services on the Internet, users may or may not know about these providers. Here, it was found that, in many cases, a large number of users did not know about the providers of some government information and services. For example, 25% of the participants did not know which government agencies provided information about the countries that Saudi citizens are not allowed to travel to. Also, it was clear that the majority used the same title of the government recourse when searching for government resources. Regarding the methods used to contact government, around 70% of the participants contacted public sector agencies in person, as compared to about 15% who did so using the Internet (see appendix H Q16 toQ18).

6.1.4 Non-technical eGovernment barriers

Table 6-6:Non-technical eGovernment barriers

Q19: eGovernment non-technical barriers		Completely Disagree	Disagree	Neutral	Agree	Completely Agree	Weighted Mean
Lack of marketing	N	2	16	21	80	131	4.29
	%	0.8%	6.4%	8.4%	32%	52.4%	
Lack of proper laws and legislation	N	5	20	44	89	88	3.96
	%	2%	8.1%	17.6%	36.2%	35.8%	
Lack of studies which identifying the users' needs of eGovernment	N	5	18	59	80	88	3.91
	%	2%	7.2%	23.6%	32%	35.2%	
Users' lack of IT knowledge 'digital divide'	N	9	24	43	96	78	3.84
	%	3.6%	9.6%	17.2%	38.4%	31.2%	
Trust and Confidence	N	9	32	39	80	88	3.83
	%	3.6%	12.9%	15.7%	32.3%	35.5%	
Lack of user participation in the system development	N	6	27	62	93	60	3.70
	%	2.4%	10.9%	25%	37.5%	24.2%	
Lack of IT skilled staff and leadership support	N	80	40	56	74	70	3.64
	%	3.2%	16.1%	22.6%	29.8%	28.2%	
Social and cultural issues	N	12	37	61	102	38	3.47
	%	4.8%	14.8%	24.4%	40.8%	15.2%	

As shown in Table 6.6, lack of marketing was at the top of the list of non-technical eGovernment barriers, with a weighted mean score of 4.29. This signifies that the participants were in complete agreement on this statement. This was followed by the lack of proper laws and legislation, with a weighted mean score of 3.96, and then came the lack of studies identifying society's eGovernment service needs, with a score of 3.91. Users' lack of IT knowledge was ranked fourth on the list of the major non-technical eGovernment barriers with a weighted mean of 3.84. Finally, users trust and confidence came in fifth place, with 3.83. Generally, all these factors showed a high score, as the lowest weighted mean was 3.47, meaning that participants agreed about all the barriers listed in question nineteen. The top five factors were then analysed with relation to

participants' age groups (the over 50 age group was excluded, as there were only eleven participants in this group), and education levels.
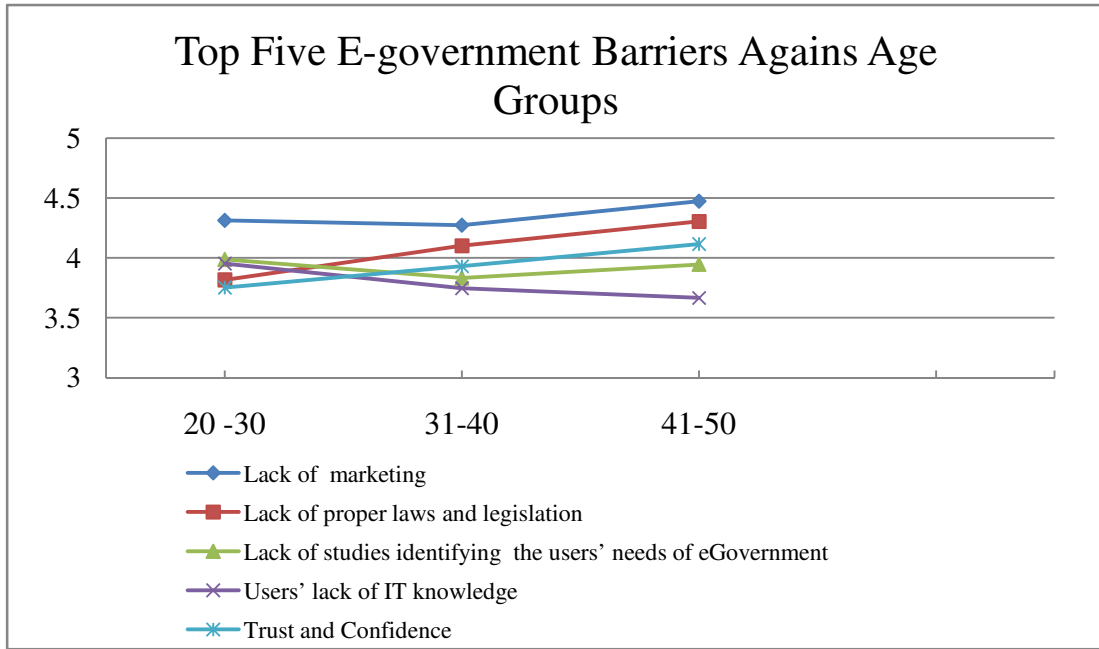

Figure 6-9: Top five eGovernment non-technical barriers against age groups
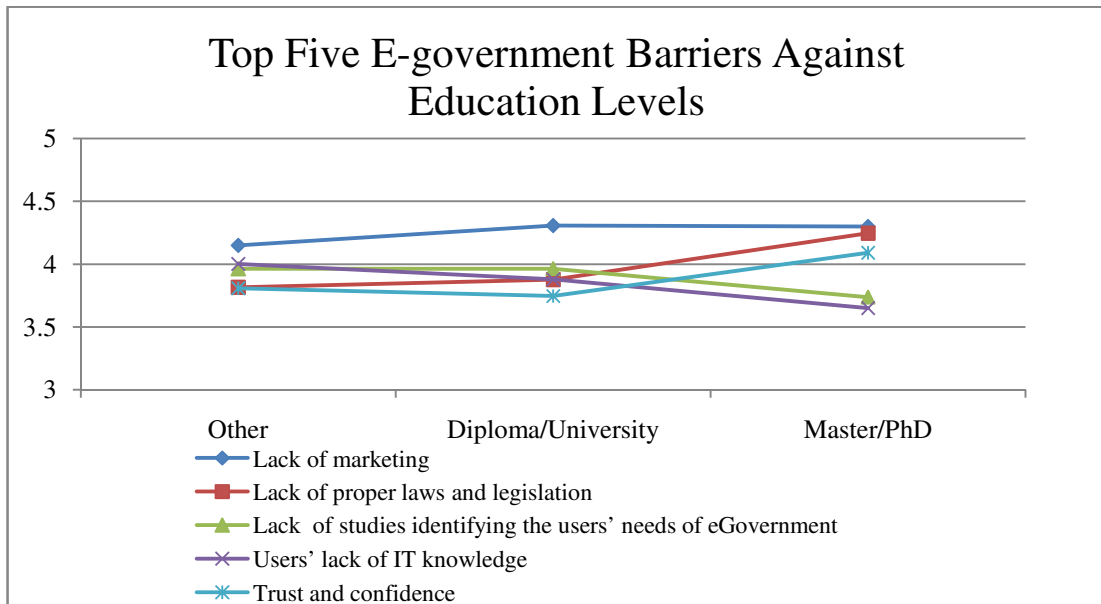
Figure 6-10: Top five eGovernment non-technical barriers against education level

As illustrated in Figure 6.9, there was generally a positive relationship between these barriers and age group, particularly for the two factors of lack of proper laws and legislation and trust and confidence. A similar situation can be seen from Figure 6.10, with participants with high education levels being generally more concerned about non-technical eGovernment barriers, except barriers three and four. The key findings of this additional analysis can be summarised as follows:

- Generally, these barriers were seen as critical for the development and diffusion of eGovernment services in Saudi Arabia among all participants.
- Participants in the age group of 41 to 50 and those in the higher education level group were more concerned about these five barriers than were other participants, apart from the dearth of studies identifying the users' of eGovernment in figure 6.9 and the dearth of studies identifying the users' of eGovernment, as well as users' lack of IT knowledge in figure 6.10.

6.2 Government website evaluation

As addressed in section 5.3.4, the evaluation of government websites can be made to examine various areas of interest of the researchers, and this was precisely the aim of this section, which evaluated the design of Saudi government websites and compiled a profile of current eGovernment technical website design issues. A total of 40 government websites, representing about 33% of Saudi Arabian government agencies' websites listed in the Saudi National eGovernment Portal were checked twice, between 10 and 30 March 2008 and again between 10 and 30 March 2010 (see appendix H). Two websites were excluded from this study (the Directorate General of Civil Status and the Public Security Directorate) as they were no longer available in 2010. It was expected that changes would have taken place in many of the government websites, as many of them in 2008 were still at an early stage of development due the fact that the most of Saudi eGovernment websites had only been developed in 2006.

6.2.1 Examples of the changes to Saudi government websites

This section presents several examples that can be used to provide a clear picture of Saudi government websites. The Riyadh Region Traffic website and the Ministry of

Labor website are two such examples. The Riyadh Region Traffic website was simple, and contained little content and offered no electronic services at all. It fell in the 'presence' web category in 2008; however, by 2010, much more content had been added and some types of electronic service had been provided. Consequently, with the development of this website, its status had improved and it was now considered to be an 'interactive' website. The same change occurred in the Ministry of Labor website, and in other government websites.

Moreover, some government agencies, such as the Ministry of Higher Education and the Passport Department, further developed their websites. Since 2008, these websites had changed from websites that provide basic information into transaction websites that allowed the public to obtain a full range of electronic services. This reflects the firms' concept of eGovernment applications. However, there are several government agencies, such as the Real Estate Development Fund and the Ministry of Justice, which had not been active in an active developing the availability of content or the availability of electronic services. The following screenshots, taken from the Ministry of Labor and the Ministry of Higher Education websites, show the website development that had taken place on these websites.

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Figure 6-11: In 2008, the Ministry of Labor's homepage was simple; in 2010, it was more organised with richer content and more available of eService

Figure 6-12: In 2008, the Ministry of Higher Education's homepage was basic with little content available; in 2010, it was rich in content and offered more eServices

6.2.2 Website evaluation checklist

As stated earlier in section 5.4.4, this checklist was developed from a collection of studies, reports and government publications.

Table 6-7:Web evaluation checklist

Indicators	Definition
1. Type of site? (Web categories).	- **Presence**: This is a basic stage of e-government. In this stage, government agencies create their own websites and post information about the agencies, such as contact information, services available, their policies and regulations. Sites provide e-mail, feedback forms and downloadable forms that are seen by some researchers as interaction stages. These are included here, as offering e-mail contact is fundamental to the advancement of e-government. - **Interaction**: Agencies' websites provide two-way communication, such as e-forms submitted online; this allows information exchange between the government agencies and the sites' visitors. - **Transaction**: Basically, a two-way interaction that allow the sites' visitors to carry out a full transaction with the agencies, such as paying taxes or applying for a job. - **Transformation**: This represents the complex stage of eGovernment website development. Site visitors can fully interact with the website, which requires the system to contact other website systems. After browsing, select the type of website, identifying the types of information provided, identifying the format used to provide information.
2. Does the site have a privacy policy statement?	A legal statement that informs the website's users as to how the personal information they provide will be used, disclosed, and managed. If the site has a Privacy Policy Statement, mark Yes
3. Is the site accessible?	Web accessibility refers to the extent to which the site is accessible to all users. General W3C Priority 1: used online accessibility checker Available: URL http://checkwebsite.erigami.com/accessibility.html

		If the site passes the W3C Priority A, mark Yes.
4.	Does the site have a language other than Arabic?	The official language of Saudi Arabia is Arabic; however, there are around 7 million residents with different backgrounds and, thus, different languages. If the site has another Language, mark Yes
5.	Does the site have an internal search function?	Search system is a type of software design that enables users to search the content of the site. If the site has an internal search system, mark Yes
6.	Does the available search system allow for advanced search?	Features search can improve the search result, such as narrow the search by data … etc. If the search system has advanced search, mark Yes
7.	Does the site have any kind of metadata?	A basic definition of metadata is 'data about data'. If the site has metadata, mark Yes, and then look at the quality of it in terms of the effective use of its elements.
8.	Does the site use any kind of information organisation methods?	Organisation of the content by using, for example topic, task, audience etc. If the site uses any kind of information organisation methods, mark Yes.
9.	Does the site have FAQs?	A list of questions and answers that is supposed to be the most frequently asked questions in an organisation. If the site has FAQs, mark Yes.
10.	Does the site have a sitemap?	A sitemap is a single page that shows the entire website, like a table of contents. If the site has a Sitemap or A-Z Index, Mark (Yes).
11.	Are the external links provided reasonable and well described?	What others sites should be linked from the site, how relevant are these links to the current website, and how are these links described?

6.2.2.1 Web categories

Table 6-8:Web categories

Indicators	2008			2010		
Web categories		No	*%*		No	*%*
	Presence	28	73%	Presence	19	50 %
	Interaction	9	24%	Interaction	13	34%
	Transaction	1	3%	Interaction	6	16%
	Transformation	0	0%	Transformation	0	0%

As discussed in section 2.3 and shown in Table 6.7, there is more than one stage of government website. Organisations or experts have developed the models of these stages to measure the maturity of the government services provided to the beneficiary, starting with a presence as the basic stages and ending with a transformation as an advanced stage. Here, each website was checked twice once in 2008 and again in 2010 to determine its maturity. As can be seen from Table 6.8, by 2010 there had been a slight improvement in the Saudi government websites that were checked in 2008.

Regarding the types of information offered at these government websites, there is no significant difference among these websites. Law and regulations are commonly provided on almost all websites, as well as official publications including annual reports, periodic bulletins, and statistics. Public information including services offered and their requirements and procedures. Downloadable forms are offered on many website checked. Moreover, PDF, MS Word, MS Excel were used mostly in these websites to present their law and regulations and their publications. The following figure shows the kinds of information in these websites in 2008 and 2010.
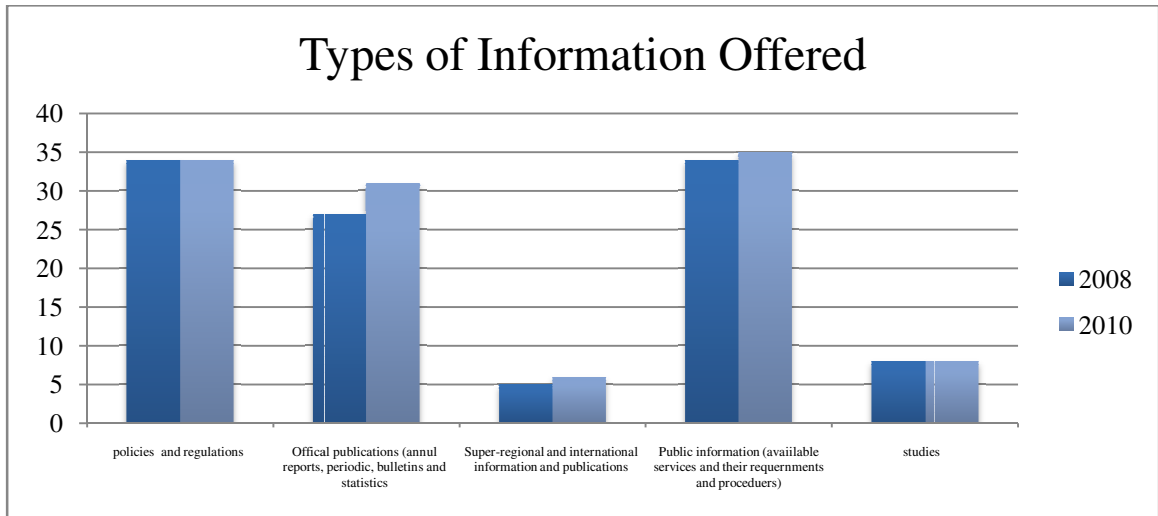
Figure 6-13: Kinds of information in these websites in 2008 and 2010

6.2.2.2 Privacy policy statement

Table 6-9:Privacy policy statement

Indicator	2008			2010		
Privacy Policy Statement		No	%		No	%
	Yes	4	11%	Yes	7	18%
	No	34	89%	No	31	82%

As shown in table, there was no significant improvement in providing visible privacy statements within the Saudi Arabian government websites. Although many of the websites that were checked for this study require some kind of personal information in order to obtain a service or to register with the site, in 2010 only 18% government websites included a privacy statements compared to 11% in 2008. Privacy issues, as addressed previously in section 3.1.3, can significantly limit the use of online government services.

6.2.2.3 Accessibility

An accessibility analysis was conducted using an online accessibility checker http://checkwebsite.erigami.com/accessibility.html to examine the homepage of each website selected in this study in order to evaluate the site's accessibility. As shown in table 6.10, in 2008 one website's home page conformed to all of the criteria of Priority A. Moreover, the issue of Saudi government websites' accessibility had remained the same

over two years. The following table summarises the accessibility results and includes information on the total number of failure issues and the top two Level A checkpoints. (Full details of the accessibility results are provided in appendix I).

Table 6-10:WCAG1 level A results

WCAG1: level A results (2008)			
Total of Failure Issues	131	- Out of 38, one site with no failure issues	
Top Two Level A Checkpoints Result			
		Total	**Average**
- Priority 1: Alt is missing		479	12
- Priority 1: Clickable image without alt		419	10.5
WCAG1: level A results (2010)			
Total of Failure Issues	141	- Out of 38, no sites with no failure issues	
Top Two Level A Checkpoints Result			
		Total	**Average**
- Priority 1: Clickable image without alt		534	14.02
- Priority 1: Alt is missing		492	12.94

In the second stage, which was only conducted in the second round, the homepages of all 38 websites were tested manually, with different Internet browsers (in addition to Internet Explorer 7.0), including Firefox 3.6.2, Google Chrome 4.1, and Netscape 9.0.0.6. According to a CITC (2008) report on individuals' usage of the Internet in Saudi Arabia, the majority (84%) of users use the Internet Explorer browser, 9% use Netscape, 2% use Firefox and the rest use other Internet browsers. Here, the website is marked 'yes' if it works with all the Internet browsers without any errors (e.g. error in web presentation). The results of the test were acceptable. 34 pages worked with Firefox 3.6.2, 31 pages with Google Chrome 4.1, and 27 with Netscape 9.0.0.6. (full details are given in appendix J).

6.2.2.4 Multiple languages

Table 6-11:Multiple languages

Indicator	**2008**			**2010**		
Multiple Languages		No	*%*		No	*%*
	Yes	24	63%	Yes	27	71%
	No	14	37%	No	11	29%

Arabic is the official language in Saudi Arabia; however, as stated in section 4.1.2, 31% of the resident population comes from different countries and backgrounds, generally to work, so providing government information in another language is essential in order to ensure that the information is accessible, particularly for government agencies that non-Saudis may need to contact regularly. Here, as can be seen from the table, Saudi government websites have generally shown an interest in using another language, especially English, which, apart from Arabic, is the most widely-used language in the country. However, none of the websites in the two rounds of the study had a full version in other languages or used any formats to present valuable information on a single page. Other languages are only used with selected pages. This gives an indication that there is no clear strategy for the use of other languages in Saudi government websites; for example, some government websites, such as the Riyadh Traffic Department, should have other languages but do not.

