**FACTORS AFFECTING E-GOVERNMENT IMPLEMENTATION AND
ADOPTION IN THE STATE OF QATAR**

A Thesis Submitted for the Degree of Doctor of Philosophy

By

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PhD Abstract

Electronic government (e-government) has established as an effective mechanism for increasing government productivity and efficiency and a key enabler of citizen-centric services. However, e-government implementation is surrounded by organisational, technological, political and social issues, which have to be considered and treated carefully in order to facilitate this change. Conversely, from an adoption perspective, e-government services are yet to be universally accepted as a medium for accessing online public services since its inception more than a decade ago.

In terms of prior research into understanding the implementation challenges and adoption factors, most existing literature focus into either the implementation context or adoption context separately and no research studies were found that take a holistic viewpoint of both implementation and adoption. Furthermore, only a few researchers have explored and reflected on the important factors that can impact e-government implementation using well founded theoretical models or frameworks. Besides, there is no universal model for e-government implementation and adoption that is applicable for all countries to ensure success, especially for developing and Gulf Cooperation Countries (GCC). Therefore, this thesis attempts to explore and investigate the key challenges that influence e-government implementation and the factors influencing citizen adoption in the state of Qatar. By simultaneously analysing and aligning the implementation issues of e-government with the adoption aspects, this study aimed to develop a better understanding of the gaps that exists between implementation and adoption. Through combining the implementation and adoption aspects of e-government, this thesis proposes a unified conceptual model which could be used as a frame of reference by government institutions that seek to implement and diffuse e-government systems in Qatar. To do so, the research draws from two well established theoretical models, Institutional Theory (for understanding implementation) and the Unified Theory of Acceptance and Use of Technology (UTAUT) model (for understanding adoption).

The research adopted a multi-method approach [combining qualitative (interviews) and quantitative (survey) methods] to explore practices and experiences of implementing and adopting e-government systems in the State of Qatar.

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[C5] **Al-Shafi, S.** and Weerakkody, V. (2009) Understanding Citizens' Behavioural intention in the Adoption of E-government Services in the State of Qatar. *Paper presented at the Proceedings of the 17th European Conference on Information Systems (ECIS2009)*, Verona, Italy. [CD-Proceedings].

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Table Of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Research Area

This chapter provides an introduction to the proposed research. The following section provides an overview of electronic government. Section 1.3 will define the research aim and objectives. The research question that will guide this study to achieve the proposed aims and objectives are offered in Section 1.4. The context of the study is offered in Section 1.5. The research significance of this study is then offered in Section 1.6. To familiarise the readers with the remainder of this thesis, an overview is offered in Section 1.7. Finally, Section 1.8 provides a summary of this chapter.

1.1 Introduction

With the emergence of the concept of e-government, public services around the world have realised the importance of making their services more efficient and available. While citizens have become more Internet savvy and experience good electronic services (e-Services) from the private sector, they begin to expect the same high standards from government agencies for their public services. Electronic Government (e-government) promises to emulate the private sector by offering more efficient, transparent and accessible public services to citizens and businesses. Although, the benefits of e-government are well documented, the implementation and adoption of the concept has been sparse in both developed and developing countries. Since the emergence of the e-government concept, there have been many studies which have explored the challenges that influence e-government implementation in various different national contexts.

Although e-government has increased transparency and improved communication and access to information for citizens, digital diffusion of information is often achieved at high cost to government agencies. Conversely, citizens' adoption of e-government services has been less than satisfactory in most countries. While studies by researchers continue to outline the most salient adoption constructs, as well as various frameworks and models for understanding adoption, research by independent consultancy/research organisations has produced a host of statistics and league tables of good and bad practices of service delivery. Yet, no studies have attempted to comprehensively understand the link between service delivery and usage. Often the perception and expectations of the user differs from the service provider in relation to key dimensions such as efficiency, ease of use, awareness, security, trust, legislation, availability and accessibility. The evaluation methods and standards currently used for measuring the service users' (citizen) perception regarding the above dimensions often differ from those used to measure the service providers' (government agency) perception of what constitutes best practice.

The author argues that the above background has contributed to an ever widening gap between e-government implementation and adoption resulting in lack of understanding, less than satisfactory adoption rates and poor return on investment for the government. None of the current e-government research studies take a holistic view of service delivery and acceptance, nor offer any guidelines on how to evaluate user (citizen) expectations against the service providers' (government agency) expectations of what constitutes good practice in terms of efficiency,

usability, awareness, security, availability and accessibility etc., of a given e-government service. Although some research initiatives have attempted to develop citizen satisfaction models for e-government (such as Carter and Weerakkody, 2008; Irani *et al.,* 2007; Elliman *et al.,* 2007; Welch *et al.,* 2005; Al-Sebie and Irani, 2005; Carter and Belanger, 2005; Eyob, 2004), these models do not suggest a systematic process that can be used for evaluating citizen satisfaction and expectation of e-government services against government perception.

Given the aforementioned arguments, the author suggests that the literatures which focus on 'e-government implementation and adoption' collectively are limited, as most scholars focus on one aspect only (i.e. either implementation or adoption). Furthermore, although models related to e-government implementation and adoption have been reported separately in the literature, the applicability and validity of these models in the area of e-government is under-researched. Despite the fact that these models have several common factors, as per the knowledge of the author there is no specific (single) model that investigates e-government implementation and adoption.

As outlined later, this research focuses on formulating a conceptual model to facilitate the unified analysis of citizens' adoption of e-government services against the governments' efforts at implementing e-government. It is hoped that this conceptual model will allow stakeholders responsible for e-government implementation to better understand the factors influencing e-government implementation in relation to those affecting the citizens' perception of adoption. In this context, this research will endeavour to bridge the void in current e-government research in the area of implementation and adoption.

The aforementioned issues are discussed in this chapter and in Chapters 2 and 3. In the next section of this chapter an overview of e-government is offered. Then, the overall aim and objectives of the research are defined, followed by an outline of the thesis and a summary of the conclusions in Sections 1.2 - 1.7, respectively.

1.2 An Overview of Electronic Government

Since the invention of the Internet by the Department of Defence in the US as a communication network, the Internet has now become part of the daily life of people worldwide. As a result, the number of internet users today is estimated to be around 1,668,870,000 (Internet World Stats, 2009). The *"E"* part of both electronic government (e-government) and electronic commerce (e-commerce) stands for the electronic platform. In particular, the success and evolution of e-commerce and the pace of technological change and economic progress had inspired and motivated the need for governments to move to the internet for providing its services to citizens in their societies. While in the 1990s the world saw the electronic commerce revolution (UN, 2008) with private and multinational organisations, since the new millennium we have witnessed public sector organisations embracing the same principles of e-business through the introduction of national e-government initiatives. Moreover, with the prominence of e-commerce in modern society, governments across the globe began to realise customer expectation for greater speed and convenience of transactions. Conversely, citizens began to want their governments to perform in the same way as those private enterprises offering e-commerce services. These factors, together with the public expectations regarding services coverage, and value and cost expectations were major influencing factors that compelled the concept of e-government to the forefront of modern public services.

Since the 1990s ICT has played an important role in incrementally changing and shifting traditional and bureaucratic government models into the current e-government model where services are delivered according to customers' needs. Siau and Long (2005) suggest that e-government has become possible because of the advancement of telecommunication, the Internet and Information Technology. E-government initiations around the world have increased to more than five hundred national initiatives (Accenture, 2006; UN, 2008). While all developed countries have now implemented some form of e-government (Accenture, 2005) - most have implemented at least transactional level services (see for instance Layne and Lee, 2001; Weerakkody *et al.,* 2007b), and the majority of developing countries have followed suit (Kurunananda and Weerakkody, 2006; Heeks, 2002).

There are various definitions of e-government and the e-government concept can be defined broadly (albeit vague and general). As indicated by many scholars such as Helbig *et al.,* (2009), Seifert and Petersen (2002), Holden *et al.,* (2003), and Jain (2002), e-government definitions vary according to different types of perspectives,

such as technological, business, process, citizen, government or functional. Srivastava and Teo (2007) define e-government as the use of ICT and the Internet's ability to enhance the access to, and delivery of, government services and operations for the benefit of citizens, businesses, employees and other stakeholders. Tian and Tainfield (2003: cited in Choudrie *et al.,* 2005) define e-government from four different viewpoints : (a) Information Technology (IT), (b) government service, (c) government efficiency, and (d) political view. In addition, (as has been already stated), the definition of e-government varies according to the goals, culture, and values of a community. These e-government literatures satisfy the argument that an e-government definition can be seen from a broader perspective. As a result, these different doctrines distinguish that there is no universally accepted definition of e-government, and Yildiz (2007) notes that rather different definitions apply to distinct disciplines. Given this context, the definition considered to be most suitable for the purpose of this research is that, e-government is a radical change and strategic tool that supports and simplifies government for its users and stakeholders such as other government agencies, citizens, and businesses (Cordella, 2007; Weerakkody *et al.,* 2007a).

There are a number of motivations behind e-government implementation; among these the most prominent is, providing better services to customers (Chircu and Lee, 2005). In addition to this, reducing the opportunities for corruption in governments is a significant motivation (InfoDev, 2002). Other key motivations reported in the literature are: efficiency and cost reduction (Gupta *et al.,* 2008; Gil-García and Pardo, 2005; Jaeger, 2003; NECCC, 2000); assurance of providing better services to customers (Davison *et al.,* 2005; Navarra and Cornford, 2005; Wong and Welch, 2004; Silcock, 2001); centralisation of e-government agencies (Gunasekaran and Ngai, 2008; Al-Khouri and Bal, 2007; Ndou, 2004; Seifert and Petersen, 2002; Layne and Lee, 2001); economic development (Gil-García and Pardo, 2005; Jaeger, 2003); reducing corruptions (Kim *et al.,* 2009; Al-Khouri and Bal, 2007); and creating a more participative form of government by encouraging online debating, voting and exchange of information (Davison, *et al.,* 2005; Carter and Belanger, 2005; InfoDev, 2002; Reynolds and Regio-Micro, 2001; Bonham *et al.,* 2001).

The major issue in the development of e-government is to maximise the benefits and make use of any expanding opportunity for future improvement. Also, when e-government is well established, continuous monitoring for improvement would be needed. As with any other new technology or organisational concept, the introduction of e-government to a country will also result in a number of challenges

for the citizens and governments alike (Zakareya and Irani, 2005; Margetts and Dunleavy, 2002; Seifert and Peterson, 2002). Overcoming these challenges would therefore be one of the biggest tests for the government and citizens of any country planning to implement the concept. Research on e-government has identified issues such as lack of awareness (Al-Omari, 2006; Weerakkody and Choudrie, 2005; Reffat, 2003), access to e-services (Chircu and Lee, 2005; Im and Seo, 2005; Fang, 2002; Caldow,2001; Silcock, 2001), usability of e-government websites (Porter, 2002; Sampson, 2002), lack of trust (Navarra and Cornford, 2003; Bhattacherjee, 2002; InfoDev, 2002; Silcock 2001), security concerns (Harris and Schwartz, 2000), resistance to change (Zarei *et al.,* 2008; AlTameem *et al.,* 2006; Margetts and Dunleavy, 2002; Chen and Gant, 2001), lack of skills and funding (Okiy,2005; Eyob, 2004), data protection laws (Kim *et al.,* 2009; Currie and Guah, 2007; Bonham *et al.,* 2003; Watts, 2001; Harris and Schwartz, 2000), digital divide (Dwivedi and Irani, 2009; Helbig *et al.,* 2009; Carter and Weerakkody, 2008; Chen *et al.,* 2006; John and Jin, 2005; Carter and Bélanger, 2005; Ifinedo and Davidrajuh, 2005; Silcock, 2001); lack of citizens' interest (Porter, 2002; Sampson, 2002); lack of government support (Irani *et al.,* 2007; Kurunananda and Weerakkody, 2006) and lack of strategy and frameworks (Damodaran *et al.,* 2005; Reffat, 2003) are hindering the implementation and adoption of e-government in many countries.

What the aforementioned literature indicates is that the concept of e-government is currently faced with more challenges than benefits. In terms of prior research into understanding the implementation and adoption challenges, as stated before, many researchers have focused on exploring the implementation processes or adoption of e-government at local or state levels (Irani *et al.,* 2007; Elliman *et al.,* 2007; Weerakkody *et al.,* 2007b; Mcnabb, 2006 ; Al-Sebie and Irani, 2005; Evans and Yen, 2005; West 2004). Furthermore, only a few researchers have explored and reflected on the important factors that can impact e-government implementation using well-founded theoretical models or frameworks. In fact, most existing studies focus on technical factors and complexities of e-government and few critically evaluate the organisational, social and political implications. Additionally, most existing studies focus on either the implementation context or adoption context separately and as mentioned before no studies were found that take a holistic viewpoint of both implementation and adoption. The author claims that no previous studies exist that have attempted to combine the factors influencing e-government implementation with adoption, or to establish relationships between factors. Also, there is no universal model for e-government implementation and adoption that is

applicable for all countries to ensure success, especially for developing and Gulf Cooperation Countries (GCC).

While the aforementioned context offers the rationale and motivations for this research, the author suggests that e-government implementation and adoption would benefit from researching into previous studies and literature on information systems and technology (IS/IT) implementation and adoption in organisations. This is particularly important as there is limited theoretical understanding of the complexities and challenges facing implementation and citizen adoption of e-government. Given this context, this thesis aims to answer two research questions as follows:

- What are the key (macro) factors that might influence e-government implementation in the State of Qatar?

- What are the key (micro) factors that might influence citizen' adoption of e-government in the State of Qatar?

With this premise, the following aims and objectives are introduced for the research.

1.3 Research Aims and Objectives

The overall aim of this research is to explore and investigate the key challenges that influence implementation and citizens' adoption of e-government in the state of Qatar.

The above aim leads to the formulation of a conceptual model that can be used as a frame of reference by government institutions which seek to implement and adopt e-government systems in Qatar. It is hoped that this conceptual model will contribute to the field of e-government by helping to establish a better understanding among the research community of the concept of e-government, and in particular the issues surrounding implementation and adoption in a Qatari context. Further, it is proposed that this conceptual model could serve as a decision-making framework for practitioners (government institutions and officials) in their efforts to implement and diffuse e-government in the state of Qatar. The conceptual model will be based on two well-established theories (institutional theory and the unified theory of acceptance and use of technology).

To realise the research aim, the following objectives will be pursued:

- Conduct a comprehensive and detailed literature review to develop a deeper understanding of e-government implementation and adoption issues.

- Formulate a conceptual model to identify and capture the salient factors influencing e-government implementation and adoption, and to offer a theoretical context to explain these factors.

- Evaluate the provision of e-government services in the state of Qatar and identify the progress made thus far, in providing e-government services in the country.

- Explicate the core challenges influencing the government's efforts towards e-government implementation and factors influencing citizens' adoption of e-government in Qatar, using an interview and survey (multi-method) research approach.

- Empirically examine e-government adoption factors relevant to the citizens' context in Qatar.

- Revise the conceptual model and formulate a set of recommendations aimed at addressing the research gaps that exist between e-government implementation and adoption research.

1.4 Context of the Study

This study explores e-government implementation and adoption in a developing country in the GCC region, Qatar. This includes understanding: a) e-government implementation in practice, b) its development stages, c) identifying the main issues that might affect implementation, d) how these issues could be treated in practice, e) to identify the gap between the government's efforts to implement e-government and their citizens' expectations of adoption, and f) how to minimise these gaps in practice. The context of this study is Qatar, which is a developing country that is situated in Western Asia.

A multi-method research approach (combining qualitative and quantitative methods) is used to explore practices and experiences of the implementing and adopting of e-government systems in Qatar. A case study (Qualitative method) was used in the organisation responsible for implementation of e-government in Qatar, to understand the challenges facing implementation, and this was complemented with a survey (Quantitative method) of Qatari citizens, to analyse citizens' behaviour and usage towards e-government adoption. The findings from the interviews and questionnaire surveys were supported with a review of government documentation where appropriate; this allowed the findings to be triangulated. Triangulation is the

combination of methodologies in the study of the same phenomenon and involves the use of multiple methods to examine the same dimension of a research problem (Jick, 1979; Hussein, 2009).

1.5 Significance of the Study

This research presents a number of significant contributions to the field of e-government. The first one is to build a model that can inform e-government implementation and adoption in a developing country such as Qatar. In addition to this, the research will focus on identifying the gaps that exist between governments' efforts to implement and diffuse e-government and citizens' expectations for adoption and use. Also, the conceptual model proposed in this research in Chapters 3 and 7 will enable e-government implementers and practices to identify the key organisational issues, as: a) it builds upon previous research on Information systems and technology (IS/IT), b) it clarifies possible organisational issues that can affect their implementation and adoption, and c) examines how these issues could be treated in practice. Furthermore, it classifies the main organisational, technological, political and social themes and associated challenges that might influence e-government implementation and adoption, and supports other research findings with regard to their impact on the process of implementation and adoption.

1.6 Research Outline

The structure and approach used in this thesis followed the methodology that has been described by Phillips and Pugh (2000) for conducting PhD research and consists of four stages, namely a) background theory, b) focal theory, c) data theory, and d) novel contribution. The background focuses on identifying the domain of the problem based on a comprehensive literature review (Chapter 2). Focal theory (Chapter 3) concentrates on developing a conceptual model. The next category (data theory) deals with issues such as: a) identifying and developing an appropriate research strategy, b) identifying an appropriate research method, and c) developing a research protocol (covered in Chapter 4). The data theory also deals with the process of collecting and analysing data (Chapters 5, 6). The last category is the novel contribution that represents the results of the research (Chapters 7 and 8).

- **Chapter 1:   Introduction**

This chapter presents a background of the research, the identification of the gap that needs to be bridged by this study, the reasons behind undertaking this research and the significance of this study.

- **Chapter 2:   Literature Review – Background Theory**

This chapter reviews the relevant e-government, Information System, and public administration literature regarding the implementation and adoption process of e-government and Information System. It includes an e-government definition, e-government characteristics, the rational for e-government implementation, and the different perspectives of implementing an e-government system. Also, it highlights the motivations for implementing e-government and then analyses the different models of the development stages of e-government initiatives.

- **Chapter 3:   Conceptual Model – Focal Theory**

This chapter analyses and discusses the key challenges found in the literature which might influence e-government implementation, and assigns them into four classifications based on institutional theory, namely, organisational, technological, political and social themes. In addition, it proposes an initial conceptual model for e-government based on the government's perspective of implementation and associated challenges facing implementation. Also in this chapter, the discussion covers e-government and, more broadly, technology adoption from the citizens' viewpoint and their behavioural and usage expectation. For this purpose, the unified theory of acceptance and use of technology (UTAUT) is used as a theoretical basis. Finally, this chapter combines the e-government implementation and adoption perspectives by proposing a conceptual model that captures the government and citizen's perspectives.

- **Chapter 4:   Research Methodology – Data Theory**

Chapters 2 and 3 set the background for this research and help the author to understand and identify the research issues. To undertake the research that focuses on these issues, an appropriate and comprehensive research methodology has to be followed. An explanation of the overall research design process and justification of the chosen research methods are offered in Chapter 4. The chapter describes the research philosophy and the main schools of thought in information systems research, presents the research strategy chosen for the study and explains the rationale behind its selection.

- **Chapter 5:   Case Study Background and Issues in Practice (Preliminary Research Findings) – Data Theory**

In this chapter, a brief background about the case study site and a description about the country where the case study is conducted are presented. Also, this chapter provides a descriptive analysis of the practices that are taking place in the case study site in terms of e-government implementation, and the associated challenges faced by the implementation team. These findings are discussed in light of the initial conceptual model proposed in Chapter 3 and the e-government literature in Chapter 2.

- **Chapter 6:   The Issues in Practice (Survey Research Findings) – Data Theory**

This chapter discusses and analyses the survey findings with regard to e-government adoption from a Qatari citizen's perspective in light of the initial conceptual model in Chapter 3 and e-government literature in Chapter 2.

- **Chapter 7:   Re-Conceptual Model – Novel Contribution**

This chapter focuses on revisiting the initial conceptual model offered in Chapter 3 and revising it based on the empirical findings in Chapters 5 and 6. Consequently, a novel conceptual model for understanding e-government implementation and adoption is proposed in Chapter 7.

- **Chapter 8:   Summary and Conclusions – Novel Contribution**

This chapter summarises and concludes the final results of the study, its implications for research and practice, its limitations, and gives recommendations for future research.

The main stages and structure of this study is outlined in Figure 1.1.
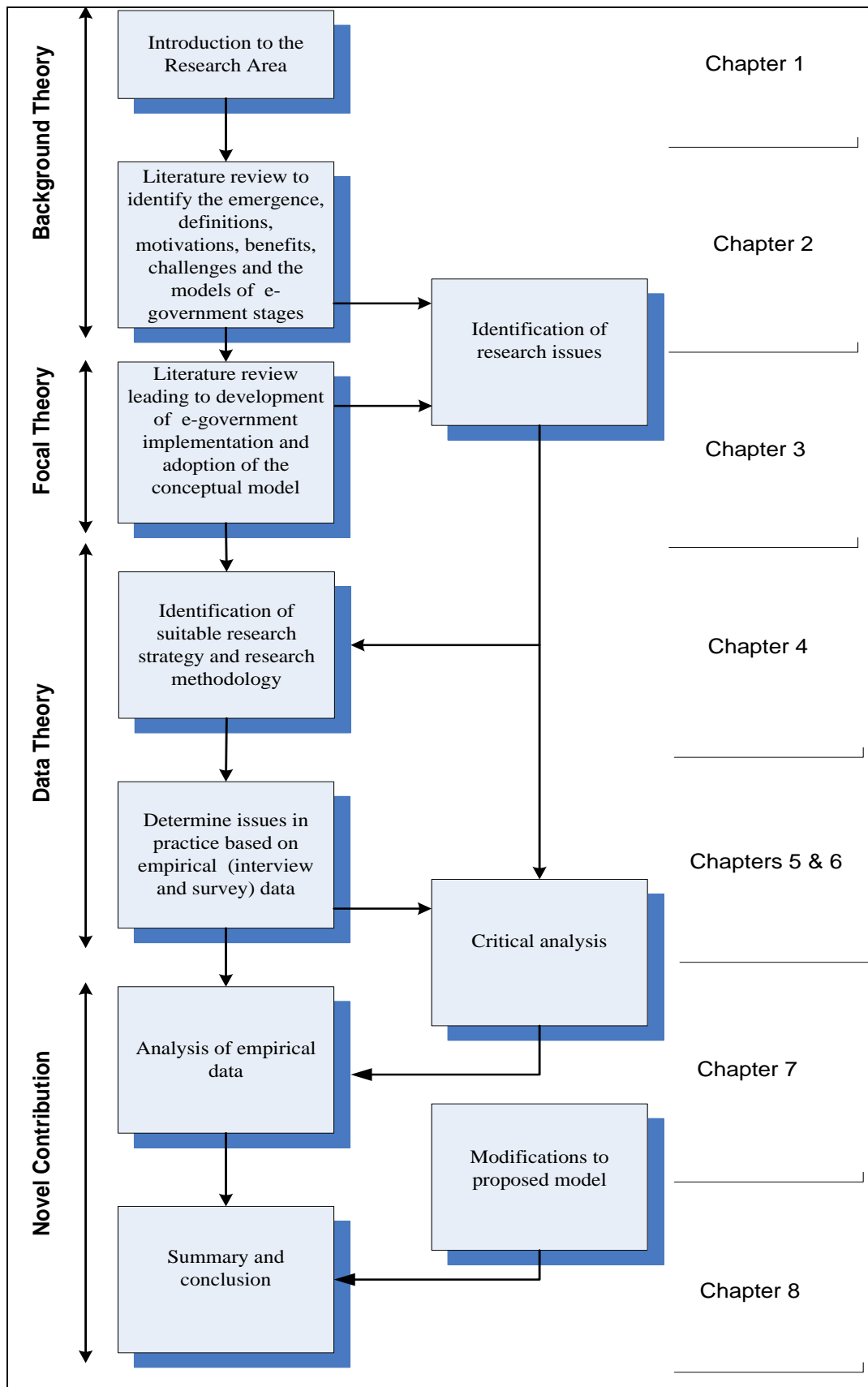
Figure 1.1: Research Outline

1.7 Conclusions

E-government implementation and adoption has been examined by many studies, but most of these studies concentrate on the implementation and adoption processes at local or state levels. Moreover, most studies focus separately on either implementation or adoption and no studies were found that take a cohesive view of e-government implementation and adoption collectively. Furthermore this research will show that there is an absence of prior research that applies theoretical models for studying e-government implementation and adoption. The research argues that the e-government research community would benefit from researching and drawing from previous literatures in the area of information systems and technology adoption. With the aim of improving the understanding of e-government implementation and adoption, this research formulates a conceptual model that is influenced by two well-established theories, institutional theory and UTAUT. It is anticipated that this conceptual model will offer a frame of reference for better understanding e-government and the potential gaps that may exist between the Qatari government's efforts to implement the concept and citizens' expectations in terms of adoption and use. This chapter presented the subject of the study by covering and illustrating its background and purpose. Additionally, this chapter covered the thesis aim, research questions, objectives, motivations and the significance of the study. The next chapter covers the literature review from which this study is built.

Chapter 2: Literature Review

This chapter aims to present a critical review of the e-government system. It seeks mainly to present the following : a) a brief history of the emergence of e-government; b) a taxonomy of e-government definitions; c) analysis of e-government dimensions; d) a categorisation of different motivations for e-government; e) a discussion of the benefits of e-government; f) a discussion of the challenges facing e-government; g) a brief discussion concerning models of development of e-government and the relationship between these different stages.

2.1 Introduction

Since the commencement of the Internet era some 40 years ago (Ho, 2002), the number of Information and Communication Technology (ICT)-driven services has quadrupled, resulting in a society that is more technology- and Internet-proficient. Whilst the 1990s saw an electronic commerce (e-commerce) revolution within private and multinational organisations (UN, 2008), we have recently witnessed the public sector embracing the same principles of electronic business (e-business) through the introduction of national electronic government (e-government) initiatives. During these years of transformation, ICT has played an important role in increasingly changing and shifting traditional and bureaucratic government models into the existing e-government model, where services are specifically delivered according to citizens' needs. Whilst the developed countries have implemented some form of e-government (Accenture, 2005) – with most realms having implemented transactional level services (Layne and Lee, 2001; Weerakkody *et al.,* 2007b), – the majority of developing countries are now beginning to follow suit (Kurunananda and Weerakkody, 2006; Heeks, 2002). Several researchers emphasise that e-government implementation is highly achievable as a result of significant advancements in the telecommunication sector (Siau and Long, 2005), internet (Frank, 2004; Siau and Tian, 2004) and Information Technology (IT) (Davidrajuh, 2003; Siau, 2003).

2.2 Emergence of E-government

It is widely acknowledged that the emergence of the e-government discipline has been due to the requirement of developing local and national government operational and process efficiencies, as well as providing accessibility to citizens and other involved stakeholders (Jones *et al.,* 2007).

Like many other ideas that have arisen during the nascent stages of the internet age, e-government is a concept that is seemingly in a constant state of development. However, with the advent of the e-government concept in the recent years, public sector organisations around the world have realised the importance of making their services more efficient, effective and accessible, i.e. revolutionising the governments' interactions with their different stakeholders (Affisco and Soliman, 2006). While citizens, therefore, become more internet adept and experience good electronic services (e-Services) from the private sector, they begin to expect the same high standards from the government agencies. In this regard, several

researchers highlight that e-government promises to emulate the private sector by offering more efficient, transparent and accessible public services to citizens and businesses (Al-Shafi, 2008; Sahraoui, 2007).