6.2.2.5 Internal search system

Table 6-12:Search system

Indicator		2008			2010	
		No	%		No	%
Search system availability	Yes	30	79%	Yes	32	84%
	No	8	21%	No	6	16%
Working	Yes	19	63%	Yes	22	69%
Not working	No	11	37%	No	10	31%
Advanced search	Yes	4	21%	Yes	9	41%
	No	15	79%	No	13	59%
Features (e.g., spelling checker)	Yes	1	5%	Yes	1	4%
	No	18	95%	No	21	96%

As shown no significant change was found between 2008 and 2010, with regard to providing an internal search system or with regard to the quality and effectiveness of the search systems provided. These websites were checked more than once during the period of the two-round evaluation in order to monitor the presence and functionality of internal search engines.

6.2.2.6 Use of metadata

Table 6-13:Metadata

Indicator	2008			2010		
Metadata		No	%		No	%
	Yes	6	16%	Yes	9	24%
	No	32	84%	No	29	76%

A meta tag checker website was used at first; however, it was noticed that these websites read the title of the website from the HTML <title> code and not from the metadata title element; therefore, manual checking was required. Although the Yesser eGovernment Framework For Interoperability (2005) indicated that simple Dublin Core should be a part of each documentation which is made available publicly or exchanged between government agencies, there is no great interest in metadata use in Saudi government websites, as can be seen from the table (see appendix K). In round two, the analysis was expanded to determine what kind of metadata was used, what elements were used, and how the elements were completed. Generally, none of the websites checked used DC as a standard to describe their information and services. Moreover, none of the websites had a completed metadata element. In addition, the same description and keywords used were repeated on each site without considering the content of the page. The following section discusses the most important issues that were discovered.

- Use inappropriate value within the metadata element

Each element of a metadata is designed for a specific purpose. For example, the title element should present the title of the resource, subject to presenting the content of the resource in words. In several of the websites checked for this study, there was an error in using the metadata element properly. This is illustrated in Figure 6.14 and Figure 6.15, below:

<META NAME="title" CONTENT="كلمة صاحب السمو الملكي النائب الثاني وزير الداخلية">
<META NAME="subject" CONTENT="كلمة صاحب السمو الملكي النائب الثاني وزير الداخلية">

Figure 6-14: Ministry of Interior Metadata Homepage 2010

As can be seen from the metadata of the Ministry of the Interior's homepage, the value used in the title and subjects elements did not meet their purpose. The title element should present the title of the site, which is the Ministry of Interior Portal. Here, the value used to describe the site title is 'The second deputy premier and the Minister of the Interior's speech'. Similarly, the value was repeated in the subject element, which is used to describe the site in a few words.

```
<meta name="description" content="بوابة المعلومات ـ المملكة العربيةالسعودية ـ وزارة الخارجية
الإلكترونية">
<meta name="keywords" content="سفارة خادم الحرمين, المملكة العربية السعودية , وزارة الخارجية
الشريفين,
بوابة المعلومات , طلب المساعدة ، الحكومة السعودية،بيانات مجلس الوزراء، اخبار القيادة ، التأشيرات الالكترونية
الالكترونية">
```

Figure 6-15: Ministry of Foreign Affairs Homepage 2010

Again, in the Ministry of Foreign Affairs' homepage, instead of using a summary about the ministry within the metadata's description element, keywords are used. 'Kingdom of Saudi Arabia- Ministry of Foreign Affairs- Ministry of Foreign Affairs Portal'. In addition, within the keywords metadata element, irrelevant words are been used, such as 'seeking help, council minister of Saudi governments' statements, and government leadership news'.

- Incomplete metadata element value

A second major issue that was noticed was that several government websites left the metadata's element blank. Elements such as keywords and description are needed for effective retrieval to support the ability to find information through the internal search facility if it is designed to search website's metadata. Figure 6.16 and Figure 6.17 show how some government websites leave the metadata elements blank.

```
<title>وزارة الصحة ـ المملكة العربية السعودية</title>
<meta http-equiv="content-type" content="text/html; charset=windows-1256">
<meta http-equiv="content-language" content="ar">
<meta name="rating" content="general">
<meta name="robots" content="index, follow">
<meta name="generator" content="">
```

```
<meta name="keywords" content="enter your keywords here">
<meta name="description" content="Enter your site description here">
<meta name="author" content="yourname">
```

Figure 6-16: Ministry of Health Homepage 2010

```
<meta http-equiv="content-language" content="ar" />
<meta name="robots" content="index,follow" />
<meta name="keywords" content="" />
<meta name="description" content="" />
<meta name="rating" content="general" />
<meta name="author" content="مركز العلومات" />
<meta name="copyright" content="Copyright © 2001-2010" />
```

Figure 6-17: Ministry of Social Affairs' Homepage 2010

- Metadata element values repeated on each page

The use of metadata is not reserved exclusively for the homepage; it is also used for sub-pages that contain important information or services, and this is usually subject to what types of resources metadata should be created for. In this study, none of the government websites that used some kind of metadata considered this matter and the metadata element values are repeated on each page, regardless of what the page contains.

```
<META NAME="keywords" CONTENT="Zakat, Tax Saudi Arabia, Ministry of Finance Saudi
Arabia, Islamic Tax, DZIT, ZAKAT, Department of ZAKAT and Income Tax, ZAKAT Duty
Persons Subject to ZAKAT, Income Tax, TaxComputing, Income Tax Regime">
<META NAME="description" CONTENT="The mission of DZIT is briefly to administer and
collect zakat on commercial goods from Saudi individuals and companies and from individuals
and companies of GCC states subject to the same treatment like Saudis, and to administer and
collect tax from non-Saudi individuals, foreign companies and foreign partners in joint
companies doing business inside the Kingdom of Saudi Arabia or inside and outside the
Kingdom at the same time.">
```

Figure 6-18: Department of Zakat and Income Tax Homepage 2010

```
<META NAME="keywords" CONTENT="Zakat, Tax Saudi Arabia, Ministry of
Finance Saudi Arabia, Islamic Tax, DZIT, ZAKAT, Department of ZAKAT and Income
Tax, ZAKAT Duty, Persons Subject to ZAKAT, Income Tax, Tax Computing, Income
Tax Regime">
<META NAME="description"  CONTENT="The mission of DZIT is briefly, to
administer and collect zakat on commercial goods from Saudi individuals and companies
and from individuals and companies of GCC states subject to the same treatment as
Saudis, and to administer and collect tax from non-Saudi individuals, foreign companies
and foreign partners in joint companies doing business inside the Kingdom of Saudi
Arabia or inside and outside the Kingdom at the same time.">
```

Figure 6-19: Department of Zakat and Income Tax New Registration 2010

6.2.2.7 Website organisation methods

Table 6-14:Websites organisation methods

Indicator	2008			2010		
Information Organisation Methods		No	%		No	%
	Yes	10	26%	Yes	12	32%
	No	28	74 %	No	26	68%

Several techniques and approaches have been used to increase information findability on the website. Helping users obtain the right information easily has become an important matter, especially with the vast and ever-increasing amounts of information available on the Internet. Moreover, the use of these methods is significant, in particular on a website where the search system is not efficient. These methods include organising the websites by topic, audience and task to support findability. Here, as can be seen in Figure 6.20, several government websites have been using some of such these organisational schemes; for example, the Saudi General Organisation, which has organised its website by audience. Similarly, the Ministry of Higher Education has organised its website by audience, while the Passport Department has organised its website by task.

Figure 6-20: In 2008, the Saudi General Organisation for Social Insurance's homepage was simple; in 2010 it was organised by audience, topic, and task.

6.2.2.8 FAQs

Table 6-15:FAQs

Indicator	2008			2010		
FAQs		%	No		%	No
	Yes	24%	9	Yes	34%	13
	No	76%	29	No	66%	25

Table 6.15, shows that only 13 government websites had a FAQ page, and six out of the 13 websites used some kind of organisational method within their FAQ page, such as by topic or audience to increase findability. In fact, providing FAQs on government websites could be more important than on any other website, for the reason mentioned earlier in Chapter Three. In this study, although several government websites provided such a page, the

nature of the questions provided in several government websites did not give precise answers or gave incomplete answers, while some provided only a small number of questions. For example, the Saudi Credit & Saving Bank listed only three questions in their FAQs page. The Ministry of Labor, on the other hand, had 42 questions listed in five FAQs pages, which made finding questions and their answers quite difficult. This could be improved by grouping related questions by topic for example. Again, considering FAQ page usability is needed to ensure that the page serves the purpose for which it has been created.

6.2.2.9 Sitemap

Table 6-16:Sitemap

Indicator	2008			2010		
Sitemap		No	%		No	%
	Yes	20	53%	Yes	25	66%
	No	18	48%	No	13	34%

As can be seen from the table, there had been a slight increase in the number of Saudi government websites providing a website sitemap as an alternative navigation method, as well as to help the website's users to understand the structure of the website and the available content. However, several usability issues were identified while conducting this evaluation. For example, in round two, only three websites were found to provide a full sitemap showing all the websites' content, compared to two websites in the first round. Moreover, the majority only provided one level; for example, such as the Riyadh Traffic Department's website, or two levels, such as in the Public Pension Agency's sitemap page. Another issue is that the sitemap should be designed to minimise as far as possible the scrolling needed for easy use. This can be done by categorising the websites' sections, and the use of an appropriate design to meet the aim of the creation of the sitemap.

6.2.2.10 The use of external links

Thirty-six out of the 38 government websites evaluated provided some kind of external links under the titles of "Important Links" or "Related Links" on their homepage. The idea behind providing external links is to serve users' needs by pointing them to other websites

that provide additional information on the topic. In this study it was found that, although several government websites used linking well, the majority did not use linking effectively from either aspect, linking unrelated websites, as well as linking to other government websites' homepages instead of linking to the pages that contained the related information. None of the websites evaluated had a link to other websites sub-pages. Figure 6.21 presents screenshots highlighting some of the issues discovered. The Ministry of Commerce and Industry provides 92 national and international website links under the title of 'related websites'. However, by looking at these, so-called 'related' websites, it can be seen that many are in fact unrelated. For example, Sections 1 and 2 are linked to 40 government website homepages. Section 3 could be the most important section, as it links to a related website (the Saudi Chamber of Commerce and Industry website). Section 4 provides links to all the universities in the country, which are basically unrelated links. Section 5 provides regionally and internationally-related useful links.

Figure 6-21: The Ministry of Commerce and Industry's related links page

The same scenario was repeated in other government websites, such as Majlis Alshura, which listed 178 links on their related links page and the Ministry of Agriculture website, which included local and regional newspapers in their selected links. On the other hand, some links which should be included in some government websites did not exist. For example, the Ministry of Justice website provided only one link (to Quran Radio), while links to the most relevant and important websites were not included, such as a web link to the Saudi Supreme Court and a web link to the Bureau of Investigation and Prosecution. It seems that web developers of these websites wished only to include as many links as possible, without any consideration of linking issues, such as how useful the links are, when to use external links, how links should be described and how many links should be included. Generally, only two websites met the recommendations for providing external links, those of the Saudi Arabian Monetary Agency and the Ministry of Labor.

6.3 Analysis of interviews

As addressed in section 5.3.2, a personal semi-structured interview approach was chosen and employed to serve the study aims and objectives, and seven key official staff in four selected government agencies participated in this study. The following section presents the findings gathered through the interviews.

6.3.1 Lack of skilled IT staff

There was almost agreement among all interviewees that skilled IT staff are needed to ensure the successful development of electronic projects. Furthermore, most interviewees believed that the current lack of skilled IT staff in the public sector will continue as the system does not make a great effort to attract skilled IT people to work in the public sector, as skilled IT employees can earn double the salary in the private sector that they can in the public sector. An official from the Ministry of Agriculture stated that:

> '*The problem within our department— Information Technology department— is*
> *that most of our qualified IT staff moved to the private sector as soon as they got a*
> *job. The reason behind this is basically due to the fact that the public sector does*

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*not attract qualified IT staff', and the private sector in general pays them more
than what they could get in the public sector'.*

Furthermore, the lack of skilled IT staff was seen by all officials as one of the top non-technical barriers faced by their agencies. They revealed that this issue had a great impact on the movement into electronic-based systems. The lack of skilled IT staff was also highlighted by a member of the Saudi eGovernment programme (Yesser). He pointed out that:

*'We do believe that almost all the public sector suffers from the lack of skilled IT
staff; therefore, we have established a plan to train public sector staff on how to
use technology. Up to now we have trained about 3,000 in several government
agencies.'*

According to the interviewees, the issue of the lack of skilled IT staff has affected the public sector in two ways: first, the lack of skilled IT staff delays the implementation of electronic projects, and second, basic jobs, which could easily be done by someone who has basic IT skills, such as updating the department pages content, is generally done by the Department of Information Technology, when they receive a request from a department. This delays the website updating process. According to one member of the Minister of Education website development team:

*'Updating the ministry website is done by our IT specialist team as there is a lack
of skilled staff in the other departments. This causes a waste of our time, as well
as a delay of updating process. If you browse our website you will find some
pages have not been updated since 2004'.*

Moreover, the issue of website updating was highlighted by an IT advisor in the Ministry of Commerce and Industry. Therefore, all the officials from the public sector interviewed for this study agreed that attracting skilled IT staff should be given a high priority, and that the issue of skilled IT staff should be considered by the Saudi eGovernment programme team seriously.

6.3.2 Lack of communication between Yesser and government agencies

In the case of Saudi Arabia, the Saudi eGovernment programme (Yesser) is the only government office in the country responsible for the implementation and managing of eGovernment project. However, it has only 35 members of staff. Moreover, the office's role is to supervise the electronic projects implemented in the public sector. In order to do so, an eGovernment committee has been created in each ministry. A member of the Saudi eGovernment programme (Yesser) made mention of the role of this committee, saying:

'*Our aim of establishing eGovernment committee in each ministry is to be a link between the programme team and other government ministries in order to overcome the difficulties that may face the implementation of electronic projects'.*

However, the issue of lack of communication with Yesser was revealed by the manager of the Information and Technology Department at the Ministry of Agriculture, who stated:

'*The problem with Yesser is that they developed their plans and policies without considering the real situation of the public sector situation in terms of human resources, finances and technology. For example, when they ask us to develop such an electronic project, with our limitations of staff and finances, this is quite difficult'.*

An information technology advisor at the Ministry of Education pointed out that:

'*The communication channels with the Saudi government programme (Yesser) are weak*'.

A member of the Saudi eGovernment programme said:

'*It could be thought that there was a lack of communication between our office and other government agencies because we have only 35 members of staff, but this is not the case as we do our best to actively communicate with others, and the*

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main reason for this weakness comes from the high level authorities in the government agencies'.

Moreover, the role of the Saudi eGovernment programme is not clear to those responsible for electronic projects in government agencies. An official from the Ministry of Commerce and Industry stated that:

'*When we try to implement some electronic projects at the ministry, we sometimes have to leave our project for another time –maybe more than a year- as we have difficulties with some high authorities in the ministry who refuse the changes we tried to make because they afraid of losing their power. Here, the role of the Saudi eGovernment programme should exist.*'

6.3.3 High rate of ICT illiteracy in the government agencies

Several initiatives have been introduced in several public sectors to reduce the high rate of ICT illiteracy. An advisor at the Ministry of Commerce and Industry stated that:

'O*ur team tried to increase the awareness of eGovernment within our ministry, but with our limited IT staff, as well as limited finances, it is quite difficult to do so. We made contact with a private organisation to train our staff in-house on how to use computer applications and the Internet, and in order to encourage staff to take part in the training programmes we gave a laptop to people who passed the programme*'.

The issue of high rate of ICT illiteracy was classified as being among the main barriers faced by the public sector. The information technology advisor at the Ministry of Education shared the same point-of-view, pointed out that:

'*With the high rate of ICT illiteracy among our staff in the ministry, the success of electronic projects is a real challenge for the development team*'.

One of the participants noted that the problem became more complex as some staff in some government agencies were not aware of the movement into electronic services.

6.3.4 Resistance to change

A reform of the public sector process is fundamentally needed, and this is a real challenge for Saudi eGovernment programme as there are several management issues that must be solved, including reprocessing of government services and resistance to change. The information technology advisor at the Ministry of Commerce and Industry pointed out that:

> '*The problem we face when we trying to change the traditional process of government services into electronic based is the resistance to change from some departments in the ministry, the problem become significant as we do not have enough power to go beyond it*'. He added, '*we should have the power to do our job effectively as some departments in the ministry did not respond to our requirements for processing change*'.

A member of the Saudi eGovernment programme (Yesser) highlighted this issue by saying:

> '*Our professional team understand the need for government processes re-engineering, and we have worked hard with all public sector organisations in order to provide them with the best practice. Two documents have been published by our professional team: the business process redesign methodology and the change management strategy to be used as guide by the government agencies, but the resistance to change in the public sector is the problem*'.

An official from the Ministry of Education provided a good example of this issue. He stated:

> '*Some processes in our ministry, particularly in the Legal Department, take between two and three months to be completed, but our professional team has reduces the time needed for completion to only few days to be done*'.

6.3.5 Cultural and social issues

'Personal relations, as well as social matters in Saudi Arabia are still among the reasons that people prefer to interact with the government face-to-face'.

This is the opinion of the IT department manager at the Ministry of Agriculture. He added:

'Although we have developed about 60% of the second-class electronic services including electronic forms, and about 5% of full transaction services, the use of these services is less than what we expected'.

The same opinion was shared by a member of the Saudi government programme, who stated that:

'The culture of the society affects the use of government electronic services. Many services are available online, but people still like to access them personally'.

The issue here is that, although there is a strong opinion on this issue, nothing has been done to explore why people prefer to use traditional methods. Is it for cultural and social issues or not? As addressed in Chapter Five, more than one factor can lead to limiting government electronic services, including technical website design issues and non-technical barriers. For example, a member of the Ministry of Education development team revealed that:

'There is a lack of government content available on the government websites; therefore in many cases people have to come to get more information about how to get the service'.

6.3.6 Technical website design issues

Web design issues are crucial and should be a top priority for every government agency. Much more has been written globally about best practices with regard to technical government website design. Here, all officials interviewed confirmed that the current government websites do not reflect the reality and the efforts given to eGovernment in

Saudi Arabia. It had been identified that the absence of a clear website developing plan in the government agencies was the main reason for the weaknesses in the government websites, as well as a misunderstanding of how important a website is for users. In addition, all the interviewees indicated that their agencies have not conducted any studies to identify the users' needs of their website.

Furthermore, a few publications have been published by the Saudi eGovernment programme team in the area of technical web design issues, including accessibility, usability and information architecture. This makes government websites design very inefficient, as seen in the previous section. The IT department manager at the Ministry of Agriculture reveals that:

> '*We do not have a website design plan, and all you have seen in our website is a personal effort*'. He added, '*Our website cost us about 130.000 SR (£ 21.500)*'.

> A member of the website development team at the Ministry of Education revealed that:

> '*The publications issued by the Saudi eGovernment programme team on web design are not sufficient and the available standard is not mandatory*'.

Regarding the use of metadata and controlled vocabularies, no government agency in this study was familiar with them at all. This was also the case for other significant issues regarding government technical website design such as how accessible the website is, how effective the search system used is. The lack of skilled website designers in these agencies, as well as unawareness of web design issues have been identified as the main reasons for poor design of government websites by member of the Minister of Education website development team. A member of the Saudi eGovernment programme sees this as a major problem, as many website developers in the public sector ignore fundamental issues, such as accessibility and the use of metadata to describe government website pages and documents. He stated that:

'*We are dissatisfied with many Saudi government websites. Our professional team made several recommendations as to how to design an effective websites*'.

Table 6-17: Frequency of eGovernment non-technical barriers

	Concepts	Frequency
1	Lack of skilled IT staff	7
2	Lack of communication with Yesser	5
3	High rate of ICT illiteracy in the governmen agencies	4
4	Resistance to change	3
5	Culture and social issues	2

6.4 Document analysis

Alriyadh newspaper was used to overcome the problem on the dearth of studies on eGovernment in Saudi Arabia, as addressed earlier in section 5.4.3. This section will address how eGovernment issues have been reported by people who are either responsible for the entire eGovernment programme in the country or who are responsible for eGovernment implementation in the public sector. This section also addresses how eGovernment issues in Saudi Arabia have been viewed by specialists who are interested in the area of eGovernment. Through the analysis of the content in this section, several issues have been addressed. It is clear that non-technical barriers were among the eGovernment issues that have been most widely reported. The next section presents the issues that were reported.

6.4.1 Lack of skilled IT staff

The issue of lack of IT staff remains the main barrier to the development of eGovernment and eCommerce in Saudi Arabia. Lack of skilled IT staff has been identified as a major barrier for the development of eGovernment in Saudi Arabia by several high authorities. For example, the Saudi eGovernment GCIO spoke of this issue twice, in September 2006 he said:

'*The lack of IT staff in government agency to manage eGovernment projects is one of the main barriers eGovernment implementation*'

Also, in May 2007 he point out that:

> *'The eGovernment programme in the country is suffering from the dearth of IT staff'*.

Similarly the point was raised by the Assistant Information Technology manager at Jeddah City Municipality, who saw it as the main reason for the delay of several government electronic projects in the public sector. Salary discrepancies between the private and public sectors and the lack of motivation have been addressed as principal reasons for the lack of skilled staff in the public sector. It has been argued that skilled IT staff are paid double what IT staff earn in the public sector. Moreover, besides the lack of skilled staff, most government agencies suffer from the high rate of ICT illiteracy among their staff. This has been identified as one of the barriers for the adoption of eGovernment in Saudi Arabia.

6.4.2 Lack of appropriate laws and legislation

Almost as much attention was given to the issue of the lack of proper laws and legislation as was given to the lack of skilled IT staff. Therefore, this issue ranks the second among eGovernment non-technical barriers in the county. Furthermore, the lack of e-transaction laws and legislation is seen a reason for the delay of eCommerce in Saudi Arabia as well. In 2007 two related laws were introduced, the e-transaction law and the IT criminal law, but they appear to be insufficient and more laws and legislation are needed in order to expand the use of electronic services in the areas of both eGovernment and eCommerce. In addition, the activation of appropriate laws and legislation, including intellectual property laws, e-transaction laws and IT criminal laws, are required. The manger of the Saudi InterActive Communication Company stated that:

> *'The availability of an appropriate law and legislation is essential in order to increase eCommerce and eGovernment activities in the country'*.

6.4.3 Resistance to change

Firstly, regarding resistance to change, this issue has been linked to the high rate of ICT illiteracy, and is seen by the Saudi GCIO as one of the non-technical barriers to the eGovernment in the country. Therefore, a Capacity Building Initiative was introduced by the Saudi eGovernment programme in 2009. The vision of this initiative is to enable a government agency's staff to acquire adequate computer skills, which will help them to make better use of technology. However, it was argued that the resistance to change is not confined only to those people who do not have adequate computing skills; it can also come from top level managers who fear losing their power. The minister of the CITC reveals that:

'*Changing people in the government agencies may be required in order to deal with this new movement effectively'*.

6.4.4 Ineffective postal services

The postal service was seen as a primary reason for the absence of eCommerce in Saudi Arabia, and of course this will continue to affect eGovernment services in Saudi Arabia negatively. To this date, there is no effective postal system in the country that can support the movement into eGovernment. This was the opinion of a number of IT specialists and key official staff in several government agencies.

6.4.5 Bureaucracy

Bureaucracy is another issue that was addressed several times. For example, the assistant for Information Technology at Jeddah City Municipality. She revealed that

'*Bureaucracy could be one reason for the delay of eGovernment projects in some government agencies*'.

Similarly, the Saudi GCIO highlighted this barriers by saying that:

'Bureaucracy in some government agancies slow the implementation of eGovernment'.

6.4.6 Lack of marketing and lack of studies in the area of eGovernment

A dearth of research and the absence of marketing have been identified as barriers to the adoption of electronic services in Saudi Arabia. More studies on eGovernment, as well as increase the eGovernment concept awareness in the society are the key success factors for eGovernment in Saudi Arabia. This was the opinion of three specialist in the area of eGovernment. Table 6.17 illustrates the frequency with which these issues were reported in Alriyadh newspaper between 2005 and March 2010.

Table 6-18:Frequency of eGovernment Barriers

	Concepts	Frequency
1	Lack of skilled IT staff	9
2	Lack of appropriate laws and legislation	7
3	Resistance to change	5
4	Postal services	4
5	Bureaucracy	3
6	Absence of marketing and dearth of studies in the area of eGovernment	1

6.5 Summary

This chapter presented the findings of this study, and several issues were identified in the areas of both non-technical barriers and technical website design. Regarding non- technical barriers, it has been indicated that the eGovernment initiative in Saudi Arabia suffers from serious problems, among which is the lack of skilled IT staff in various areas, including website developers, as well as the absence of proper laws and legislation, from the point of view of eGovernment key staff. From the point of view of the users of eGovernment, the absence of marketing was the greatest barrier, together with the absence of appropriate laws and legislation. In the area of technical website design, it is clear that the Saudi government websites have not met the minimum standard of website design in general and

in particular those of government websites. Fundamental website design issues such as accessibility, usability and information architecture were in short supply on these websites.

Discussion

This chapter's aim is to discuss the findings of the study presented in Chapter Six alongside the fundamentals of eGovernment (Chapter Two) and literature review (Chapter Three) and the Saudi Arabia' (Chapter Four), to identify the characteristic of the eGovernment user, critical non-technical eGovernment barriers and technical website design issues. This chapter is divided into three sections; it starts with the characteristic of eGovernment users, followed by a discussion of Saudi eGovernment non-technical barriers and closes with a discussion of Saudi government technical website design issues.

7.1 Characteristic of eGovernment users

This section aims to identify the characteristic of the expected eGovernment users in Saudi Arabia, which is one of the study's outcomes. Hence, as clarified in Chapter Five the questionnaire in this study was distributed to people who are most likely to directly benefit from eGovernment. Fifty participants from each group (university students, secondary school teachers, government staff, private sector workers and university lecturers) participated in the study and answered the questionnaire.

The result of the analysis of the questionnaire showed that the majority, about 86%, of the surveys' participants were already eGovernment users. Although no strong relationship between age groups, education levels or occupations was found, it can be noticed that the finding revealed that people aged between 20 and 40 with higher education are more likely to be eGovernment users. In addition, the largest number of non-eGovernment users was found in the age groups of 41-50 and over 50 years, as well as within participants with low education levels. However, apart from university students, people with a monthly income of more than 2000 SR are most likely to be Internet literate and, as a result, eGovernment users. Furthermore, accessing the Internet from home with five

years of experience and good skills in using the Internet are the main characteristics of those users. In addition, they in general spend between three and five hours daily on email and searching for information. Regarding factors that affect the Internet use, the analysis of the questionnaire showed that the weakness of the Internet connection was the top factor affecting the use of the Internet services by people who are most likely to be eGovernment users.

Also, the result showed that, printing government electronic forms was the top eGovernment service used by eGovernment users, and using an Internet search engine is the most common method used by those users when searching for government information and services. In addition, it was communicated that locating government information and services usually required more than one attempt. In relation to the factors that affect the use of government websites, clearly the finding showed that the lack of availability of government content was the top factor affecting users when looking for government information and services on the Saudi government websites. Also, the lack of organisation schemas and the absence of an effective search facility were identified among the top factors affecting the use of government websites. The following figure summarises the characteristics of eGovernment users.

eGovernment User Profile

Users	- Age: The 20-40 age group is more likely to use eGovernment. - Education: Highly educated people are more likely to use various eGovernment services. - Monthly Income: People with over SR 2000 are more likely to be eGovernment users.
Characteristics	- Access the Internet from home. - Five years of Internet experience. - Between 1 and 3 hours daily spent using the Internet. - Use the Internet for email and searching for information. - Skilled in using the Internet.
Internet Features	- Slow Internet connection.
Use of eGov	- Printing e-forms is the most popular service among eGovernment users. - Using search engines to search for government information/services - Several attempt to find government information and services.
eGovernment Websites	- Lack of government content. - Lack of information organisation schemas. - Absence of an effective search facility

Figure 7-1: eGovernment user profile

7.2 eGovernment in Saudi Arabia: Non-technical critical barriers

This section aims to discuss the study findings regarding the key non-technical barriers that impede the adoption and diffusion of eGovernment in Saudi Arabia. In this study, a mixed research design approach with a triangulation data collection method including questionnaires interviews and documents analysis was adopted to identify these barriers. Question nineteen of the questionnaire was developed after investigating the

eGovernment literature in the area of non-technical barriers, and a list of eight key non-technical barriers were listed. The surveys' participants were asked to rank these non-technical barriers by using a Likert Scale to show their relevance to the adoption of eGovernment in Saudi Arabia. Moreover, the qualitative data obtained through the interviews, as well as the documents analysis regarding non-technical barriers was then transferred to be quantitatively for comparison and integrated purpose. This was one of the main benefits of adopting the concurrent triangulation strategy in this study, which gives the researcher the ability not only to present the finding, but also to explain the nature and relation of the findings that begin to be discovered. As addressed in Chapter One each country has its own characteristics in terms of cultural, social and political issues as well as the availability of human and financial resources, and therefore by using this strategy, barriers that were not included in the questionnaire that face eGovernment adoption in Saudi Arabia will appear in one of the other data collection tools used. This was done to build a profile of the key non-technical barriers facing eGovernment in Saudi Arabia and to achieve the second outcome of the research, which was the actual identification of these major non-technical barriers. Moreover, the relation of these barriers to some aspects of government websites design were linked and discussed. This is the significance of the portion of the study which tried to show how non-technical barriers and technical websites design is interrelated. For better understanding of these barriers they will be discussed under the three themes of political, social and organisational as the barriers identified in this study can be broadly classified under one of them. The following figure shows the non-technical barriers identified in this study organised from higher ranking to lower ranking barriers.

Non-Technical Barriers		
Questionnaire	Interviews	Alriyadh Newspaper
Lack of marketing	Lack of skilled IT staff	Lack of skilled IT staff
Lack of proper laws and legislation	Lack of communication with Yesser	Lack of proper laws and legislation
Lack of studies which identifying the users' needs of eGovernment	High rate of ICT illiteracy	Resistance to change
Users' lack of IT knowledge 'digital divide'	Resistance to change	Ineffective postal services
Trust and Confidence	Culture and social	Bureaucracy
Lack of user participation in the system development		Lack of marketing and lack of studies in the area of eGovernment
Lack of IT skilled staff and leadership support		
Social and cultural issues		

Figure 7-2: Non-Technical Barriers

7.2.1 Political theme

Political support is an essential element for any government electronic projects, therefore, in general the decision of moving into eGovernment is made or supported by the high authority (2.5). However, this is just one aspect of the political support roles as there are several other related areas that need to be considered, and this is because eGovernment is a national, social, economic project and an integrated system; moreover, without the availability of the resources needed for building it, including the availability of related proper laws and legislation, the ability of the government to invest in technology and the availability of other government supported services, the risk of not achieving the overall aim of the project will be high.

In developing countries, including the Arab countries as addressed in Chapter One, the political issues in particular have been identified as more influential to the success of eGovernment project in those countries, because these countries in general have fewer and less rigorous government laws and legislation, as well as minimal transparent government policies and rules compared to developed countries.

In Saudi Arabia, it is clear that the eGovernment initiative is supported by the high authority in the country. In 2003, the King of Saudi Arabia issued a royal decree to move into eGovernment including a directive to the Ministry of Communications and Information Technology to formulate a plan for providing government services and transactions electronically (Yesser , 2006). However, two factors have been revealed from the finding of the study that can be classified under the political theme. Both of them are a fundamental and need to be considered in order to make sure that the eGovernment initiative in Saudi Arabia will be more likely to succeed. These two factors are: the lack of proper laws and legislation, and the absence of government fundamental services for eGovernment, mainly the post system services. In line with the literature reviewed on this study (4.6.2 and 4.6.3), these two factors have been already seen as one of the main reasons for the delay of eCommerce implementation and diffusion in the country, and as addressed in by Pons (2004) barriers facing eCommerce in the Arab world will continue to influence the development of eGovernment.

Firstly, the lack of proper laws and legislation was ranked in the second place by the survey participants among the other non-technical barriers listed in question nineteen, as well as reported in the documents analysis. In Saudi Arabia as addressed in section (4.3) although several laws and pieces of legislation have been introduced in 2007 regarding government electronic services, it seems to be that more legislation is needed, as well as the activation of such available laws and legislation in order to guide both the government agencies and users when carrying out electronic transactions. Users of government websites should be able to be confident that the personal information that they provide online will be fully protected by the law. As discussed in section (3.1.3) privacy issues have been seen by many researchers as one of the key non-technical

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barriers that can limit the use of government websites; therefore, related privacy legislation has been developed as soon as government websites appeared on the Internet. However, the finding of the study shows that although trust and confidence was found to be a concern for the survey participants, no privacy legislation has been developed as yet in Saudi Arabia, and this could be why only 18% of Saudi government websites evaluated in this study provide a visible privacy statement in 2010 compared to 11% in 2008.

In relation to government website design, several examples in different countries around the world show that several piece of legislations have been developed after the eGovernment projects were introduced, and some have been expanded to cover issues related to eGovernment websites. For example, legislation related to the accessibility of government website, which should be seen by the government agencies as a fundamental aspect of their website, and as discussed in section (3.2.5) the best way to ensure the accessibility of government websites is to develop an accessibility standard or legislation. This is to ensure the equality of access among users, and the absence of such legislation can result in inaccessible government websites which will affect the use of government websites by some groups of users, as can be seen clearly in the results of the accessibility test in this study (6.2.2.3). All Saudi government websites tested in this study suffer from a large number of accessibility errors, and without an appropriate legislation government agencies in the country may or may not consider the accessibility of their website taking into consideration that until now there is no such a mandatory legislation that protect disabled people and prevent disability discrimination in real life.

Moreover, forcing government agencies to publish their information regularly by introducing a freedom of information act or by developing a mandatory guidelines on what government agencies have to publish is needed as seen in some examples in section (3.2.6) where the lack of government content was identified as a reason for government websites' user dissatisfaction. In line with this issue, the findings of the survey showed that the lack of availability of government content was identified by the expected eGovernment users in Saudi Arabia as the top factor that affects them when using Saudi

government websites. In addition, evidence from some government websites evaluated in this study showed that there is a lack of information provided, even information related to the available government eServices, such as requirements, fees and procedures, that they provide on their website.

Secondly, the absence of an effective postal service system in Saudi Arabia, which was identified during the analysis of the documents, is an obvious barrier to eGovernment in Saudi Arabia. In fact, it is an almost agreed upon fact that there is no justification for the absence of an effective postal service system in the country. Participants who highlighted this issue, raised the question as to how users can use government eServices that require sending and receiving documents without an effective postal service system. The findings of the study support what has been reported in the literature (4.2.6). Several studies which address eCommerce in Saudi Arabia confirmed that the absence of an effective postal system is one of the main reasons for the delay of eCommerce in the country. Recently, in order to overcome this issue the Saudi Post has introduced a service called 'Saudi Post-Government eServices' in cooperation with several government agancies, such as the traffic department and some universities in the some cities in Saudi Arabia. For example, the scenario for using electronic driver's license renewal services is that the beneficiary brings all the required documents for license renewal to the nearest post office in any of these cities; after the driver's licence is renewed, the beneficiary will receive an SMS message on his mobile phone and the driver's licence is delivered to his address. The cost of this services is SR 20 (about £6). In this case, users of the services have to travel, as well as paying an extra fee for a services that can be done personally free of charge. This is contrary to one of the most benefits of eGovernment project reported in the literature mainly saving people time and money section (2.4).

These two factors of the lack of proper laws and legislations and the absence of effective postal service must be given a proper attention by eGovernment developer teams in order to ensure that eGovernment will not be in the same situation as eCommerce although some indicators found in this study support that . For example, without an efficient postal service system government agencies cannot develop government services that requires

sending and receiving documents and users will continue using the basic government eServices, such as printing government forms, which was the most used government eServices in this study. Also, government agancies cannot offer services that require sending documents (6.1.2). Also, if there is no clear legislation on privacy and how government websites should be designed, government agencies may or may not consider this issue, which will result in continued use of the traditional method (in person or by phone call) for contacting government agancies.

7.2.2 Social theme

eGovernment is about users, so social factors that can limit the use of available government services should be considered in order to reduce the affect of such factors. eGovernment is not only about technology and cannot work perfectly except if it is also considered as a social system that aims to transform the society into an information society in which ICT is a part of each individual's daily life. As seen in Chapter There are more than one factors that can affect the use of eGovernment have been identified by many researchers including factors, such as culture, the digital divide, trust in government, and Internet trust. Not addressing and managing these issues effectively will result in the risks associated with available government online services not being used, or being used by fewer people than expected due to these factors.

Here, the results of the study indicated that there are several non-technical barriers that can be classified under the social theme. The digital divide with all its related concepts (e.g., region digital divide, social class digital divide and skills divide) is considered to be a big challenge that exists in Saudi Arabia, therefore, this issue must be given high attention by eGovernment developers. The finding of the survey ranked the digital divide in the fourth place among the eight non-technical barriers, and this could be due to the fact that the sample technique adopted in this study was designed to gather information from Saudi males who are more likely to be Internet users. In light of this, however, there is still evidence from the study results that support what has been reported in the literature regarding the digital divide in Saudi Arabia section (4.6.2). For example, the result showed that social class digital divide exists, and this can be seen in section 7.1 where

participants with higher education, as well as participants with higher income are more likely to be Internet users.