Thus, by having an outdated viewpoint of e-government discipline, customers were doomed to have little interaction with government. Heeks, (2007) highlights that the "electronic government" phrase first became eminent while undertaking the 1993 United States (US) National Performance Review, and the "e-government" expression gradually promulgated from 1997. Ho, (2002) notes that this area emerged thanks to electronic mail and the World Web Wide (WWW) to deliver end-to-end services and information to citizens. This was also manifested by e-government projects (e.g. AnalysePilot, SeamlessUK–PINPoint, PASSPORT, TAXISnet, collectively known as the government modernisation agenda) undertaken by several governments around the world in the late 1990s, in order to provide seamless information and services to citizens and businesses (Irani *et al.,* 2006).

In describing e-government, literature highlights that the interpretation of e-government is based on technology (e.g. the use of ICT for delivery of government services electronically), process (e.g. processes of transaction and transformation of e-government services), benefits (e.g. benefits for delivery of government services electronically for the public), citizen focus (e.g. citizenry and their desires as a focal viewpoint), single point access (e.g. delivery of government services electronically through a single point of access), and phenomenon (e.g. e-government as a phenomenon and alternative way to deliver government service). Choudrie and Weerrakody, (2007) also state that e-government encompasses a broad spectrum of activities (e.g. the capture, management, use, dissemination and sharing of seamless information) that are offered using ICT. All these factors allow for improved government service delivery to citizens. Akman *et al.,* (2005) support this argument and state that ICT has played an important role in transforming public service delivery from a bureaucratic paradigm into one based on personal needs. Governments around the world have undertaken several initiatives in order to provide online services and information around the clock, (e.g. Sharma, 2004; Janssen *et al.,* 2003; Beynon-Davies and Williams, 2003; Atherton, 2002; Gouscos *et al.,* 2001). It appears that governments around the world are attempting to fundamentally change the way in which ICT is used to achieve interactive working between and among local government agencies and provide new, efficient and

convenient ways for citizens and businesses to communicate with government in the acquisition of services (Kamal, 2008; Ebrahim *et al.,* 2003; Melitski, 2003).

Some countries have specified different names for e-government, e.g. in Hong Kong, Australia and India, it is termed 'electronic service delivery', 'government online', and 'electronic government' respectively. Despite these numerous synonyms of the e-government terminology, it refers to the same connotation - that is seamless accessibility of government information and services through the web (Bose, 2004). The aforementioned theorised conceptions illustrate the provision of e-government service delivery, mainly focusing on citizens. Conversely, literature also highlights similar provision of services to customers through the use of e-commerce technological solutions (Al-Shehry *et al.,* 2006). Moreover, Carter and Belanger (2004b) and Al-Shehry *et al.,* (2006) argue that both e-government and e-commerce are based on Internet technology that is designed to facilitate the exchange of goods, services, and information between several stakeholders. Tassabehji and Elliman, (2006) and Al-Shehry *et al.,* (2006), further emphasize that e-government systems share similar characteristics with the field of e-commerce and e-business in terms of the use and implementation of the internet; thus generating new services, products and channels to be available to end-users. Eyob, (2004) also observes that e-government has become another wave of ICT applications in the public sector, as e-business and e-commerce disciplines mature in the private sector.

2.3 A Taxonomy of E-government Definitions

E-government has been defined and conceptualised in different ways in normative literature. Some definitions view e-government from a narrow perspective of exploiting the accessibility of ICT and the Internet to improve the efficiency of government systems. Others view it from a broader perspective - that of a system of reform and government process reengineering. Nevertheless, despite several conceptions, the definition of e-government remains vague and a concept of some debate among the various e-government scholars. Al-Sebie and Irani, (2005) support this argument and state that there is no specific definition for the e-government concept among practitioners and public administration. Various researchers have offered different definitions to explain the concept of e-government (e.g. the European Union, 2004; Heeks, 2003; Seifert and Petersen, 2002; Jain, 2002). These definitions differ according to varying e-government foci and are usually centred on technology, business, citizen, government, process, or a functional perspective (Weerakkody and Dhillon, 2008; Irani *et al.,* 2006; Seifert and Petersen, 2002). Irani

et al., (2006) argue that different individuals and stakeholder groups in different countries and government levels (e.g. at national and local government levels) perceive the e-government concept in different ways. In support of this, Riley, (2001) and Moon, (2002) argue that the concept of e-government is a confusing phrase and has no specified agreed definition. Bekkers, (2003) claims that due to the variety of practices embarked on in different countries, the e-government concept is barely defined and is largely based on pragmatic experience and visions. In this regard, Al-Sebie and Irani, (2005) state that there are two focal reasons for the lack of an agreed e-government definition: firstly, the definition of e-government has different beneficiaries and dimensions, and secondly, e-government definition depends on the cultures goals, and values of a community. Based on these characteristics, the e-government concept has been defined in various ways. Moreover, while there are many definitions and perspectives of e-government initiatives, there are still certain significant concepts and features that can help in clarifying and understanding some of the e-government characteristics such as:

- *Dimensions of e-government implementation:* Government-to-Citizen (G2C), Government-to-Business (G2B), Government-to-Employee (G2E), Government-to-Government (G2G), Citizen-to-Government (C2G) and Business-to-Government (B2G).

- *Levels of e-government or implementation:* E-government might be implemented at different levels - local, federal, state or national.

- *Overall aim of e-government implementation*: Governments ultimately aim to improve and refine the way of providing their services to their customers (citizens, businesses, or government agencies) by utilising the capabilities of ICT.

- *Access availability:* By providing round-the-clock e-services available to all customers or to limited customers, such as government, businesses or citizens.

Based on these aforementioned conceptions, the e-government concept can be defined broadly (albeit vague and general). As indicated by Seifert and Petersen, (2002), Holden *et al.,* (2003) and Jain, (2002), e-government definitions vary according to different types of perspectives, such as technological, business, process, citizen, government or functional. Here are a few of the e-government definitions reported by several researchers: Srivastava and Teo, (2007) define e-government as the use of ICT and the internet's ability to enhance the access to, and delivery of, government services and operations for the benefit of citizens,

businesses, employees and other stakeholders: Tian and Tainfield, (2003) define e-government from four different viewpoints : (a) Information Technology (IT), (b) government service, (c) government efficiency and (d) political view. In addition, (as has already been stated), the definition of e-government varies according to the goals, culture and values of a community.

The following Table 2.1 illustrates different classifications of e-government, for both broad and narrow perspectives.

Table 2.1: E-government Perspectives	
Perspective	**References**
Information Technology	Lambrinoudakis *et al.,* (2003)
Process	Bonham *et al.,* (2001)
Benefits	Whitson and Davis, (2001); Katzen, (2000)
Citizen Focus	Burn and Robins, (2003)
Single Point Access	Ke and Wei, (2004); UNDPEPA/ASPA, (2002)
Phenomenon	Riley, (2001)

Definitions related to the above-mentioned e-government perspectives are illustrated in the following Tables.

Table 2.2: Definitions Focusing on the Use of Information Technology		
Definitions/Description – Information Technology	**Characteristics**	**References**
"E-government refers to the use of IT by government agencies (*such as Wide Area Networks, the Internet, and mobile computing*) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions".	Focus is on utilising IT to deliver government services, improve interactions and effective management.	World Bank Group, (2004)
"E-government is the term used to reflect the use of ICT in public administration in an attempt to ease access to governmental information and services for citizens, business and government agencies". Furthermore, there is always a target to improve the quality of the services and to provide greater opportunities for participating in democratic institutions and processes".	Focus is on ICT usage for providing access to government information.	Lambrinoudakis *et al.,* (2003)
"E-government encompasses applications of various technologies to provide citizens and organisations with more convenient access to government information and services; and to provide delivery of public services to citizens, business partners and suppliers, and those working in the public sector."	Focus is on Information Technology to provide citizens with government information and services.	Turban *et al.,* (2002)

"Although governments use a variety of information technologies, the use of the internet has become a key component of enhanced service delivery. E-government, the delivery of government services online, provides the opportunity to increase citizens access to government, reduce government bureaucracy, increase citizen participation in democracy, and enhance agency responsiveness to citizens needs".	Focus is on the use of Information Technology	Gant and Gant, (2002)
"Electronic government is the use of Information Technology to support government operations, engage citizens, and provide government services".	Focus is on IT usage to provide support for governments activities.	Scholl, (2003)
Broadly defined, "E-government includes the employment of all information and communication technologies from fax machines to wireless palm pilots, to facilitate the daily administration of government"	Focus is on ICT usage. Emphasis on effective delivery of services through ICT.	UNASPA, (2001)
"E-government is the use of technology to enhance the access to, and delivery of, government services to benefit citizens, business partners and employees".	Focus is on delivery of government services via the use of technology.	Silcock, (2001)
"E-government is the use of Information Technology to support government operations, engage citizens, and provide government services".	Focus is on Information Technology to deliver government services.	Cook *et al.,* (2002)
"E-government is simply using Information Technology to deliver government services directly to the customer at any time.. The customer can be a citizen, a business or even another government entity".	Focus is on delivery of government service to customers through IT usage.	Duffy, (2000)

The main characteristics of the following e-government definitions are for the process of the transaction and transformation of e-government services.

Table 2.3: Definitions Focusing on the Processes of Transactions and Transformation		
Definitions/Description – Transaction/Transformation	**Characteristics**	**References**
"[They saw] e-government covers [ing] [author's brackets) changes of governance in [a] twofold manner: (1) transformation of the business of governance, i.e. improving service quality delivery, reducing costs and renewing administrative processes; (2) transformation of governance itself, i.e. re-examining the functioning of democratic practices and processes".	Focus is on transformation of business of governance on and governance itself.	Aichholzer and Schmutzer, (2000)
"Electronic government, or (e-government), is the process of transacting business between the public and government through the use of automated systems and the internet network, more commonly referred to as the World Wide Web".	Focus is on process of transaction between the public and government through the internet.	Legislative Analyst's Office, (2001)
"E-government means exploiting the power of information to help transform the accessibility, quality and cost-effectiveness of public services and to help revitalise the relationship between customers and citizens and public bodies who work on their behalf".	Focus is on using power of information for transforming accessibility.	Aldrich *et al.,* (2002)
"Electronic government refers to the processes and structures pertinent to the electronic delivery of government services to the public".	Focus is on the process of delivery of e-government services.	Okot-Uma, (2001)

Several e-government definitions concentrate on the benefits of delivery of government services and information electronically for citizens, business and employees. These are mentioned in brief in Table 2.4.

Table 2.4: Definitions Focusing on the Benefits of E-government		
Definitions/Description – Benefits	**Characteristics**	**References**
"E-government is defined as the implementation of cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online. The concept integrates strategy, process, organisation and technology".	Focus is on benefits of e-government via cost reduction. Emphasis is on the integration concept in e-government.	Whitson and Davis, (2001)
"E-government involves access to government information and services 24 hours a day, 7 days a week, in a way that is focused on the needs of our citizens and businesses. E-government relies heavily on agency use of the internet and other emerging technologies to receive and deliver information and services easily, quickly, efficiently and inexpensively".	Focus is on the benefits of delivering government services electronically.	Ke and Wei, (2004)

Below are a few e-government definitions that consider citizens and their needs as an important remit of e-government and seek to position customers at the centre of focus.

Table 2.5: Definition Focusing on Citizens		
Definitions/Description – Citizen Focus	**Characteristics**	**References**
"An e-government is a government that makes full use of the potential of technology to help put its citizens at the centre of everything it does, and which makes its citizens its purpose".	Focus is on putting the citizens and their desires at the centre.	Waller *et al.,* (2001)
"E-government as seamless service delivery to citizens or governments' efforts to provide citizens with the information and services they need by using a range of technological solutions".	Focus is on providing seamless services to citizens.	Burn and Robins, (2003)

Below are a few e-government definitions that focus on the delivery of government services through a single point of access, i.e. the Internet.

Table 2.6: Definitions Focusing on the Internet as a Single Point of Access		
Definitions/Description – Single Point of Access	**Characteristics**	**References**
"Utilising the internet and the World Wide Web for delivering government information and services to citizens".	Focus is on the internet for delivering services.	UNDPEPA/ASPA, (2002)
"E-government is usually explained as a way of improving the delivery of government services by making them available through a single point of access on the internet, i.e. also called as 'one stop shop' shopping".	Focus is on the internet as a medium for single point of access for delivery of service.	Mitchinson, (2001)

Table 2.7 shows definitions focusing on social, economic and political phenomenon, without a specified definition that delivers government services in an alternative way.

Table 2.7: Definitions Focusing on Social, Political, and Economic Phenomena		
Definitions/Description – Phenomenon	**Characteristics**	**References**
"Indeed, e-government is a concept that exists without a firm definition. To some, it represents traditional government "with an 'e' ", providing an alternative delivery method for government services. For others, it is a social, economic and political phenomenon, which promises to re-engineer the nature of democratic government itself".	Focus is on delivery methods, social, economic and political phenomena.	Riley, (2001)
"E-government offers an opportunity for governments to re-organise themselves, get closer to the citizen and co-operate with a variety of societies".	Focus is on the political aspects of e-government.	Margetts and Dunleavy, (2002); Caldow, 1999).

The previously mentioned e-government literature analysis satisfies the argument that an e-government definition can be seen from a broader perspective. As a result, these different doctrines distinguish that there is no universally accepted definition of e-government. Yildiz, (2007) notes that rather different definitions apply to distinct disciplines.

In the following section, the author attempts to investigate and interpret different dimensions of e-government that are referred to as government initiatives to other governments, businesses, citizens and employees.

2.4 Analysis of E-government Dimensions

Rapid changes in the internet and the World Wide Web (WWW) have led to new developments in the way governments provide services to their citizens and businesses, and in the way governments handle their internal operations. E-government has provided revolutionary developments by its implementation and improving of government functional abilities. Chadwick and May, (2003) and Jaeger, (2003) report that e-government activities can be examined in terms of the interaction between different sectors of governments, businesses, citizens and government employees. E-government aims to provoke an interaction with these sectors, and other governments; in so doing, it makes the interaction more convenient, friendly, transparent, inexpensive and effective (Al-Khouri and Bal, 2007; Chadwick and May, 2003). However, as aforementioned, e-government has emerged in different interactional dimensions, such as government-to-government,

government-to-business, government-to-citizen and government-to-employee, and all these dimensions have enabled the transformation of e-government as a whole (Reynolds and Regio-Micro, 2001). In attempting to explore these dimensions, the author provides a deeper insight into e-government.

2.4.1 Government-to-Government (G2G)

The first e-government dimension is government-to-government (G2G) that characterizes the networked nature of government, including interagency, intergovernmental linkage and partnership. The services provided through this dimension take place at two levels: at the local or domestic level and at the international level. G2G services are transactions between central, national, local government, other government agencies, and department-level, attached agencies and bureaus (Klamo *et al.,* 2006). At the same time, G2G services are transactions between governments, and can be used as an instrument of international relations and diplomacy (Chavan and Rathod, 2009). Bonham *et al.,* (2001) report that in many respects, the G2G dimension represents the backbone of e-government initiatives, as it facilitates increased efficiency and communication between government divisions. G2G interactions also allow for the proficient sharing of information between government divisions (Jaeger, 2003). Some observers, including Seifert, (2003; 2008) and Atkinson and Ulevich, (2000) suggest that governments must enhance and update their own internal systems and procedures before electronic transactions with citizens and businesses can be successful. G2G e-government involves sharing data and conducting electronic exchanges between government actors. This involves both intra- and inter-agency exchanges at the central level, as well as exchanges between the central, national, and local levels. From the aforementioned speculations, the author asserts that the G2G dimension has the following objectives:

- G2G enables all the levels of government to work together more easily to better serve the needs of citizens and businesses.
- G2G reduces the fractured nature of individual department and agencies, moving towards a more 'joined-up' government.
- Changing the culture of the community service from reactive to proactive.

Example of G2G Initiatives: One example of a G2G e-government initiative as reported by Seifert, (2003;2008) is the Northeast Gang Information System (NEGIS). NEGIS is sponsored by the Department of Justice and serves as a shared resource for street gang information for states in the northeast, including

Connecticut, Rhode Island, Vermont, Massachusetts, and New York. It includes information such as gang-related activities, gang intelligence and a reference library. NEGIS connects the state police departments of the participant-states, which, in turn, transmit the information to the states' other law-enforcement agencies. The National Environmental Information Exchange Network is another G2G initiative that establishes a *"voluntary, standards-based system that links different state systems and the Environmental Protection Agency's systems, using common language and secure connections through the internet in the US"* (Carter and Belanger, 2004a: 2).

2.4.2 Government-to-Business (G2B)

The G2B dimension is the second type of e-government service. In this sector individuals, but mainly businesses, undertake transactions with their governments. G2B initiatives receive a significant amount of attention, in part because of the high enthusiasm of the business sector and the potential for reducing costs through improved procurement practices and increased competition (Bonham *et al.,* 2001; Seifert, 2008). G2B transactions include various services exchanged between government and the business community, including dissemination of policies, memos, rules and regulations (Chavan and Rathod, 2009). Business services offered in this domain include obtaining current business information, downloading application forms, renewing licenses, registering businesses, obtaining permits and payment of taxes (Ibid). "*The services offered through G2B transactions also assist in business development, specifically the development of small and medium enterprises*" (Chavan and Rathod, 2009: 73). Conversely, the author reports that the delivery of integrated, single-source public services creates opportunities for business and government to partner together. The accounting industry and tax office, for example, could build on their existing relationship and work together to provide value-added services for citizens and businesses filing online tax returns.

Partnering with the private sector can also help governments establish a web presence sooner and cheaper. Researchers highlight that G2B initiatives involve the sale of government goods and the procurement of goods and services for the government; this results in benefits for both the government and business (Jaeger, 2003). The author states that in this dimension, for businesses, G2B interactions can result in increased awareness of opportunities to work with the government and in cost savings and increased efficiency in performing transactions. Furthermore, for governments, G2B interactions offer benefits in reducing costs and increasing

efficiency in procurement processes and provide new avenues for selling surplus items. From the aforementioned theories, the author asserts that the G2B dimension has the following objectives:

- Reducing the burden on business by providing one-stop access to information in order to facilitate business development.

- Eliminate the need to report the same data multiple times to multiple agencies.

- Streamlining the reporting requirements by creating more efficient ways for business to interact with government.

- A national economy that is flexible and competitive within the global market.

Example of G2B Initiatives: One example of a G2B initiative is the US "Buyers.gov", a business and auction exchange administered by the General Service Administration (GSA) and Federal Technology Service (FTS) (Seifert, 2008). The Buyers.gov site facilitates the purchase of information technology products by federal government agencies through the use of reverse auctions and aggregates demand for commonly-purchased products. *FedBizOpps* is another example of a G2B initiative in the US. It serves as an online, government-wide point of entry for access to federal government business opportunities greater than $25,000 (Carter and Bélanger, 2004a).

2.4.3 Government-to-Citizen (G2C)

The third e-government dimension is G2C. Bonham *et al.,* (2001) report that G2C initiatives are designed to facilitate citizen interaction with government, which is what some observers perceive to be the primary goal of e-government (Seifert, 2008; Carter and Bélanger, 2005). These initiatives attempt to make transactions, such as renewing licenses and certifications, paying taxes and applying for benefits, less time consuming and easier to carry out. G2C initiatives also often strive to enhance access to public information through the use of dissemination tools, such as Web sites and/or kiosks. Some e-government advocates suggest that one of the goals of implementing these initiatives should be to create a "one-stop shopping" site where citizens can carry out a variety of tasks, especially those that involve multiple agencies, without requiring the citizen to initiate contacts with each agency individually. A potential outgrowth of G2C initiatives is that they may facilitate

citizen-to-citizen interaction and increase citizen participation in government by creating more opportunities that overcome possible time and geographic barriers, thereby connecting citizens who may not ordinarily come into contact with one another (Seifert and Petersen, 2002). Although e-government has clear benefits for businesses and governments themselves, citizens may actually receive the widest array of benefits from e-government. G2C initiatives can facilitate involvement and interaction with the government, enhancing the *"degree and quality of public participation in government"* (Kakabadse *et al.,* 2003: 47). G2C interactions can allow citizens to be "*more informed about government laws, regulations, policies, and services"* (Muir and Oppenheim, 2002: 175).

For the citizen, e-government can offer a huge range of information and services, including information for research, government forms and services, public policy information, employment and business opportunities, voting information, tax filing, license registration or renewal, payment of fines and submission of comments to government officials. Reffat, (2003) and Reynolds and Regio-Micro, (2001) report that citizens are not interested in which layer of bureaucracy or which public official is responsible for a specific government program or public service. To provide citizens with personalised services, governments must make all information and services available from a single-integrated source (Reffat, 2003). Through portals and one-stop shops, the web can be used to create a single face to the public, hiding the internal complexity of government. Also, through a single access point, citizens can better articulate their expectations and needs from government. It reinforces their participation in local community life and the democratic process since they can interact with government and access public information, official documents and administrative proceedings (Reffat, 2003). For those who do not have time to go to city hall or committee hearings to participate in public debates, they can instead send an email or contribute to an online discussion forum. Based on the aforesaid G2C conceptions, the following objectives can be related to the G2C dimension:

- To provide one-stop, on-line, access to information to individuals.

- Citizens should be able to find what they need quickly and easily.

- Receiving services should be citizen-focused and not agency focused.

- Disintermediation of civil service staff, i.e. delivering services directly to citizens.

- Building and enhancing trust.

Example of G2C Initiatives: Although many examples of G2C initiatives can be found at the local and state level, there are also examples at the federal level. One of these examples is the establishment of the US "FirstGov" web site. FirstGov, a public-private partnership is administered by the GSA. Established in September 2000, FirstGov is designed to serve as the online portal for 51 million pages of government information, services and online transactions. According to the web site, FirstGov has the most comprehensive search of government anywhere on the internet. Seifert, (2008:110) also reports that FirstGov serves as *"the catalyst for a growing e-government".* Another example of a G2C initiative is the Savings Bond Direct that supports the online sale of United Sates savings bonds directly to the public (Carter and Bélanger, 2004a).

2.4.4 Government-to-Employee (G2E)

The fourth e-government dimension is G2E. G2E services encompass G2C services as well as specialised services that cater only for government employees, such as the provision of human resource training and development that improves the bureaucracy's day-to-day functions and dealings with citizens (Chavan and Rathod, 2009). In the e-government vision, the G2E solution is about empowering employees to assist citizens in the fastest and most appropriate way, speed-up administrative processes, and optimise governmental solutions. Civil servants will be able to link efficiently with other departments, rely on the latest news, draw on the available resources in an optimal way, and use the most appropriate support. The benefits provided to the governments within this interaction are an empowered pro-active workforce, streamlined efficient communication and workforce retention. Because employee benefits include increase in responsibility, this provides a common place for all communication and information needs and promotes better cross-departmental understanding of the services. The author has identified the following objectives of the G2E dimension.

- Collaboration with other government employees anytime and anywhere.

- Opportunities for more effective cross-agency initiatives.

- Improved intra-agency information-sharing and team collaboration.

Example of G2E Initiatives: Romulo and Akhtar, (2003) report in their article that Mississippi state government employees have access to their payroll and tax information records online through a secure, web-based, self-service application called Access Channel for Employees (ACE). ACE is directly linked to the state's

legacy payroll system, enabling employees with a log-in ID and password to view their payroll accounts (called W-2). Also, government employees who receive their pay checks through direct deposits can view their last 10 pay stubs. Employees are notified by email when their pay stubs arrive and they can then review the information before the actual payday. This application has given the state of Mississippi US$0.50 in savings for every W-2 form that is printed and mailed. Aside from the savings in cost, if employees spot mistakes on their W-2s, re-issuing these electronically takes only two days instead of two weeks. Of the more than 40,000 state employees of Mississippi, 17% have adopted and used this new application. Another example reported by Carter and Bélanger, (2004a) for the G2E initiative is the Office of Personnel Management's Employee Express. This initiative illustrates an automated system that allows federal employees to manipulate their Thrift Savings Plan accounts and health benefits online.

The following diagram shows the different dimensions of e-government initiative and the interaction to each sector:
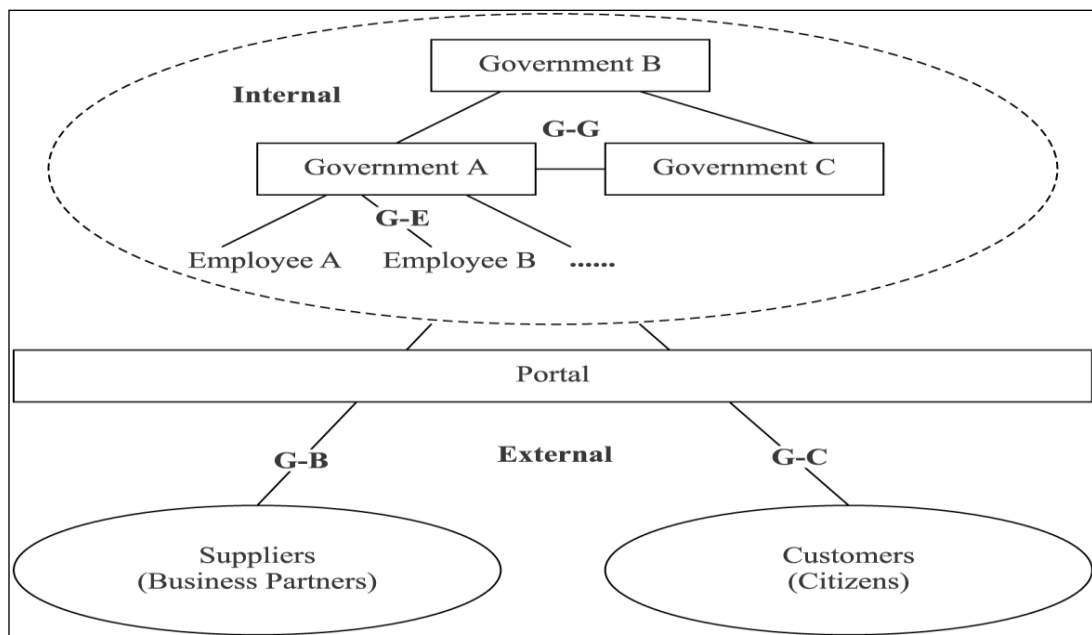
Figure 2.1: E-government Interaction Dimensions (Adapted: Siau and Long, 2005)

2.5 Models of the Stages of E-government: An Evolutionary Perspective

A brief history of e-government indicates that, since the early 1990s, many governments around the world have adopted e-government solutions, ranging from a simple web-based presence and one-way communication to two-way communication and transactions with different stakeholders such as citizens and businesses (Al-

Shehry *et al.,* 2006; Weerakkody *et al.,* 2006). This government transition phase moved on to a more integrated web presence and e-democracy (Moon, 2002; Layne and Lee, 2001). Many researchers have tried to understand the e-government phenomenon from an evolutionary point of view by dividing the e-government development process into many stages (e.g. Moon, 2002; Deloitte and Touche, 2001; Layne and Lee, 2001). These and several other researchers exemplify that to develop and implement a vigorous e-government infrastructure requires a staged approach, where the development focus moves from the 'immature' to the 'mature' – these terms are often used to characterise the state of a given level in a continuous process (Irani *et al.,* 2006; Anderson and Henriksen, 2006; Ebrahim and Irani, 2005). The latter offers full integration with public administration and will have required the underlying re-think and change of government and its constituents (Irani *et al.,* 2006).

Traunmuller and Lenk, (2002) accentuate that the concept of e-government represents a fertile anthology of organisational and technological issues. Incorporating the conception of maturity or immaturity does not reinforce the ontology of the e-government concept. In addition, Andersen and Henriksen, (2006) highlight that certain qualitative and/or quantitative measures to ascertain what distinguishes different degrees of maturity are indispensable. Irani *et al.,* (2006) state that a benefit of having a staged approach is the ability to generate momentum that can then be maintained. The reason is that it may allow the public sector (including local government organisations) to attract an increasing number of citizens to using electronic services. The e-government implementation process passes through different stages until it reaches its highest potential stage, i.e. the integration of government information and services in different departments, for different functions and at different levels of the government system, thus enabling citizens to obtain government services and information online from a single point of access (Gupta and Jana, 2003; Layne and Lee, 2001).