In addition, as addressed in the literature, skills in using eGovernment are gained over time by using other Internet applications as revealed by many researchers; section (3.1.2). This is an important factor as in Saudi Arabia according to CITC report issued in 2009 only 1% of the population had use some kind of eCommerce applications mainly e-banking and e-travelling. Therefore, these issues should be considered when designing government websites in order to make it easier for users to find and use government information and eServices. Unfortunately it was clear that the Saudi government websites evaluated in this study have not met the basic requirements of website design in general, which make using government websites quite difficult as shown in table 6.5 and 6.2.2.7. For example, only a small number of the government websites evaluated in this study have an effective internal search system as well as appropriate information organisation schemas to help users locate the government information and services they are looking for. A large number of the survey participants reported that they have had great difficulty finding what they were looking for on government websites, which is necessarily linked to the fact that very few government websites are providing effective search system and an appropriate information organisation schemas. The importance of government website design in relation to the skills divide is significant and needs to be treated by specifically considering the best practices of government website design that will not only encourage current Internet users to use government websites but also people who are not presently connected to the Internet.

Moreover, Saudi Arabia has a unique culture and specific social issues, which are sometimes seen as reasons to speed up the implementation of eGovernment section (4.6.1). In this study, although this factor was seen as a less influential barrier among the non-technical barriers listed in the questionnaire by the survey participants, this could be due to the fact that the concept of culture and social issues in general is broad and leads to it being broadly defined. Yet, some participants interviewed in this study had strong opinions about the effect of Saudi culture and social issues on the use of available

eGovernment services. They believed that Saudis prefer to interact with government agencies in person, however, avoidance of using government websites can be caused by other factors as seen throughout the study including inappropriate website design, lack of the availability of government content and users trust. Unfortunately, according to all the participants interviewed in this study, no studies have been carried out by their agency to find out the real reasons, or to find out if the culture of the society or something else is the primary cause for lack of use. Getting the users' feedback in terms of how the website is easy to use and the availability of eServices, as well as the availability of the content in broad view (completeness, relevancy, accuracy, reliability, usefulness and updating) is the best way to know more about the users' needs and expectations. However, the study finding revealed the lack of studies which identifying the users' needs of eGovernment had been ranked in the third place by the survey participants.

In addition, the findings of the study revealed that paying for government eService was the less government electronic services used by the survey participants. This somewhat supports what has been addressed in the literature (4.6.1) that the Saudi society is a cash-based society. This could be due to the fact that eGovernment would be the first real Internet application many Internet users in the country would use for electronic payment. Therefore, finding a way to encourage people to use online payment options is required. In fact, some sectors in the country, especially Internet provider companies, have realized the issue of ePayment and have started to sell what is called 'Prepaid Cards', where people can buy such cards from shops and use them online in order to encourage people to use their eServices. The government could use such methods, at least to get people online and to increase online payment trust.

Furthermore, Saudis are more concerned about trust and confidentiality when using the Internet for transaction purposes that require personal information and bank detail. According to Essers and Ettedgui (2003, p.7) 'citizens prefer eGovernment services that do not require them to reveal a great deal of personal information'. Therefore, personal information should be minimized in order to encourage people to use government eServices. However, it was clear that some government agencies evaluated in this study

did not consider this issue. For example, on the Saudi Technical and Vocational Training Corporation website merely in order to get information about opening hours, users have to provide their name, email address, mobile phone number and their national ID number. Finally, the findings of the survey showed that the lack of marketing of available government eServices was the top non-technical barriers ranked by participants. Also, this issue was identified during the analysis of the documents. Certainly, eGovernment is for users, therefore, it is important to make them aware of government eServices that are available online, as well as to help them realise the benefits of using these services. As can be seen in several examples in section (3.1.6) several methods have been used to increase the awareness of government eServices in the society including the use of mass media (e.g., TV, Press and Radio). In the case of Saudi Arabia, the use of the mass media is unlikely to be a big issue as the official four Saudi TV channels are owned by the government. Moreover, popular websites, in particular social network and social media websites (e.g., YouTube, Facebook and Twitter), can been used for the same aim of increasing awareness of government eServices. For instance, in the UK, the Directgov website channel on YouTube has about 116 short videos outlining some of UK government eServices that can be done online with an explanation of how to use them. This is a good idea that can be used to encourage Saudi people to use available government eServices. Also, the Directgov page on Facebook has been used to inform people about new services and to let people discuss and share their opinion regarding government electronic services.

7.2.3 Organisational theme

Several organisational barriers that affect the adoption of eGovernment in Saudi Arabia have been revealed in this study. According to the results obtained from the interviews and the documents analysis the lack of skilled staff was the major factor that has affected the implementation of eGovernment projects in the government agancies. Also, there was a strong opinion among officials interviewed in this study that the lack of skilled staff will continue because the system of employment fails to attract skilled IT staff to work in the public sector. In addition, the results of the lack of skilled IT staff in relation to eGovernment implementation have been addressed by some participants interviewed.

According to them, the lack of skilled IT staff has resulted in the delay or cancellation of some government electronic projects that had been planned to be implemented. This has been confirmed by a member of Yesser who pointed out that although the Yesser plan was to develop 150 government eServices by the end of 2010, only 35 government electronic services have been developed. As addressed in section (3.1.5) qualified IT staff is one of the main pillars for establishing eGovernment, and in the case of Saudi Arabia, it seems to be that the most needed action seen by almost all official staff who participated in this study, as well as on what has been reported in the documents, is to invest more to attract qualified IT staff in order to ensure that the government can meet their commitment regarding the development of eGovernment.

Moreover, the majority of the participants interviewed in this study confirmed that the coordination and cooperation between the Saudi eGovernment programme Yesser and their agencies is lacking. In their opinion, Yesser is setting up policies, strategies and standards without considering the government agencies e-readiness, such as the availability of skilled staff, the awareness of eGovernment concepts among the employees and other workplace issues. In relation to this point, it has been revealed that the lack of staff within the Saudi eGovernment programme office itself could be the main reason for the lack of communication between the office and government agencies as the office has only 35 members of staff responsible for communicating with a large number of government agencies in the country. Also, apart from the Yesser responsibility is to increase the awareness of general issues related to eGovernment, such as government websites design. However, it was discovered in this study that there is a lack of publications published by the office. An example can be seen clearly in the area of government websites design as there is only one fourteen-page document titled 'Guidelines for Government Websites Design', which was published in 2006. In other countries, as can be seen in section (5.3.4) more publications on best practice in government websites design have been published in different countries by the eGovernment offices who is responsible for eGovernment implementation covering different areas, such as usability, accessibility and findability of a website to help government agencies designing their websites in an effective and professional manner.

Moreover, it was revealed in this study that the high rate of ICT illiteracy within the Saudi government itself was considered to be one of the key organisational factors that inhibits the adoption of eGovernment in the government agancies. In addition, this factor is seen by some participants interviewed as a reason for the resistance to change, which had been identified in this study as an organisational obstacle for the adoption of eGovernment. People are more likely to accept the change when they participate in the development of the system, as well as when they aware of what is going on in their department. Furthermore, in this study, it was discovered that resistance to change not only comes from the officials' staff who do not have adequate computer skills, but also from high authorities in the government agancies. This is could be why changing people in the government agencies was mentioned by the minister of ICT as a way to overcome this barrier. Finally, there were some workplace issues identified during the analysis of the documents including bureaucracy which is seen as a reason for the slowdown of the implantation of electronic government projects in some agencies. In line with the literature, this factor is seen as a reason to speed up eGovernment implementation in particular in developing countries.

7.3 Technical websites design

Although most of the government websites evaluated in this study are still considered to be in the first or second stage of government website stages, which is basically provide the users with limited government information, downloadable forms and more advanced sites allowed the users to make an appointment and to fill out e-forms as shown in section (6.2.2.1). In spite of this, users experience in using these websites was difficult due to a number of website design issues. In this section the web design issues are discussed so as to build a profile of technical websites design issues of current Saudi government websites and to achieve the study outcome regarding identification of the major Saudi Arabia government websites design issues.

7.3.1 Availability of government content

As addressed earlier the availability of government content has been linked to the eGovernment users' satisfaction. Also, it is believed that content of the website is the most repeated suggestion in search engines optimization in order to rank a website at or near the top of the Internet search result (3.2.6). However, from the study findings, it was clear that the lack of government content was the top factors that affect eGovernment users when using government websites. Moreover, although the lack of government content significantly affects all age groups and education levels, there was a positive relation between the lack of government content and education levels as well as age groups except users over 50 years old. On the other hand, as addressed in section 3.2.6 the government website content is not limited to only the availability of content, but also the completeness, relevancy, accuracy, reliability, usefulness and updating of the content, so these elements represent the broad concept of government content, hence, they should be considered when addressing government website content. In addition, the study showed that the majority of eGovernment users use known web-based search engine to locate government information and services. Therefore, the creation and development of content should seek to achieve two aims: Firstly, to satisfy eGovernment users as the content is generally the main reason why users visit a website. Secondly, for information retrieval objective through Internet search engines as the majority of eGovernment users in this study use these websites to start searching for government information and services. As discussed before in section (7.2.1) the issue of the availability of content can be solved or at least reduced by enacting legislation that forces government agencies to publish their information regularly or to develop a mandatory guidelines which government agencies have to follow when creating their websites.

7.3.2 Web content accessibility

Because eGovernment has a social objective to achieve, the accessibility of government websites become a unique issue, and thus, there is much that has been written on the government websites accessibility best practice section (3.2.5). This is to ensure that people with disabilities are able to get the full benefit of government websites. Also,

another aspect of website accessibility is to ensure that government websites work with different website browsers. However, as shown in the result of the accessibility test in this study out of the thirty-eight Saudi government websites' homepages only one homepage received a score of 0, which basically means this homepage had met the WCAG level A in 2008. In 2010 no homepage had met the WCAG level A. In addition, the number of accessibility errors that appeared on each homepage was large in general. For example, in 2008 as mentioned only one homepage received no accessibility errors and the Ministry of Commerce and Industry's homepage received the highest accessibility errors with 75 accessibility errors. The average accessibility errors in 2008 was 31 errors per homepage. Moreover, only six homepages had less than ten accessibility errors. In 2010, the situation remained the same in general as the average accessibility errors was 36 per homepage with no homepage entirely free of accessibility errors. Also, only three homepages received less than ten accessibility errors and the Municipality of Riyadh Region homepage received the highest accessibility errors with 137 errors. Although different types of accessibility errors were compiled, failure to provide text equivalents for non-text elements presented in the two categories of 'Alt is missing' and 'Clickable image without alt' were the most serious errors identified in this study in both 2008 and 2010. The results indicate that mandatory accessibility legislation must be put in place, so that government website designers will be forced to consider accessibility issues during the creation or re-development of their websites. Also, as recommended by Paciello (2000), cited in Kuzma (2009) who believed that poor design, including accessibility errors, is caused by lack of awareness of website design issues among web developers, so organising conferences and workshops should be provided as a way to increase awareness about issues related to web design for web developers and designers. Regarding designing the website to be viewable by different web browsers, which was tested in the second round of the website evaluation in 2010, the results were disappointing as only twenty-five websites were viewable without any presentation errors.

The cause of these massive accessibility errors could be linked to three factors identified in this study. First and foremost is the fact that no accessibility legislation for government

websites has been developed as yet as addressed in section 7.2.1. Secondly, there is a lack of awareness of the importance of website design in general among people interviewed in this study. Finally, up to now no government websites accessibility guideline has been published by Yesser to guide government agencies on the best practice in this area. For example, for the Ministry of Agriculture website, which was created and managed by only one person without a website development plan, the average accessibility errors in the two rounds of study was 66.5. It is significant to point out that Saudi Arabia is not like developed countries, where disabled people have access to government in other formats (e.g., Video, Audio and Braille). Therefore, government websites should be viewed from a social perspective taking into consideration that the availability of web accessibility international standards make the job more easily. According to Fogli (2009) most of the government accessibility legislations are based on the World Contend Accessibility (WCAG), as well as the availability accessibility electronic checkers the job can be done and completely easily.

7.3.3 Information findability

In this study, information findability refers to several techniques that can be used by website developers to increase findability not only within a government website, but also through Internet search engines (3.2.1). These techniques have been evaluated in this study, and the results show that most of the government websites evaluated have not meet the basic requirements of these techniques, which could be linked to the participants experience in using Saudi government websites as the study finding showed that the majority revealed that locating the government information and services they were looking for was difficult as shown in section (6.1.2).

Regarding the findability techniques used within a website, the finding of the study clarified that there was inappropriate use of these techniques. The search facility provided in these websites was ineffective as some of them did not working at all. Also, an advanced search feature was only provided on a few websites with only one website providing a search feature, such as spelling checker in both years of 2008 and 2010. In relation to the use of metadata and controlled vocabulary within these websites to

describe government information and making searching more effective, none of them had adopted any kind of metadata standards, although the Dublin Core standard has been recommended by Yesser to be used to describe government information and services provided on the Saudi government websites.

On the other hand, a small number of the websites evaluated in this study have used some sort of information organisation schemas (e.g., browsing by subjects, audiences and tasks) to increase findability. In line with the survey result, these two factors of the lack of information organisation schemas and the absence of an effective search facility, had been identified among the top factors that affect the use of government websites by participants. Also, the poor presentation of the search results had been ranked by the survey participants in the fourth place. This could be linked to the absence of the use of metadata and controlled vocabulary as seen in section (3.2.2); discovery metadata is essential to improving search results, as well as bringing related resources together without needing to know who is the providers of such these resources. For example, it was revealed in the findings of the study that a large number of participants did not know the providers of some government information. For example, 25% did not know where to find information about countries that Saudi nationals are not allowed to travel to. Finally, the use of other techniques that can aid to increase findability, such as sitemap, the FAQs and external linking were inefficient. Regarding increased findability through the Internet search engines as addressed in section (3.2.1), website content and the accessibility of a websites are considered to be significant when discussing increasing findability thorough the use of the web-based search engines, but as can be seen clearly in the previous two sections these two elements have not been given much attention which will negatively affect supporting findability through search engine websites. In relation to the use of other techniques including the use of effective sitemaps and well linking between government agencies as addressed previously inefficient and would not help much to increase findability through web based search engines.

7.4 Summary

This chapter has discussed the findings of the study alongside the fundamentals of eGovernment (Chapter Two), literature review (Chapter Three) and Saudi Arabia's background (Chapter Four), in order to identify the characteristic of eGovernment users in Saudi Arabia, as well as to identify the key non-technical barriers that can influence the adoption and diffusion of eGovernment in the country and to see how these barriers can influence some aspect of government websites design. It is clear that eGovernment in Saudi Arabia faces a number of non-technical barriers that need to be managed effectively in order to ensure that eGovernment is most likely succeed.

Moreover, while some of these barriers, as discussed, have a great impact on Saudi government websites, such as the lack of related websites legislations, unawareness of technical website design issues, and the lack of qualified IT staff, others, such as the digital divide and Internet trust need to be considered when designing government websites. Finally, it was clear from the study results that government websites in Saudi Arabia can be classified broadly as being at an early stage of development. Also, in their current position Saudi government websites have not met the basic standards of government websites design and will not participate in encouraging Saudis to utilize e-Government services.

Elements to be considered when designing Saudi government websites

This chapter aims to identify the core functions of government websites that must be considered when developing or re-developing Saudi government websites. Herein is listed a set of recommendations that have been built based on the findings of the study and what has been written in the area of government website design best practices to help Saudi government agencies to understand how a good government website can be developed and what factors need to be considered in relation to Internet users in Saudi Arabia. Screenshots are used to help clarify specific issues.

8.1 Introduction

In developed countries eGovernment is motivated by the increase in Internet users, as well as the increase in Internet application usage, so eGovernment applications have been seen as a natural element in the development of Internet applications. Therefore, the issues surrounding government website design has been considered to the greatest extent in developed countries as a result of their previous experience with other Internet applications. This can be seen clearly by the large number of publications that have come out of these countries, either as academic studies or as publications produced by government offices that are in charge of the development of eGovernment. These studies and publications have addressed issues such as website accessibility, usability and information architecture. As seen in the previous chapter, however, in Saudi Arabia most government websites are suffering from serious website technical issues, and the majority have not met the basic requirements of good website design. In fact, this study has observed eighty-three government websites for two years, some of which were built as far back as 2005. It is clear, however, that there is widespread misunderstanding on the importance of website design, its effect on users, and the role that a good website can play in the effort to encourage more people to use eGovernment. The following sections

outline the core elements that must be considered by government website developers in Saudi Arabia.

8.2 Users' perspective

Considering the users' needs and abilities and the factors that can affect them when using government websites are fundamental aspects of any website development plan in order to ensure that their website is well design and would play its rule perfectly. One outcomes of the present study was to identify the characteristics of expected eGovernment users in Saudi Arabia, as well as to determine what government services are used most, how users search for government information and services and what difficulties they face when using government websites. Defining these elements will assist government agencies in recognizing the users' needs and abilities, so that they can develop websites accordingly.

8.2.1 Web download speed

Although the 2008-2009 CITC report on the use of computer and the Internet in Saudi shows that the majority of the Internet users in the country in 2009 use Broadband connection, the Web download speed is still a very important matter among users in this study, as shown the weakness of the Internet connections have been ranked at the top factor that affect Internet users. This is especially profound as the participants in this study were from Riyadh, the capital city, where the Internet infrastructure is supposed to be better than in other parts of the country. One way to reduce the impact of website download speed is to follow the general recommendation in this area when designing government website. For example, reducing the total size of the page to be around 100K, will loaded the homepage in 20 second which is an acceptable average for a 56bps connection. This can be done by reduce the number of images, as well as their size and format. Moreover, the use of text navigation menus instead of graphics and images.

8.2.2 Users' skills

The concept of the digital divide is not limited to the availability of Internet access, but also the skills of using the Internet and particular Internet applications (e.g., eCommerce

and eGovernment). In the case of Saudi Arabia, as addressed before, only a small percentage of the population currently has experience using any Internet applications, therefore, eGovernment applications will likely be the first real Internet application that many Internet users in Saudi Arabia will utilize for transaction purposes and for searching for particular information and services. Thus, developers of government websites should take into account that users have not had the advantage of using other Internet applications to build their skills in searching for resources and for using eServices. For government resource findability, the findings of this study indicated that there was key differences between users; those with lower levels of education were affected more by the absence of an effective search system, while users with higher levels of education were affected more by the lack of information organisation schemas. Therefore, it is significant for Saudi government agencies to use both approaches on their websites so as to help all users find government information and services more easily. Also, the use of other findability techniques including FAQs and sitemaps would increase the level of user satisfaction regarding findability. For example, The General Organisation for Social Insurance website has made a good use of both approaches of searching and browsing as they tend to serve different kinds of people in Saudi Arabia, including highly educated Saudis, Saudis with lower education backgrounds, and non-Saudi workers.