Literature on e-government disciplines illustrates that many researchers (either from individual academia researchers to institutions) have developed and proposed e-government stage models, including Howard's Three-Stage Model (Howard, 2001); Chandler and Emanuels' Four-Stage Model (Chandler and Emanuels, 2002); Layne and Lee's Four-Stage Model (Layne and Lee, 2001), Murphy's Four-Stage Model (Murphy, 2005), Gartner's Four-Stage Model (Baum and Di Maio, 2000), UN's Five-Stage Model (United Nations and American Society for Public Administration, 2001), Deloitte's Six-Stage Model (Deloitte and Touche, 2001) and Hiller and

Bélanger Five-Stage Model (2001). Besides these e-government stage models, several other proponents of e-government discipline are in agreement that these different stages in e-government provision are vital (McDonagh, 2002; Moon, 2002; Bonham *et al.,* 2001; Baum and Di Maio, 2000). Having studied several e-government stage models, it is rather perceptible that there remains a lack of harmony regarding how many stages of maturity an e-government system goes through. As aforementioned, some researchers believe that only three stages are necessary, others believe that four, five or even six stages are required. The various models of the stages of e- government and their perceptions can be seen from Tables 2.8 to 2.11. The purpose of these tables is to identify and locate the transaction stage within the different e-government models.

Table 2.8: 3- Stage Model For E-government Implementation		
3 Stage Model	**Perception**	**Reference**
Stage 1: Publish Stage 2: Interact Stage 3: Transact	• Information about activities of government available online. • Enables citizens to have simple interactions with their governments such as sending e-mail or 'chat rooms'. • Provides citizens with full benefits from transactions over the internet, such as applying for programmes and services, purchasing licenses and permits, etc.	Howard, (2001).

Table 2.9: 4- Stage Models For E-government Implementation		
4 Stage Model	**Perception**	**Reference**
Stage 1: Information Stage 2: Interaction Stage 3: Transaction Stage 4: Integration	• Delivery of government services online. One-way communication between government and citizens. • Simple interaction between citizens and governments. • Services that enable transactions of value between citizens and government. • Integration of services across the agencies and departments of government.	Chandler and Emanuels, (2002).
Stage 1: Cataloguing Stage 2: Transaction Stage 3: Vertical Integration Stage 4: Horizontal Integration	• Creating websites and making government information and services available online. • Enables citizens to interact with their governments electronically. • Focuses on integrating, disparate at different levels. • Focuses on integration of government services for different functions horizontally.	Layne and Lee, (2001).
Stage 1: Web Presence Stage 2: Interaction Stage 3: Transaction Stage 4: Transformation	• Agencies provide website to post basic information to public. • Users are able to contact agencies through websites, e.g. e-mail, or self-service, e.g. download document. • Users can complete entire transactions e.g. license application and procurement, online. • Governments transform the current operational processes to provide an efficient, integrated, and personalized service.	Baum and Di Maio, (2000).
Stage 1: Promote Access and Connectivity Stage 2: Provide	• Focusing on developing infrastructure.	Murphy, (2005).

| Service Online Stage 3: Transform the Enterprise Stage 4: Next Generation Government | • Implementing basic services that are installed and adding an e-government presence to existing services.
• Increasing emphasis is upon the automation of back office processes and integration both within and between services.
• It emphasizes future generation government, where most business processes are re-engineered and IS/IT systems are collaborated through organisation. This stage implies total transformation of government. | |

Table 2.10: **5- Stage Models For E-government Implementation**		
5 Stage Model	**Perception**	**Reference**
Stage 1: Emerging Stage 2: Enhanced Stage 3: Interactive Stage 4: Transactional Stage 5: Seamless or Fully Integrated	• Creating a government website with limited information. • Updating information regularly. • Provides users with reasonable levels of interaction enabling them to download forms and paying parking tickets. • Enables users to complete online transactions, e.g. obtaining visas, licences, passports. • Provides services across administrative and departmental lines with the highest level of integration.	UN, (2001).
Stage 1: Simple Information Age Stage 2: Request and Response Stage 3: Service and Financial Stage 4: Integration Stage 5: Political Participation	• Representing a basic form of e-government uses e.g. disseminating information by posting it on the web sites. • Facilitation of citizen and government interaction. • Transactions occur both between governments and individuals (e.g. obtaining visa), and between governments and businesses (i.e. ordering office facilities). • This is similar to the last two stages in the Layne and Lee (2001) four-stage model. This stage refers to integrating separate systems at different levels (vertical) and from different departments (horizontal). • Promotion of political participation through services such as online voting and surveys.	Hiller and Bélanger, (2001).

Table 2.11: **6- Stage Model For E-government Implementation**		
6 Stage Model	**Perception**	**Reference**
Stage 1: Information Publish/Dissemination Stage 2: Official Two-way Transaction Stage 3: Multi-purpose Portals Stage 4: Portal Personalization Stage 5: Clustering of Common Services Stage 6: Full Integration/Enterprise Transaction	• Governments provide users with increased access to information. • Agencies provide interaction between governments and users by using ICT such as digital signatures and security keys. • Governments utilise a single portal to provide universal service across multiple departments. • Governments enable users to customise portals according to their own desires. • Governments enhance collaboration and reduce intermediaries (between operational processes) in order to provide a unified and seamless service. • An ideal vision in which governments provide sophisticated, unified and personalised services to every customer according to their own needs and preferences.	Deloitte and Touche, (2001).

In summarising the aforementioned e-government implementation stage models, the author accentuates that there is no mutual conformity among the different scholars

and academicians on the number of stages that e-government should pass through during its life-cycle and the requirements for moving from one to another. As is clear from Tables 2.8 to 2.11, some models emphasise that e-government should pass through all of the preceding stages to move on to the next one. Others argue that public organisations might decide to skip certain stages or to offer different services at varying stages of maturity. In light of these arguments, comprehending e-government evolutionary stages provides the implementer with a clear understanding of the issues that should be taken into consideration. However, these stage models represent a number of motivational reasons (or forces) that influence decision-makers from the public sector to adopt e-government services. These are explained in the subsequent section.

2.6 Motivations for E-government Implementation

E-government is an increasingly global phenomenon that portrays a highly beneficial endeavour and has consumed the attention of many governments (including policy makers, politicians and citizens) around the world. Several governments have been motivated to make and to continue to make substantial financial and political commitments to establishing e-government – as a promising vehicle for improving the services nation-states provide to their citizens and businesses, as well as to other governments both within their borders and beyond (Gupta *et al.,* 2008; Accenture, 2004; Sharma and Gupta, 2002). The motivational drive to implement e-government at such levels has resulted in the implementation of numerous e-government visions and strategic agendas (Accenture, 2004). Numerous motivational reasons for e-government-implementation can be found theorised in the normative literature (Ebrahim and Irani, 2005; Tung and Rieck, 2005; Gupta and Jana, 2003; Jaeger, 2003; Relyea, 2002; Fairweather and Rogerson 2002; Moon, 2002; Layne and Lee, 2001), but it is Al-Shehry *et al.,* (2006) who presented a classification for these motivational forces. These are: (a) political, (b) economic, (c) social, (d) technological and (e) managerial reasons. These authors supply the following instances:

- *Political Forces:* E-government can increase citizen participation in political processes (i.e. electronic participation [e-participation]); building trust between citizens and their government by improving the government's image and perhaps facilitating democratic elements by enabling voting online. Although there are many theoretical discussions involving participation, e.g., participatory management, etc, e-participation is usually associated with some

form of political deliberation or policy decision-making process (Macintosh, 2004). Participation can take place within the formal political process or outside it (Saebo *et al.,* 2008; Macintosh, 2004). Several research studies focus on 'political participation' in the policy-making sense, and cover participation both within and outside the formal political system. The 'e (lectronic)' in e-Participation has a clear association with earlier 'e' areas (e.g. e-business, e-commerce, e-government) and refers to the use of new ICT, with the implication that technology has the ability to change or transform citizen participation in the policy-making process (Saebo *et al.,* 2008).

- *Economic Forces:* Motivations include cost reductions for both the government itself and the adopter of e-government services. According to a report for the National Electronic Commerce Coordinating Council (NECCC, 2000), government agencies can save up to 70 percent of their costs by moving their services online (UN, 2001). It has also been recognised as a new way of debating and deciding policy (Basu, 2004). Gupta *et al.,* (2008) argue that e-government provides potential benefits including reduced cost and time for providing services to the general public, enhanced communication and coordination between government organisations, reduced bureaucracy, expounding citizen's participation and increased efficiency and effectiveness of the government agencies.

- *Social Forces:* Benefits of e-government implementation are related to end-to-end service delivery by making learning and education available for citizens and offering citizen empowerment through access to information. Moreover, services can be more readily brought to all citizens across the country, particularly those with special needs and the elderly by enabling citizens to obtain government information through a single portal at any time and from any location equipped with internet access. E-government has been compared to an "endless wire" or a new method of "threading together" citizens, business and governments within a nation (Jaeger, 2003). E-government, as it continues to progress in development and deployment, may re-define the relationship between government and the public (Committee on Governmental Affairs, 2001).

- *Technological Forces:* Research related to technological forces (in the context of e-government) illustrates that ICT provides new possibilities for governments to be more transparent to citizens and businesses, giving access to a greater

range of information collected and generated by governments (Gupta *et al.,* 2008; Lambrinoudakis *et al.,* 2003). It also creates opportunities for partnership and collaboration among different government institutions (Allen *et al.,* 2001). E-government has been touted as the mechanism by which governments can reduce communication and information costs, increase speed, broaden their reach and eradicate distance (Jaeger and Thompson, 2003). Quite simply, because e-government is primarily based on ICT, it provides the necessary infrastructure for seamless communication and flow of information within government and its stakeholders. Moreover, studies related to this theme of research investigate the influence of ICT-design features on individuals' acceptance and use of e-government applications. For example, several researchers have highlighted that data security, accessibility and perceived confidentiality significantly influence individuals' adoption of e-government services (Jaeger, 2003; Lee and Rao, 2003; Warkentin *et al.,* 2002).

- *Managerial Forces:* Research related to managerial reasons that influence e-government implementation aims at the identification and/or measurement of specific managerial strategies and behaviours that are considered to significantly affect e-government adoption and use (Titah and Barki, 2006). For example, within such reasoning, a managerial practice that has received significant research attention and is posited as having a vital effect on e-government implementation, is process reengineering. Literature highlights several empirical research studies on cases and simulations indicating that the absence of a comprehensible and well-executed process reengineering strategy significantly impedes e-government implementation and success (Kawalek and Wastall, 2005; Golden *et al.,* 2003; Thong *et al.,* 2000). In addition, another motivational force is the influence of management support (Ke and Wei, 2004; Homburg and Bekkers, 2002). For example, Thong *et al.,* (2000) in their case study on the Singapore Housing and Development Board, found that the presence of management support was a significant factor that influenced e-government implementation and acceptance. Likewise, the establishment and implementation of a formal governance formation, as well as the insight of impartiality with regards to this structure, were also found to be major enabling factors of e-government adoption and usage (Thong *et al.,* 2000).

Despite the claims for these motivational reasons (or forces) for e-government implementation, mainly aiming towards improving government performance and their service delivery, a number of studies have argued that e-government has not

yet fulfilled its promise. For example, Holden and Fletcher, (2001) argue that there are virtually no systematic research results justifying a rapid transition. Indeed, there is a significant body of literature that suggests bureaucracies of government will prove resistant to such change. Fountain, (2001) describes the state of government agencies embedded in institutional arrangements that frustrate attempts to exploit IT, particularly where such IT is multi-agency and aimed at united government. Furthermore, according to the UN Global e-government Survey, (2003), the average government reaches a level of only 25.5% on the index score of the highest ranking governments, with only seven governments reaching 75% and above (UN, 2003). Moreover, in a study conducted by Accenture, (2005) on e-government initiatives in 22 countries, the average e-government's maturity was 48%, with only two countries reaching 60% or above. Other researchers point out that the provision of e-government services is still far from reaching full effectiveness (Reddick, 2004; Moon, 2002) whilst a number of researchers argue that many issues, such as privacy and security, remain as barriers for e-government implementation (Wilford, 2004). Some argue that e-government is worthy of support, but many issues must be addressed with its implementation. For instance, Rogerson, (1997) specifies a number of principles for electronic services in the UK that will ensure social responsibility in e-government implementation, i.e. the principles of choice, confidence of clean data, accessibility to allow all citizens to obtain the services, and public funds protection. Despite several aforementioned conceptions on e-government implementation, the motivational themes described above are largely influenced by a plethora of benefits. These benefits are explained in the following section.

2.7 Characterising E-government Benefits

Much of the research on the e-government implementation discipline has focused on examining the inputs (e.g., "what was done" and "how much was spent") and relating them to hurdles and outputs in light of what was achieved in the context of e-government maturity models (as examined in Section 2.5). Most of the studies exemplify the opinion that innovation occurs incrementally – benefits, if realised, are slow to accumulate (Brown, 2007; Norris and Moon, 2005). While acknowledging that government organisations and other related agencies do not recurrently pursue a chronological maturational process (Brown, 2007), West, (2005) argues that the sequential approach for e-government implementation appears to be an established course of development. This therefore allows researchers to

precisely predict and monitor progress. Thus, many researchers have found the maturational models of Brown (2007), West (2005) and Norris and Moon (2005) useful for classifying activities and predicting potential outcomes and benefits in the context of e-government. In this model, early stages of maturation can be seen to equate to only minor service gains, whereas higher degrees of maturity often signify greater benefits (Brown, 2007). As such, several maturational models have been espoused and used as a proxy for understanding e-government benefit gains.

As demonstrated by several researchers, that, similar to other phenomena such as e-Business, e-Commerce, and e-Learning providing several benefits, e-government also delivers a number of benefits for citizens, businesses, and governments (and their employees) around the world (Gil-García and Pardo, 2005; Jaeger, 2003; Edmiston, 2003; Fang, 2002; Cook, 2000). Although still in its adolescence (for developing countries, whereas for developed countries the e-government discipline has climbed far up the maturity ladder), the core transformative capacities of the internet include its potential for radically shrinking communications and information costs, maximising speed, broadening reach and eradicating distance. Jaeger and Thompson, (2003) accentuate that e-government is a key method for achieving many of these benefits. According to Bhatnagar, (2004) e-government is about changing how governments work, share information, and deliver services to external and internal clients. It harnesses ICT to transform relationships with citizens and businesses, and between arms of government. Benefits can include a reduction in corruption, increased transparency, greater convenience, higher revenue, and lower costs. E-government implementation reduces government expenditure through direct-channel communication between public sector, private sector and other government organisations and by integrating various government agencies' systems through a single web portal (Al-Khouri and Bal, 2007). Furthermore, e-government increases public expectations and improves the services to offer more transparent and accessible services to the user (Al-Khouri and Bal, 2007) and to public-private sector collaboration. These conceptions illustrate that e-government is not merely an extension of the government; rather it significantly transforms government operational activities to electronically serve their constituents and other associated stakeholders.

Having studied many of the e-government benefits as theorised in the normative literature, the author characterises the most common e-government benefits and attempts to classify them as follows: (a) efficiency and cost reduction [i.e. with

particular focus on using ICT to improve government service delivery], (b) accountability and transparency [i.e. with specific focus on making a government receptive to constituents], (c) citizen centric focus [i.e. with precise focus on placing citizens and their requirements at the centre], (d) economic development [i.e. with clear focus on enhancing economies], and (e) accessibility and availability [i.e. with explicit focus on single point access via the Internet], as illustrated in Figure 2.2.
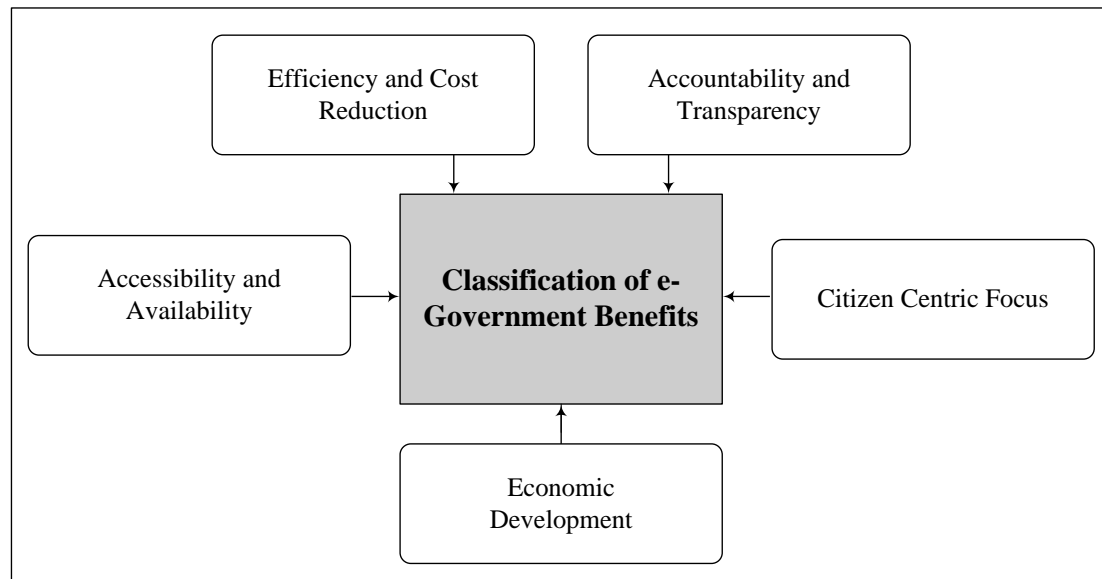
Figure 2.2: Characterising E-government Benefits

2.7.1 Efficiency and Cost Reduction

Edmiston, (2003) advocates that the bona fide benefits from new technology do not come from performing high-technology feats, but rather from government undertaking their daily operational activities in a much improved and economic mode. Ndou, (2004) supports this argument and states that by putting services on-line substantially decreases the processing costs of many activities compared with the manual way of handling operations. In this context, many researchers argue that e-government, if implemented pertinently, can significantly improve efficiency of government services, result in more accurate and efficient delivery of services, and reduce administrative costs and time spent on repetitive tasks for government employees (Gil-García and Pardo, 2005; Jaeger, 2003). Other researchers also support that e-government initiatives reduce errors and offer improved outcomes by focusing on standardised tasks (Gil-Garcìa and Pardo, 2005; Carter and Belanger, 2005; Basu, 2004). Bhatnagar, (2004) reports that businesses recurrently face considerable administrative barriers while interacting with government; however, by

implementing e-government systems, these obstacles can be overcome. In addition, the transaction costs to both businesses and government can be reduced and government can benefit from more efficient revenue collection. This indicates that by developing a practicable internet presence, a government can generate interest in the political process among businesses that frequently use the internet. So much so that e-government can even be used "in some locations" as a method to reduce corruption in government functions as a computer will not likely ask for a bribe to do its job (The Economist, 2003).

2.7.2 Accountability and Transparency

Literature indicates that governments, across all national boundaries and levels of government, have been found to share certain common beliefs about the practical benefits that e-government can produce increased accountability and transparency of the decision-making process, and improved services to citizens (Ndou, 2004; Jaeger, 2003). Although accountability and transparency in public administration can prove to be phrases difficult to quantify, they often refer to the answerability of government to the public on its performance (Wong and Welch, 2004). E-government is often viewed and promoted as a positive channel for enhancing government accountability, transparency and empowering citizens (La Porte *et al.,* 2002; Kumar, 2003). With more information delivered in a more timely fashion to citizens, it is expected to increase transparency of government and empower citizens to more closely monitor government performance. Enhanced interactivity of the technology is also expected to improve government accountability as it makes government more responsive to the needs and demands of individual citizens (Wong and Welch, 2004; Welch and Hinnant, 2003). Carter and Belanger, (2005) also support the idea that e-government improves government accountability and helps to decentralise the administration of level governance in government agencies. This indicates that a more transparent government allows citizens to monitor the performance of public organisations more easily via the increase in the availability of information. This also creates an opportunity for citizens to participate in decision-making by allowing them to provide their ideas/suggestions in forums and on-line communities (Ndou, 2004).

2.7.3 Customer Centric Focus

E-government has the potential to alter the traditional relationship between government and customers (i.e. their citizens) by creating a new virtual government and citizen interface (Navarra and Cornford, 2005; Wong and Welch, 2004). Silcock

(2001) specified that the relationship between governments and their citizens is no longer a one- way relationship, but rather it is about creating a partnership relationship. Literature highlights that the role of public administration and other government organisations, and their governance style, is changing under the impact of, for example, globalisation (Bevir *et al.,* 2003). This is also illustrated as the nature of public policy, both nationally and internationally, appears to be undergoing a significant critique and re-conceptualisation (Ghose, 2005). These changes have implicated greater interest by governments to citizen attention as well as shifts towards forms of participatory governance. Lauber and Knuth, (1999) and other contemporary theorists have strongly advocated 'participation' (in the context of e-government) and argue that focusing on and involving citizens in making decisions about issues (e.g. roads construction, new runways and highways etc) that affect them is fundamental to democratic governance. Others contend that incorporating citizens into policy designing processes will make those processes more acceptable to citizens, leading to a variety of benefits, including, among others, helping to ensure the implementation of management plans and improving the relation between management agencies and the public administration (Irvin and Stansbury, 2004). The author, assert that this may improve government accountability as it makes government more responsive to the needs and demands of individual citizens.

2.7.4 Economic Development

Literature stresses that e-government aims to *"help strengthen a government's drive towards effective governance and increased transparency to better manage a country's social and economic resources for development"* (Basu, 2004: 110). Many businesses have a preference to maximise their cost-saving activities by creating an effective e-government system that enables them to process their government's services online at any time without having to visit any government agencies to accomplish the service. Examples of this are online procurement, that includes public bidding, purchasing, and payment (Gunasekaran and Ngai, 2008; Seifert and Petersen, 2002). E-government also creates an opportunity of partnership between the government and businesses, i.e. the promoting of the government in a business relationship (Bertot and Jaeger, 2006; Al-Sebie and Irani, 2005). These theoretical conceptions strongly advocate that e-government is expected to assist in improving the business climate and trust in the country to attract foreign investment.

2.7.5 Accessibility and Availability

One of the greatly-desired and highly-pursued outcomes of this e-government process is the seamless integration of computer-supported government services and the increase of government accessibility and availability (Scholl and Klischewski, 2007). Based on this vision, different stakeholders (i.e. citizens, businesses, etc.) alike access whatever government service they need through a single gateway (or portal), that integrates every aspect of the government to citizen- and business-transaction or interaction. Halchin, (2004) and Doty and Erdelez, (2002) also agree that e-government provides fast and easy access to government information, makes governments approachable by augmenting their availability, and increases their transparency and responsiveness towards citizens' needs. Prins, (2001) also agrees with this concept and states that e-government provides the opportunity to increase citizen access to government, reduce government bureaucracy and increase citizen participation in democracy. These arguments accentuate that e-government has the potential to improve the quality and accessibility of public services (Carter and Belanger, 2005).

Despite the many potential benefits of e-government as discussed earlier, governments still struggle with several challenges to e-government implementation, such as the problems of rigid and ineffective internal and inter-institutional processes. In addition to that, there is a lack of understanding of citizens' real needs and attitudes to this concept. Also, there is the citizen's actual ability to use ICT-based services and this consequently leads to low adoption of e-government resources. Reasons for inefficient use of e-government include great heterogeneity, fragmentation and inability of information systems to interoperate within the many government organisations (Lam, 2005; Janssen and Cresswell, 2005; Beaumaster, 2002). Cooperation among government agencies and with society (citizens) and the market (businesses) is in most cases realised only in limited ways. Fully customised and personalised electronic public services are still a vision far beyond reality in some developing countries.

However, electronic association without the necessity of physical meeting is undoubtedly desirable for certain services in the public sector. There is an increasingly imperative need to facilitate open discussion about the future strategic development and improvement of e-government globally within the public sector (Al-Shehry *et al.,* 2006; Al-Sebie and Irani, 2005; Gilbert *et al.,* 2004; West, 2004; Ndou, 2004; Jaeger, 2003; Jaeger and Thompson, 2003). The purpose of such a

debate is to transform the landscape of developing countries (governments) into a coherent community, capable of anticipating citizens' needs and requirements and of utilising the available potentials of innovative ICT. Current deficiencies and challenges of e-government research in respect of the potential future of governments are identified in the following section.

2.8 Challenges to E-government Initiatives

While it is evident that e-government is an effective driver for economic growth and significant cost reductions, conversely there remain many challenges which impede the exploration and utilisation of its opportunities (Al-Sebie and Irani, 2005; Gilbert *et al.,* 2004; Ndou, 2004; Jaeger and Thompson, 2003). The multidimensionality and complexity of e-government initiatives implies the existence of an extensive multiplicity of challenges that impede implementation and management (Ndou, 2004). For example, as reported by Stoltzfus (2005), e-government is costly, involves tremendous risks, requires a skilled technical pool of resources, and a stable technical infrastructure. Implementing e-government necessitates the evaluation of the following risk factors: political stability, an adequate legal framework, trust in government, importance of government identity, the economic structure, the government structure (centralised or not), levels of maturity within the government and citizen demand (Basu, 2004). Furthermore, inherent issues of e-government include: security and privacy, homeland security, diverse educational levels of users, accessibility issues, and prioritisation of e-government over basic functions of government, building citizen confidence in e-government, and whether certain forms of government do better with e-government than others (Jaeger, 2003).

Ke and Wei, (2004) also assert that many e-governments efforts – to turn vision into reality - have been obstructed by various challenges. Several researchers from the academia and industry have argued that the emergence of e-government is a fundamental transformation of government, which entails profound changes in its structure, process, culture and behaviour of the individual in the public sector (Irani *et al.,* 2005; Prins, 2001; Howard, 2001). This is because the e-government paradigm includes changing the operational activities of government agencies to carry out its work. Thus, the organisations in the public sector face challenges (e.g. overcoming resistance to change, privacy, security and possibly a lack of top management support) in implementing e-government (Al-Shehry *et al.,* 2006; West, 2004; Ndou, 2004).

Literature indicates that there is no single list of challenges to e-government initiatives (Gil-Garcìa and Pardo, 2005; Aldrich *et al.,* 2002; Layne and Lee, 2001). These are merely a handful of challenges to e-government initiatives reported in the normative literature. In addition to this, numerous other researchers have put forward their empirical findings on challenges to e-government initiatives in different disciplines. However, although there are very few notable consistencies across the different disciplines and research findings, the common themes that keep emerging can be categorised into the following seven groupings: (a) organisational, (b) technological, (c) social, (d) managerial, (e) operational, (f) strategic and (g) financial (Al-Shehry *et al.,* 2006; Al-Sebie and Irani, 2005; Gilbert *et al.,* 2004; West, 2004; Ndou, 2004; Jaeger and Thompson, 2003; Prins, 2001). For example, in a report by Government Accountability Office, (2001), these challenges are identified as: (a) sustaining committed executive leadership, (b) building effective e-government business cases, (c) maintaining a citizen focus, (d) protecting personal privacy, (e) implementing appropriate security controls, (f) maintaining electronic records, (g) maintaining a robust technical infrastructure, (h) addressing IT human capital concerns, and (i) ensuring uniform service to the public. Kushchu and Kuscu, (2003) highlight technological challenges to e-government, e.g. (a) infrastructure development, (b) payment infrastructure, (c) privacy and security, (d) accessibility, (e) legal issues and (f) compatibility. Gil-Garcìa and Pardo, (2005) put forward their work on e-government challenges and group them into five categories: (a) information and data, (b) information technology, (c) organisational and managerial, (d) legal and regulatory and (e) institutional and environmental.