Figure 8-1: General Organisation for Social Insurance website

The topic of eServices, which refers to the ease with which users can use eServices, is very important for eGovernment users in Saudi Arabia for the reasons mentioned earlier. The way in which traditional government services are transferred into electronic services must be designed carefully. If for any reasons the users find it difficult to use eServices, they will continue to use the traditional methods. For example, in 2011, the Ministry of Civil Services introduced an Internet portal for job seekers in the public sector. However, in examining this portal, it is evident that some of the required fields that must be completed are difficult to use (see figure 8.2). More specifically, the fifth (certificate type) and sixth (certificate's grade) fields can only be completed by individuals obtaining their degree from education institutions that utilize scales consistent with those on the government website. This makes it difficult for individuals who received their degrees from education institutions that do not use this scale (e.g., in the UK). The only way to overcome this situation is to utilize users in the process of developing government electronic services. Also, user participation in the development process also leads to higher user satisfaction.

Figure 8-2: Ministry of Civil Service's Job Portal

8.2.3 Users' trust on the Internet

User trust on the Internet has been linked directly to the increased use of eCommerce websites, which is off course not the case in Saudi Arabia as most of the eCommerce websites in the country can be generally classified under the publishing stage of eCommerce websites stages. For example, in the UK, Dutton and Shepherd (2003), believed that there is a strong relationship in the UK between Internet trust and the use of eCommerce websites. Therefore, this issue must be managed effectively as government website will play the role played by the business sector in other countries to build Internet trust among Internet users. To do so, government agencies should follow the best practice in this area. For example, providing a visible privacy statement and reducing the amount of user's personal information needed when contacting the government through their website are effective ways to encourage more people to adopt eGovernment. Also, government agencies should provide the users of their eServices with a notification of their transaction for example, by email, SMS or printable receipt and keep them updated of their transaction status or allow users to track their transaction. In addition, more options for communication regarding online transaction inquires should be available, such as by email and phone call. The following screenshot was taken from the Saudi Technical and Vocational Corporation; it shows that in order to get general information, the users of the website have to disclose much personal information.

Figure 8-3: Contact US at the Saudi Technical and Vocational Training Corporation
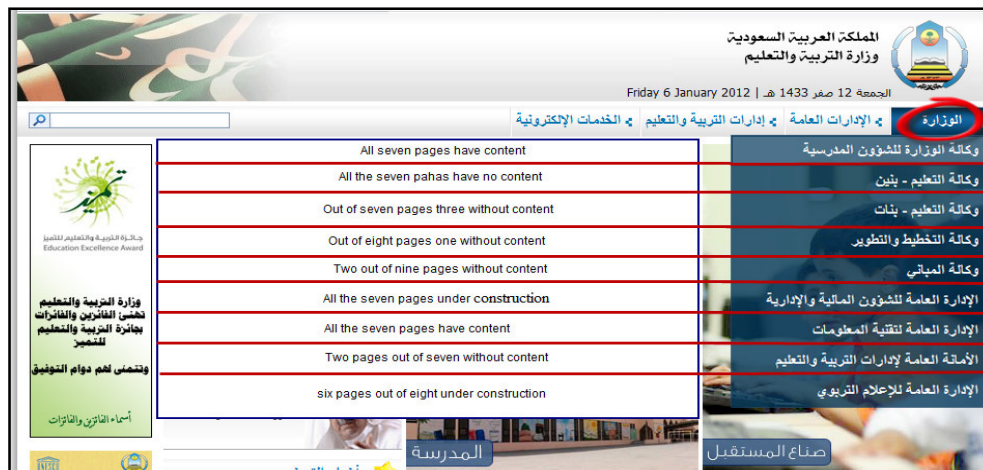
8.3 Web content perspective

Users of government websites expect to find accessible, complete, relevant, accurate, current and up-to-date information. A successful government website has to provide these elements of content, and ignoring these elements will affect the entire user experience in respect to that government website.

8.3.1 Content availability

Basically, the content of a website is the most foremost reason why users visit government websites. Providing users with incomplete information about government services (e.g., requirements, procedures and services fees) or out-of-date information will affect the entire user experience as revealed in this study. Moreover, the quality of the content will enhance users' ability to locate government information through Internet-based search engines, which was the method most used by participants in this study for finding government information on the Internet. Therefore, more attention should be given to the content creation and development of Saudi government websites. Moreover, pages without content or pages under construction, which characterizes most of the government websites evaluated in this study, must be avoided. For example, the ministry of education website has under one subject heading, titled 'Ministry', nine subheadings with a total of 67 pages for all in which 19 pages are under construction and 8 are without content.

Figure 8-4: Riyadh Traffic Department website

8.3.2 Content accessibility

The value of government websites for users should not be minimized by accessibility errors In addition, with the availability of international standards and the availability of an electronic checker, eradicating accessibility errors can be completed easily. As addressed earlier, eGovernment has a social objective, and therefore everyone should have equal access to government electronic resources. It should be understandable that minor changes can make the web more accessible for people with disabilities. The problem with government website accessibility in Saudi Arabia is linked mostly to the absence of accessibility legislation. Therefore, the only way to ensure that government websites are accessible, and as a way to spread the awareness of the significance government website accessibility, is to develop an accessibility act which government agencies must adhere to when developing their websites. In the case of Saudi Arabia the WCAG1: level A should be mandatory for government websites.

- **Provide equivalent alternatives to auditory and visual content:**
  - Provide a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content). *This includes*: images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video.
  - Provide redundant text links for each active region of a server-side image map.
  - Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation.
  - or any time-based multimedia presentation (e.g., a movie or animation), synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation.

- **Don't rely on colour alone:**
  - Ensure that all information conveyed with colour is also available without colour, for example from context or markup.

- **Clarify natural language usage:**
  - Clearly identify changes in the natural language of a document's text and any text equivalents (e.g., captions)

- **Create tables that transform gracefully:**
  - o For data tables, identify row and column headers.
  - o For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.

- **Ensure that pages featuring new technologies transform gracefully:**
  - o Organise documents so they may be read without style sheets. For example, when an HTML document is rendered without associated style sheets, it must still be possible to read the document.
  - o Ensure that equivalents for dynamic content are updated when the dynamic content changes.
  - o Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.

- **Ensure user control of time-sensitive content changes:**
  - o Until user agents allow users to control flickering, avoid causing the screen to flicker.

- **Ensure direct accessibility of embedded user interfaces:**
  - o Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies.

- **Design for device-independence:**
  - o Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
- **Use W3C technologies and guidelines:**
  - o After best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.

- **Provide context and orientation information:**
  - o Title each frame to facilitate frame identification and navigation.

- **Ensure that documents are clear and simple:**
  - o Use the clearest and simplest language appropriate for a site's content.

Figure 8-5: WCAG1: level A

Also, apart from issues related to content accessibility, is the use of other languages. Generally, there are two levels of providing a website in two or more languages. Firstly, a

government agency could provide a full version of the website in other languages, and this is typically used in a country where there is more than one official language, such as in Wales, where English and Welsh are both recognized and used. This is also the case in Canada, where English and French are the official languages. Secondly, a government agency could provide a single page that provides valuable information in other languages in different formats, such as PDF or MS Word, for specific groups of users. This has been used on many websites, particularly websites that expect users from other countries. The choice of these methods is based on several elements, among which are the aim of the website and the expected users. For example, visitors on holiday in London may need specific information on travelling around the city; thus, the Transport of London website provides valuable information for users in fifteen languages, each on a single page. The Arabic page includes information on the London underground, the Oyster ticket, taxi fares and services, driving in London, the congestion zone charge, Barclay's Cycle Hire and the times of river transport services. All this information is given in PDF format on a single webpage. With the current position of the Saudi government websites this method could be the most appropriate method for Saudi government websites, in particular for government websites that expect users of languages other than Arabic, such as the passport department, Riyadh traffic department and the Ministry of Foreign Affair.

8.4 Findability

Section 8.2.2 outlined the significance of using both searching and browsing within government websites in Saudi Arabia to increase findability. However, as discussed in Chapter Three a structural metadata and a controlled vocabulary are required to make searching and browsing effective and consistent. This section addresses the development of metadata and controlled vocabulary to describe government resources to support both approached of searching and browsing.

8.4.1 Metadata

Introducing a nationwide standard for metadata to describe online government resources requires first defining the objective of using metadata. Here, the objective of the metadata

is to describe Saudi online government resources for discovery purpose. Moreover, to determine the most appropriate metadata standards to be used within Saudi government websites. Also, which government website's pages should have a metadata, as well as the conditions of the metadata's elements. The analysis of the findings of this study regarding eGovernment users and government agencies requirements will be reviewed in order to addressed this issues.

Firstly, from the perspective of users, as addressed earlier there is an indicator on that users of Saudi government websites may have limited skills in using Internet applications, including eGovernment (e.g., searching and using government information and services). In addition, it was clear in this study that users in many cases used a title of the government resources when searching government websites. Secondly, from the perspective of government agencies, there are some elements that need to be taken into consideration when planning to develop a nationwide standard for metadata: the lack of IT staff in the public sector including website designer, as well as the high rate of ITC illiteracy among government staff. In addition, all government agencies contacted in this study were unfamiliar with the use of metadata and controlled vocabulary in their websites. Furthermore, this study have identified several issues regarding the use of metadata in Saudi government websites, including metadata elements with no value and the use of inappropriate values. Finally, the information offered by Saudi government websites in general is sparse. Most of the websites reviewed are focusing on providing eServices, downloadable forms, and specific information on their eServices. By considering these factors, and the fact that Saudi government websites focus more on providing government eServices and information related to these services, a simple DC, which is the most metadata standard used widely in the area of eGovernment across the world could be the most appropriate standard for discovery objective. The DC metadata standard provides the key description elements that have been used for years in the library sector to describe the content of a resource including title, subject, description, type and date. In addition, based on the study results a metadata should be created for the four following pages:

- Website's homepage.

- Pages that contains downloadable forms (most used service) and e-forms.

- Pages that contains online services, as well as the requirements and procedures for the services.

- Pages containing the agency's publications.

Finally, the metadata elements' condition must be determined (e.g., mandatory, conditional, recommended, or optional). For resource discovery purposes, it is believed that the three elements of title, subject, and description should be mandatory. These three elements are significant for resource description. Theoretically, in library and information sciences, title and subject are among the main description elements (Qasim, 1995). By applying this theory to online government resources, each government resource should have a formal title. As such, the title is an important element to include. Subject is used to bring similar resources together when searching, as well as to aid browsing. Finally, the description element in the context of eGovernment serves two functions. First, it provides a brief description that helps a user to decide if the resource meets their needs. Second, in cases in which the title of the resource does not reflect the content, the description element gives the user the ability to overcome this issue, so these four elements should be mandatory.

The following figure provides an example of the usage of metadata to describe a page from the Department of Passport. It contains a passport application form, passport requirements and the procedure to use the service through using an online DC metadata generator tool available (http://www.ukoln.ac.uk/cgi-bin/dcdot.pl).

```
<link rel="schema.DC" href="http://purl.org/dc/elements/1.1/" />
<link rel="schema.DCTERMS" href="http://purl.org/dc/terms/" />
<meta name="DC.title" lang="ar" content="Procedures for obtaining the Saudi
passport" />
<meta name="DC.creator" content="Department of Passport" />
<meta name="DC.subject" lang="ar" content="Passport; Applications" />
<meta name="DC.description" lang="ar" content="This page explains how to get
the first passport , how much it costs and what you need to bring in with your
application" />
<meta name="DC.publisher" content="Department of Passport" />
<meta name="DC.type" scheme="DCTERMS.DCMIType" content="Text" />
<meta name="DC.identifier" scheme="DCTERMS.URI"
content="http://www.gdp.gov.sa/?id=2048" />
<meta name="DC.language" scheme="DCTERMS.RFC1766" content="ar" />
```
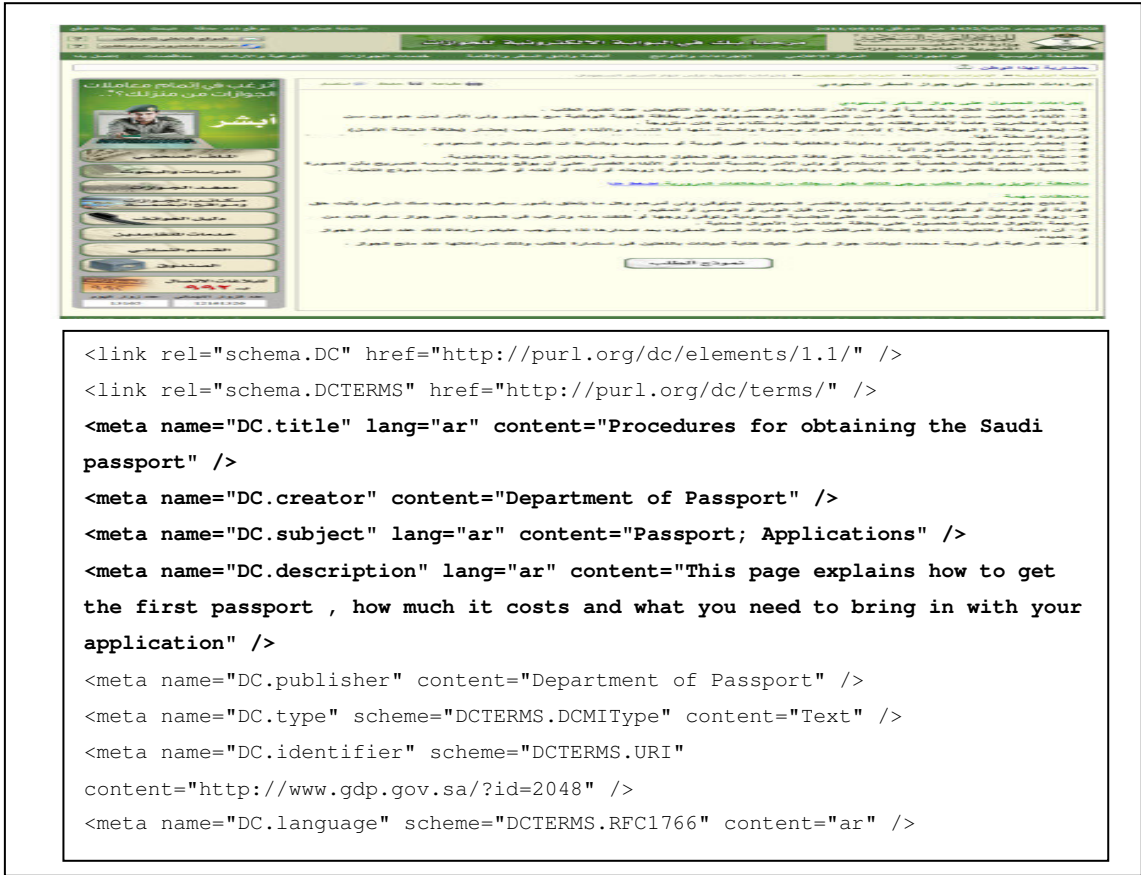
Figure 8-6: Example of metadata

8.4.2 Controlled vocabulary

 In order to improve resources discovery search terms should be standardized by applying a control vocabulary in the metadata's subject element, and as discussed in Chapter Three there is more than one type of controlled vocabulary that can be developed to be used to describe online government resources. The choice of these controlled vocabularies is usually made based on several factors, including the aim of using controlled vocabularies (e.g. searching, browsing), the size of the website and the size of information resources that going to describe and the end users' needs and the availability of skilled staff who will do the job as was seen in the example from the UK.

In Saudi Arabia, however, although there are two government agencies responsible for the documentation of government documents, there is not a controlled vocabulary that

has been developed to be used to describe this kind of government information. The Administrative Documentation Center in the Institute of Public Administration (IPA) uses Arabic Subject Headings, which is a controlled vocabulary that was developed by the Institute's library in 1995 to be used to describe their library collection (See appendix L an example of completed document description). Also, the Saudi National Center for Documents and Archive, which was created in 1998, uses their own classification and coding schema, and according to this schema, government documents are divide into three types: constitutive and political documents, documents of particular importance and government agency documents. Each is divided into types and each type is divided into main subjects and each subject is divided into sub-subjects, and so forth as required. It sometimes seems too general and sometimes too specific, and this is something to be expected as it has been developed to be used in the centre for a specific objective.

Moreover, according to Algrabi (2007) in his study on electronic archiving in Saudi Arabia, the main obstacles to applying electronic archiving in Saudi Arabia is the lack of legislation and laws regarding how to archive government documents, which includes the absence of a single controlled vocabulary for description purposes. Also, the high rate of ICT illiteracy among government staff had been identified as one of the top obstacles. He reveals that the concept of electronic archiving has not yet matured, as only 58% of government agencies have archive centres that have adopted some kind of electronic archiving, and of these agencies that do have archiving centres, about a quarter of these centres were created between 2002 and 2007. Therefore, based on previous facts, the kind of control vocabulary to be used should be easy to use by the people who will do the job of government resource tagging. By considering these issues, a traditional taxonomy could be the most appropriate kind of controlled vocabulary that addresses the needs of Saudi government websites at this time.

8.5 Summary

This chapter has outlined the major areas that need to be understood by government website developers when developing any Saudi government website plan. These issues are crucial and must be considered to encourage more people to use government

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websites. Making online government resources easy to find and use is the only way to encourage more Saudis to utilize government websites, as well as to ensure that the most important pillar of eGovernment projects are heading in the right direction.

Conclusion and Recommendations

This is the concluding chapter of this study. It presents the main findings and conclusions derived from the analysis of the literature and the findings of the study. This conclusion begins with an overview of the study, is followed by a section that addresses the findings of the study, and is completed by recommendations for further research.

9.1 An Overview of the Study

In Saudi Arabia, eGovernment has recently become a part of the country's ICT national plan. Several reasons for establishing eGovernment in Saudi Arabia have been revealed by the eGovernment Programme Office, including providing better and easier to use government services (Yesser, 2006). However, eGovernment in Saudi Arabia is not like it is in developed countries where eGovernment has been a natural outgrowth of the increased use of ICT in most everyday activities, including public sector activities. Since the 1980s, technology has been utilized in developed countries to improve the government's internal operations by automating the work process. Also, since the Internet was introduced in the 1990s, several online activities have been developed, in particular eCommerce applications. Therefore, by the late 1990s, the period in which many eGovernment initiatives were established in developed countries, the use of ICT, the number of the Internet users, and the usage of other Internet applications, were at a reasonable level. These were the real motivations for the development of eGovernment in those countries.

In Saudi Arabia, however, government agencies have just recently started using Internet technology. Furthermore, the number of Internet users in the country is low in general, and online activities, including eCommerce, have not yet matured in the country. In fact, the two popular online business activities e-banking and e-travelling that provide users with electronic transaction services are currently used by only 1% of the Saudi

population. Other business websites in Saudi Arabia can be classified broadly under the first and second stages of the eCommerce website model namely, providing basic information and providing basic two-way communication. This is also found to be the cases of eGovernment, the vast majority of government websites evaluated in this study were similarly limited and immature. This shows that there is a significant relationship between the development of eCommerce and eGovernment, which is in turn supported by what has been reported in the literature that the issues facing eCommerce in the Arab world will continue to influence the development of eGovernment services. Also, it has been revealed that getting people online, helping them build their Internet skills, and increasing their Internet trust, are all direct links to the increased use of eCommerce websites. However, because of the eCommerce lag in Saudi Arabia, eGovernment will play the role played by business sector in other countries, such as getting people online, helping them develop skills in using Internet applications, and in building Internet trust among users. In Saudi Arabia, eGovernment will be the first real Internet application many people will use for electronic transactional purposes. This would not help much and it is something questionable as in many examples eCommerce attract more users than eGovernment as seen in the UK. Internet users who use government websites were found to be less than the Internet users who use eCommerce websites (Dutton at el., 2009).

It is obvious that in Saudi Arabia the motivation for eGovernment is not clear, and the problem with the project developers is that they want to achieve quick results without considering related issues or they are basically 'Over-optimistic' about the success of the project. This could be because the concept of and motivations for eGovernment are not clearly understood. For example, the eGovernment programme vision is to develop 'world-class government services offered in a seamless, user-friendly and secure way by utilizing a variety of electronic means by the end of 2010'. Also, the proposed eGovernment stage models have not been particularly helpful because they focus heavily on the technology perspectives and do not provide clear requirements for each stage of eGovernment development. Technology, while it remains one of the main pillars of eGovernment, is not the sole and only pillar in the eGovernment construct. The literature of eGovernment indicates that the success of eGovernment cannot be achieved without

considering each stage related factors that can seriously affect the adoption and diffusion of eGovernment. A few examples may be helpful, and user privacy is a good issue to examine. On a basic government website where users do not have to disclose their personal information, the eGovernment privacy practice needs to cover issues, such as tracking the user's activities within the website. However, in more advanced stages, where disclosing personal information is required, the privacy practice needs to clarify the purpose of collecting this information and how it will be treated. On a different note, as eGovernment moves into more advanced stages, the sending and receiving of hardcopy documents will be necessary, and this cannot be achieved unless the postal service is developed so that it is efficient. Generally, all of these factors have been discussed in the eGovernment literature under two categories: non-technical barriers and technical website design issues, and are seen by many researchers as the main reasons for the failure of eGovernment in developing countries.

9.2 Research findings

This section presents the main findings that need to be considered in order to have the ability to develop an advanced and integrated two-way communication eGovernment system, which is the ultimate goal of the eGovernment project in Saudi Arabia. Unless these findings are heeded, the majority of eGovernment services in the country will continue to stagnate at the two basic stages of the eGovernment stage model.

Firstly, regarding eGovernment non-technical barriers, a range of issues which can be generally classified under the three themes of political, social and organizational have been identified. In the area of the political theme, the most significant hindrance to the adoption of eGovernment is the lack of proper laws and legislation. Also, the absence of effective postal services is a severe setback; without an effective postal service, Saudi government agencies cannot develop electronic services that require sending and receiving hardcopy documents. As a result, the findings of the study show that most government electronic services currently provided by Saudi government websites can be classified broadly under basic two-way communication, such as making appointments and printing out government forms. Interestingly, these two factors are also seen as the

main reasons for the delay in the adoption of eCommerce in Saudi Arabia. Therefore, these two factors need to be solved in order to enable government agencies to develop more advanced government electronic services. Additionally, addressing these issues will also help to speed up the adoption and diffusion of eCommerce, which should in turn help in reducing several of the barriers to the adoption and diffusion eGovernment, since eGovernment is typically a natural development of eCommerce.

Secondly, in regards to the social theme, the most significant factor is that the number of Internet users is low, and that only a small percentage of Internet users in the country have used some kind of Internet application for transactional purposes. Therefore, getting people online is the first thing that needs to be done. Based on the evidence from other countries, building eCommerce in the country could be the best way to encourage more people to use the Internet. Also, this would help to increase the level of Internet trust, as well as popularize the required skills for using the Internet for transactional objectives. Also, website design issues have been identified in many countries as reasons why users neglect using eGovernment. Unfortunately, most of the government websites evaluated in this study have not met the basic website design requirements needed in order to bring people online, to give them the incentive to develop Internet skills, and to increase users' Internet trust.

Finally, regarding the organisational theme, the most important point is that in relation to developed countries, Saudi Arabia is in a very different position. In developed countries eGovernment has grown out of the government agencies themselves, which can be called eGovernment at the agency level. In such cases, government agencies have been well positioned, in terms of the availability of IT staff and of necessary infrastructure and equipment. These developed countries have also been in a good position in respect to the population's use of technology in general, or what is called the e-readiness of the public sector. As revealed in this study, all of this is not the case in Saudi Arabia. For example, all the government officials who participated in this study confirmed that their agencies were suffering from the lack of skilled IT staff, as well as low rates of ICT literacy among their staff. Taking into consideration that the officials who participated in this

study were from ministries where the e-readiness was supposed to be better than in other government agencies.

In the area of website design, there is no doubt that the key point today for any government agency is that having a website is not enough. How effective the website is, in terms of the availability of content, usability, accessibility, and findability, can be just as or even more important than merely having a presence on the web. The role of government websites, in relation to the eGovernment project which should be considered by eGovernment developers in Saudi Arabia, is that they should be designed in ways that encourage people to utilize government websites, whether they are veteran Internet users or they are people who are new to the Internet. Unfortunately, most of the websites evaluated in this study would not help much to encourage many people to use them. Addressing users' needs, users' abilities, and factors that can limit the usage of government websites, are essential to any electronic project that is attempting to satisfy users. For example, in the case of Saudi Arabia, the familiarity with online activities is low as a result of the absence of other Internet applications. Therefore, increased attention ought to be given to website design. The findings of this study revealed that participants with lower education were found to be more affected by the absence of effective search facilities, whereas people with higher education were found to be more affected by the lack of the use of organisation schemes. So, the educational background of expected users ought to be taken into consideration during the design of each government website.

9.3 Research outcome

As addressed in Chapter One, this study aimed to achieve four outputs in order to address the critical issues regarding eGovernment implementation, adoption and diffusion in Saudi Arabia.

- Identified the characteristic of eGovernment users in Saudi Arabia to help government websites developers understand their needs, expectations and the difficulty they face when using government websites. The profile of expected

users of eGovernment in Saudi Arabia created in this study will absolutely help the government development team to recognize eGovernment users' characteristic and needs in the county. (section 7.1).

- Identified the major eGovernment non-technical barriers in Saudi Arabia and their impact on eGovernment website design. The classification of eGovernment non-technical barriers under three themes with links to their impact on all aspects of the implementation and diffusion of eGovernment will assist eGovernment development teams to realize these barriers and their impact more easily (section 7.2).

- Identified the major issues regarding Saudi government websites in order to assist government website developers to understand the government website core functions. Government websites included in this study were observed over two years (March 2008 to March 2010) (section 7.3).

- Identified the core elements that need to be considered when future government websites are developed or re-developed. Also, a nationwide metadata for discovery purposes was proposed along with a suggestion for the most appropriate kind of controlled vocabulary to be used within Saudi government websites (Chapter Eight).

9.4 Suggestion for future research

The area of eGovernment in Saudi Arabia still requires further study from different perspectives as it has not been explored extensively with regard to particular issues related to government website design or from the end users perspectives. With the geographical and cultural limitations of this study, addressed in section 1.4, reporting on the female as a user of eGovernment services, as well as reporting from government agencies that are managed by females, may be needed in order to get a clear picture of eGovernment in Saudi Arabia. Including non-Saudis could be another way in which further study could be carried out, as addressed in section 4.1.2, about 31% of the

population is classified as foreign. Additionally, there are about 12 million visitors coming to Saudi Arabia each year for religious purposes (performing Hajj or Omrah). Finally, the area of the use of metadata and controlled vocabularies in government websites for description purposes is still fertile ground for academic study. On the other hand, it might be useful to retest factors identified in both areas of non-technical barriers and technical website design issues in different developing countries to see how such these factors can affecting the usage of eGovernment services.

9.5 Researcher experience

Since 2006, the researcher has been a student in the Department of Computer Science at Strathclyde University, first as a Master's student and then as a PhD student. Interest in the area of eGovernment was born out of a class entitled 'Management and Marketing of Information and Library Studies'. For one of the class assignments, the researcher chose to join the group that took the topic of 'Libraries and eGovernment'. Since that time, the area of eGovernment has been in the researcher's mind as a topic in need of further study.

Over the last four years in the department as a PhD student, the researcher has learnt many things by working with other students and staff and his supervisor in particular. Knowing how to perform effective academic searches could be the most important thing that a researcher learns, including how to review the current relevant literature, select the research design, select data tools, and use analysis software. In fact, the researcher believes that research knowledge originates from practice. A part of the researcher's experience was to use all available electronic services, and therefore, almost all contact with the UK government was accomplished online except for transactions requiring a personal visit. The following is a list of some online government service activities that the researcher has performed so far:

- Applying for a driving license.
- City council payments (more than 10 times for my daughter's nursery fees).
- Booking an appointment to renew a visa (3 times).
- Paying road tax (4 times).

- Paying parking charge notices (2 times).
- Requesting bulk uplift (2 times).

The researcher has not visited any government agencies regarding obtaining information on specific matters, such as visas, car registration, and so on. All the information the researcher wants is available online.

9.6 Final Note

Subsequent to the second round of government website evaluations, which was conducted in March 2010, seven government websites have changed their design: the Ministry of Foreign Affairs, Saudi Communication and Information Technology Commission, Ministry of Justice, Ministry of Transport, Ministry of Civil Service, Municipality of Riyadh Region and General Department of Statistics and Information.

9.7 Summary

This chapter started with an overview of the study, describing in brief the major areas that the study examined. The research questions were reviewed to show what the research aimed to answer. The third section reviewed the outcomes of the research. Suggestions for future research was then covered in the forth section, as several issues arose during the conduct of this study and demonstrated the need for further study.

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Appendix A: Directgov FOI Email

Directgov

Directgov
Hercules House
Hercules Road
London
SE1 7DU
www.direct.gov.uk

04 February 2011

Dear Abdulrahman Alasem,

Reference: FOI310378

Thank you for your Freedom of Information request received on 26 January. You asked the following:

I am a PhD student doing a research on eGovernment marketing, and as you utilized Â£1 million for TV ad in 2010. I would like to know the total number of Directgov visitors in 2010 and 2009. This is to see have the number of visitors increased after the TV ad.

I can confirm that the total number of visitors to Directgov in 2009 was 211,472,681. The total number of visitors to Directgov in 2010 was 319,876,091.

Between December 2009 and January 2010 visits to the site rose from 16.1 million to 27.5 million. By the end of January 2010, 73% of the population could recall the Directgov advert, significantly above the Central Office of Information benchmark for government campaigns (64%).

Please contact directgov.foi@directgov.gsi.gov.uk if you have any queries about this letter.

Yours sincerely,

Directgov FoI Team
directgov.foi@directgov.gsi.gov.uk

If you are unhappy with the service you have received in relation to your request or wish to request an internal review, you should write to:

Sue Gray
Director
Cabinet Office
70 Whitehall
London
SW1A 2AS
email: foiteam@cabinet-office.x.gsi.gov.uk

You should note that the Cabinet Office will not normally accept an application for internal review if it is received more than two months after the date that the reply was issued.

If you are not content with the outcome of your internal review, you may apply directly to the Information Commissioner for a decision. Generally, the Commissioner cannot make a decision unless you have exhausted the complaints procedure provided by Cabinet Office. The Information Commissioner can be contacted at:

The Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF

Appendix B: The questionnaire

Dear Sir,

I would like first to think you in advance for your co-operation and assistance in answering the following questionnaire titled 'eGovernment in Saudi Arabia: an investigation from information architecture perspective'. I am a PhD students at the department of Computer Sciences at Strathclyde University- UK, Glasgow, and I am working on the topic in order to fulfillment of the degree of the PhD in the field of information and library studies.

The questionnaire is designed to work with other data collection tools, which are developed for the same purpose of the study. The questionnaire is divided into five sections: Section one background Information including age, education level and monthly income, Section two about your Internet experience (e.g., place of using the Internet, factors effecting using the Internet). Section three is about eGovernment awareness and use, such as how government information and services is searched. Section four is about how easy for users to identify the government information and services public providers. Finally, eGovernment non-technical barriers that could stand for the development of the project in the country.

It is important to note that all information and data provided here will be treated confidentially, and it will be used for the purpose of the study only. There is no right or wrong answer, and your opinions just reflect your conception of the subject only. As an expression of my gratitude for your cooperation in completing this study, I am pleased to send you a copy of the study's results if you like just fill your details in the section on this at the end of the questionnaire. Finally, through your cooperation, the results of this study will contribute to improve the methods and strategies of the development of eGovernment in Saudi Arabia.

Abdulrahman Nasser ALASEM

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Riyadh +966505853836

Glasgow +447872906365

Background Information

1. Age:　　　　☐ 20 - 30　　　☐ 31- 40
　　　　　　　☐ 41 – 50　　　☐ Above 50 years

2. Occupation:　☐ Student　☐ Teachers　☐ University Lecturer
　　　　　　　☐ Government worker　　　☐ Private sector worker

3. Education:　☐ Diploma/ University　　　☐ Master/ PhD
　　　　　　　☐ Other, please specify (…….)

4. Monthly income:　☐ Less than 2000　☐ 2000 – 4000　☐ 4000 – 6000
　　　　　　　☐ 6000 – 8000　☐ Above 8000
　　　　　　　………………………………….

Internet experience

5. Have you ever used the Internet?

　　☐ Yes　　☐ No (*If no, please go to question 17*)

eGovernment Use

6. Have you ever　(*If no, please go to question 17*)

	Yes	No
- Sent an e-mail to a government agency		
- Printed out an e-form and then post it, fax it or hand it in		
- Completed government online forms		
- Used interactive government electronic services		
- Pay government services		

7. How often do you use the Internet daily?
　　☐ Less than 1 hour　☐ Between 1 and 3 hours　☐ More than 3 hours

9. Where do you usually access the Internet?
　　☐ Home　　　☐ Work　　☐ University　☐ Internet café
　　☐ Public Library　☐ Other, please specify (…………………….…..)

----

9. How long have you been using the Internet?
   ☐ Less than a year ☐ 1-2 years ☐ 2 – 4 years ☐ Five years or more

10. What do you mainly use the Internet for? (*Choose more than one option if applicable*)
    ☐ E-mail   ☐ Entertainment   ☐ Information & Knowledge Search
    ☐ Other

11. In general how would you rate yourself in using the Internet?
    ☐ Very Poor ☐ Poor ☐ Average ☐ Good ☐ Very good

12. To what extent do the factors listed below affect you when you use the Internet?

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
- Slow Internet connection					
- Expensive Internet subscription					
- Lack of computer skills					

13. In general which of the methods do you use most often to search the Saudi electronic government information and services? (**Choose more than one option if applicable**)
☐ Searching using known search engine, e.g., Google.
☐ Directly to the agency website link.
☐ Searching the Saudi National eGovernment Portal.
☐ Other, please specify (. . . . .)

14. How did you find your experience in searching for government information?
☐ Easy, and I found what I was looking for.
☐ I found the information I was looking for after several attempts, in several places.
☐ Difficult, and I did not find what I was looking for.

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15. To what extent do the factors listed below affect you when searching for government information and services?

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
- Difficulty in identifying which government agencies provide the information or services I require					
- Lack of availability of government content					
- Absence of effective search facility					
- Lack of information organisation schemas.(e.g., browsing by subjects, audiences, tasks)					
- Difficulty in formulating the search query					
- Poor search results					

16. Are you satisfied with the level of performance of Saudi Arabia eGovernment?
☐ Dissatisfied ☐ Somewhat satisfied ☐ I don't know ☐ Satisfied ☐ Very satisfied

………………………………..

Public Services Providers

17. Imagine you are in the Saudi National eGovernment Portal looking for the following

information:

- Saudi Arabia official holidays. What government agency/ies may provide this information? (………………………………………………………) Which words or phrases would you use to search for it? ………………………………………………………………………………………... ………………………………………………………………………………………..
- Employing students in the summer holidays. What government agency/ies may provide this information? (………………...………………………….) Which words or phrases would you use to search for it? ………………….. ………………………………………………………………………………………..
- Information on Saudi embassies. What government agency/ies may provide this information? (……………………………………………………….)

Which words or phrases would you use to search for it? …………………………………………………………………………………………………… ……………………………………………………………………………………………..
- Countries not authorised to travel to. What government agency/ies may provide this information? (…………………………….………………….) Which words or phrases would you use to search for it? …………………...……………………………………………………………… ……………………………………………………………………………………………..
- Replacing a damaged passport. What government agency/ies may provide this information? (……………………………………………………………….) Which words or phrases would you use to search for it? ……………………………………………………………………………… ……………………………………………………………………………………………..
- A passport for a child born abroad. What government agency/ies may provide this information? (……………………………………………………) Which words or phrases would you use to search for it? …………………...……………………………………………………………… ……………………………………………………………………………………………..

18. In general which channel do you use most often for transactions with government agencies?

☐ Personal Visit ☐ Phone   ☐ Agencies ☐ Internet   ☐ Others
……………………………………..

eGovernment non-technical Barriers

19. Electronic government initiatives all over the world generally face some challenges. The following table identifies some of them. In your view, to what extent can these challenges lead to the failure of the Saudi eGovernment initiative?

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
- Users' lack of IT knowledge					
- Social and culture issues					
- Lack of user participation in project development					
- Lack of studies which identifying the users' needs of eGovernment					

- Lack of proper laws and legislation					
- Trust and Confidence					
- Lack of marketing					
- Lack of skilled IT staff and leadership support					

20. Are there any points not presented in this questionnaire that you would like to add?

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Thank you

If you want to receive a copy of the study result:

Name (optional) …………………………………………….

Email: …………………………………………………………

Appendix C: A formal supported letter from the Ministry of Commerce and Industry.

Appendix D: Interview questions

Interviewee's name	
Position	
Date	
Time	
Place	

All interviews start with a brief introduction about the study, including its aim and objectives, as well as a brief background of the researcher.

Interview questions

Q1: What do you think are the greatest non-technical barriers facing the development of eGovernment in Saudi Arabia?

Q2: What is the main barriers for eGovernment adoption in your agency?

Q3: How do you see your agency website in terms of how easy it is to use?

Q4: Have you carried out any studies to obtain information about the users of your website?

Q5: Do you have statistics of the number of visitors to your website, and have you analysed your website to know how users search for information and services, what the information that is most sought-after is, and so forth?

Q6: Did you take into consideration the website design guide published by the 'Yesser' programme during designing or developing your website?

Q7: Do you know about the metadata standard suggested by the YESSER programme, which will be used within the Saudi Arabian government websites?

Appendix E: A formal supported letter from the Department of Information Studies at AMISIU.

KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
Al-Imam Muhammad Ibn Saud Islamic University

College of Computer and Information Sciences
Dept. Of Information Studies

المملكة العَربيّة السُعوديّة
وزارة التعليم العالي
جامعة الإمام محمد بن سعود الإسلامية
كلية علوم الحاسب والمعلومات
قسم دراسات المعلومات

الرقـم : .... التـاريخ : / / ١٤هـ المشـفوعات : ....