In another context, Kamal, (2008) reports that e-government initiatives/projects have an increasing influence on how business processes evolve and change. Scholl, (2005) reports that, while early e-government projects focused on government-to-citizen information and interaction, the second and third wave of e-government projects also emphasized internal effectiveness and efficiency along with intra- and inter-departmental, as well as intra- and inter-branch, integration. With such increases in the scale of e-government projects, existing business processes, including core business processes, have become candidates for improvement and reengineering. In addition, realising a better service-provisioning for citizens and businesses is also a big challenge for governments at all levels (Gortmaker *et al.,* 2004). In e-government, once the service and application potential of the early catalogue and transaction phases is fully utilised, the next developmental step leads to the integration of services and business processes within and across government

organisations (Layne and Lee, 2001). Thus, better service provision requires the integration of business processes across multiple-government organisations, due to which significant changes to the business logic becomes a necessity (Scholl, 2003).

Several government organisations have set up e-government initiatives, e.g. Customer Relationship Management (CRM) systems, Geographic Information Systems (GIS), etc., to improve the delivery of services to their citizens (Kamal, 2008). Homburg and Bekkers, (2002) note that these initiatives require information-exchange through various networks available in the government organisation back-offices. Bekkers, (1998) also reports that for e-government initiatives to be successful, back-office operations and functions, and, more specifically, back-office streamlining has to be taken care of. In e-government literature, often the focus is on the interaction between government organisations and citizens via webportals, call centres, physical offices and other interacting channels (Kamal, 2008). To exploit these channels in an efficient and effective way, however, the need to restructure the entire administrative operation, functions and processes is paramount to realise the effects and benefits of e-government. For that to occur, the support, coordination and cooperation between different government organisations must be present. However, legacy systems within these organisations often restrict the development of new citizen-oriented processes. As a result, there is a need for an integration of technological and traditional systems to reach a solution that enables seamless communication between front-office and back-office legacy IS to overcome infrastructure challenges to e-government initiatives (Kamal, 2008; Wimmer and Traunmüller, 2002). In the context of financial challenges to implementing e-government initiatives, Kamal, (2008) highlights that organisations tend to reduce costs to improve their financial capability. However, if e-government is not implemented, there are the costs of running a non-integrated IT infrastructure as well as having he redundancy/inconsistency of data and systems (Abie *et al.,* 2004; Gamper and Augsten, 2003). What is clear is that, in order to achieve integrated e-government, integration is needed to increase the performance and efficiency of government organisations, and this results in improvements of financial capacity (Themistocleous and Sarikas, 2005).

2.9 Chapter Summary

When examining the aforementioned challenges, it is clear that four key themes stand out; these are Political-Legal forces, Economic forces, Socio-cultural forces and Technology, collectively known as '*PEST*' (Wheelen and Hunger, 2002:11). The

majority of researchers that discuss e-government have been critical of the implementation and diffusion challenges facing e-government. Various researchers have suggested that the introduction of e-government to a country will ultimately result in a number of challenges for the citizens and therefore for the government (Al-Shafi and Weerakkody, 2008a; 2008b; 2009a; 2009b; Faisal and Rahman, 2008; Al-Shafi, 2008; Weerakkody *et al.*, 2006; AlAdawi *et al.*, 2005; Zakareya and Irani, 2005). These challenges are flagged in the literature review presented in this chapter and are taken into consideration and addressed in Chapter 3.

3

Chapter 3: Conceptual Model

In this chapter, the aim is to develop an initial conceptual model for e-government implementation and adoption. The word 'model' is used loosely in this research. The rationale for this is that the proposed conceptual model (Figure 3.1) captures two perspectives: a) e-government implementation challenges on one side, which represents a *framework* structure that addresses the complex issues impacting implementation; and b) factors influencing adoption on the other side, representing a *model* structure which captures the various constructs and their influence on e-government adoption by citizens. The proposed conceptual model will be used as a road map for empirical data collection and analysis, and to establish a comprehensive overview of e-government implementation and adoption in a Qatari context.

The main consideration is to allow the model to consider the challenges that might hinder e-government implementation from the governments' perspective, while simultaneously examining the adoption of e-government among citizens (or users) from a technology- acceptance perspective.

This chapter is divided into three sections. Section 3.1 explains and discusses the various factors influencing e-government implementation. These factors are themed into four main categorisations of those challenges that might hinder e-government implementation. These categories are derived from the e-government literature and institutional theory and identified as organisational, technical, social and political themes. Under these themes, the e-government literature is examined in detail. Section 3.2 then analyses the technology adoption and acceptance factors that might explain and show citizens' behaviour and adoption towards e-government systems based on e-government literature and the Unified Theory of Acceptance and Use of Technology (UTAUT).

Finally, the factors discussed in this chapter will be mapped in a conceptual model that will form the basis for the empirical research discussed later in Chapters 5 and 6.

3.1 E-government Implementation: The Government Perspective

Having evolved from e-business ideas, the implementation of e-government involves introducing fundamental change to established business practices in public sector organisations. Therefore, in the study of e-government it is imperative to understand how this change will impact public sector organisations which are perceived as bureaucratic and rigid.

Prior research has shown that while implementing e-government, governments should consider the reality of complex issues that surround the e-government initiative. These include managerial (Pardo, 2002), technological (Pardo, 2002), economical (Lee-Kelley and James, 2005; Reffat, 2003), social (Lee-Kelley and James, 2005; Reffat, 2003), and policy related (Pardo, 2002) changes. A grave error would be to neglect understanding of these issues and complexities as this could well result in the risk of costly failure (Irani *et al.,* 2009; Al-Khouri and Bal, 2007; Evangelidis, 2004). Chandler and Emanuels (2002) specify that the e-government implementation project is a long-term project and has many challenges and barriers. When implementing e-government initiatives, the consequences of change to its stakeholders, i.e. the employees, businesses, and citizens, and their relationships with the role of government must be considered. Some scholars have classified e-government challenges into technical, economic, social and organisational challenges (Chesi *et al.,* 2005; Oreste *et al.,* 2005; and Al-Sebie and Irani, 2005; Layne and Lee, 2001).

According to Nelson (2003), e-government implementation leads to organisational change by moving from an existing status to a new desired situation. Therefore, change could be seen as a situation shifting from simple and normal status to externally and internally new conditions. In today's dynamic and shifting world of citizens' needs, organisations need to respond as quickly as possible to these changes and citizens' demands. In this respect, an organisation's response to these changes will often depend on socio-cultural, political, economic, demographic and technological developments and trends in different markets or national contexts (Centeno *et al.,* 2005).

There are a number of theories that have been proposed over the years to study organisational change, such as system theory, social theory, and the theory of Reasoned Action (Kritsonis and Student, 2004). Among the most widely used and earliest theories of organisational change are Lewin's model, Lippitt's model, and

Institutional theory. In the context of e-government, institutional theory in particular has been applied by various scholars such as Kim *et al.,* (2009), Silva and Figueroa (2002), and Andoh-Baidoo and Osatuyi, (2009) to study the implementation of electronic services in the public sector. The next section examines some of the relevant theories for understanding change in an e-government context.

3.1.1   Change Management Theories that are Relevant to E-government:

As outlined in the previous section, implementing change requires a good understanding of how to go about the 'change', and the resulting influence on the organisation. One of the early and most widely-used theoretical models for understanding change is Kurt Lewin's change theory (Lewin, 1958; 1951). This model consists of three steps in the process of changing behaviour, namely unfreeze the present developmental stage, movement, and refreezing stages. The first stage in Lewin's model is the unfreezing stage. Unfreezing is defined as taking people from a condition of being unready to change to being ready and willing to make the first step (Lewin, 1958;1951). Some of the activities that can help the unfreezing step are motivation-building, building trust and participation in recognising problems (Robbins, 2003). The second stage in Lewin's model is the concept that change adjusts the equilibrium (Transition) stage. In this stage, as a result of getting new information, the development of new attitudes, beliefs, values and behaviours are attained. The change can be implemented after being aware of and minimising the resistant forces and maximising the impact of the driving forces. Consequently, the change is implemented by heading in the direction of the desired position by altering the position of equilibrium. Lewin's third step is refreezing, i.e. the making of routine for the new order. This step is intended to sustain the system after the change has been implemented and to integrate the new values among community values and traditions.

While Lewin's change theory can help to understand the internal organisational level changes that government institutions will need to implement in the context of e-government, it is somewhat limited in scope to appreciate the complexities of an evolving concept, such as e-government.   In this respect, Lippitt *et al.,* (1958) extended and modified Lewin's three-step change theory in order to capture a more detailed picture of internal organisational change contexts using seven stages (Kritsonis and Student, 2004). This seven-stage model offers a more comprehensive perspective of the type of organisational change that is required to implement evolving concepts, such as e-government. The seven-stage model of organisational

change focuses on the roles and responsibilities of a representative change, instead of change evolution. The stages are scouting, entry, diagnosis, planning, action, stabilisation and evaluation, and finally the termination stage (Lippitt *et al.,*1958).

Of the other theories mentioned before that are relevant in an organisational change context, systems theory focuses on the complexity and interdependence between the groups of activities or parts that form a system (Luhmann, 1994); while organisational complexity theory proposes that change can be affected by factors such as environmental influences, personal aspects, and attributes of the behaviour itself (Robbins 2003). On the other hand, the theory of reasoned action states that *"individual performance of a given behaviour is primarily determined by a person's intention to perform that behaviour"* (Ajzen and Fishbein, 1980). While the aforementioned theories focus largely on internal organisational and personal behavioural aspects that influence the implementation and acceptance of change, e-government related change on public institutions can be influenced by a number of external aspects that are far more complex than the internal influences that impact more conventional organisational change initiatives. Therefore, understanding e-government influenced change and the factors influencing such change should consider the external aspects that may impact the institution. In this context, institutional theory offers a useful conceptual lens that has been used before to study organisational change in a public sector and e-government context (see for example Andoh-Baidoo and Osatuyi, 2009; and Irani *et al.,* 2009; Kim *et al.,* 2009; 2007; Currie and Guah, 2007; Silva and Figueroa, 2002).

Institutional theory captures the political and social aspects influencing organisational change from both an internal, as well as an external, perspective. It is not surprising that these two dimensions are more dominant in an e-government context, as highlighted by a number of different researchers (e.g. Irani *et al.,* 2009; 2007; Weerakkody and Dhillon, 2008; Klischewski and Scholl, 2008; Heeks, 2007). The nature of e-government means that it is at the centre of and surrounded by politics, both from an institutional perspective, as well as from a government or national perspective. Similarly, the bureaucratic nature of government institutions and the wider social influences that form these bureaucracies, play a major part in shaping the character of implementation (e.g. level of efficiency and complexity of the services offered as in the case of the different stage models proposed in Chapter 2, Section 2). The political aspects that influence e-government from an institutional perspective have been identified by Kim *et al.,* (2009) and Yildiz (2003). Likewise, social dimensions have been identified by a number of e-government researchers

(Kim *et al.,* 2009; Al-Gahtani *et al.,* 2007). Therefore, given the close association of these two dimensions on e-government, a closer examination of institutional theory and how it may facilitate a better understanding of the evolving concept of e-government requires further examination and merit.

Since all institutions are surrounded by a set of social, political, economic and legal contexts, institutional theory is considered most prominent in sociology and political sciences literature (Hall *et al.,* 2001 Miranda and Kim, 2006; Jepperson, 1991; March and Olsen, 1989; Coase, 1937; North, 1990; Skocpol, 1985; 1992; Buchanan and Tullock 1962; Shepsle and Weingast 1987; Goffman, 1961; Schutz 1962; Berger and Luckmann 1967b; Silvermann 1971; Meyer and Rowan 1977; Zucker 1977; DiMaggio and Powell 1983), and economics literature (Coase 1937, 1960; Williamson 1975; 1981; North and Thomas 1973; North 1990) literature that study organisations. Many scholars such as Zucker, (1977), Haveman (1993), Mezias (1990), Teo *et al.,* (2003), Tingling and Parent (2002) and Hu *et al.,* (2006) have utilised institutional theory to explain the influence of various social, political and technology phenomena on organisations. Cavalluzzo and Ittner (2004) discuss how government organisations often implement management control systems to meet legislative requirements, but do not use these systems for internal improvements. These authors use institutional theory to conjecture how the limited perceived benefits realised from mandated organisational changes in government organisations tends to be symbolic, but have little effect on internal operations. More recent studies have utilised the theory to explain the impact of technology on modern organisations (Kim *et al.,* 2009; Liang *et al.,* 2007; Hu *et al.,* 2006; Teo *et al.,*2003; Yildiz, 2003; Tingling and Parent, 2002). In particular, the political, social and technology aspects that influence e-government influenced change have been explained by Kim *et al.,* (2009) and Yildiz, (2007) using institutional theory.

Institutional theory consists of three mechanisms: regulatory (occurs as a result of the formal and informal pressure to conform to government in the form of rules or laws), mimetic (occurs as a result of organisations that try to be like other organisations in uncertain environments in order to reduce risk, or the desire of one organisation to mimic, or look like another), and normative (described as the result of professionalism of the organisational actors, such as managers and administrators, who are influenced by the pressure of cultural expectations). Therefore, the wider social and political dimensions and the regulatory and normative mechanisms proposed in institutional theory, offer a well balanced conceptual frame of reference for understanding institutional changes and the

associated challenges faced by e-government implementation. Moreover, institutional theory has multiple roots and variants that have been applied to many areas of study (Scott, 2001; DiMaggio and Powell, 1991; Kim *et al.,* 2009) that are similar to e-government (and that involve change).

3.1.2   Institutional Theory

According to Scott (2001), the work of Berger and Luckman in 1967 is the basis for modern institutional theory. Berger and Luckmann (1967a) argue that social reality is a human construction created through interaction. Furthermore, like other change theories, institutional theory has historically explained why organisational structures and values endure (Robey and Boudreau, 1999). However, "*Scholars have not agreed on [a] single and universal definition of an 'institution' in the institutional school*" (Bjorck, 2004:2). Scott (1995:33) attempts to define institutions and states that "*Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour. Institutions are transported by various carriers—cultures, structures, and routines—and they operate at multiple levels of jurisdiction*". Johansson (2002:17-18) identified institutions as "*...structures based on more- or- less taken for granted, formal or informal, rules that restrict and control (or support) social behaviour*".

Furthermore, Davis and North (1971) argue that an institution is surrounded by a set of social, political, economic and legal contexts. Institutional theory is considered most prominent in sociology (Jepperson, 1991; and Zucker, 1977), political science (Miranda and Kim, 2006; and March and Olsen, 1989), and economics (Hodgson, 1995; Williamson, 1985; 1981) literature.

Meyer and Rowan (1977) influentially argue that modern societies have many institutionalised rules which "*provide a framework for the creation and elaboration of formal organisations*" (Scott, 2001:117). Many of these rules are rationalised myths that are believed, but not testable. They originate and are sustained through public opinion, educational systems and laws. Furthermore, King *et al.,* (1994) and Butler and Murphy (1999) have used organisational and sociological perspectives to examine development, implementation and use of information systems and information technology (IS/IT) in organisations. Additionally, Scott (1987) and DiMaggio and Powell (1991) argue that institutional theory has numerous roots and has been adopted and applied to many areas of study. Furthermore, Bjorck (2004:1) argues that "*social and cultural forces are part of any environment and institutional*

theory fills these gaps. Thus, lots of the environmental forces on organisations are not based on efficiency or effectiveness but as a result on social and cultural forces".

According to literature, institutional theory consists of three mechanisms: regulatory (occurs as a result of the formal and informal pressure to conform to government in the form of rules or laws), mimetic (occurs as a result of organisations that try to be like other organisations in uncertain environments in order to reduce risk, or the desire of one organisation to look like another), and normative (described as the result of professionalism of the organisational actors, such as managers and administrators who are influenced by pressure of cultural expectations) (Scott 2005; Currie and Guah, 2007; DiMaggio and Powell, 1991; Kim *et al.,* 2009). Scott (2008) goes on to suggest that the organisation is institutionalised by the following contexts, social, cultural, legal or political, in terms of meeting the requirements to norms, values, rules and beliefs upheld by society. In terms of e-government, the three mechanisms outlined above offer a good framework for evaluating the pressures which relate to current legislation that specify laws and rules relating to e-services and other cultural influences that shape the behaviour and professionalism of public-sector employees. In terms of mimicking behaviour, it is fair to suggest that, unlike competitive commercial organisations, government institutions will be less motivated to adopt such behaviour to minimise risks. Therefore, the wider social and political dimensions and the regulatory and normative mechanisms proposed in institutional theory, offer a well-balanced conceptual frame of reference for understanding the institutional changes and associated challenges faced by e-government implementation.

Given the above discussion, it is evident that many studies have applied institutional theory to explore how organisations are institutionalised by social, cultural, legal, or political contexts in terms of meeting the requirements to the norms, values, rules, and beliefs upheld by society [e.g. see Scott (2005) and Currie and Guah (2007)]. Therefore, this research adopts a similar approach to study e-government related change by considering the key forces influencing implementation from organisational, technological, social and political themes. These factors are discussed below from an institutional theory lens where the theory is used primarily as a frame of reference for classifying the internal and external influences on e-government implementation.

3.1.3 Theme 1: Organisational Influence

Bjorck (2004:1) identified organisational influences in the context of institutional theory as *"a collection of ideas that together form a, somewhat consistent, perspective of the mechanisms supporting and restricting social behaviour"*. In this context, institutional theory is useful in describing the properties of the organisation and its behaviour (Kondra and Hurst, 2008). Further, the institutional approach to the study of organisations has led to significant insights regarding the importance of institutional environments to organisational structure and actions (e.g. Burns and Wholey 1993; Fligstein 1985; Goodstein 1994; Haveman 1993; Tolbert 1985: Tolbert and Zucker 1983; Mezias 1990). Institutional theorists have ascribed the institutionalisation of organisations to sources internal or external to the organisation (Zucker 1987). Following arguments advanced by Berger and Luckmann (1966), the internal-to-organisations perspective considers institutions as the persistent patterning of activities via social constructions by organisational members. In contrast, the external-to-organisations perspective considers the influence of forces emanating from the external environment on the persistent patterning of organisational activities (e.g., DiMaggio and Powell 1983; Meyer and Rowan 1977; Scott 1987). The organisational field includes *"those organisations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resources and product consumers, regulatory agencies, and other organisations that produce similar services or products"* (DiMaggio and Powell 1991: 64-65). Chiasson and Davidson (2004) argue that government classification schemes can be used to identify key organisational actors and to define boundaries of an organisational population or field. In 2006, Pedersen and Dobbin (2006) provided further explanation of how external institutional pressures can often reshape the culture of an organisation. Consequently, the most recent shape of any organisation is the indirect result of the transformations that are implemented to traditional services in response to pressures (e.g. cultural, technology, political) that have originated in the external environment (Kostova *et al.,* 2008; Bjorck, 2004).

The transformations that take place in government organisations and the resulting improvement to their services play an important role in e-government diffusion (Hoffman, 2001). Moreover, the rapid development of the internet and supporting ICT has the capability to increase the level of citizen/customer interaction with businesses and better develop awareness of the organisations that are involved in a particular domain (Kostova *et al.,* 2008). In an institutional theory sense, this will lead the organisation to deal with a wide range of users with multiple languages and

cultures and reduce any organisational barriers; overall, this will help to form an organisational structure that will perform better and deliver services that are more customer/citizen oriented (ibid).

3.1.4 Theme 2: Technology Influence

In the traditional literature of institutional theory, IT is conceptualised as unfolding within the changes of the structural and behavioural context of the organisation to desire better efficiency of its business processes (Bjorck, 2004; Teo *et al.,* 2003). Many researchers, such as Teo *et al.,* (2003) and Liang *et al.,* (2007) have considered institutional theory to study the affect of information technology on organisational business processes. The adoption of any new or innovative technology can often be explained by environmental influences that occur due to the various relationships of the organisation (e.g. with suppliers, customers and employees) (Teo *et al.,* 2003). Finally, those relationships and their norms are the main reason for the diffusion of new IT guidelines (Teo *et al.,*2003). The customers and suppliers norms are explained by many researches as 'normative pressures' (Kondra and Hurst, 2009; Mignerat and Rivard, 2005). However, according to Silva and Figueroa (2002), the pressure varies from one norm to another (i.e. pressure from customers is stronger than that of suppliers); but the combined pressure from suppliers, customers, employees and other influences was found to have a stronger impact on the adoption of technologies (ibid). Additionally, from the government's point of view, those pressures have led government to adopt online services and several features of ICT, such as security and privacy and using interoperability standards for building e-government systems (Silva and Figueroa, 2002).

More recently, institutional theory has been used to study the effects of internal and external influences on large scale IT implementation. For example, a study by Liang *et al.,* (2007) has pointed to the influence of top management in mediating the effect of institutional pressures on IT assimilation in large-scale enterprise systems. Other researchers, such as DiMaggio and Powell (1983), Haunschild and Miner (1997), Meyer and Rowan (1977) and Teo *et al.,* (2003) have all advocated the use of institutional theory for identifying and examining key institutional determinants of IT-based adoption. Bjorck (2004) proposes institutional theory for the stability of the institutional perspective in IS/IT security in organisations. Orlikowski *et al.,* (1995) argue that individuals employ institutional structures of signification, legitimization, and domination to make sense of the technology. Kim *et al.,* (2009) have used institutional theory as an analytical perspective to documents and to

evaluate the development of an e-government system (an anti-corruption system) in the Seoul Metropolitan government. The study by Teo *et al.,* (2003) utilises institutional theory as a lens to understand the factors that enable the adoption in information technology. Their study showed that institutional pressures have resulted in a significant influence on organisational intention to adopt a system, and the understanding of institutional pressures when investigating information technology innovations adoption.

3.1.5   Theme 3: Social Influence

Public organisations that have introduced electronic services, have done so by radically transforming their organisational structures using the latest innovations in technology (Bjorck, 2004). Barley (1986:79) defines social structure as *"patterned action, interaction, behaviours, and cognition."* Davidson and Chismar (2007:741) posit that social structures often *"become a taken for granted aspect of social life".* Given this context, institutional theory explains how external pressures can control the input processes of an organisation, resulting in actions that would ultimately increase the quality of services and improve customer satisfaction. By gaining customers' satisfaction, organisations will be able to reduce any negative external pressure of social behaviour within an e-government context. This procedure will help public organisations to transform from traditional services to online services with respect to social behaviour. Worthy of note here is the result that transformation will have on the implementation of new rules, procedures and organisational processes that relate to and shape social behaviours (Liang *et al.,*2007; Teo *et al.,* 2003).

DiMaggio and Powell (1983) and Teo *et al.,* (2003) argue that, regardless of the technical value of innovation, an organisation may itself cope after a movement of other organisations to obtain status presenting social fitness in a social structure. King *et al.,* (1994) claim that an institutional environment is a social system that makes use of influence and regulation over other social entities as a constant feature of social life. On the other hand, Kondra and Hinings (1998) attempt to develop a taxonomy of organisations within an institutional environment in order to conceptualise how organisations respond to violations of institutional norms and the resultant implications these actions have on the potential for change. Finally, according to Kim *et al.,* (2009) organisations often take action as they are expected to follow industry norms rather than economic considerations.

The social dimensions of e-government related institutional change have been identified by a number of scholars such as Kim *et al.,* (2009); Al-Gahtani *et al.,* (2007); and Yildiz, (2007). In addition, Heeks (2005; 53) argues that *"e-government is connected to the social context in which it is deployed. This can be seen firstly in the way that technology can impact that social context"*. Moreover, Liao and Jeng, (2005: 505) argue that *"Public administration involves planning and implementing various policies in order to solve various complex problems posed by the social, political, and economic environment"*. Therefore, significant social, organisational and technical challenges will need to be understood well and to prevail over those efforts that attempt to accomplish governmental transformation (Affisco and Soliman, 2006). This is particularly significant as *"what looks like technologically determinist research to one person might look like socially determinist research to another"* (Heeks and Bailur, 2007: 245). Therefore, given the close association of these two dimensions on e-government, a closer examination of institutional theory and how it may facilitate a better understanding of the evolving concept of e-government, requires further merit.

3.1.6 Theme 4: Political Influence

According to the traditional view, institutional theory relates to forming new rules, procedures, arrangements and actions which are required to develop a successful organisation (Shepsle, 1986). Those new actions and arrangements will influence the decisions and behaviour of leaders and decision makers in the organisation (O'Donnell *et al.,* 2003). Strong government support, political leadership and legal and regulatory issues are essential at all levels of government in order to achieve public sector transformation. This leadership must include people who understand the e-government vision and its impact on the local, regional and national aspects of government (O'Donnell *et al.,* 2003). Once the organisation is transformed, the new shape of the organisation will influence existing social norms and legal procedures; and members of society (citizens in the case of e-government) will be influenced by those new rules and procedures (DiMaggio and Powell, 1991; Scott, 2001). Therefore, organisational practices and policies become readily accepted as legitimate and rational means to attain organisational goals (Meyer and Rowan 1977).

DiMaggio and Powell (1991: 66) note that *"organisations compete, not just for resources and customers, but for political power and institutional legitimacy, for social as well as economic fitness."* They define institutional isomorphism as the

process of homogenisation among members of an organisational population arising from regulative and normative pressures and from professional governance. In the study by Kim *et al.,* (2009), it was found that the implementation of an open e-government system has shown that regulatory dimension was most effective and strong leadership was crucial to its success. On a different note, Keohane and Martin (1995) use institutional theory to explore how international relations work between countries and between international organisations.

The new actions and arrangements that are influenced by organisational change that takes place because of e-government are likely to impact the decisions and behaviour of leaders and decision makers in the organisation (Irani *et al.,* 2003). Therefore, strong government support, political leadership and legal and regulatory issues are essential at all levels of government in order to achieve public sector transformation. This leadership must include people who understand the impact of ICT on public sector change and its impact on the community (Andoh-Baidoo and Osatuyi, 2009; Weerakkody and Dhillon, 2008;Irani *et al.,* 2003). In the study by Kim *et al.,* (2009), the authors found that the implementation of open electronic systems in the public sector has shown that regulatory dimension was most effective and strong leadership was crucial to its success.

3.1.7 Factors Influencing E-government Implementation: The E-government Literature Perspectives

From an e-government implementation perspective, many challenges and themes have been discussed in 'e-government' literature. Yet, very few studies have used a formal theoretical basis to explain how and why they have classified these challenges/themes in a certain and/or particular manner. A close examination of the e-government literature reveals that, although different researchers have identified various factors that influence e-government implementation, these factors can be broadly classified under the four broad themes of organisational, technological, social, and political, as discussed above from an institutional theory perspective. In order to better understand the makeup and influence of these four broad themes on e-government implementation, current e-government literature is examined in detail to identify what challenges and complexities can be classified under each of the themes. This literature analysis is outlined below.

3.1.7.1 Organisational Factors Influencing E-Government Implementation

Organisational Structure

Organisational structure is seen as the way that organisations separate the responsibility relationship that holds a structure together and how to coordinate it (Strens and Dobson, 1994). Jackson and Morgan (1982:81) define organisational structure as: *"the relatively enduring allocation of work roles and administrative mechanisms that creates a pattern of interrelated work activities and allows the organisation to conduct, coordinate, and control its work activities".* In the context of e-government, public sector agencies will be encouraged to make fundamental changes that will require radical reengineering of work processes in a manner that has not been encountered before (Weerakkody and Dhillon, 2008; Janssen and Shu, 2008; Al-Mashari, 2006;Scholl, 2003; 2005). In addition, Layne and Lee (2001) state that, as e-government become more established, the organisational structure of public agencies may be changed accordingly into two main aspects, internal and external. These changes might raise some challenges, like resistance to change as the public employees get suspicious about the threat to their jobs by the use and adoption of these technologies (Al-Shehry *et al.,* 2006).

Power Distribution

The implementation of a new IS/IT environment to facilitate e-government will involve major organisational change and shift of power within the organisation (Weerakkody and Dhillon, 2008; Norris *et al.,* 2001). Additionally, the implementation of new IS/IT in public organisations may result in user (government employee) resistance (Doherty and King, 2005), as well as employees losing their authority and power over traditional business processes. Those employees, who feel a loss of power or control, will try to resist the e-government project because it is seen as a threat to their skills, power and position (Doherty and King, 2005; Heeks, 1999).

Information System Strategy Alignment

Information systems strategy facilitates and leads organisations in their information systems development work. According to Basu (2004), the strategic objective of e-governance is to support and simplify governance for all stakeholders including government, citizens, and businesses. Therefore, a comprehensive e-government strategy is essential to effectively and efficiently deliver the successful implementation of online public services (Pilling and Boeltzig, 2007).

Prioritisation of Deliverables

If the e-government services, their deliverables and relationships with their stakeholders and customers, are not prioritised, e-government projects are likely to face major challenges, such as loosing citizens' confidence and satisfaction (Lee *et al.,* 2008). This will result in a delay of take up / adoption of new services (Rotchanakitumnuai, 2008; AlHamidah, 2007). Furthermore, in terms of project management, prioritisation of deliverables will ensure that the most strategically significant services are managed and delivered appropriately.

Future Needs of the Organisation

E-government projects are viewed as a set of activities that start with the project and ends with it (Marchewka, 2006). Moreover, an e-government project is a long-term initiative. Therefore, according to Ebrahim and Irani (2005), the adoption and implementation of e-government systems need time and appropriate models to support that implementation.

Organisational Culture

Hofstede (1998) identifies organisational culture as groups of programming in the brain which differentiate members of different organisations. According to Irani *et al.,* (2005), e-government implementation might be affected by the variety of organisational culture issues. Therefore, governments are required to be ready for these changes and consequently adopt new strategies for e-government initiation (Burn and Robins, 2003). Moreover, Zarei *et al.,* (2008) specify that the creation of a public culture is vastly different from the physical infrastructure. Weerakkody and Choudrie (2005) revealed that the paradigm shift and change of culture that is introduced by e-government may result in some resistance. According to Coombs *et al.,* (1992) culture exposes the socially-organised character of the practices which comprise organisational life. Such practices are irremediably supported by a web of meaning, mobilised by organisational members as they orientate themselves to their work. The above authors recognise the different dimensions and wide-ranging implications of culture in terms of technology implementation. However, it is beyond the scope of this paper to examine all the various and different dimensions of culture in the context of e-government.

Training

In an e-government context, training is one of the most fundamental issues where employees and managers need to get familiar with work under the new circumstances, and to be prepared for changes (Zarei *et al.,* 2008; Clegg *et al.,* 1997). Given the rapid advancement in technological innovations, skills in using a particular technology can quickly become obsolete. Therefore, education and training employees on the new technologies would lead them easily to change (Weerakkody and Choudrie, 2005). Training is considered an important factor that is expected to influence the implementation and results of success is the extent to which resources and training are provided to support the implementation (Kwon and Zmud, 1987). If training resources are not sufficient, this may result in a decrease of normal development procedures, and lead to an increasing risk of failure (McGowan and Klammer, 1997). Moreover, Heeks and Davies (1999:32) specify that *"Senior public officials - both managers and politicians often lack IT skills and even IT awareness"*. In this context, e-government officials must consider training and education as one of the most imperative factors influencing the success of e-government implementation (Read and Kleiner, 1996). Finally, and on a defining note, scholars like Kwon and Zmud (1987) and Anderson and Young (1999) argue that there is a positive relationship between training and implementation success.

3.1.7.2 Technical Themes Influencing E-government Implementation

Information Technology (IT) Standards:

Technology standards are an important requirement for e-government implementation. The literature has identified many obstacles that impede collaborative efforts between government agencies (Fedorowicz *et al.,* 2009; Joia, 2007). It is common for different government agencies to have different, incompatible hardware and software that may not work, integrate and interoperate together; this may lead to e-government implementation difficulties. According to Layne and Lee (2001), e-government implementation is expected to provide the access to citizens and other users from one single integrated gateway. Also, it requires participating government agencies to share their data to serve and achieve the citizens or e-government system users' needs. Therefore, information technology standards are needed to avoid any hardware and system barriers that would hinder the implementation of e-government systems. Keen and Klahr (1991) defines standards as agreements of procedures, formats and interface standards that assist system and hardware designers to develop new services differently from each other,

but which can be well-suited and compatible with each other if required. Nyrhinen (2006:10) argues that IT standards *"dictate how IT assets are to be acquired, managed, and utilized within the organisation. Standards act as the glue that links the use of physical and intellectual IT assets"*. Therefore, to conclude, for a successful implementation of e-government to occur, IT standards should be considered as a main and effective factor from an e-government implementation perspective.

Security and Privacy

Wilford (2004) argues that researchers in the field of e-government consider security and privacy as one of the key challenges for the implementation of an e-government system. Security issues commonly consist of computer security, privacy and confidentiality of personal data (Al-Khouri and Bal, 2007; Smith and Jamieson, 2006 ;Layne and Lee, 2001). Conklin and White (2006) justify that information that is stored in databases and systems, remains very valuable. In this case, security and privacy issues should be monitored and reviewed continuously. Underestimating the importance of this factor can result in unauthorised access to sensitive information and loss of citizens' trust, which might lead to e-government implementation failure. Therefore, building a solid trust environment by providing a high level of data privacy, data integrity and user authorisation, will ensure electronic transaction security and online identity authentication (Al-Khouri and Bal, 2007; Conklin and White, 2006). Common security services include public key infrastructure (PKI), electronic signature, passwords, biometrics, and policy enforcement mechanisms (Kaliontzoglou *et al.*, 2005). Zweers and Planque (2001) specified that security and privacy are counted in the USA e-government implementation as one of the four most important issues.

System Integration

Layne and Lee (2001) divide system integration into two types: vertical and horizontal. They explain that vertical integration is where local systems are linked to higher level systems and within smaller functionalities, whereas, horizontal integration integrates a system across different functions which would provide a full and real 'one stop shop'. This integration assumes that all participant agency efforts are joined (Al-Khouri and Bal, 2007). Furthermore, the more complex and transformational e-government developments (Baum and Di Maio, 2000), the more integration is required among internal and external applications (Zarei *et al.*, 2008; Weerakkody and Dhillon, 2008; Baum and Di Maio, 2000). Al-Khouri and Bal

(2007:94) argue that *"overall system integration is one of the biggest obstacles in e-government implementation"*. Many researchers have stated that e-government systems need to link vertically and horizontally between front- and back-office information systems in different government agencies for effective one-stop delivery of online services (Kamal *et al.*, 2009; Elsheikh *et al.*, 2008; Weerakkody *et al.*, 2007b; Al-Sebie and Irani, 2005; Layne and Lee, 2001).

E-government Portal and Access

As in e-business, the success of online services in e-government depends on the mechanism and payment process that is in place for services rendered by the government (Wittmann *et al.*, 2007). In online payment systems, the widespread availability of a payment gateway service 24 hours a day, 7 days a week is one of the major benefits to users (Deakins and Dillon, 2002). Trkman and Turk (2009:417) state that *"the assurance of a suitable institutional environment ('the rule of law', credible payment channels etc.), is an important prerequisite for the usage"*. Moreover, the payment method in online transactions has to be dynamic and secure and accessible from anywhere in the world. For example, in Germany, the use of "Geldkarte" payment is only possible inside Germany and not internationally, as the payment process involves inserting a card into a card reader, which is located only in Germany (Wittmann *et al.*, 2007).

3.1.7.3 Social Themes Influencing E-government Implementation

Citizen-Centric Focus

E-government is about using new technology to develop better, more accessible citizen- focused government services (Al-Shehry *et al.*, 2006; Al-Sebie and Irani, 2005). Therefore, e-government activities should focus on citizens needs and deliver services that add value to the citizen (Parent *et al.*, 2005). Misra (2007) argues that citizen-centric government is one of many important criteria that make e-government unique from traditional forms of service delivery. Additionally, Misra (2007: 11) states that *"it is necessary to define e-government afresh and propose a citizen-centric, criteria-based definition of e-government as a lodestar to guide the efforts of e-government policy makers and implementers"*. According to Undheim and Blakemore (2007:23), e-government is concerned more with the process of 'customer insight': *"Insight can be defined as 'a deep 'truth' about the customer, based on their behaviour, experiences, beliefs, needs or desires, that is relevant to the task or issue and 'rings bells' with target people."*

Awareness

The general population (or citizens) often have limited awareness about what e-government is and what its benefits are (Al-Omari, 2006). This lack of awareness might prevent the citizen from participating in e-government services (Reffat, 2003). Therefore, the growth and implementation of e-government will greatly depend upon marketing and awareness (Reffat, 2003; Navarra and Cornford, 2003; Bhattacherjee, 2002). Moreover, Morris and Venkatesh (2000) specify that older people often lack awareness and have limited trust in technology. Additionally, Fang (2002) mentioned that governments often tend to cooperate more with the elderly due to the generation gap and lack of expertise in the use of modern technology. Therefore, it is imperative that, *"the importance of e-government services are exploited and their benefits emphasised to the citizens"* (Choudrie *et al.,* 2005:565). Given this context, strong campaigns are needed to promote e-government in order to achieve more citizen participation and to achieve successful implementation. These campaigns would motivate and raise citizens' awareness of e-government initiatives. Examples of such campaigns may include government sponsored seminars and workshops, mailing newsletters, displaying posters and banners to citizens in public malls, and so forth. Also, advertising through public media services about e-government benefits would encourage citizens to be more involved, convince them to use e-government, and raise awareness about participating in e-government services (Weerakkody and Choudrie, 2005).

The Digital Divide

Digital divide occurs in the gap between those who are able to access and use ICT, and those who are not, between different ethnic, gender, age, income, language and social divides (Im and Seo, 2005; Caldow, 2001). On the other hand, Silcock (2001:7) emphasises that *"Digital divide is not so much a question of access, but of education. You can put computers in libraries, for example, but they are not going to be used by those who do not have the know-how"*. Marchinonini *et al.,* (2003) categorise digital divide into three types: access to information; transaction services; and citizen participation. Thus, e-government officials should be aware of the 'Digital Divide' that exists, and they can help in providing multi channels of access to new technology. Providing computer literacy education to citizens, especially to the elderly and less computer-literate users, will ensure that the digital divide will be minimised (MIIIT, 2006). Helbig *et al.,* (2009) argue that e-government and the digital divide are intertwined social phenomena theoretically and practically. Additionally, they specify that *"the market will eventually close the*

"perceived" gap over time and that public intervention is not necessary" (Helbig *et al.,* 2009:91). Moreover, some scholars specify that digital divide can come in different forms: a) global divide, (b) social divide, (c) democratic divide, d) skills divide and e) economic opportunity divide (Mossberger *et al.,* 2003; Norris, 2001).

3.1.7.4 Political Themes Influencing E-government Implementation

Government Support

Apart from government top management commitment, support is strongly required throughout the implementation of an e-government project. It needs continuous approval and commitment from a high authority to sustain and to continue without any unanticipated delays or project failures (Heeks, 2003). Authors such as Weerakkody and Dhillon (2008), Kurunananda and Weerakkody (2006) and Irani *et al.,* (2007) suggest that top managers should fully understand the strategic objectives of e-government and the associated benefits. Furthermore, the involvement and support of the government's top authorities would enable e-government officials to implement the project with more confidence. This will result in higher levels of success and avoid problems such as resistance to change, unclear position, and top management uncertainty of the e-government project (Zarei *et al.,* 2008; AlTameem *et al.,* 2006). Chen and Gant (2001: 343) argue that *"continual top management support is necessary for dealing with possible initial resistance and ensuring interdepartmental communication and cooperation".*

Funding

Researchers such as Okiy (2005) and Eyob (2004) argue that the importance of funding superior services cannot be over-accentuated. Funding facilitates the infrastructure (such as building, technology, human resources) that is needed to implement e-government and helps attain the associated targets and milestones in terms of e-government implementation. Moreover, Gottipati (2002) argues that the way e-government projects are being reviewed and funded in the Arabian gulf is that such projects appear to seen as budget-based instead of seeing those projects as project-based budgets. Also, as mentioned previously, e-government initiatives are long term projects, and therefore, they need long term financial support from the government. Furthermore, Eyob (2004) states that it is a major challenge, especially when the funding has to come from a government where political influence may interfere with decisions taken by high level officials (ibid).

Leadership

Leadership in an e-government context is closely linked with the political context as success depends on the level of commitment and innovative vision shown by politicians (or government officials) who govern a country at the time of e-government implementation (Heeks and Stanforth, 2007). Murphy (1996; 1) defines leaders as: *"people to whom others turn when missions need to be upheld, breakthroughs made, and performance goals reached on time and within budget"*. E-government projects are long-period projects, and thus need strong leadership in order to avoid most challenges. Research has identified leadership and vision as main factors for the success of e-government projects (Elnaghi *et al.,* 2007; Ke and Wei, 2004; Jaeger and Thompson, 2003). In this respect, innovative leaders provide innovative solutions for citizens and businesses (Hunter and Jupp, 2001). Likewise, Denison *et al.,* (1995) state that effective leaders express more complex and contradictory behaviour than ineffective leaders. Zairi (1994:9) claims that *"Nowadays leadership is considered as a must for survival. It comes from the level of inspiration, commitment generated and corporate determination to perform."*

Legislation and Legal

Akomode *et al.,*(2002:45) state that *"the concept of e-government is radically changing the way the public sector is doing business, new legal issues continue to arise"*. The e-government system requires many regulations and legislative acts to cope with the changes that are caused by e-government systems. These legislations may include electronic signatures, archiving data protection, preventing computer crimes and hackers, and the Freedom of Information Act. Heeks (2001) clarified that regulatory changes are required for a host of activities, from procurement to service delivery. Moreover, legal risks in terms of technology may expose public agencies to serious liabilities (Watts, 2001), and therefore new e-service legislative acts have to be developed and updated periodically to avoid unexpected results or the delaying of projects. Failure to do so may result in e-government progress being severely delayed and hindered. A good example of this is in the UK, where, according to Bonham *et al.,* (2003) e-government progress is hindered by the data protection and privacy laws that prevail in the country.

Drawing from the aforementioned theoretical arguments which were drawn from institutional theory and the literature on e-government research, a conceptual taxonomy that maps the key factors influencing the implementation of e-government under the four broad themes of organisational, technology, social, and political is proposed in Table 3.1.

Table 3.1: A Taxonomy of Factors Influencing E-government Implementation			
Themes	**Factors Impacting E-government Influenced Public Sector Change**	**Description**	**E-government and Public Sector References**
Organisational	Organisational structure	The relatively enduring allocation of work roles and administrative mechanisms that creates a pattern of interrelated work activities and allows the organisation to conduct, coordinate, and control its work activities.	Kim *et al.,* (2009); Weerakkody and Dhillon, (2008); Janssen and Shu, (2008); Al-Mashari, (2006); Scholl, (2003; 2005); Strens and Dobson, (1994); Jackson and Morgan (1978).
	Power distribution	user (government employee) resistance as well as employees losing their authority and power over traditional business processes.	Weerakkody and Dhillon, (2008); Doherty and King, (2005); Norris *et al.,* (2001); Heeks, (1999).
	Information system strategy alignment	Alignment of strategies between different Information systems	Pilling and Boeltzig, 2007; Basu, 2004).
	Prioritisation of deliverables	prioritisation of deliverables which will ensure the most strategically significant services are managed and delivered appropriately in time.	Lee *et al.,* (2008); Pilling and Boeltzig, (2007); Basu (2004).
	Future needs of the organisation	project is a long-term initiative, and the adoption and implementation of e-government systems need time and appropriate models to support that implementation for the future needs of the organisation.	Marchewka, (2006); Ebrahim and Irani (2005).
	Organisational culture	groups of programming in the brain which differentiate members of different organisations.	Zarei *et al.,* (2008); Weerakkody and Choudrie (2005); Irani *et al.,* (2005); Burn and Robins, (2003); Hofstede (1998).
	Employees training	employees and managers need to get familiar with work under new circumstances, and to be prepared for changes.	Zarei *et al.,* (2008); Weerakkody and Choudrie, (2005); Heeks and Davies (1999); Clegg *et al.,* (1997).
Technological	Information Technology (IT) standards	IT assets are to be acquired, managed, and utilized within the organisation and ct as the glue that links the use of physical and intellectual IT assets.	Nyrhinen (2006); Shin, (2007); Layne and Lee (2001); Keen and Klahr (1991).
	Security and privacy issue	Security issues that consist of computer security, privacy and confidentiality of personal data.	Al-Khouri and Bal, (2007); Smith and Jamieson, (2006); Conklin and White (2006); Kaliontzoglou *et al.,* (2005); Layne and Lee, (2001).
	System integration	integrates a system across different roles that provide a full and real 'one stop shop'. This integration assumes that all participant agency efforts are joined together.	Kamal *et al.,* (2009); Zarei *et al.,* (2008); Weerakkody and Dhillon, (2008); Elsheikh *et al.,* (2008); Al-Khouri and Bal, (2007); Baum and Maio, (2000).

	E-government portal and access	Portal access and availability of a payment gateway service 24/7.	Trkman and Turk (2009); Rubaii-Barrett and Wise, (2008); Wittmann *et al.,* (2007); Deakins and Dillon, (2002).
Political	Government support	top management commitment, support. Furthermore, the involvement and support of the government's top authorities that would enable e-government officials to implement the project with more confidence.	Kim *et al.,* (2009); Weerakkody and Dhillon (2009); Zarei *et al.,* (2008); Madon *et al.,* (2007); Kurunanada and Weerakkody (2006); Altameem *et al.,* (2006).
	Funding	E-government initiatives are long term projects, therefore, these projects need long term financial support from the government.	Madon *et al.,* (2007); Okiy (2005) ;Eyob (2004); Gottipati (2002).
	Leadership	government officials or politicians to whom others turn when missions need to be upheld, breakthroughs made, and performance goals reached on time and within budget.	Kim *et al.,* (2009); Madon *et al.,* (2007); Elnaghi *et al.,* (2007); Heeks and Stanforth, 2007); Ke and Wei (2004); Jaeger and Thompson (2003); Murphy (1996).
	Legislation and legal	regulations and legislative that acts to cope with the changes that are caused by e-government systems and include e-signatures, archiving data protection, preventing computer crimes and hackers, and the freedom of information.	Kim *et al.,* (2009); Rubaii-Barrett and Wise, (2008); Madon *et al.,* (2007); Heeks (2001); Bonham *et al.,* (2003).
Social	Citizen centric	E-government activities that focus on citizens needs and deliver services that add value to the citizen.	Misra (2007); Undheim and Blakemore (2007); Al-Shehry *et al.,* (2006); Al-Sebie and Irani, (2005); Parent *et al.,* (2005).
	Awareness	Awareness campaigns that promote e-government services to achieve more citizen participation and to achieve successful implementation.	Rubaii-Barrett and Wise, (2008); Madon *et al.,* (2007); Al-Omari, (2006); Choudrie *et al.,* (2005); Weerakkody and Choudrie, (2005).
	Digital divide	digital divide that includes access to information; transaction services; and citizen participation.	Rubaii-Barrett and Wise, (2008); Madon *et al.,* (2007); Shin, (2007).

3.1.8   A Conceptual Model for E-government Implementation in Qatar

The literature and theoretical analysis offered above and their close connection with institutional theory offers the basis for proposing a conceptual model that maps the organisational, technology, social and political themes in Figure 3.1. This model offers the frame of reference for conducting the empirical research in this thesis, discussed in Chapter 5, to explore the factors influencing e-government implementation in a Qatari context (Figure 3.1). In particular, the conceptual model will offer the overall structure and guidance on the key lines of inquiry for exploring the external and internal challenges facing the Qatari government (institutions) during their e-government implementation initiative.
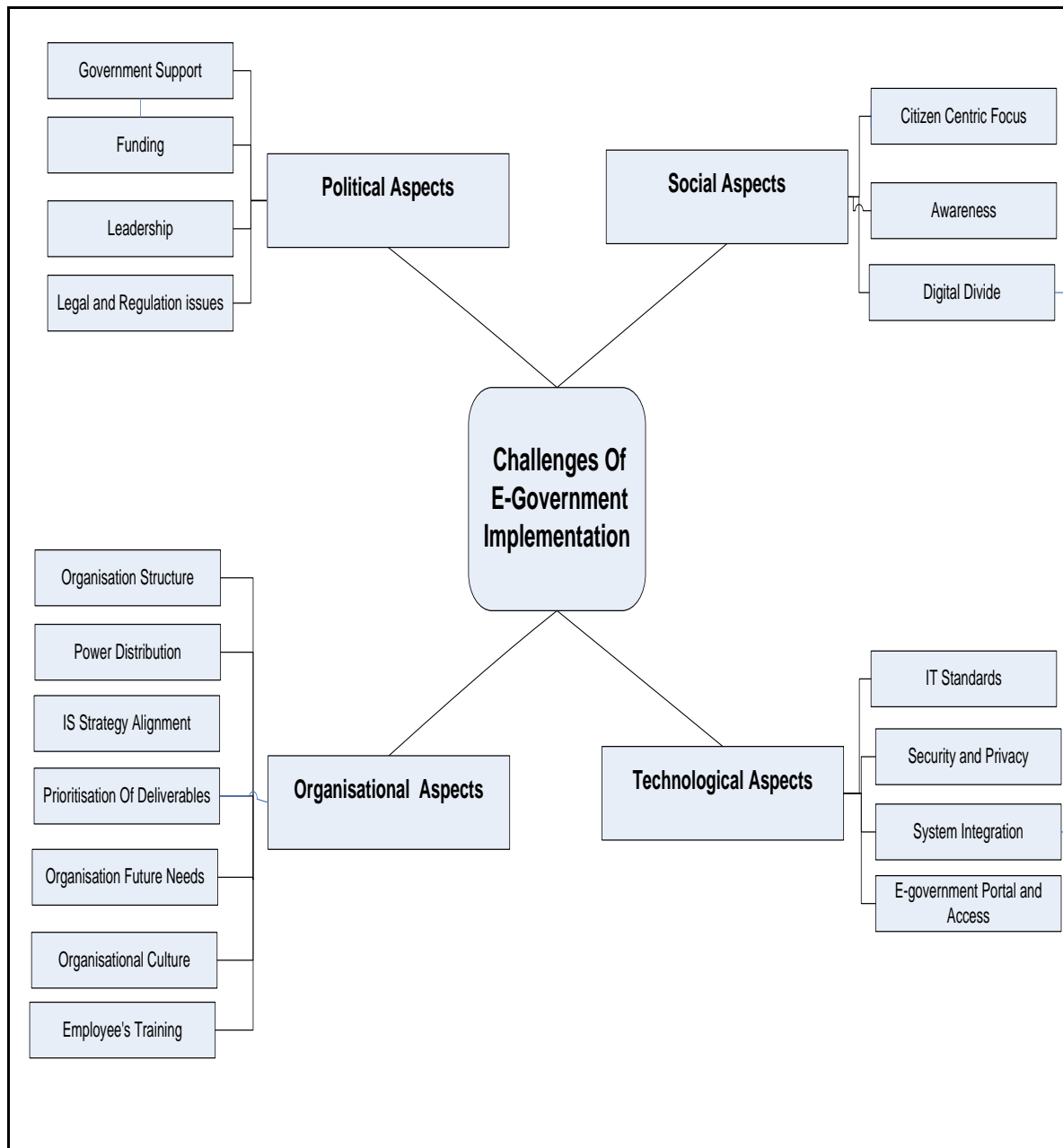
Figure 3.1: A Conceptual Model for Understanding E-government Implementation in Qatar

The conceptual model in Figure 3.1 mirrors the findings of many of the e-government studies that have discussed implementation challenges (see for example, Al-Shafi and Weerakkody, 2008a; 2008b; 2009a; 2009b; Weerakkody and Dhillon, 2008; Faisal and Rahman, 2008; Al-Sebie and Irani, 2005; Choudrie *et al.,* 2005; Zakareya and Irani, 2005; Wheelen and Hunger, 2002; Layne and Lee, 2001). Furthermore, the theoretical context offered previously in terms of change management theories that are relevant for e-government, and in particular that of institutional theory, support the key themes mapped in the conceptual model. Whereas the conceptual model reflects the implementation related factors or

challenges facing e-government, the success of any implementation can only be evaluated against the adoption of the services implemented. As outlined in Chapter 1 (Section 1.3) one of the objectives of this research is to explore what relationships exist between the various facets of implementation and adoption, in other words the connections and gaps between the service provisioning or provider (government institutions) and usage or user (citizens). While this section analysed the implementation aspects, the next section will examine the adoption of factors influencing e-government.

3.2 E-government Adoption: The Citizens' Perspective

Like any other new technology or organisational concept, the introduction of e-government to a country will also result in a number of challenges for the citizens and the government alike as a lack of access to e-services, security concerns, trust, individual differences, and digital divide, are challenges that can impact on participation and thereby obstruct the adoption of e-government services.

This section highlights the need for studies that investigate the adoption and citizens' behaviour of e-government services and examines the theories that explain technology adoption that are relevant for this research. In addition, it proposes a conceptual model that maps the key factors influencing e-government adoption from a citizen's perspective.

3.2.1   Technology Adoption Theories

The study of adoption, and its usage, is considered to be a mature area of research within the IS discipline (Venkatesh *et al.,* 2003; Benbasat and Zmud, 1999; Hu *et al.,* 1999). Over the last three decades, a number of researchers have adopted, modified and validated many theoretical models in order to understand and predict technology acceptance and usage (Venkatesh *et al.,* 2003; Benbasat and Zmud, 1999; *Hu et al.,* 1999). The models that have been taken and used from another discipline and developed by IS researchers, include the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975); the Theory of Planned Behaviour (TPB) (Ajzen, 1991; 1988; 1985; Ajzen and Fishbein, 1980); the Technology Acceptance Model (TAM) (Davis, 1989; Davis *et al.,* 1989); and the Diffusion of Innovation Theory (DOI) (Rogers, 1995). Venkatesh *et al.,* (2003) argue that researchers are able to choose a suitable and favoured model and ignore the contributions from alternative models. This led Venkatesh *et al.,* (2003) to review, discuss and integrate elements across eight prominent user acceptance models (TRA, TAM, the Motivational model, TPN, a model combining the Technology acceptance model and the TPB; MATH, DOI, and the Social cognitive theory) that resulted in proposing the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.,* 2003). Some of these theoretical models are considered and believed to be the most robust and significant in describing IT/IS adoption behaviour (ibid).

The following paragraphs offer a brief explanation of these technology acceptance theories.

3.2.1.1 Theory of Reasoned Action (TRA)

Ajzen and Fishbein developed this behavioral theory in 1980. This model is to be considered the backbone of studies associated with attitude behaviour and it is widely used in academic and business research (Ajzen and Fishbein, 1980). The theory of reasoned action (TRA) has two determinants on intention attitude toward behaviour and subjective norms associated with behaviour. This theory is a general research intention theory that has been used to explain and predict human behaviour (Ajzen and Fishbein, 1980). Suh and Han (2003) claim that this theory is used by information systems researchers to study the determinants of IT innovation-usage behaviour. Most literature related to technology acceptance, initiated studies with the theory of reasoned action.

3.2.1.2 Theory of Planned Behaviour (TPB)

This theory (TPB) was developed by Ajzen in 1985 and was proposed as an extension to the TRA. The TPB introduced a third independent determinant of intention, called perceived behaviour control, in addition to the two TRA determinants (Ajzen, 1985, 1991). It was proposed to influence behaviour, in addition to attitudes, toward use, subjective norms and perceived behavioural patterns. In essence, TPB is a theory that predicts intentional behaviour, and Chau and Hu (2002) claim that TPB is considered to be more general than TRA, because of the added determinant, perceived behaviour control.

3.2.1.3 Innovation Diffusion Theory (IDT)

Innovation diffusion theory (IDT) has been used since the 1960s to describe and study innovations ranging from agricultural tools to organisational ending to Information Systems (Lu *et al.,* 2003). IDT has been gradually modified and developed, until the best model was introduced by Rogers (1962; 1995).