إلى من يهمه الأمر

السلام عليكم ورحمة الله وبركاته، وبعد:

نفيدكم بأن الدارس عبدالرحمن بن ناصر العاصم أحد المبتعثين من قسم دراسات المعلومات بجامعة الإمام محمد بن سعود للحصول على درجة الدكتوراه من المملكة المتحدة. وهو حالياً في رحلة علمية للمملكة من أجل جمع البيانات اللازمة لبحثه الموسوم بـ "الحكومة الإلكترونية في المملكة العربية السعودية".

لذا نأمل منكم التكرم بمساعدته في إتمام بحثه، وتزويده بالمعلومات التي يحتاجها في إطار حدود دراسته.

وتقبلوا خالص الشكر و التقدير ،،،

رئيس قسم دراسات المعلومات

د. عبدالله بن إبراهيم المبرد

Appendix F: Riyadh Newspaper Documents

No	Site	Date	Type and Topic
1	Riyadh Newspaper	15 Sep 2006 No: 14053	**Interview** **E-government in Saudi Arabia** **Interviewee**: Ali Alsamie (Saudi eGovernment GCIO). **Interviewer**: Mohammed Albahlal **Available at**: http://www.alriyadh.com/2006/12/15/article209238.html
2	Riyadh Newspaper	10 Dec 2008 No: 14779	**Article** **E-governemnt in Saudi Arabia** **Writer**: Saad Alroues **Available at**: http://www.alriyadh.com/2008/12/10/article393727.html
3	Riyadh Newspaper	11 Mar 2007 No: 14139	**Interview** **E-government in Saudi Arabia** **Interviewee**: Ali Alsamie (Saudi eGovernment GCIO). **Interviewer**: Mohammed Aluwayd **Available at**: http://www.alriyadh.com/2007/03/11/article231819.html
4	Riyadh Newspaper	31 May 2007 No:14220	**Report** **3rd conference on e-government in GCC countries** **Writer**: Ali ALqahis **Available at**: http://www.alriyadh.com/2007/05/31/article253492.html
5	Riyadh Newspaper	11 Jan 2008 No: 14597	**Article** **Success factors for government websites** **Writer**: Mohammed Albahlal (IT specialist) Available at: http://www.alriyadh.com/2008/06/11/article349792.html
6	Riyadh Newspaper	26 Jun 2009 No: 15000	**Interview** **E-government in Saudi Arabia** **Interviewee**: Arwa Alama (Assistant for Information Technology at Jeddah Municipality) **Interviewer**: Ahmed Bin Hamdan **Available at**: http://www.alriyadh.com/2009/07/19/article445782.html
7	Riyadh Newspaper	27 Oct 2007 No: 14369	**Article** **Post Services and E-government** **Writer**: Fahad Aloboud (IT specialist and a member of the Saudi parliament) **Available at**: http://www.alriyadh.com/2007/10/27/article289510.html

8	Riyadh Newspaper	14 Jun 2007 No: 14083	**Interview** **E-gommerce in Saudi Arabia** **Interviewees**: - Muhammad Ahmad (Minister of ICT) - Interviewer**:** Fahd Albhalal **Available at**: http://www.alriyadh.com/2007/01/14/article216162.html
9	Riyadh Newspaper	29 Oct 2009 No: 15102	**Interview** **E-government in Saudi Arabia** **Interviewees**: - Abdulaziz Almaqbal (IT expert) - Hassan Abdulsakor (IT expert) - Interviewer**:** Hassen Alqahtani **Available at**: http://www.alriyadh.com/2009/10/29/article470219.html
10	Riyadh Newspaper	14 Jun 2010 No: 15330	**Report** **E-government in Saudi Arabia Conference** **Speakers:** Abdurrahman Algafri (the Governor of CITC) **Writer:** Rushed Alskran **Available at**: http://www.alriyadh.com/2010/06/14/article534758.html
11	Riyadh Newspaper	27 May 2010 No:15312	**Report** **16th GCC countries E-government forum.** **Writer:** Ali Alqahis **Available at:** http://www.alriyadh.com/2010/05/27/article529586.html
12	Riyadh Newspaper	9 Jan 2009 No: 14809	**Interview** **E-government in Saudi Arabia** **Interviewee**: - Ahmad Alrabaa (professor at the Public Administration Institute) - Nasser Alqahtani (professor at the Public Administration Institute) - Samier Almaqran (the manager of the Public Administration Institute) **Interviewer**: Mohammad Alsofian **Available at**: http://www.alriyadh.com/2009/01/09/article400951.html
13	Riyadh Newspaper	9 May 2006 No: 13833	**Interview** **E- government in Saudi Arabia** **Interviewees:** - Mohammad Alqasim (IT consultant at the Ministry of Communication and Information Technology) **-** Kalied Alqanim (manager of Elm for Information Security) - Ebrahim Alrasad (manager computer centre at the Technical and Vocational Training Corporation) - Mohammad Alroiaq (manager of computer department at the Riyadh Principality) - Selah Alzoied (manager of the Internet department at the Ministry of Health) **Interviewers:** Hamad Alfhalah & Fahad Albahlal **Available at**: http://www.alriyadh.com/2006/05/09/article152831.html
14	Riyadh Newspaper	21 Nov 2007 No:14394	**Report** **Online Questionnaire on E-government Users' Satisfaction** **Author:** Riyadh newspaper information centre **Available at:**

			http://www.alriyadh.com/2007/11/21/article295715.html
15	Riyadh Newspaper	27 Sep 2007 No:14339	**Report** **Information technology in Saudi Arabia** **Witter:** Fahad Alaskar **Available at**: http://www.alriyadh.com/2007/09/27/article282813.html
16	Riyadh Newspaper	25 Oct 2007 No:14371	**Article** **eCommerce in Saudi Arabia** **Writer:** Sulieman Alturky **Available at:** http://www.alriyadh.com/2007/10/29/article289945.html
17	Riyadh Newspaper	27 Aug 2007 No:139943	**Article** **eCommerce challenges in Saudi Arabia** **Writer:** Hani Alqafily **Available at:** http://www.alriyadh.com/1943/04/29/section.home.html
18	Riyadh Newspaper	1 Feb 2007 No:14101	**Article** **eGovernment and the availability of skilled staff** **Writer:** Abdullah Alageree **Available at:** http://www.alriyadh.com/2007/02/01/article221312.html

Appendix G: Web Site Reviewed

	Agency's Name	URLs
1	Saudi Arabian Monetary Agency	http://www.sama.gov.sa
2	Real – Stat Development Found	www.redf.gov.sa
3	Majlis Alshura	www.shura.gov.sa
4	Department of Zakat and Income Tax	www.dzit.gov.sa
5	Capital Market Authority	www.cma.org.sa
6	Saudi Food and Drug Authority	www.sfda.gov.sa
7	Ministry of Social Affairs	http://mosa.gov.sa
8	Ministry of Higher Education	www.mohe.gov.sa
9	Ministry of Foreign Affairs	www.mofa.gov.sa
10	Saudi Communication and Information Technology Commission	www.citc.gov.sa
11	Ministry of Agriculture	www.moa.gov.sa
12	Passport Department	www.gdp.gov.sa
13	Riyadh Traffic Department	www.rt.gov.sa
14	Riyadh Principality	www.riyadh.gov.sa
15	Saudi Credit Saving Bank	www.scb.gov.sa
16	Ministry of Labor	https://mol.gov.sa
17	Ministry of Education	www.moe.gov.sa
18	Ministry of Commerce and Industry	www.commerce.gov.sa
19	Ministry of Islamic Affairs, Endowments, Da'wah and Guidance	www.al-islam.com
20	Ministry of Justice	www.moj.gov.sa
21	Ministry of Transport	http://www.mot.gov.sa
22	Ministry of Health	www.moh.gov.sa
23	Ministry of Hajj	www.hajinformation.com
24	Saudi Technical and Vocational Training Corporation	http://tvtc.gov.sa/
25	Ministry of Civil Service	www.mcs.gov.sa
26	Ministry of Communications and Information Technology	www.mcit.gov.sa
27	Directorate General of Civil Status	Not available
28	Saudi Industrial Development Fund	www.sidf.gov.sa
29	Saudi Commission for Tourism and Antiquities	www.scta.gov.sa
30	General Organization for Social Insurance	www.gosionline.gov.sa
31	Ministry of Interior	www.moi.gov.sa
32	National Commission for Wildlife Conservation and Development	www.ncwcd.gov.sa
33	Public Security Directorate	Not available
34	Municipality of Riyadh Region	www.alriyadh.gov.sa
35	National Centre for Assessment in High Education	www.qiyas.org
36	Public Pension Agency	www.pension.gov.sa
37	General Department of Statistics and Information	www.cdsi.gov.sa
38	Ministry of Economy and Planning	www.mep.gov.sa
39	Bureau of Investigation and Prosecution	www.bip.gov.sa
40	King Abdulaziz and his Companions Foundation for Giftedness and Creativity	www.mawhiba.org.sa

Appendix H: Raw data

Q1: Age Distribution.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20- 30	144	57.6	57.6	57.6
31- 40	59	23.6	23.6	81.2
41- 50	36	14.4	14.4	95.6
Above 50	11	4.4	4.4	100.0
Total	250	100.0	100.0	

Q2: Occupation Distribution.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Student	50	20.0	20.0	20.0
Teachers	50	20.0	20.0	40.0
University Lecturer	50	20.0	20.0	60.0
Government worker	50	20.0	20.0	80.0
Private sector worker	50	20.0	20.0	100.0
Total	250	100.0	100.0	

Q3: Education Distribution without University Students.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Diploma/ University	119	59.5	59.5	59.5
Master/ PhD	54	27.0	27.0	86.5
Other, please specify	27	13.5	13.5	100.0
Total	200	100.0	100.0	

Q4: Income Distribution.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 2000	41	16.4	16.4	16.4
2000 – 4000	53	21.2	21.2	37.6
4000 – 6000	38	15.2	15.2	52.8
6000 – 8000	40	16.0	16.0	68.8
Above 8000	78	31.2	31.2	100.0
Total	250	100.0	100.0	

Q4/2: Income Distribution without University students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2000	7	3.5	3.5	3.5
	2000 – 4000	39	19.5	19.5	23.0
	4000 – 6000	37	18.5	18.5	41.5
	6000 – 8000	39	19.5	19.5	61.0
	Above 8000	78	39.0	39.0	100.0
	Total	200	100.0	100.0	

Q5: Have you ever used the Internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	241	96.4	96.4	96.4
	No	9	3.6	3.6	100.0
	Total	250	100.0	100.0	

Cross-tabulation: Internet use and age groups, education levels and monthly income.

	Age				Total
Q5 and Age groups	20-30	31-40	41-50	Over 50	
Q 5 Yes	140	56	35	10	241
No	4	3	1	1	9
Total	144	59	36	11	250
Internet Illiterate	3%	5%	3%	**9%**	

	Education			Total
Q5 and education levels (without Uni students)	Diploma/ University	Master/ PhD	Other	
Q 5 Yes	116	52	23	191
No	3	2	4	9
Total	119	54	27	200
	2%	4%	**15%**	

	Income					Total
Q5 and monthly income (without Uni students)	Less than 2000	2000 – 4000	4000 – 6000	6000 – 8000	Above 8000	
Q 5 Yes	5	38	35	36	77	191
No	2	1	2	3	1	9
Total	7	39	37	39	78	200
Internet Illiterate	**28%**	3%	5%	8%	1%	

Q6: eGovernment users.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	216	86.4	89.6	89.6
	No	25	10.0	10.4	100.0
	Total	241	96.4	100.0	
Missing	System	9	3.6		
Total		250	100.0		

Cross-tabulation: Q6 eGovernment use and age groups, education levels.

Q6 and age groups (without Uni students)		Age				Total
		20-30	31-40	41-50	Over 50	
Q 6	Yes	86	51	30	9	176
	No	5	4	5	1	15
Total		91	55	35	10	191
		6%	7%	**14%**	10%	

Q6 and education levels (without Uni students)		Education			Total
		Diploma/ University	Master/ PhD	Other	
Q 6	Yes	104	47	19	170
	No	12	5	4	21
Total		116	52	23	191
		10%	10%	**17%**	

Q6/1: Sent an e-mail to a government agency.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	118	54.6	54.6	54.6
	No	98	45.4	45.4	100.0
	Total	216	100.0	100.0	

Q6/2: Printed out an e-form and then post it, fax it or hand it in.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	157	72.7	72.7	72.7
	No	59	27.3	27.3	100.0
	Total	216	100.0	100.0	

Q6/3: Completed government online form.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	109	50.5	50.5	50.5
	No	107	49.5	49.5	100.0
Total		216	100.0		

Q6/4: Used interactive government electronic services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	128	59.3	59.3	59.2
	No	88	40.7	40.7	100.0
Total		216	100.0		

Q6/5: Pay government services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	81	37.5	37.5	37.5
	No	135	62.5	62.5	100.0
Total		216	100.0		

Cross-tabulation: government services and occupation.

Q 12.1	Sent an e-mail to a government agency					Total
	Students	Teachers	Uni lecturers	Gov officers	Private workers	
Yes	23	21	**32**	22	20	118
Q 12.2	Printed out an e-form and then post it, fax it or hand it in					Total
	Students	Teachers	Uni lecturers	Gov officers	Private workers	
Yes	30	33	**37**	31	26	157
Q 12.3	Completed government online form					Total
	Students	Teachers	Uni lecturers	Gov officers	Private workers	
Yes	16	26	**27**	14	26	109
Q 12.4	Used interactive government electronic services					Total
	Students	Teachers	Uni lecturers	Gov officers	Private workers	
Yes	**40**	15	32	15	26	128
Q 12.5	Pay government services					Total
	Students	Teachers	Uni lecturer	Gov officers	Private workers	
Yes	9	17	**23**	16	16	81

Q7: How often do you use the Internet daily?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 1 hour	45	20.8	20.8	20.8
Between 1 and 3 hours	105	48.6	48.6	69.4
More than 3 hours	66	30.6	30.6	100.0
Total	216	100.0	100.0	

Q8: Where do you usually access the Internet?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Home	166	76.9	76.9	76.9
Work	29	13.4	13.4	90.3
University	9	4.2	4.2	94.4
Internet café	11	5.1	5.1	99.5
Public Library	1	.5	.5	100.0
Total	216	100.0	100.0	

Q9: How long have you been using the Internet?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than a year	8	3.7	3.7	3.7
1-2 years	16	7.4	7.4	11.1
2 – 4 years	53	24.5	24.5	35.6
Five years or more	139	64.4	64.4	100.0
Total	216	100.0	100.0	

Q10: What do you mainly use the Internet for?   (*Choose more than one option if applicable*)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Email	14	6.5	6.5	6.5
Entertainment	4	1.9	1.9	8.3
Information and Knowledge	42	19.4	19.4	27.8
1&2	11	5.1	5.1	32.9
1&3	74	34.3	34.3	67.1
2&3	2	.9	.9	68.1
1&2&3	68	31.5	31.5	99.5
Email	1	.5	.5	100.0
Total	216	100.0	100.0	

Q11: In general how would you rate yourself in using the Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Poor	2	.9	.9	.9
	Poor	6	2.8	2.8	3.7
	Average	58	26.9	26.9	30.6
	Good	93	43.1	43.1	73.6
	Very good	57	26.4	26.4	100.0
	Total	216	100.0	100.0	

Q 12/1: Slow Internet Connection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	12	5.6	5.6	5.6
	Disagree	10	4.6	4.7	10.2
	Neutral	35	16.2	16.3	26.5
	Agree	81	37.5	37.7	64.2
	Completely Agree	77	35.6	35.8	100.0
	Total	215	99.5	100.0	
Missing	System	1	.5		
Total		216	100.0		

Q 12/2: Expensive Internet subscription

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	34	15.7	16.0	16.0
	Disagree	22	10.2	10.3	26.3
	Neutral	68	31.5	31.9	58.2
	Agree	49	22.7	23.0	81.2
	Completely Agree	40	18.5	18.8	100.0
	Total	213	98.6	100.0	
Missing	System	3	1.4		
Total		216	100.0		

Q 12/2: Lack of computer skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	62	28.7	29.0	29.0
	Disagree	43	19.9	20.1	49.1
	Neutral	69	31.9	32.2	81.3
	Agree	25	16.6	11.7	93.0
	Completely Agree	15	6.9	7.0	100.0
	Total	214	99.1	100.0	
Missing	System	2	.9		
Total		216	100.0		

Q12: Descriptive Statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
Slow Internet Connection	215	1	5	3.93	1.100
Expensive Internet subscription	213	1	5	3.18	1.303
Lack of computer skills	214	1	5	2.48	1.221
Valid N (listwise)	213				

Q13: In general which of the methods do you use most often to search the Saudi electronic government information and services? (Choose more than one option if applicable).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Searching using known search engine, e.g., Google	163	75.5	75.5	75.5
	Directly to the agency website link	5	2.3	2.3	77.8
	Searching the Saudi National eGovernment Portal	2	.9	.9	78.7
	1&2	33	15.2	15.3	94.0
	1&3	9	4.1	4.2	98.1
	1&2&3	4	1.8	1.9	100.0
Total		216	100.0		

Cross-tabulation: Q13 searching for government information, services and age group and education levels.

Q13 and age groups		Age				Total
		20-30	31-40	41-50	Over 50	
Q 13	Searching using known search engine, e.g., Google	**108**	**35**	**17**	**3**	163
	Directly to the agency website link	4	0	0	1	5
	Searching the Saudi National eGovernment Portal	1	0	0	1	2
	1&2	17	3	10	3	33
	1&3	0	6	2	1	9
	1&2&3	1	2	1	0	4
Total		131	46	30	9	216

Q13 and education levels		Education			Total
		Diploma/ University	Master/ PhD	Other	
Q 13	Searching using known search engine, e.g., Google	**117**	**30**	**16**	163
	Directly to the agency website link	5	0	0	5
	Searching the Saudi National eGovernment Portal	0	1	1	2
	1&2	20	11	2	33
	1&3	4	5	0	9
	1&2&3	1	3	0	4
Total		147	50	19	216

Q14: How did you find your experience in searching for government information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Easy, and I found what I was looking for	79	36.6	36.6	36.6
	I found the information I was looking for after several attempts, in several places	128	59.3	59.3	95.8
	Difficult, and I did not find what I was looking for	9	4.2	4.2	100.0
Total		216	100.0		

Cross-tabulation: Q14 how easy to find government information, services and age group and education levels.