The Rogers (1995) model has five stages:

- Knowledge occurs when an individual is exposed to an innovation and knows how it functions.

- Persuasion occurs when an individual forms a favourable or unfavourable attitude towards the innovation.

- Decision occurs when an individual becomes engaged in activities which conclude in the decision of implementing, or rejecting, the innovation.

- Implementation occurs when an individual moves an innovation into use.

- Confirmation occurs when an individual would like to strengthen him/herself for an innovation already made, or reverses an earlier decision to adopt.

3.2.1.4 Technology Acceptance Model (TAM)

The Technology acceptance model (TAM) is adapted and transferred from the TRA to the field of information systems. Davis developed TAM in 1989 (Davis, 1989) and uses TRA as a theoretical basis for specifying the linkages between two key beliefs: perceived usefulness and perceived ease of use and users' attitudes, intentions and actual usage behaviour. According to Davis *et al.,* (1989), the main goal of the model is to offer an explanation of the determinants of computer acceptance, which eventually transformed in to an explanation of user behaviour across a broad range of end-user computing technologies and user populations (ibid). In addition, another key focus of TAM is to provide a base for determining or exposing the impact of external variables on internal beliefs, attitudes, and intentions. During the last few years, TAM has received extensive support through validation, applications and replications for its power to predict use of information systems (Al-Shafi and Weerakkody, 2008; Cheng *et al.,* 2006).

Additionally, TAM is considered to be a well-established, well-tested, powerful, robust and parsimonious model for predicting user acceptance of technology (Venkatesh and Davis, 2000). Some examples of these technologies are electronic mail, text editors, and word processing systems and graphics software.

3.2.1.5 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh *et al.,* (2003) unified and completed the various models of IT acceptance and they integrated the elements of eight well-known models (TRA; TAM; Motivational model (MM); TPB; the combined TAM-TPB; model of PC utilization; Innovation diffusion theory (IDT); and Social cognitive theory (SCT) into a Unified Theory of Acceptance and Use of Technology (UTAUT).

UTAUT provides enormous improvement to our understanding of user acceptance. However, the early UTAUT study focused on large organisations.

TAM has received extensive support through validation, application and replication for its power to predict use of information systems (IS) and is considered to be the most robust and influential model explaining IS adoption behaviour (Davis, 1982;

Davis *et al.,* 1989; Davis and Venkatesh, 1996; Lu *et al.,* 2003). On the other hand, it has been found that TAM excludes some important sources of variance and does not consider challenges, such as time or money constraints as factors that would prevent an individual from using an information system. In addition, TAM has failed to provide meaningful information about the user acceptance of a particular technology due to its generality (Matheison *et al.,* 2001). Consequently, a number of modified TAM models were proposed, which are applicable to contemporary technologies (Horton *et al.,* 2001; Chau and Hu, 2001). However, researchers are confronted with a choice among a multitude of models. Hence, a new model was developed to address these limitations (UTAUT). The aim of this model is to understand intention/usage as a dependent variable (Venkatesh *et al.,* 2003). The research model used in this thesis to examine the citizens' adoption of e-government is UTAUT.

The UTAUT model consists of eight theoretical models: the Theory of reasoned action (Davis *et al.,* 1989), the Technology acceptance model (Davis,1989), the Motivational model (Davis *et al.,* 1992), the Theory of planned behaviour (Ajzen, 1991), a model combining the Technology acceptance model and the Theory of planned behaviour (Taylor and Todd, 1995), the model of PC utilization (Thompson *et al.,* 1991), the Innovation diffusion theory (Rogers, 1995), and Social cognitive theory (Compeau and Higgins, 1995). The UTAUT model combines these theoretical models and is made up of four core determinants of usage intention. Additionally, the UTAUT model has been found to be preferred to the abovementioned theoretical models, as it is able to account for a higher percentage of the variance (R^2) in usage intention (Venkatesh *et al.,* 2003).

Venkatesh *et al.,* (2003) tested the unified theoretical model in four different organisational settings for a period of six months and the study showed significant predictions of intention (performance expectancy, effort expectancy, social influence and facilitating conditions), whereas attitude toward using technology, self-efficacy and anxiety were theorized not to be direct determinants of intention.

3.2.2 Research Model and Hypotheses for E-government Adoption in Qatar

Based on the aforementioned literature, the following adoption factors from the UTAUT model together with literature in the domain of e-government and e-participation are included: performance expectancy, effort expectancy, social influence, facilitating conditions, intention to use and e-government use behaviour. As discussed above, these constructs have been established in the literature as salient predictors of technology acceptance (Dwivedi and Irani *et al.,* 2009; 2008a; AlAwadhi and Morris, 2008; Al-Shafi *et al.,* 2009; Al-Shafi and Weerakkody, 2008a; 2009; He and Lu, 2007; Venkatesh *et al.,* 2003; Wang, 2003). These constructs have assumed various names in e-government literature which are clearly sign-posted in the literature analysed previously. In this study, we use the names presented by Venkatesh *et al.,* (2003) in UTAUT. A further discussion of each construct is provided in the next section, while formulating hypotheses for this research.

This study proposes the model which posits that performance expectancy, effort expectancy and social influence all have a significant impact on intention to use e-government services. Furthermore, 'intention to use' and 'facilitating conditions' both have significant influence on usage behaviour (of e-government services). The following subsections provide descriptions of each construct, along with the theoretical justification for including them in the conceptual model and the associated hypotheses. Furthermore, the following Figure, 3.2, proposes the conceptual model for e-government adoption in a Qatari context that investigates the adoption rate and citizens' behaviour of e-government services. It also shows the relationship between the independent constructs and the dependent constructs. These are illustrated in the following Figure 3.2.
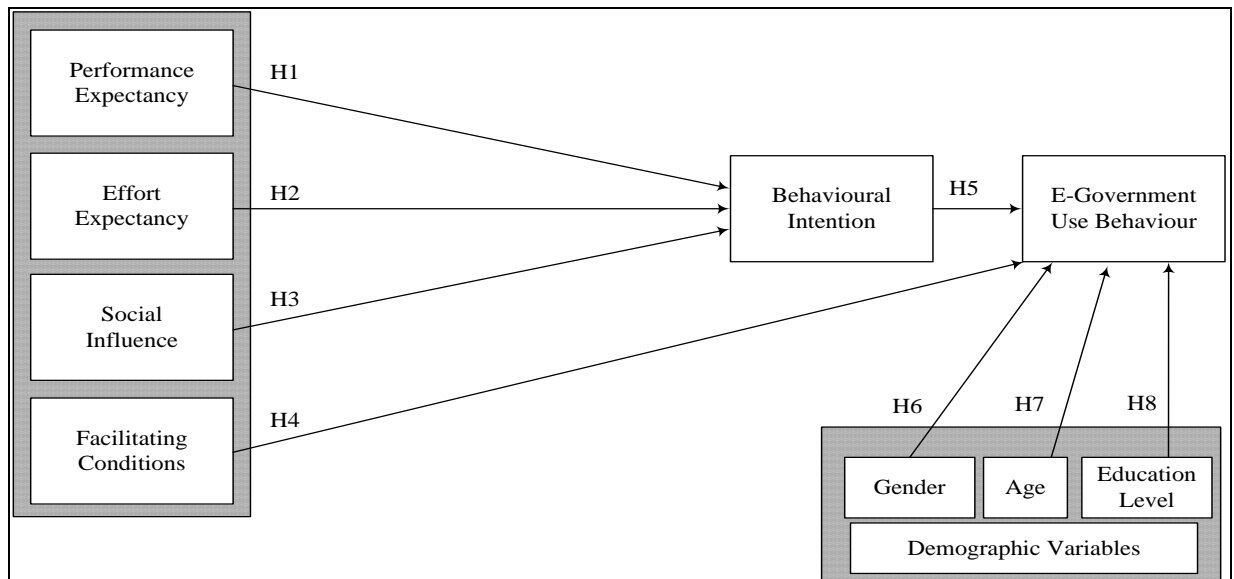
Figure 3.2: E-government Adoption Research Model [Adapted from Venkatesh *et al.*, (2003)]

A list of constructs and summaries of hypotheses are presented in Table 3.2. The following sections also provide detailed descriptions of each construct in the model.

	Table 3.2 Summary of Research Hypotheses	
HN	**Independent Variables**	**Dependent Variables**
H1	Performance Expectancy (PE)	Behavioural Intention to adopt e-government system (BI).
H2	Effort Expectancy (EE)	Behavioural Intention to adopt e-government system (BI).
H3	Social Influence (SI)	Behavioural Intention to adopt e-government system (BI).
H4	Facilitating Conditions (FC)	E-government Adoption Behaviour
H5	Behavioural Intention to adopt e-government system (BI).	E-government Adoption Behaviour
H6	Gender	E-government Adoption Behaviour
H7	Age	E-government Adoption Behaviour
H8	Education Level	E-government Adoption Behaviour

3.2.2.1 Performance Expectancy

Performance expectancy is defined as the degree to which individuals believe that using a system will help them improve their job performance and contains five variables: performance expectancy, extrinsic motivation, job-fit, relative advantage and outcome expectations (Venkatesh *et al.,* 2003). Venkatesh *et al.,* (2003) integrated a similar construct, identifying perceived usefulness, outcome expectancy, relative advantage, job fit and extrinsic motivation constructs (Davis, 1989; Compeau *et al.,* 1999; Moore and Benbasat, 1991; Davis *et al.,* 1992) into performance expectancy factors.

In this study, performance expectancy is measured by the perceptions of using e-government services in terms of benefits, such as saving time, money and effort, facilitating communication with government, improving the quality of government services and by providing citizens with an equal basis on which to carry out their business with government (AlAwadhi and Morris, 2009: Al-Shafi *et al.,* 2009).

Performance expectancy was found to be a strong predictor of intention to use IT according to previous acceptance studies (Venkatesh *et al.,* 2003; Davis, 1989; Chang *et al.,* 2007; Taylor and Todd, 1995; Venkatesh and Davis, 2000).

To explain performance expectancy toward intention to use e-government system/services, the author proposes the following hypothesis:

H1. Performance expectancy will have a positive influence on behavioural intentions to use e-government services.

3.2.2.2 Effort Expectancy

Effort expectancy is the degree of ease associated with the use of the system (Venkatesh *et al.,* 2003). Venkatesh *et al.,* (2003) identify three constructs from the eight models that make up the concept of effort expectancy: perceived ease of use, complexity, and ease of use. Additionally, Marchewka *et al.,* (2007) claim that this construct can be significant in determining user acceptance of information technology.

According to Kijsanayotin *et al.,* (2009), the concept is similar to the perceived ease of use construct in TAM and the IDT models and the complexity of technology construct in the MPCU model.

Many scholars (Davis, 1989; Moore and Benbasat, 1991; Thompson *et al.,* 1991; Chang *et al.,* 2007; Agarwal and Prasad, 2000; Schaper and Pervan, 2007; Gupta *et al.,* 2008; Al-Gahtani *et al.,* 2007) found that effort expectancy has a significant influence on intention to use behaviour. In contrast, Chau and Hu (2002), argue that effort expectancy does not have significant influence to intention to use behaviour.

In this research, effort expectancy is measured by the perceptions of ease of use of e-government services as well as ease of learning how to use these services. Therefore, the researcher proposes the following hypothesis:

H2*. Effort expectancy will have a positive influence on behavioural intentions to use e-government services.*

3.2.2.3 Social Influence

Social influence is defined as *"the degree to which peers influence use of a system".* Whether this is positive or negative; it is a very important factor in many aspects of the lives of citizens and is likely to be influential (Venkatesh *et al.,* 2003). Relevant references, such as citizen's family, colleagues and friend's may have an influence on citizen's decisions (Irani *et al.,* 2009; Tan and Teo, 2000).

The findings of many scholars like Rogers (1995), Taylor and Todd (1995), Lu *et al.,* (2005) and Pavlou and Fygenson (2006) suggest that social influences are an important determinant of behaviour. Venkatesh *et al.,* (2003) integrated subjective norms in TRA, TAM2, and TPB, social factors in MPCU, and image in IDT into the social influence factor. This research assumes that if e-government adopters are influenced with positive messages by their social networks, they are more likely to have a strong behavioural intention to adopt the e-government system. Thus, the researcher proposes the following hypothesis:

H3*. Social Influence will have a positive influence on behavioural intentions to use e-government services.*

3.2.2.4 Facilitating Conditions

Facilitating conditions are the degree to which an individual believes that an organisational and technical infrastructure exists to support the system (Venkatesh *et al.,* 2003). Facilitating conditions in the UTAUT comprises of perceived behavioural control, facilitating conditions, and compatibility from the TPB, TAM,

MPCU, and IDT models (Ajzen, 1985; 1991; Taylor and Todd, 1995; Triandis, 1979; Venkatesh *et al.,* 2003).

Researchers in the field of technology studies (e.g. Venkatesh *et al.,* 2003; Moore and Benbasat, 1991; Thompson *et al.,* 1991; Chang *et al.,* 2007; Taylor and Todd, 1995; Chau and Hu, 2002; Venkatesh and Speier, 1999) found that the facilitating conditions construct has a positive effect on innovation use. They also found that it is a significant predictor of the technology use. In contrast, they found that it did not predict intention to use IT when both constructs, performance expectancy and effort expectancy, are used in the same model (ibid).

Within this study, facilitating conditions was measured by the perception of being able to access required resources, as well as to obtain knowledge and the necessary support needed to use e-government services. It is also influenced by the perception of the technology fitting into the lifestyle of the user. To explain facilitating conditions toward behaviour of e-government use, the researcher proposes the following hypothesis:

H4. Facilitating conditions will have a positive influence on e-government usage behaviour.

3.2.2.5 Behavioural Intention

Behavioural intention is defined as a customer's intention to adopt and make use of a certain tool in the future (Ajzen, 1988; 1991; Taylor and Todd, 1995; Venkatesh and Brown, 2001; Venkatesh *et al.,* 2003)

According to Irani *et al.,* (2009), the majority of technology adoption researches have utilized behaviour intention to predict technology adoption. Also, Ajzen (1991) suggests that behavioural intention is counted to have a direct influence on adoption. The measurement of behavioural intention includes the intention, and predicted use of, e-government services.

To explain behavioural intention toward behaviour of e-government use, the researcher proposes the following hypothesis:

H5. Behavioural intentions to use e-government services will have a positive influence on e-government usage behaviour.

3.2.2.6 Gender

Jackson and Scott (2001) defined gender as a hierarchical separation between women and men embedded in both social institution and social practices. Morgan (1986) argues that gender can be employed as a descriptive variable as well as an explanatory variable. A number of researchers (Anderson and Young, 1999; Choudrie and Lee, 2004; Gefen and Straub, 1997; Morris and Venkatesh, 2000; Venkatesh *et al.,* 2000; Venkatesh *et al.,* 2003) have investigated the role of gender in the adoption and usage of technology. Previous studies have revealed that gender has an important effect and role when considering technology adoption and usage in organisational context. Venkatesh *et al.,* (2000) showed that male users use a computer more than females to show gender as one of the most important variables when adopting technology.

According to Morris and Venkatesh (2000) gender differences have been shown to exist in technology-adoption contexts. Furthermore, gender significantly moderates the influence of the determinants on behaviour intention. For example, Venkatesh *et al.,* (2003) found that the effect of perceived usefulness on behaviour intention was moderated by gender. In this research the author followed Dwivedi and Lal's (2007) proposition that gender (as a social variable) can be considered as an independent variable to explain the differences between adopters and non-adopters of technology, in this case e-government.

To explain gender toward e-government adoption and use, the researcher proposes the following hypothesis:

H6. *The adopters of e-government will be more from male than female gender.*

3.2.2.7 Age

Scholars (Morris and Venkatesh, 2000; Venkatesh *et al.,* 2003) have found evidence that explains the significant, direct and moderating effect of age on the behavioural intention, adoption and usage behaviours. Venkatesh *et al.,* (2000) found in their study that the majority age group adopting computers in the USA is 15-17 years, followed by the group of 26-35 years. The younger and middle age groups are expected to be more indifferent to adoption, while the older age group is expected to be more relevant to the non-adopters. In this research the author followed Dwivedi and Lal's (2007) proposition that age (as a social variable) can be considered as an

independent variable to explain the differences between adopters and non-adopters of technology, in this case e-government.

To explain age toward e-government adoption and use, the researcher proposes the following hypothesis:

H7. *There will be a difference between the e-government adopters and non-adopters of various age groups.*

3.2.2.8 Education Level

Burgess (1986; cited in Dwivedi and Lal, 2007) argues that individuals and citizens that have educational qualification are more likely to attain better occupation and are more likely to adopt new innovations. Venkatesh *et al.,* (2000) suggest that a positive correlation between the level of education, technology ownership and usage. Scholars (Choudrie and Lee (2004); Choudrie and Papazafeiropoulou, (2006) have mentioned that education is one of the most important drivers. Moreover Dwivedi and Lal (2007) argue that education can be considered as an independent variable to explain the differences between adopters and non-adopters of technology, in this case e-government.

To explain age toward e-government adoption and use, the researcher proposes the following hypothesis:

H8. *There will be a difference between the adopters and non-adopters of e-government in different levels of education.*

The following Table 3.3 provides a summary of above discussed factors that influence the adoption in the context of e-government services with the corresponding sources of reference.

<table>
<tr><td colspan="3" align="center">Table 3.3:
Factors Employed in Existing Studies to Examine Technology Adoption</td></tr>
<tr><td>Construct</td><td>Description</td><td>Sources</td></tr>
<tr><td>Performance Expectancy</td><td>The degrees to which individuals believe that using a system will help them improve their job performance and contain five variables: performance expectancy, extrinsic motivation, job-fit, relative advantage and outcome expectations.</td><td>Venkatesh et al.,(2003); Compeau and Higgins, (1995); Davis et al.,(1989, 1992); Thompson et al.,(1991).</td></tr>
<tr><td>Effort Expectancy</td><td>The degree of ease associated with the use of the system; effort expectancy is made up of: perceived ease of use, complexity and actual ease of use.</td><td>Marchewka et. al., (2007); Rogers, (2003); Venkatesh et al., (2003); Davis, (1989).</td></tr>
<tr><td>Social Influence</td><td>The degree to which peers influence use of the system, be it positive or negative.</td><td>AlAwadhi and Morris, (2008); He and Lu, (2007); Venkatesh et al., (2003).</td></tr>
<tr><td>Facilitating Conditions</td><td>The degree to which an individual believes that an organisational and technical infrastructure exist to support the system. Facilitating conditions are comprised of three root constructs: perceived behavioural control, facilitating conditions and compatibility.</td><td>AlAwadhi and Morris, (2009); Venkatesh et al., (2003); Venkatesh and Davis (2000).</td></tr>
<tr><td>Behavioural Intention to adopt</td><td>Intention is an immediate predictor of behaviour (towards an innovation).</td><td>Verhagen et al., (2006); Carter and Belanger, (2005); Venkatesh et al., (2003); Ajzen, (1985; 1991); Davis, (1989).</td></tr>
<tr><td>Adoption Behaviour</td><td>The actual use and associated behaviour of the innovation.</td><td>Venkatesh et al., (2000; 2003); Davis et al., (1989, 1992).</td></tr>
<tr><td>Gender</td><td>Hierarchical separation between women and men embedded in both social institution and social practices.</td><td>Dwivedi and Lal, (2007); Choudrie and Papazafeiropoulou, (2006); Choudrie and Lee, (2004); Venkatesh et al., (2003); Jackson and Scott, (2001); Morris and Venkatesh, (2000); Venkatesh et al., (2000); Anderson and Young, (1999); Gefen and Straub, (1997).</td></tr>
<tr><td>Age</td><td>Different age categories of the adoption of innovation</td><td>Dwivedi and Lal, (2007); Choudrie and Papazafeiropoulou, (2006); Venkatesh et al., (2003); Morris and Venkatesh, (2000).</td></tr>
<tr><td>Education Level</td><td>Different demographic education level between citizens</td><td>Dwivedi and Lal, (2007); Choudrie and Papazafeiropoulou, (2006); Choudrie and Lee, (2004); Venkatesh et al., (2000); Burgess, (1986).</td></tr>
</table>

Moreover, the following Table 3.4 provides a summary of the research hypotheses that have been discussed in the aforementioned theory and the factors that influences the e-government services adoption.

Table 3.4: Summary of Adoption Research Hypotheses	
HN	**Research Hypotheses**
H1	Performance expectancy will have a positive influence on behavioural intentions to use e-government services.
H2	Effort expectancy will have a positive influence on behavioural intentions to use e-government services.
H3	Social Influence will have a positive influence on behavioural intentions to use e-government services.
H4	Facilitating conditions will have a positive influence on e-government usage behaviour.
H5	Behavioural intentions to use e-government services will have a positive influence on e-government usage behaviour.
H6	The adopters of e-government will be more from male than female gender.
H7	There will be a difference between the e-government adopters and non-adopters of various age groups.
H8	There will be a difference between the adopters and non-adopters of e-government in different levels of education.

The review of literature on various technology adoption theories and models suggested that the UTAUT model proposed by Venkatesh *et al.,* (2003) offers a robust and comprehensive theoretical framework for examining citizen's adoption of e-government services. Drawing from UTAUT, a conceptual research model was proposed in Figure 3.2 that captures the most salient factors that may influence e-government adoption and use as described in the literature.

A Conceptual Model for E-government Implementation and Adoption

Having outlined the key factors influencing both e-government implementation and adoption, in the next section, this research will now combine the two separate conceptual models derived from institutional theory (for implementation, Figure 3.1) and UTAUT (for adoption, Figure 3.2) and the e-government literature to propose a conceptual model that captures the possible relationships between implementation and adoption in Figure 3.3.
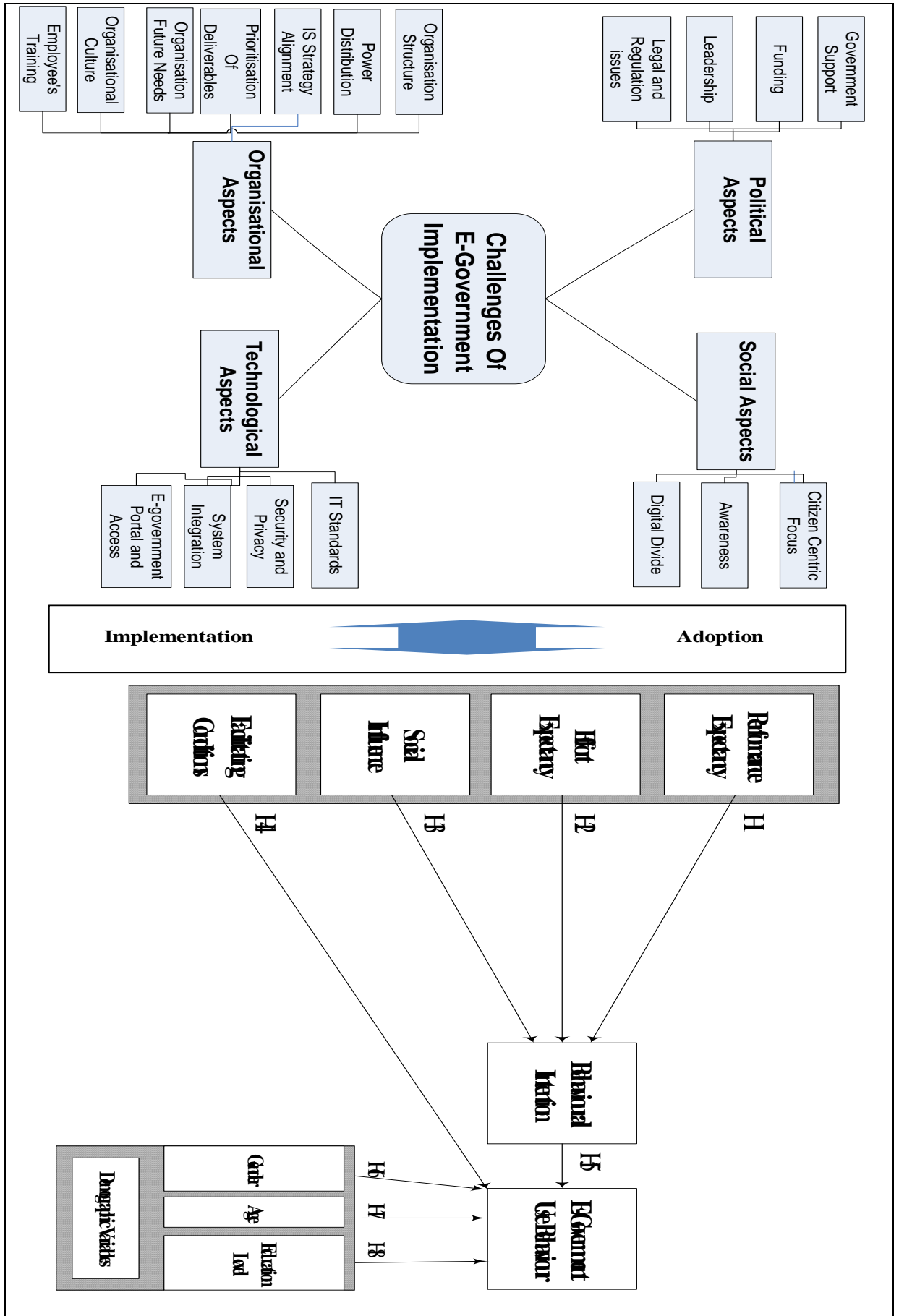
Figure 3.3: Implementation and Adoption - A Proposed Research Model

3.3 Chapter Summary

This chapter aimed to clarify the challenges surrounding e-government initiatives using literature and theoretical contexts from the perspectives of implementation and adoption. This chapter concludes by offering a conceptual model that maps the possible relationships between e-government implementation and adoption. This model offers the main frame of reference and potential lines of inquiry for the empirical research that will be carried out in this thesis to explore the factors influencing e-government implementation and adoption in Qatar. The proposed model is novel because it combines the e-government challenges into taxonomy of organisational, technological, social and political themes together with the technology acceptance factors that were identified separately in previous studies. To the researcher's knowledge, no previous studies exist that have attempted to combine the factors influencing e-government implementation with adoption or to establish relationships between these factors. The proposed model could be used as a frame of reference by government institutions that seek to implement and adopt e-government systems. Further, it could serve as a decision-making tool to support government institutions and officials in their efforts to implement and diffuse e-government. This model can also be used by researchers and scholars in the field of e-government to analyse and understand e-government system implementation and adoption. In the following Chapters (5 and 6), the proposed conceptual model will be utilised as a basis for empirical investigation. The next Chapter (4) begins with a discussion of the chosen research method for the empirical investigations.

4

Chapter 4: Research Methodology

4.1 Introduction

This chapter describes and develops the research methodology of the work in this thesis. This explanation is within the perspective of research methods that is used generally in the area of Information Systems, and as such, is the basis and rational for the rest of the work in this research.

Initially, a review of both positivism and interpretivism will be conducted. Then, a discussion explains the justification for the selection of a multi-method research approach for the thesis and justifies the selection of one case study and a survey research strategy. The author presents in detail the results of the empirical research methodology, which acts as a framework for conducting the empirical enquiry. Finally, the overall research protocol used for data collection and analysis is discussed.

The primary focus of the methodology is to identify the issues of e-government implementation and adoption in the State of Qatar.

4.2 Selecting an Appropriate Research Approach

The different aspects of Information Systems (IS) are multi disciplinary and are closely related to behavioural sciences, mathematics, engineering and the natural sciences. The selection of an appropriate research approach to study IS related phenomenon is not an easy task (Galliers, 1994). IS are not related to a single theoretical perspective (Orlikowski and Baroudi, 1991), and therefore, researchers are able to choose a suitable method from plenty of research approaches and strategies. IS have several philosophical approaches, including positivism, interpretive, and critical (see Figure 4.1). These approaches concentrate on different approaches to research, and on an enquiry into the nature of knowledge. Orlikowski and Baroudi (1991) claim that IS can be classified into the positivist method if there is evidence concerning the type of formal proposition, and quantifiable variables if there are hypotheses testing and the drawing of inferences about the phenomenon.
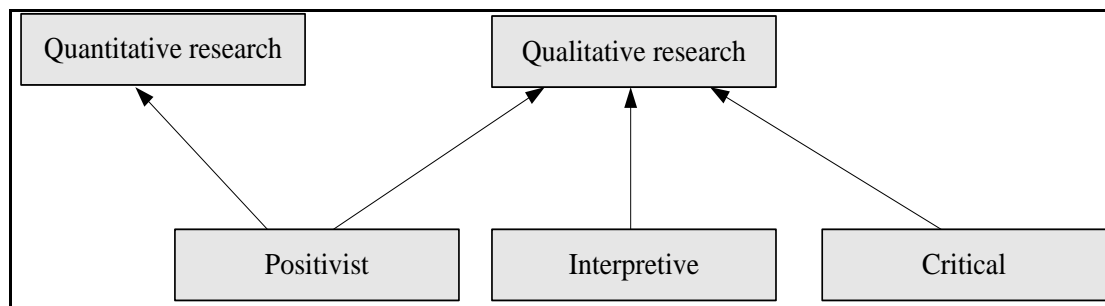
Figure 4.1: Epistemological Assumption for Qualitative and Quantitative Research (Source: Adapted from Straub *et al.,* 2005)

Orlikowski and Baroudi (1991), Irani *et al.,* (1999) and Straub *et al.,* (2005) all specify that information systems are not covered in one theoretical perspective. There are many different views about these phenomena and these scholars (ibid) suggest three categories based on the fundamental research epistemology; positivist, interpretive, and critical approaches (see Figure 4.1). Furthermore, in previous IS studies, the positivism approach has been the prime epistemology in IS research (Yin, 2003; 2009; Straub *et al.,* 2004; Walsham, 1995b; Galliers, 1992).

The following Table 4.1, shows the summary of epistemological stances between the different specified approaches.

Table 4.1: Summary of Epistemological Stances		
Approach	**Description**	**References**
Positivist	Positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena. Several researchers classified IS research as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample for a stated population.	Orlikowski and Baroudi (1991); Straub *et al.,* (2004: 2005)
Interpretive	Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them. Interpretive methods of research in IS are 'aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context'.	Walsham (1995b)
Critical	Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researchers recognise that their ability to do so is constrained by various forms of social, cultural and political domination. The main task of critical research is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light	Myers and Avison (2002)

According to Galliers and Land (1987), a number of different information systems in research taxonomies have been proposed as a result of the number of different research approaches that are adopted from other studies, such as business studies, sociology and the natural sciences. Fidel (2008: 265) suggests that scholars often agree that multi-method projects include both quantitative and qualitative components, but they *"disagreed on how these components should relate to one another and what level of integration was required"*. Also, Tashakkori and Creswell (2007), specify that the research integrates findings, and draws inferences using both quantitative and qualitative methods in a single study. Furthermore, researchers have been employing more than two methods, for example, surveys, observation and interviews in multi-method research (Fidel, 2008). Bernardi *et al.,* (2007) employed three instruments for their study and analysis that include a semi-structured interview in qualitative approach, a socio-demographic questionnaire that was analysed quantitatively, and a network chart and network grid providing data for both qualitative and quantitative analyses. Additionally, the literature review and

analysis presented in Chapters 2 and 3 indicate that there are organisational, technological, social and political issues related with the implementation of an e-government. Moreover, these challenges and factors described in Chapter 3 that hinder the e-government implementation cannot be separated from its organisational, technological, social, and political contexts. Therefore, a research approach that will clarify the understanding of the researcher towards the implementation of e-government, as well as the factors that influence and challenge e-government implementation is imperative for this study. Additionally, there are research hypotheses and quantifiable measures of variables in the research towards e-government adoption. Therefore, in the context of this research, interview based qualitative research to explore e-government implementation, and survey based quantitative research to investigate e-government adoption in Qatar, is chosen.

4.3 Use of Qualitative Research vs Quantitative Research Approach

The debate among scholars over the last few years about whether to employ a quantitative or qualitative methodology has gained considerable momentum. While the exact constitution of both methodologies varies between researchers, there is an agreement about the fundamental meanings and their practical implications. The quantitative method is suitable to be used when the research seeks to assign figures to observation or to reach to a universal statement (Brynard and Hanekom, 1997). In contrast, according to Myers (1997), the qualitative approach in information systems, is more effective to employ as it involves the use of qualitative data such as interviews, documents and observations to understand and explain social phenomena. Denzin and Lincoln (2003: 549) recommend qualitative research as the researcher must *"Study things in their natural setting, attempting to make sense of, or interpret, phenomena in terms of the meaning people to bring to them"*

The criterion for categorising research methods as quantitative or qualitative is based on whether studies yield statistical or numerical data. An approach needs to be decided upon to collect and analyse the ensuing data. This might result in using both qualitative and quantitative methods at different stages of the study; this is then categorised as a mixed research method. Guba and Lincoln (1988), Creswell (1994), and Neuman (2000) draw up a comparative list between quantitative and qualitative research methods. They concur that:

1. formal language is used in quantitative research, in contrast to qualitative research where the language is informal.

2. researchers are independent from what is being researched in quantitative research, but in qualitative research, researchers interact with what is being studied or researched.

3. generalising in quantitative research leads to prediction, explanation, and thus understanding. On the other hand, in qualitative research, patterns and theories are developed from an understanding.

4. in quantitative research, analysis comes usually in the form of statistics, tables, charts and by discussing how they relate to the given hypothesis; qualitative analysis is used to extract generalisation from what is found and organising them to present a consistent picture.

5. in quantitative research, data are in the form of numbers. As for qualitative research, data are in the form of words from observations and documents.

Furthermore, Godfrey and Callaghan (2003) outlined a comparison list between the Quantitative and Qualitative methodologies in the following Table 4.2:

Table 4.2: Comparison of Quantitative and Qualitative Methodologies (Source: Adapted from Godfrey and Callaghan (2003).	
Quantitative research features	**Qualitative research features**
Data are expressed in numbers.	Information is expressed in words and/or images (semiotics) that relate to feelings, processes, actions and meanings.
Concepts need to be defined in terms that are measurable.	Focus is on how people understand and interpret their social worlds.
Data are collected in a way that can be generalised to a wider population.	Data collection process is a social interaction involving the researcher and the participants.
Data must be valid and reliable and independent of the research setting and process.	Researcher's interpersonal skills are crucial to the understanding of the information.

The following Table 4.3, outlines a summary of the strengths and weaknesses of the quantitative and qualitative methods according to Bernard (2000).

Table 4.3: Strengths and Weaknesses of the Quantitative and Qualitative Methods (Source : Bernard , 2000)		
Method	**Strength**	**Weakness**
QUALITATIVE METHOD	• The qualitative analysis allows a complete, rich and detailed description. • Can be faster when compared to quantitative methods. • Does not reduce complex human experiences to numerical form and allows a good insight into a person's experiences and behaviour. • Qualitative methods can be cheaper than quantitative research. • Ambiguities, which are inherent in human language, can be recognised in the analysis.	• Qualitative data is difficult to analyse and needs a high level of interpretative skills. • Good chance of bias. • Hard to draw brief conclusions from qualitative data. • Qualitative data faces difficulties in terms of comparison. • Low level of accuracy in terms of statistics.
QUANTITATIVE METHOD	• Quantitative analysis allows for the classifying of features, counting them, and constructing more complex statistical models in an attempt to explain what is observed. • Findings can be generalised to a larger population. • Allows researchers to analyse more easily because quantitative data is in numerical form. • Provides high level of accuracy. • Compare measures of dispersion. • Allows to present analysis graphically.	• Picture of the data which emerges from quantitative analysis lacks richness of detail compared with data from qualitative analysis reduced to numerical form. • Quantitative implementation slow, and needs time compared with qualitative. • Can be expensive. • Low response rates. • Not simple to implement. • Quantitative often requires computer analysis.

4.4 Use of Case Study Method

The case study is one constituent of other accepted research methods for conducting research in the information systems discipline. Like the case study, action research, ethnography, and grounded theory approaches are seen as parts of qualitative research. Yin (2003; 2009) claims that when 'how' and 'why' questions are frequently posed, case studies are the preferred strategy. Yin (2009:18) also defines the scope of a case study as *"A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident"*.

Irani *et al.,* (1999) claim that case studies can be used to describe phenomena, build theory and test theoretical concepts and relationships. In view of the nature and complexity of the e-government implementation process, and the combination of many complex systems issued as technologies, business processes, and human resource (Silcock, 2001), the case study method might not be an ideal choice. Moreover, Miles and Huberman (1994) describe qualitative research as based on words rather than numbers. Marshall and Rossman (1999) summarise some types of research that qualitative research would be appropriate for, including research on phenomenon that are not known or little known, research that examines complexities in depth, research that cannot be done experimentally, and research for which relevant variables have to be identified.

4.4.1 Single Versus Multiple Case Studies

A question that arises when selecting the case study method is 'whether to conduct a single case study or multiple case studies'. Some research efforts prefer multiple cases, but single cases are useful in specific instances. Yin (2003; 2009) and Irani *et al.,* (1999) suggest that single case studies are more relevant if:

- it is a revelatory case.

- it represents a critical case for testing a formulated theory.

- it is a unique case.

Irani *et al.,* (1999) specified that single case design enables rich analysis of phenomena. In contrast, conducting multiple case designs is preferred when the intent of the research is descriptive, theory testing or theory building. Benbasat *et al.,* (1987) specify that multiple cases yield more general research results.

According to Irani *et al.,* (2008: 157), *"generally, it is considered that there is no ideal number of cases that should be undertaken when using this research approach".* Furthermore, Romano (1989; cited in Irani *et al.,* 2008) suggests that the number of cases used should be left up to the individual researcher. However, Eisenhardt (1989) and Lincoln and Guba (1986) suggest that cases should to be used until a theoretical saturation or reaching the point of redundancy, neglecting time and money constraints.

For this study, as explained, the selection of cases was based on pragmatic considerations. Practicalities and a saturation of data limited the study to a single case study. In addition to this, the case study method was used in this research for two main reasons. Firstly, the study was looking to gain a better idea and understanding of e-government and its implementation process, with a particular focus on the identification of the challenges that might hinder its implementation. Secondly, because of the nature of the selected case study and the limitations of resources and time, the researcher would not be able to conduct several or multiple case studies within this study.

The main purpose of choosing a particular case study site is based on the ease of conducting the study and overcoming any problems that might arise related to access issues. According to Hartley (1994: 216) *"Unless you are already known in the organisation or the industry, you are likely to be in the position of 'cold calling' the organisation".*

4.4.2   Case Study Data Analysis

Qualitative data analysis requires some originality to place new data into logical and meaningful categories in order to examine them in a valid fashion and to find a way to communicate this interpretation to others (Hoepfl, 1997). Bogdan and Biklen (1998) define qualitative data analysis as *"Working with data, organising it, breaking it into manageable units, searching for patterns, discovering what is important and what is to be learned and deciding what you will tell others."*

The process of qualitative data analysis takes many forms, but is non-mathematical in nature. A common complaint about qualitative data analysis is that it is often unclear, and is not well-formulated (Miles and Huberman, 1994). As the interview was the main method of data collection to study the government's efforts from an e-government implementation perspective for this research, the analysis of data involves testing the meaning of people's words and actions. According to Yin,

(2009), qualitative interviews vary in the degree of structure and, thus, can be structured, semi-structured and unstructured. Wengraf (2001:5) defines the degree of structure, focusing on the semi-structured *"Semi-structured interviews are designed to have a number of interviewer questions prepared in advance but such prepared questions are designed to be sufficiently open that the subsequent questions of the interviewer can't be planned in advance but must be improvised in a careful and theorized way"*.

Yin (2009) specifies six major sources of evidence in data collection. These sources include documentation, interviews, direct observation, participant observation, archival records, and physical artefacts. Additionally, some examples of the use of these sources are given in the Table 4.4 below:

Table 4.4: **Data Collection Methods: Strengths and Weaknesses (Source: Yin, 2009:102)**			
Sources of Evidence	**Strengths**	**Weaknesses**	**Expected Use of Sources in this study**
Documentation	•Stable - can be reviewed repeatedly. • Unobtrusive and not created as a result of case study. • Exact - contains exact names, references, and details of events. •Broad coverage - long span of time, many events and many settings.	• Irretrievability can be low. • Biased selectively, if collection incomplete. • Reporting bias reflects (unknowingly) on bias of author. • Access - may be intentionally blocked.	• Reports from organisations under study. • White Papers. • Reference material downloaded from internet. • Newspapers articles. • Brochure.
Archival Record	• [*Same as above for documentation*]. • Precise and quantitative.	• [*Same as above for documentation*]. • Accessibility, for privacy reasons.	• Organisational records, e.g. charts, layouts, service records.
Interviews	• Targeted - focuses directly on case study topic. • Insightful, provides and perceives causal interfaces and explanation.	• Bias due to poorly constructed questions. • Response bias. • Inaccuracies due to poor recall. • Reflexivity - what the interviewer wants to hear.	• Semi-structured interviews. • Close-ended questions.
Direct Observation	• Reality covers events in real time. • Contextual - covers context of event.	• Time-consuming. • Selectivity unless broad coverage. • Reflexivity-event may proceed differently because observed. • Cost hours needed by human observers.	
Participant Observation	• *[Same as above for direct observation]*. • Insight into interpersonal behaviour and motives.	• *[Same as above for direct observation]*. • Bias due to investigators manipulation of events.	
Physical Artefacts	• Insight into cultural features. • Insight into technical operations.	• Selectivity. • Availability.	

4.5 Use of Survey Method

Survey research is an important area of measurement in applied social research (Pinsonneault and Kraemer, 1993). Scholars mentioned that the main purpose of a survey is to produce quantitative statistics about some aspects of a study. Additionally, a survey is a systematic method for assembling information from a sample of the population for the rationale of constructing quantitative attributes. Groves *et al.,* (2004) argue that survey methodology seeks to discover the principle about the design, collection, processing, and analysis of surveys that are linked to the cost and quality of survey estimates. Also, survey methodology is used both in the scientific field and professional management fields.

Groves and Singer, (2004:23) state that *"survey in quantitative side emphasise solutions to problems, extraction of principles that have wide applicability, generalisation of results, and standardisation of measurement"*.

A variety of scholars (Fowler, 2008; Mingers, 2001; 2003; Galliers, 1992; Orlikowski and Baroudi, 1991) have used the survey approach with a number of data collection techniques such as mail, telephone and interviews. Furthermore, surveys are believed to be less appropriate than other methods such as case studies and observation when the study objective requires an in depth understanding of context and history of the phenomena. Straub *et al.,* (2005) have indicated that surveys can be used as a data collection technique together with other techniques, such as interviews, within the same field.

Pinsonneault and Kraemer, (1993:78) state that *"survey research involves examination of a phenomenon in a wide variety of natural settings"*. Finally, Dwivedi *et al.,* (2006); Shareef *et al.,* (2009); Irani *et al.,* (2009); and Dwivedi and Irani (2009) argue that the survey approach is considered most widely used for examining technology adoption.

Orlikowski and Baroudi (1991) suggest that there are six types of research design for conducting IS research, including case study, survey, laboratory, experiment, field experiment, action research. The following Table 4.3 shows the categories of research strengths and weaknesses:

Table 4.3
Categories of Research Strengths and Weaknesses (Source: Galliers, 1992)

Experimental Research	Strengths	Weaknesses
Researcher has strong control over environment being observed. This research has roots in scientific practice of biologists and physicians, where variables are manipulated over time, associated numeric data collected, and causal or correlation models tested through statistical analysis.	Solution and control of a small number of variables, which may then be studied intensively. Greater realism; less artificial in case of applying within organisation or society.	Limited extent to which identified relationships exist in the real world due to oversimplification of experimental situation and isolation of such situations from most variables found in the real world.
Survey Research	**Strengths**	**Weaknesses**
This research method has its roots in the work of economists and sociologists. In survey research, the researcher typically has considerable samples to be analysed, which suggests the use of questionnaires with easy questions to be answered for quantitative evaluation. Survey research is typically applied to validate models and hypotheses.	A greater number of variables may be studied than in the case of experimental approaches. Description of real world situations. Easier /appropriate generalisations.	Likely that little insight is obtained. Possible bias in respondents (self-selecting nature of questionnaire respondents) and this can be affected by the moment in time that the research is undertaken.
Case Research	**Strengths**	**Weaknesses**
Roots in business studies. Cases are analysed either to build up or validate models or theories, typically through collections of textual data by interviews. Essentially merely a means of describing relationships existing in a particular situation.	Capturing 'reality' in detail and analysing more variables than possible using experiments and surveys.	Restrictive to single event/organisation. Difficulty in generalising, given problems of acquiring similar data from statistically meaningful number of cases. Lack of control of variables. Different interpretations of events by individual researchers/stakeholders.
Action Research	**Strengths**	**Weaknesses**
The origins of this research approach rest in socio-psychological studies and work-life issues. Action research is often uniquely identified by the dual goal of both improving organisation and participating in the research project.	Practical as well as theoretical outcomes most often aimed at emancipator outcomes. Biases of researcher can be made known.	Similar to case study research, but additionally places considerable responsibility on researcher when objectives are at odds with other groupings. Ethics of the particular research key issues.

4.6 Use of Multi-Method Research: Combining Quantitative and Qualitative Research

Selecting an appropriate research approach is a key task of the research design process. The researcher must decide whether to use a deductive or inductive approach. According to Saunders *et al.,* (2003) the inductive approach is used to collect data and develop theory as a result of data analysis. The deductive approach is used when developing a theory, and the research strategy is then designed to test the theory.

Myers (1997) and Mingers (2001) argue that, although most researchers conduct qualitative or quantitative research, some researchers have recommended mixing them in one study. According to Johnson *et al.,* (2007), this multi-method research is a synthesis that includes ideas from both qualitative and quantitative research. Furthermore, Stake (1995) notes that qualitative researchers look for understanding of the interrelation of the phenomenon, whereas, quantitative researchers are keen to find the explanation and control the phenomenon.

Das (1983 cited in Amaratunga *et al.,* 2001:23) argues that

"Qualitative and quantitative methodologies are not antithetic or divergent, rather they focus on the different dimensions of the same phenomenon. Sometimes, these dimensions may appear to be confluent: but even in these instances, where they apparently diverge, the underlying unity may become visible on deeper presentation. The situational contingencies and objectives of the researcher would seem to play a decisive role in the design and execution of the study".

Scholars have identified has different names for combined qualitative and quantitative research method such as multi-strategy (Bryman, 2004), multi-methods (Brannen, 1992), mixed methodology (Tashakkori and Teddlie, 2008), or mixed methods (Creswell, 2008; Tashakkori & Teddlie, 2008). Given this context, the definition considered to be most suitable for the purpose of this research is multi-methods.

Creswell (2008), Johnson *et al.,* (2007), Creswell and Clark, (2006), and Tashakkori and Teddlie, (2008) note that a multi-method research approach has its own emerging world view, vocabulary and techniques. Tashakkori and Creswell (2007) propose a broad definition to multi-method research and state that

"Research in which the investigator collects and analyses data, integrates the finding, and draws influences using both qualitative and quantitative approaches or methods in a single study or program of inquiry" (Tashakkori and Creswell, 2007:4).

This leads to the development of triangulation in research. Denzin (1978:291) defines triangulation as *"The combination of methodologies in the study of the same phenomenon".* In addition, he outlined four main types of triangulation:

1. Data triangulation, as the use of a variety of sources in a study.

2. Investigator triangulation.

3. Theory triangulation.

4. Methodological triangulation: the use of multiple methods to study a research question.

Morse (1991) specifies two types of methodological triangulation: simultaneous and sequential. According to Rossman and Wilson (1985: cited in Johnson *et al.,* 2007), there are three reasons for combining quantitative and qualitative research:

1. Combinations are used to enable confirmation of each other as in triangulation.

2. Combinations are used to enable or to develop analysis that results in a richer data.

3. Combinations are used to explore new ways of thinking by mixing the two data sources.

Also, Jick (1979) defined triangulation technique by combining qualitative and quantitative methods, and these methods should be seen as corresponding and complementary rather than contradictory. Most recently, Collins *et al.,* (2006) identified four rationales to conduct multi-method research: participant enrichment, instrument fidelity, treatment integrity, and significance enhancement. Therefore, for the purpose of conducting this research, a multiple-methods research study is found the most suitable.

4.7 The Strategy Adopted for this Research

In this study, the researcher decided to use the triangulation approach. By using multiple methods within the same study, it is argued that this creates a form of triangulation which will result in expanding the validity and reliability of the study (Denzin, 1978). Furthermore, Bryman and Bell (2007:649) argue that this multi-

method research approach occurs for filling the gaps *"when the researcher cannot rely on either a quantitative or a qualitative method alone and must buttress his or her findings with a method drawn from the other research strategy"*

E-government research largely focuses on either the government or implementation issues. By using a case study based qualitative approach, the research hopes to gain valuable data from both of these aspects – case study for the government members; and for the adoption side, utilising a survey based quantitative research. What makes this research unique is that, as discussed in Chapter 1, to the author's knowledge, there are no studies to date that explore e-government implementation and adoption from both the government (service provider) and citizen (service users) perspective to better understand the gaps between implementation and use. The only way of focusing on this research gap is to utilize a multi-method research strategy whereby the researcher can simultaneously explore both sides of e-government innovation. Therefore, the multi-method approach was chosen to be the base to obtain data for this study.

The overall research strategy was divided into two main phases to facilitate the multi-method approach to data collection. The first phase used a qualitative strategy, whereby the researcher employed an interview-based case study approach whilst the second phase utilised a quantitative research strategy involving a questionnaire- based survey.

4.7.1   Phase 1: Qualitative Strategy: Using Case Study Method

The qualitative research method, as described by Walsham (1995a), was employed in this study to undertake the government perspective. This included informal, in-depth semi-structured interviews. Within a single case study, interviews were used, facilitated by an interview guide that was developed used during the data collection process. The conceptual model and the literature provided the frame of reference to draw relevant research questions in preparing the initial semi-structured interview guide. The interview guide was reviewed and evaluated by conducting three pilot interviews. The pilot interviews were conducted with three e-government researchers and practitioners from different professional backgrounds. Based on the pilot session, the questions and interview guide were revised and modified.

Questions covered in the interview guide were about general e-government information, e-government background, status of the e-government project in Qatar,

current problems and challenges encountered during the implementation of the project (Appendix A).

Having developed and tested the interview guide, the researcher began to identify the people to be interviewed within the e-government project team and the information systems department in the Ministry of the Interior. These interviewees were chosen from different managerial levels. The sample size was restricted to eight interviewees. All interviewees had the approval to participate in this study.

The respondents' organisations and positions are as follows:

1. The e-government director - this is the highest managerial position in the e-government project in Qatar.

2. The e-government application manager – this is the second-highest managerial level in the e-government project.

3. The e-government program manager – this is the third-highest managerial and technical level in the e-government project.

4. The e-government distribution architect – part of the application section and technical level in the e-government project.

5. The e-government Data Base Administrator (DBA) – part of the application section and technical level in the e-government project.

6. The head of the application section, in the information systems department - Ministry of Interior (ISD-MOI).

7. The head of the Internet and electronic services branch (ISD-MOI).

8. The application developer of e-services in the internet branch (ISD-MOI).

Table 4.7 below shows the characteristics of the interviewees and their demographic background.

Table 4.7: Interviewees Demographic Background	
	Demographic Background
Education	➢ 1 postgraduate (MBA) ➢ 7 graduates (Bachelor)
Sex	8 males
Age	From 30 to 42 years
Experience	➢ One person below 5 years ➢ Four persons from 5 to 10 years ➢ Three persons over 10 years

The Ministry of Interior (MOI) was selected to be part of the study as most of the e-government services and information that are conducted and used in the e-government project in Qatar are from this ministry. The author had access to the e-government organisation and the information system department within the Ministry of Interior through past employment and personal contacts. Access to this department was also preferred because of good, personal communication with these organisation's employees.

The researcher began the interviews by introducing himself; a brief overview of the research being undertaken, the purpose, and the meaning of some terms used was then given. After that, the researcher informed and assured the interviewees that the information provided here in the study would be treated as highly confidential and used only for the purpose of this research. Also, the interviewer took steps to put the interviewees at ease, so that a two-way, open communication atmosphere existed.

The researcher had permission from all of the interviewees to use a tape recorder, and asked them to talk openly. The interviews were conducted as one-to-one tape-recorded interviews.

All interviews were conducted in person to ensure that the appropriate skills to participate in the research were present. Interviews were conducted in the meeting rooms or sometimes in the interviewees' offices where the environment was quite and appropriate for a one-to-one interaction. As some of the interviewees were senior managers, they were disrupted during the interviews (e.g. telephone and mobile phone calls) and these minor delays were expected while performing the interviews. Interviews took approximately two hours and were conducted between the period of June and December 2008. Follow up face-to-face interviews were conducted for each person, which gave the researcher the opportunity to clarify any unclear information. This was complemented with brief telephone conversations and email exchanges to clarify certain issues where necessary. A variety of secondary data sources were used to collect data; these ranged from internal reports and other publications that form a part of the case study organisations' history, and past project documentation (Irani *et al.,* 2008). This helped to triangulate and validate some of the data collected from the interviews (ibid).

4.7.1.1   Case Study Validity

The use of interviews and documentary sources indicates that internal validity is required and needs to be addressed. Each interview was tape recorded and transcribed. These were given to each interviewer to check and resolve any discrepancies that may have arisen and to eliminate any bias (Irani *et al.,* 2005). The accumulated and huge concern of evidence was carried out by the researcher to guarantee that the primary and secondary data were collected to met on similar issues and facts (Jick, 1979; Irani *et al.,* 2005).

4.7.1.2   Research Output Format

Yin (2003;2009) argues that while collecting the output format of a case study, the researcher should focus on the interviewees. Thus, in Chapter 5, the researcher presents an empirical data analysis and decides upon which format the output of the empirical inquiry will take.

4.7.1.3   Finalising the Data Collection Process

As Hartley (2004:331) states, *"When you have collected enough data, you will have to leave".* Additionally, Glaser and Strauss (1967) note that "the s*aturation point is reached at time of your research when you really do think that everything is complete and that you're not obtaining any new information by continuing" (Glaser and Strauss, 1967: cited in Dawson, 2002: 53).*

The researcher spent as much time as necessary, until he was satisfied that he had found the answers to the research questions in terms of e-government implementation, in order to achieve the aim of the study.