Q14 and age groups	Age				Total
	20-30	31-40	41-50	Over 50	2
Q 14 Easy, and I found what I was looking for	**48**	20	11	0	79
I found the information I was looking for after several attempts, in several places	75	25	19	9	128
Difficult, and I did not find what I was looking for	8	1	0	0	9
Total	131	46	30	9	216

Q14 and education levels	Education			Total
	Diploma/ University	Master/ PhD	Other	1
Q 14 Easy, and I found what I was looking for	50	20	9	79
I found the information I was looking for after several attempts, in several places	90	30	8	128
Difficult, and I did not find what I was looking for	7	0	2	9
Total	147	50	19	216

Q15/1: Difficulty in identifying which government agencies provide the information or services I require.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	57	26.4	26.4	26.4
	Disagree	36	16.7	16.7	43.1
	Natural	71	32.9	32.9	75.9
	Agree	37	17.1	17.1	93.1
	Completely Agree	15	6.9	6.9	100.0
Total		216	100.0		

Q15/2: Lack of availability of government content.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	5	2.3	2.3	2.3
	Disagree	16	7.4	7.4	9.8
	Natural	24	11.1	11.2	20.9
	Agree	80	37.0	37.2	58.1
	Completely Agree	90	41.5	41.9	100.0
	Total	215	99.1	100.0	
Missing	System	1	.5		
Total		216	100.0		

Q15/3: Absence of effective search facility.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	22	10.2	10.2	10.2
	Disagree	33	15.3	15.3	25.5
	Natural	64	29.6	29.6	55.1
	Agree	63	29.2	29.2	84.3
	Completely Agree	34	15.7	15.7	100.0
Total		216	100.0		

Q15/4: Lack of information organisation schemas.(e.g., browsing by subjects, audiences, tasks).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	15	6.9	7.0	7.0
	Disagree	38	17.6	17.8	24.8
	Natural	63	29.2	29.4	54.2
	Agree	72	33.3	33.6	87.9
	Completely Agree	26	12.0	12.1	100.0
	Total	214	98.6	100.0	
Missing	System	2	0.9		
Total		216	100.0		

Q15/5: Difficulty in formulating the search query.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	71	32.9	32.9	32.9
	Disagree	47	21.8	21.8	54.6
	Natural	50	23.1	23.1	77.8
	Agree	35	16.2	16.2	94.0
	Completely Agree	13	6.0	6.0	100.0
Total		216	100.0		

Q15/6: Poor and unorganized search results.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	26	12.0	12.1	12.1
	Disagree	40	18.5	18.6	30.7
	Natural	71	32.9	33.0	63.7
	Agree	49	22.7	22.8	86.5
	Completely Agree	29	13.4	13.5	100.0
	Total	215	99.5	100.0	
Missing	System	1	.5		
Total		216	100.0		

Q15: Descriptive Statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
Difficulty in identifying which government agencies provide the information or services I require	216	1	5	2.62	1.237
Lack of availability of government content	215	1	5	4.09	1.017
Absence of effective search facility	216	1	5	3.25	1.194
Lack of information organisation schemas.(e.g., browsing by subjects, audiences, tasks)	214	1	5	3.26	1.103
Difficulty in formulating the search query	216	1	5	2.41	1.262
Poor and unorganized search results	215	1	5	3.07	1.200

Q16: Are you satisfied with the level of performance of Saudi Arabia e-government?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	100	46.3	46.3	46.3
	Somewhat satisfied	77	35.6	35.6	81.9
	I do not know	19	8.8	8.8	90.7
	Satisfied	15	6.9	6.9	97.7
	Very satisfied	5	2.3	2.3	100.0
	Total	216	100.0	100.0	
Total		216	100.0		

Q17: Government information and services providers

Q17/1: Saudi Arabia official holidays. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	132	52.8	54.1	54.1
	wrong	112	44.8	45.9	100.0
	Total	244	97.6	100.0	
Missing	System	6	2.4		
Total		250	100.0		

Q17/2: Employing students in the summer holidays. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	186	74.8	76.0	76.0
	wrong	59	23.6	24.0	100.0
	Total	246	98.4	100.0	
Missing	System	4	1.6		
Total		250	100.0		

Q17/3: Information on Saudi embassies. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	227	90.8	91.2	91.2
	wrong	22	8.8	8.8	100.0
	Total	249	99.6	100.0	
Missing	System	1	.4		
Total		250	100.0		

Q17/4: Countries not authorized to travel to. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	184	73.6	74.8	91.8
	wrong	62	24.8	25.2	100.0
	Total	246	98.4	100.0	
Missing	System	4	1.6		
Total		250	100.0		

Q17/5: Replacing a damaged passport. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	240	96.0	96.4	96.4
	wrong	9	3.6	3.6	100.0
	Total	249	99.6	100.0	
Missing	System	1	.4		
Total		250	100.0		

Q17/6: A passport for a child born abroad. What government agency/ies may provide this information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Correct	97	38.8	47.5	47.5
	wrong	107	42.8	52.5	100.0
	Total	204	81.6	100.0	
Missing	System	46	18.4		
Total		250	100.0		

Q18: In general which channel do you use most often for transactions with government agencies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Personal Visit	178	71.2	72.1	72.1
	Phone	27	10.8	10.9	83.0
	Agencies	2	.8	.8	83.8
	Internet	38	15.2	15.4	99.2
	Others	2	.8	.8	100.0
	Total	247	98.8	100.0	
Missing	System	3	1.2		
Total		250	100.0		

Q19: eGovernment non-technical Barriers

Q19\1: Users' lack of IT knowledge, awareness and motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	9	3.6	3.6	3.6
	Disagree	24	9.6	9.6	13.2
	Natural	43	17.2	17.2	30.4
	Agree	96	38.4	38.4	68.8
	Completely Agree	78	31.2	31.2	100.0
	Total	250	100.0	100.0	

Q19\2: Social and culture issues.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	12	4.8	4.8	4.8
	Disagree	37	14.8	14.8	19.6
	Natural	61	24.4	24.4	44.0
	Agree	102	40.8	40.8	84.8
	Completely Agree	38	15.2	15.2	100.0
	Total	250	100.0	100.0	

Q19\3: Lack of user participation in project development.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	6	2.4	2.4	2.4
	Disagree	27	10.8	10.9	13.3
	Natural	62	24.8	25.0	38.3
	Agree	93	37.2	37.5	75.8
	Completely Agree	60	24.0	24.2	100.0
	Total	248	99.2	100.0	
Missing	System	2	.8		
Total		250	100.0		

Q19\4: Lack of studies which identify the users' needs of eGovernment.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	5	2.0	2.0	2.0
	Disagree	18	7.2	7.2	9.2
	Natural	59	23.6	23.6	32.8
	Agree	80	32.0	32.0	64.8
	Completely Agree	88	35.2	35.2	100.0
	Total	250	100.0	100.0	

Q19\5: Lack of proper laws and legislation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	5	2.0	2.0	2.0
	Disagree	20	8.0	8.1	10.2
	Natural	44	17.6	17.9	28.0
	Agree	89	35.6	36.2	64.2
	Completely Agree	88	35.2	35.8	100.0
	Total	246	98.4	100.0	
Missing	System	4	1.6		
Total		250	100.0		

Q19\6: Trust and confidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	9	3.6	3.6	3.6
	Disagree	32	12.8	12.9	16.5
	Natural	39	15.6	15.7	32.3
	Agree	80	32.0	32.3	64.5
	Completely Agree	88	35.2	35.5	100.0
	Total	248	99.2	100.0	
Missing	System	2	.8		
Total		250	100.0		

Q19\7: Lack of marketing campaigns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	2	.8	.8	.8
	Disagree	16	6.4	6.4	7.2
	Natural	21	8.4	8.4	15.6
	Agree	80	32.0	32.0	47.6
	Completely Agree	131	52.4	52.4	100.0
	Total	250	100.0	100.0	

Q19/8: Lack of skilled IT staff and leadership support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely Disagree	8	3.2	3.2	3.2
	Disagree	40	16.0	16.1	19.4
	Natural	56	22.4	22.6	41.9
	Agree	74	29.6	29.8	71.8
	Completely Agree	70	28.0	28.2	100.0
	Total	248	99.2	100.0	
Missing	System	2	.8		
Total		250	100.0		

Q19: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Users' lack of IT knowledge, awareness and motivation	250	1	5	3.84	1.082
Social and culture issues	250	1	5	3.47	1.068
Lack of user participation in project development	248	1	5	3.70	1.030
Lack of studies which identify the users' needs of eGovernment	250	1	5	3.91	1.026
Lack of proper laws and legislation	246	1	5	3.96	1.023
Trust and confidence	248	1	5	3.83	1.154
Lack of marketing campaigns	250	1	5	4.29	.925
Lack of skilled IT staff and leadership support	248	1	5	3.64	1.148

Appendix I: Accessibility

		Year	Issues	Alt is missing	Object without alternative inner text	Clickable image without alt	Data table without headers is found	Script based link is found	Blink text is found	Frame has no title	Total
1	Saudi Arabian Monetary Agency	2008	3	3	1	2	0	0	0	0	6
		2010	6	9	2	2	2	1	1	0	17
2	Real – Stat Development Found	2008	4	3	5	10	0	0	0	1	19
		2010	5	3	3	14	0	0	1	1	36
3	Majlis Alshura	2008	2	1	1	0	0	0	0	0	2
		2010	5	28	3	25	0	1	1	0	58
4	Department of Zakat and Income Tax	2008	4	13	0	2	0	47	3	0	65
		2010	4	13	0	1	0	47	2	0	63
5	Capital Market Authority	2008	0	0	0	0	0	0	0	0	0
		2010	4	5	2	9	0	6	0	0	22
6	Saudi Food and Drug Authority	2008	3	3	4	10	0	0	0	0	17
		2010	4	3	4	9	0	2	0	0	18
7	Ministry of Social Affairs	2008	3	11	0	1	0	0	1	0	13
		2010	3	11	0	1	0	0	1	0	13
8	Ministry of Higher Education	2008	3	15	0	6	0	1	0	0	22
		2010	3	0	1	17	0	1	0	0	19
9	Ministry of Foreign Affairs	2008	5	30	0	40	1	0	1	2	74
		2010	4	21	0	15	0	0	1	2	39
10	Saudi Communication and Information Technology Commission	2008	3	1	0	11	0	5	0	0	17
		2010	3	1	0	20	0	5	0	0	26
11	Ministry of Agriculture	2008	6	5	2	9	0	44	2	4	66
		2010	6	6	3	7	0	45	2	4	67
12	Passport Department	2008	5	3	0	5	3	5	2	0	18
		2010	5	9	0	30	1	0	2	1	43
13	Riyadh Traffic Department	2008	4	6	0	2	0	1	2	0	11
		2010	1	0	0	0	0	0	1	0	1
14	Riyadh Principality	2008	5	35	0	8	1	0	2	1	47
		2010	3	36	0	22	0	0	2	0	60
15	Saudi Credit Saving Bank	2008	3	6	0	9	0	4	0	0	19
		2010	3	6	0	15	0	4	0	0	25
16	Ministry of Labor	2008	2	9	0	0	0	0	1	0	10
		2010	4	0	1	16	0	36	1	0	54

17	Ministry of Education	2008	2	14	0	15	0	0	0	0	29
		2010	3	17	0	15	1	0	0	0	33
18	Ministry of Commerce and Industry	2008	4	31	0	41	0	0	2	1	75
		2010	4	29	0	47	0	0	2	1	79
19	Ministry of Islamic Affairs, Endowments, Da'wah and Guidance	2008	4	13	1	11	0	0	0	1	26
		2010	4	13	1	12	0	0	0	1	27
20	Ministry of Justice	2008	5	5	1	25	0	20	1	0	52
		2010	5	7	1	28	0	20	1	0	57
21	Ministry of Transport	2008	3	5	0	11	0	4	0	0	20
		2010	3	9	0	10	0	3	0	0	22
22	Ministry of Health	2008	2	57	0	14	0	0	0	0	71
		2010	4	25	1	12	0	0	0	1	39
23	Ministry of Hajj	2008	1	0	2	0	0	0	0	0	2
		2010	2	0	1	0	0	31	0	0	32
24	Saudi Technical and Vocational Training Corporation	2008	4	10	0	8	1	8	0	0	27
		2010	4	4	0	17	1	36	0	0	58
25	Ministry of Civil Service	2008	2	8	0	42	0	0	0	0	50
		2010	4	9	0	44	0	0	1	1	55
26	Ministry of Communications and Information Technology	2008	6	11	6	8	0	1	2	1	29
		2010	6	15	6	6	0	1	2	1	31
27	Directorate General of Civil Status										
28	Saudi Industrial Development Fund	2008	4	18	3	13	0	0	1	0	35
		2010	4	18	3	13	0	0	1	0	35
29	Saudi Commission for Tourism Antiquities	2008	6	6	2	15	0	1	1	1	26
		2010	5	4	2	16	0	2	1	0	25
30	General Organization for Social Insurance	2008	4	17	0	21	0	11	1	0	50
		2010	1	0	0	1	0	0	0	0	1
31	Ministry of Interior	2008	2	45	0	6	0	0	0	0	51
		2010	2	27	0	12	0	0	0	0	39
32	National commission wildlife Conservation and Development	2008	2	1	0	4	0	0	0	0	5
		2010	3	1	1	4	0	0	0	0	6
33	Public Security Directorate										0
34	Municipality of Riyadh Region	2008	4	44	0	17	0	1	0	1	63
		2010	4	103	0	32	0	1	0	1	137
35	National Centre for Assessment in High Education	2008	3	3	0	7	0	1	0	0	11
		2010	2	10	0	16	0	0	0	0	26
36	Public Pension Agency	2008	3	3	0	4	0	0	0	6	13
		2010	3	5	0	8	0	1	0	0	14
37	General Department of Statistics and Information	2008	5	3	4	17	0	4	1	0	29
		2010	5	1	4	17	0	5	1	0	28
38	Ministry of Economy	2008	4	8	0	8	0	23	0	7	46

	and Planning	2010	3	13	0	3	0	0	1	0	17
39	Bureau of Investigation and Prosecution	2008	4	30	0	14	1	1	0	0	46
		2010	4	30	0	14	1	1	0	0	46
40	King Abdulaziz and his Companions Foundation for Giftedness and Creativity	2008	2	3	0	3	0	0	0	0	6
		2010	3	1	1	4	0	0	0	0	6
	Total	2008	131	479	32	419	7	282	23	26	
		2010	141	492	40	534	6	249	25	14	

Appendix J: Internet browses

Agency's Name	Internet Explorer 7.0	Firefox 3.6.2	Google Chrome 8.0	Netscape 9.0.0.6
Saudi Arabian Monetary Agency	✓	✓	✓	✓
Real – Stat Development Found	✓	X	X	X
Majlis Alshura	✓	✓	✓	✓
Department of Zakat and Income Tax	✓	✓	✓	X
Capital Market Authority	✓	✓	✓	✓
Saudi Food and Drug Authority	✓	✓	✓	✓
Ministry of Social Affairs	✓	✓	✓	✓
Ministry of Higher Education	✓	✓	✓	✓
Ministry of Foreign Affairs	✓	✓	X	X
Saudi Communication and Information Technology Commission	✓	✓	✓	✓
Ministry of Agriculture	✓	X	X	X
Passport Department	✓	✓	✓	✓
Riyadh Traffic Department	✓	✓	✓	✓
Riyadh Principality	✓	✓	✓	X
Saudi Credit Saving Bank	✓	✓	✓	✓
Ministry of Labor	✓	✓	✓	✓
Ministry of Education	✓	✓	✓	✓
Ministry of Commerce and Industry	✓	✓	✓	✓
Ministry of Islamic Affairs, Endowments, Da'wah and Guidance	✓	✓	✓	✓
Ministry of Justice	✓	✓	X	X
Ministry of Transport	✓	✓	✓	✓
Ministry of Health	✓	✓	✓	✓
Ministry of Hajj	✓	✓	✓	✓
Saudi Technical and Vocational Training Corporation	✓	✓	✓	✓
Ministry of Civil Service	✓	X	X	X
Ministry of Communications and Information Technology	✓	X	X	X
Directorate General of Civil Status				
Saudi Industrial Development Fund	✓	✓	X	X
Saudi Commission for Tourism Antiquities	✓	✓	✓	✓
General Organization for Social Insurance	✓	✓	✓	✓
Ministry of Interior	✓	✓	✓	✓
National commission wildlife Conservation and Development	✓	✓	✓	✓
Public Security Directorate				
Municipality of Riyadh Region	✓	✓	✓	✓
National Centre for Assessment in High Education	✓	✓	✓	✓
Public Pension Agency	✓	✓	✓	X
General Department of Statistics and Information	✓	✓	✓	✓
Ministry of Economy and Planning	✓	✓	✓	X
Bureau of Investigation and Prosecution	✓	✓	✓	✓
King Abdulaziz and his Companions Foundation for Giftedness and Creativity	✓	✓	✓	✓
	38	34	32	27

Appendix K: Metadata

No	Government agency's name	2008	2010
1	Saudi Arabian Monetary Agency	✓	X
2	Real – Stat Development Found	X	X
3	Majlis Alshura	X	X
4	Department of Zakat and Income Tax	✓	✓
5	Capital Market Authority	X	X
6	Saudi Food and Drug Authority	X	X
7	Ministry of Social Affairs	X	✓
8	Ministry of Higher Education	X	X
9	Ministry of Foreign Affairs	✓	✓
10	Saudi Communication and Information Technology Commission	✓	✓
11	Ministry of Agriculture	X	X
12	Passport Department	X	✓
13	Riyadh Traffic Department	X	X
14	Riyadh Principality	✓	X
15	Saudi Credit Saving Bank	X	X
16	Ministry of Labor	X	✓
17	Ministry of Education	X	X
18	Ministry of Commerce and Industry	X	X
19	Ministry of Islamic Affairs, Endowments, Da'wah and Guidance	X	X
20	Ministry of Justice	X	X
21	Ministry of Transport	X	X
22	Ministry of Health	X	✓
23	Ministry of Hajj	X	✓
24	Saudi Technical and Vocational Training Corporation	X	X
25	Ministry of Civil Service	X	X
26	Ministry of Communications and Information Technology	X	X
27	Directorate General of Civil Status	X	X
28	Saudi Industrial Development Fund	X	X
29	Saudi Commission for Tourism Antiquities	X	X
30	General Organization for Social Insurance	X	X
31	Ministry of Interior	X	X
32	National commission wildlife Conservation and Development	X	X
33	Public Security Directorate	X	X
34	Municipality of Riyadh Region	X	X
35	National Centre for Assessment in High Education	X	X
36	Public Pension Agency	X	X
37	General Department of Statistics and Information	X	X
38	Ministry of Economy and Planning	X	X
39	Bureau of Investigation and Prosecution	X	X
40	King Abdulaziz and his Companions Foundation for Giftedness and Creativity	✓	✓
Total		6	9

Appendix L: A sample of document description used in the Institute of Public Administration

التوثيق الإداري

نموذج البيانات الكاملة للوثيقة

رقم الوثيقة	93	تاريخ التوثيق	1380/10/24
النوع	مرسوم ملكي	الرقم العام للوثيقة	13137
المصدر	الديوان الملكي		
الموضوعات	الأنظمة (قوانين)	الإدارة العامة - معاهد	
العنوان	نظام معهد الإدارة العامة		
المستخلص	الموافقة على نظام معهد الإدارة العامة		
الملاحظات	التوريق : 12ص .		

source: http://www.ipa.edu.sa/documentation/form.asp. Last access 28 December 2020

In English:

Documents Number	93	Data of Document	24/10/1380
Type	Document	General Number	13137
Source	Royal Diwan		
Subjects	Public Administration (Institute)	Regulations (rules)	
Title	Institute of Public Administration system		
Abstract	Approval of the Institute of Public Administration		
Comments	Foliation: 12 pages.		