The overall qualitative research process is captured in Figure 4.2 below.
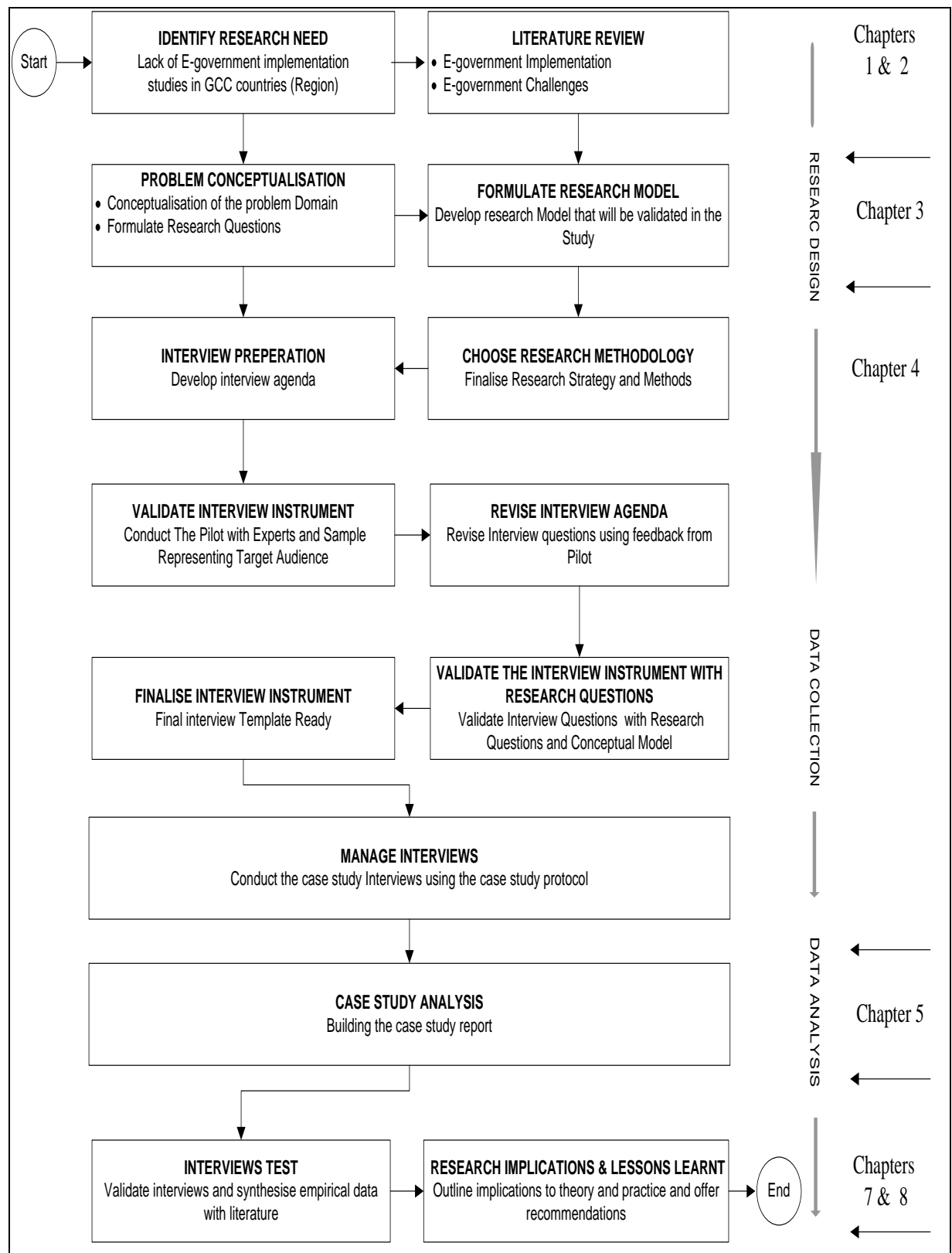
Figure 4.2: The Qualitative Research Process

In terms of data analysis, Yin (2009) argues that investigators often search for formulas, recipes or tools (such as Atlas and NVivo), hoping that familiarity with these devices will produce the needed analytic result. However, Yin warns that although these tools are important and can be useful, they will not do the data analysis without human interaction and consideration. Furthermore, in some cases these tools cannot be helpful when the words or verbal reports represent verbatim records and are part of the case study evidence, or when having a large collection of data (ibid).

In this research, the strategy for conducting the data analysis followed a traditional technique without any computerised tools. Also, the researcher followed his own style or rigorous empirical thinking, with high consideration of evidence and alternative interpretations, and developed a suitable analytic strategy. The strategy that the author followed helped in treating the evidence fairly, in producing compelling analytic conclusions, and in ruling out alternative interpretations (Yin, 2009). Given this context, the overall data analysis approach followed a thematic analysis process. This concerned a process that involved encoding the qualitative information in order to identify a particular theme with the information; that is, whether some sort of pattern is identified within the information that may have some relevance to the area of research (Boyatzis, 1998).

4.7.2   Phase 2: Quantitative Approach: Using a Questionnaire-Based Survey

In this section, the researcher discusses the quantitative approach by using a questionnaire-based survey approach. This section is divided into four sub-sections: questionnaire development, pilot study, questionnaire translation, and the sample used in the study.

4.7.2.1   Questionnaire Development

In order to determine (that suitable data would be collected) the acceptance of generalisation, a survey was used in this study to learn citizens' perceptions.

The questionnaire was developed based on research literature with a particular focus on the information technology adoption literature outlined in Chapter 3.

The questionnaire contained detailed, brief and clear instructions, and was created to prompt an ease of response. Respondents were notified by a cover letter concerning the nature and the purpose of conducting this research.

Respondents were advised to choose the most suitable and honest way to answer the questionnaire in either English or Arabic . Additionally, respondents were assured of privacy and confidentiality and told not to write any name that might represent their identity.

A five–point 'Likert' scale was chosen to be the main instrument in the questionnaire. The questionnaire was structured into various sections to gain data from a demographic background-related viewpoint, with a total of 34 closed-format questions (Appendix B and C).

4.7.2.2   Pilot Study

After the questionnaire was designed, a pilot study was conducted using six researchers and four practitioners. This had two main aims: to improve the questions and to test respondents' comprehension and clarity before the actual survey was administered (Saunders *et al.,* 2003; Miles and Huberman, 1994).

The author received comments and suggestions that helped in improving the questionnaire and led to the removal and modification of some questions. These comments and suggestions concerned the wording or format of some statements.

4.7.2.3   Questionnaire Translation

Saunders *et al.,* (2003: 300) argue that

"Translating questions and associated into another language requires care if your translated or target questionnaire is to be decoded and answered by respondents in the way you intended".

The original questionnaire was developed in the English language (Appendix B) but a translation into Arabic (Appendix C) was conducted because some respondents did not speak English as Arabic was their first language. Therefore, the researcher provided the questionnaire in both languages, English and Arabic, to maximise the effectiveness of the data collection.

The researcher took into consideration the accuracy, fluency and facility of use in terms of translation as ineffective, as inaccurate translation could lead to misconstrued meaning and misunderstanding (Saunders *et al.,* 2003). This would greatly hamper valid data collection.

In order to maximise validity, the researcher followed two distinct phase processes. In the first phase, the researcher translated the English version of the questionnaire into Arabic. Then, in the second stage, the Arabic version was translated back into English by an interpreter. The initial English version compared well with the translated one. Furthermore, both English and Arabic versions were checked by three persons who are professional translators in English and Arabic, one of them holds a PhD degree and the other two hold masters degrees. This ensured accuracy during the translation process (Saunders *et al.,* 2003)

4.7.2.4 Survey Research Protocol

The protocol followed for the data collection was as follows: first, the researcher approached senior managers and directors in public agencies including the eight Qatari municipalities, Health Authorities (the main hospital in Qatar is called Hamad Medical Corporation (HMC)); selected education institutions such as Qatar university (students, academic faculty and employees) and a limited number of female public secondary schools (students and teachers); the immigration authority; and the authority of traffic and motoring. Also, the questionnaire was distributed to some governmental agencies, IT private companies, and international and local gas and oil companies' employees in the state of Qatar. Distribution of the questionnaire made use of the researchers' wide network of professional contacts to seek permission and assistance in administering the questionnaire to citizens. The survey protocol utilised a convenient sampling method by selecting to distribute the questionnaire in the above mentioned different agencies/organisations, yet randomly distributed the survey to the citizens attending the agencies/organisations.

Then, the process of completing of the questionnaire began within the premises of the above-mentioned agencies and was facilitated by the agency staff. As stated before, the questionnaire offers a brief explanation of the purpose of the research to the participants and participation was on a purely voluntary basis. The questionnaires were completed in an environment free from external pressures and at the respondent's own pace. Within the public agencies, the questionnaires were collected after a period of around 15 minutes from the respondents. This was possible as the researcher was present during the administering of the questionnaires and thus helped in facilitating the completion of the questionnaire by various respondents. The respondents completed the questionnaire whilst waiting to complete their tasks within the respective public agency premises. In the case of the private companies, the questionnaires were administered and collected by one of the

employees belonging to the respective organisation. These employees were fully briefed on the purpose (aim and objectives) and the process of how to administer and facilitate the completion of the questionnaire. The questionnaires distributed in the private companies were collected by the researcher from the representative in the organisation who administered the survey, usually at the end of the same working day in most cases. As stated before, the questionnaire was distributed in both English and Arabic languages (for the benefit of those citizens who were not conversant in English).

The survey questionnaire was distributed to a total of 1500 citizens between the period of August and December 2008. From 1500 questionnaires distributed, 1250 responses were received. Of these, 71 questionnaires were discarded (because the respondents gave more than one answer to a question that expected only one answer) and many questions were unanswered. This meant that, from the final sample of 1250 completed questionnaires, 1179 usable responses were obtained and used for subsequent analysis.

The overall quantitative research process is captured in Figure 4.3 below.
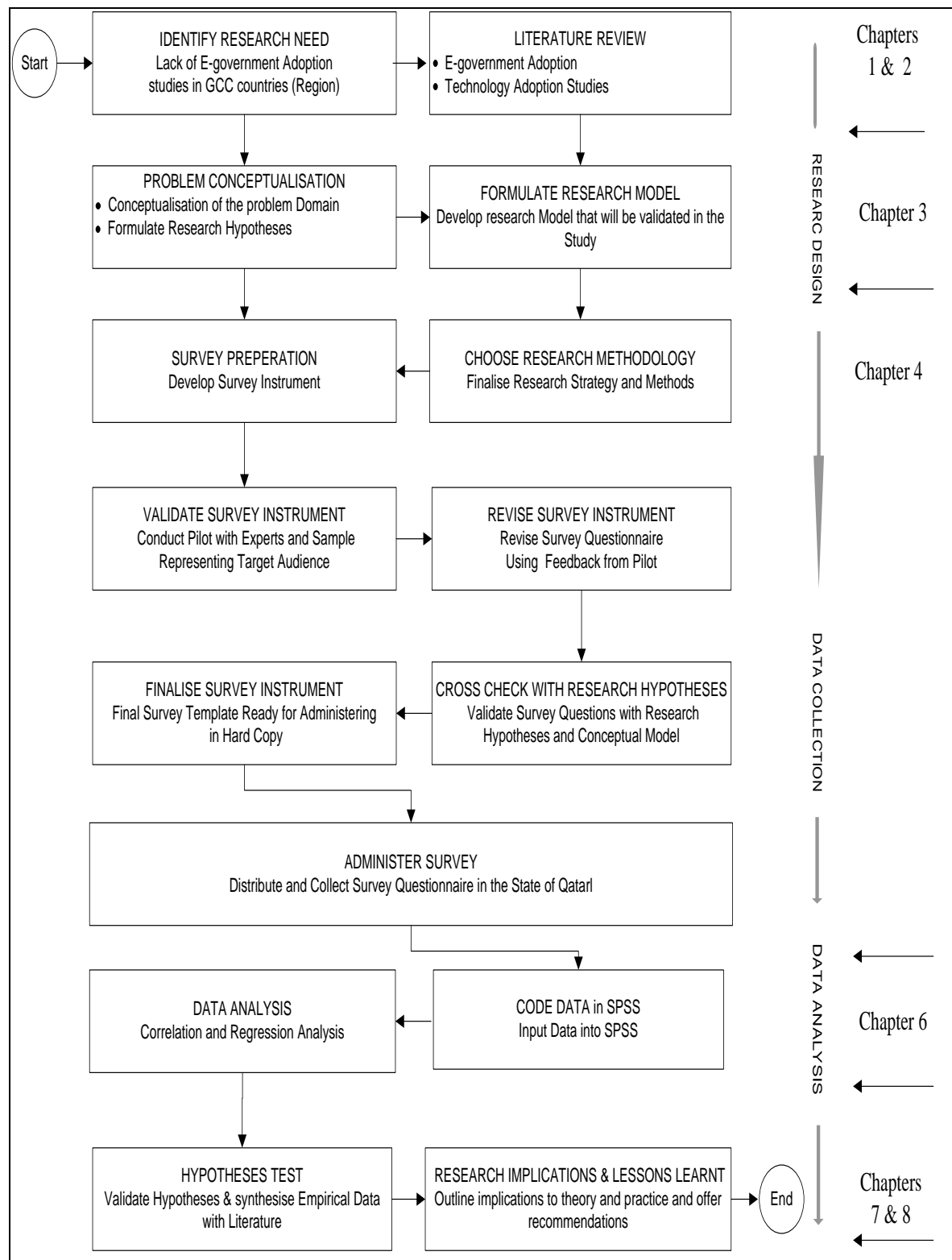
Figure 4.3: The Quantitative Research Process

4.8   Research Design

Finally, Figure 4.4 outlines the overall multi-method strategy adopted for this research. As shown in the figure, the overall research strategy draws from three schools of thought involving selection and justification of research methods for data collection: a) selecting a single case study: b) using qualitative interview-based approaches; and c) utilizing quantitative survey-based approaches. Additionally, Figure 4.4 outlines how the overall research process utilised for the research went through eight different, but interlinked stages.
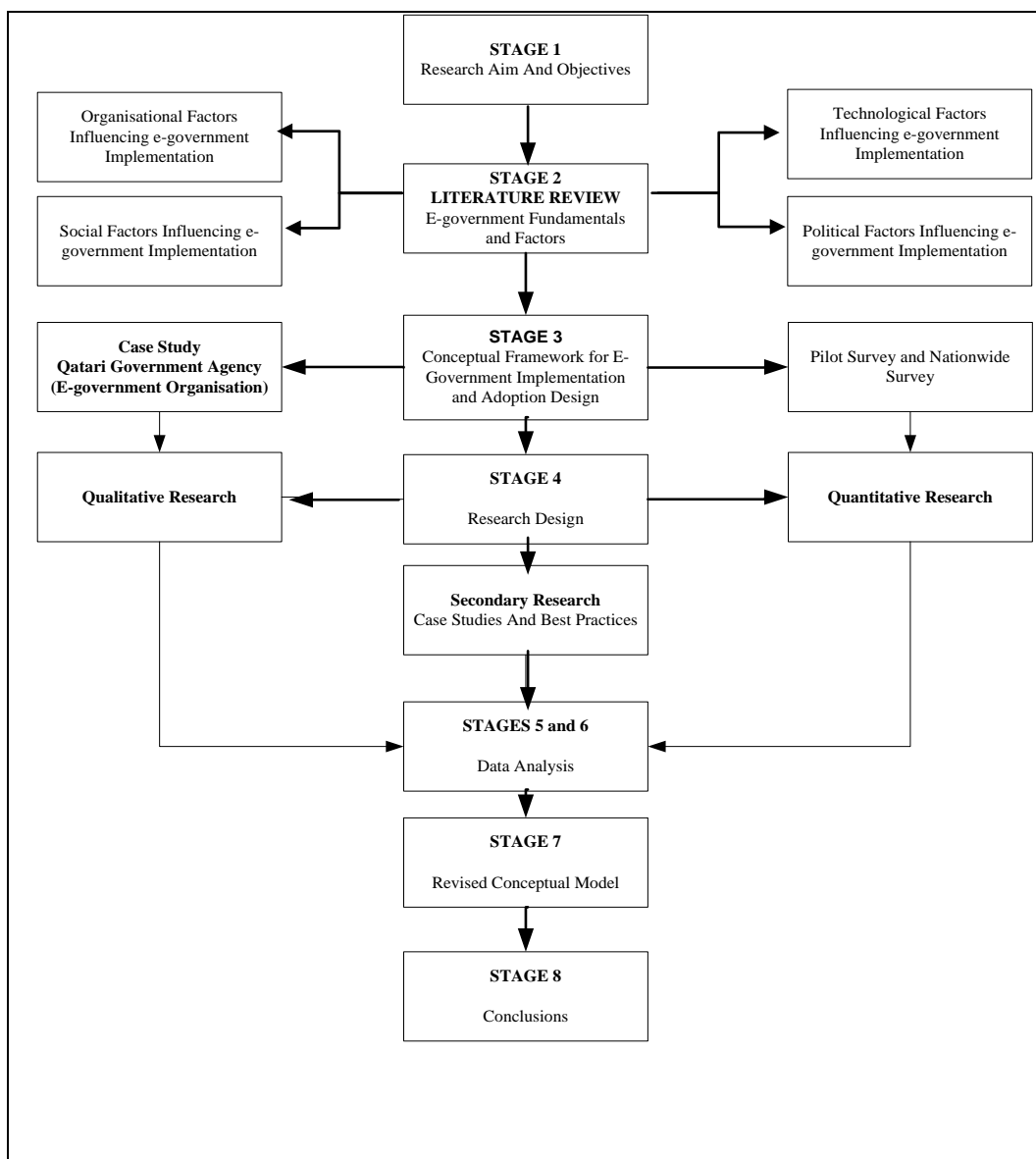
Figure 4.4: Research Design and Methodology of the Study

4.9   Chapter Summary

In order to find suitable and valid responses to the research questions, a multi research methodology was used by the researcher; this was complemented with a close examination of the literature.

The researcher presents and discusses evidence to provide justification for the research methods used, and the relative research techniques were also discussed in this chapter. The next chapter presents the case study background and the empirical case study findings.

5

Chapter 5: Case Study Findings

The previous chapter (Chapter 4) provided a discussion and justification of the data collection and analysis methods. This chapter presents the case study background, and the findings obtained from the case study interviews.

This chapter is structured as follows. Section 5.1 presents the country's background, its population distribution, economy, political situation, and its ICT efforts and background to date. Section 5.2 then describes the Evolution of E-government in Qatar (2000-2005) and Section 5.3 also discovers the Evolution of E-government in Qatar (2005-). Section 5.4 explores and analyses the various challenges faced by the Qatari government in implementing e-government under the broad organisational, technological, political and social themes as previously discussed in chapter 3. As established in the chapters 2 and 3, these issues might influence the implementation of any e-government project. By identifying these challenges facing e-government implementation in Qatar, the researcher will aim to uncover how these challenges could be treated in reality and practice. Finally, Section 5.5 summarises and concludes this chapter.

5.1 The State of Qatar

5.1.1 Geography and Regions

The State of Qatar is located on the west coast of the Arabian Gulf Peninsula. It borders Saudi Arabia, is a short distance by sea to the Kingdom of Bahrain and a short distance by land to the United Arab Emirates. It is a peninsula, the total land area of the state of Qatar is around 11,431 square kilometres, and Doha city is the capital (MOFA, 2009). The following Figure 5.1, shows the regions in Qatar.

Figure 5.1 Map of the State of Qatar (Source: MOFA, 2009)

5.1.2 Population

The population of the State of Qatar reached 483,823 (301,510 Male and 182,313 Female) in the year 1997, with an annual growth rate of around 3%, according to the 1986 and the 1997 censuses. Whereas the official population numbers 1,448,449 inhabitants at the end of the year 2008 (QSA, 2009), only a minority of the population are citizens by birth, whilst the rest are residents who live or work in the state of Qatar and are not Qatari by birth (Al-Shafi and Weerakkody, 2008a). In addition, about half of the population is concentrated in Doha City, the capital.

The following Figure 5.2 and Table 5.1 present Qatar's total population at the end of 2008. The distribution of gender among the population (QSA, 2009) is also shown.

Qatari population distribution
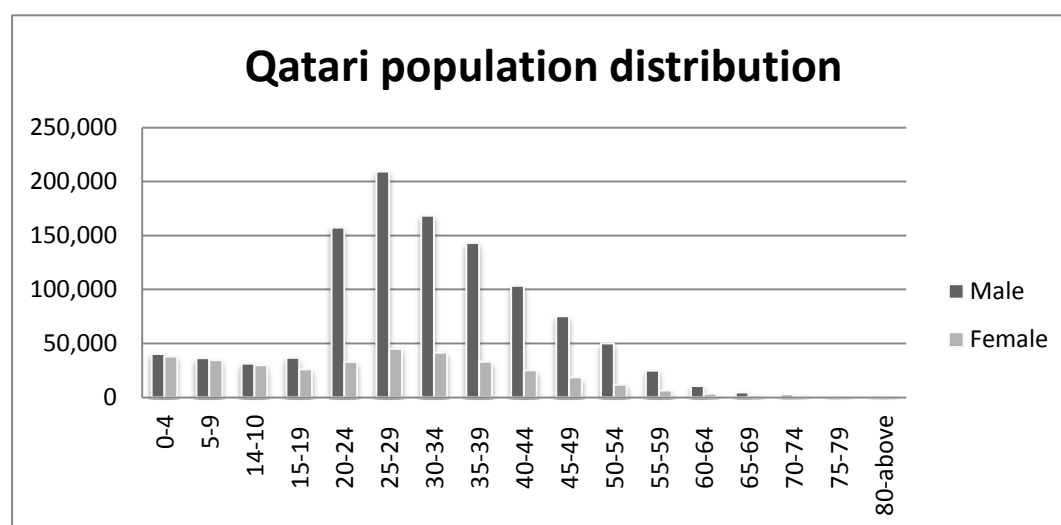
Figure 5.2: Detailed Qatari Population (Source: QSA, 2009)

The following Table (5.1) shows a detailed case study of the population at the end 2008. It also describes the gender distribution.

Age Group	Male	Female	Total	%
Table 5.1: Detailed Qatari Population (Source: QSA, 2009)				
0-4	40,288	37,938	78,226	5.4%
5-9	36,252	34,546	70,798	4.9%
10-14	31,450	29,936	61,386	4.2%
15-19	36,750	26,015	62,765	4.3%
20-24	157,274	32,854	190,128	13.1%
25-29	209,314	45,068	254,382	17.56%
30-34	168,299	41,392	209,691	14.47%
35-39	143,020	33,058	176,078	12.15%
40-44	103,272	25,105	128,377	8.86%
45-49	75,116	18,445	93,561	6.46%
50-54	50,085	11,652	61,737	4.26%
55-59	24,924	6,336	31,260	2.15%
60-64	10,689	3,500	14,189	.98%
65-69	4,477	2,297	6,774	.47%
70-74	2,632	1,503	4,135	.28%
75-79	1,426	913	2,339	.16%
80-above	1,549	1,074	2,623	.18%
Totals	**1,096,817**	**351,632**	**1,448,449**	**100%**

5.1.3   The Economy Context in Qatar

Qatar is considered to be one of the richest countries in the Gulf and in the world. Its economy is based on oil and natural gas revenues. Qatar's natural gas is considered to have one of the largest reserves world-wide. Therefore, most of Qatar's export income derives from oil and natural gas. The economic policy of the government aims to plough the returns of its natural resources back into the economy in order to establish a solid industrial base. The Qatari economy is deemed to be one of the world's fastest expanding economies. The Gross Domestic Product (GDP) achieved a record growth rate of 33.3% in 2005 to stand at 153.3 billion Qatari riyals (by current prices) compared to 115 billion Qatari riyals registered in 2004 (MOFA, 2009). Revenues to the country helped the state of Qatar to diversify its economy.

5.1.4   Political Context

The constitutional development in Qatar is regulated from one financial phase to the next, keeping pace with the development of the country and its economic growth. The first provisional constitution was issued in 1970, before independence, and it was amended in 1972, after independence, in order to cope with the requirements and responsibilities of the new phase (MOFA, 2009).

In 1995, when he succeeded his father, his highness Sheikh Hamad Bin Khalifa Al-Thani became the ruler (Emir) of Qatar. The Emir is the head of the constitutional authorities, holding all legislative and executive powers. In addition, the Emir has the power to appoint, release or designate any minister, even the prime minister (see Figure 5.3).

There is no form of election to the governing bodies. On the other hand though, in the year 1999, Qatar had its first municipality supreme election under the law number 12 and decrees 17 for the year 1998 (MOFA, 2009).

The following Figure 5.3, shows ictQATAR under the responsibility of the ministry of business and trade as a consequence of a recent merger during July 2008, and the information systems department (ISD) under the ministry of interior responsibility.
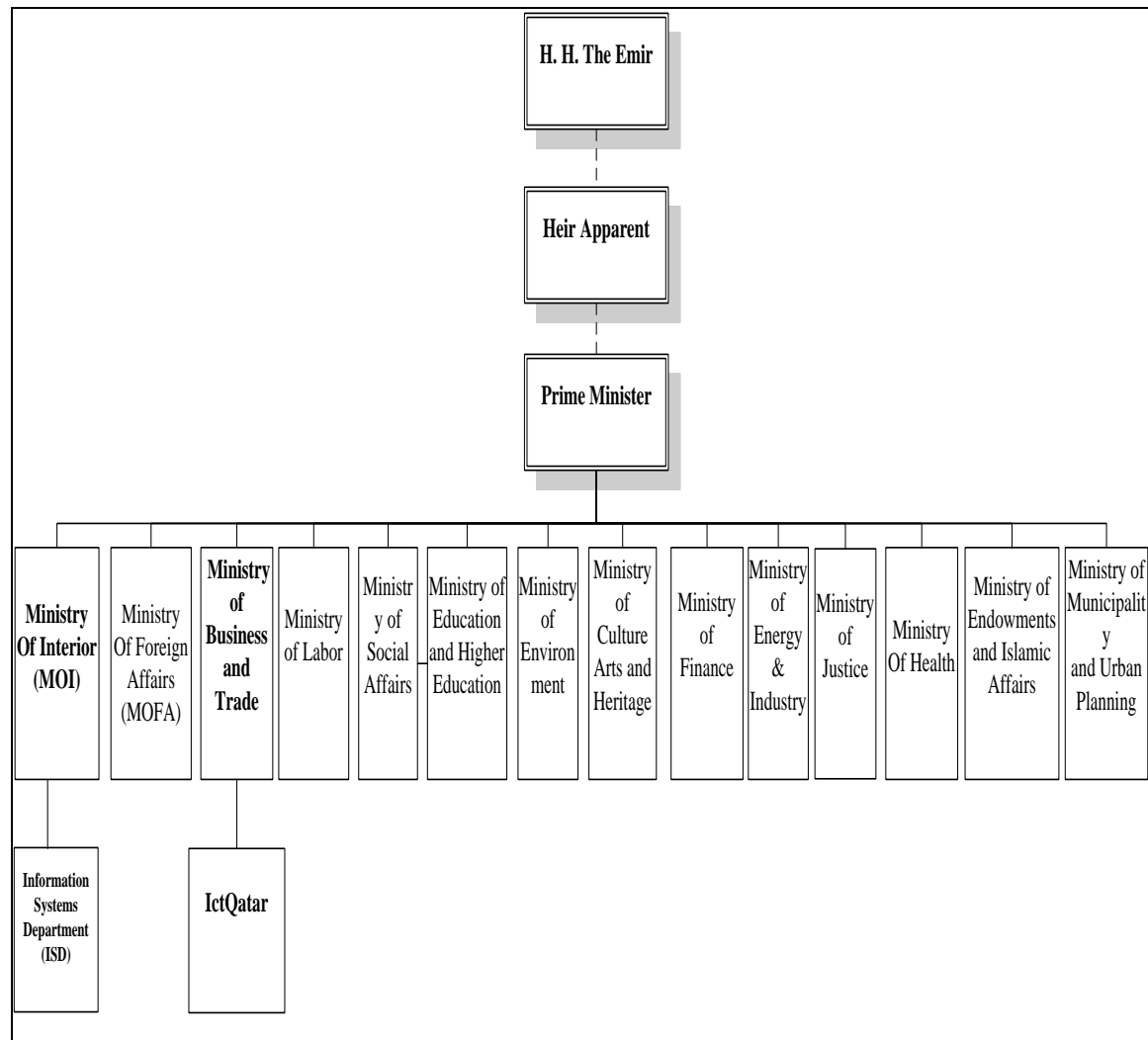
Figure 5.3: Qatar Government Political Structure at the Year 2008.

5.1.5 ICT and Technology Background

Before the e-government project and public agencies electronic services presence, there were a limited national IT projects called Network of National Information (NNI), and some other government to government activities (G2G). These government agencies websites were managed independently by their ministries and appeared around the year 2000. An example of this is the Ministry of Municipality and Urban Planning (MMAA) and the Ministry of Interior (MOI). The emergence and presence of these websites provided only static information, such as addresses of ministries, departments, services and officials. Other websites provided some more advanced facilities, such as search engines, downloadable forms and templates. The following Table 5.2, represents a list of Qatar ministries and their website links.

Seq.	Ministry	Website Link
Table 5.2: **Qatari Ministries and Government Agencies and Their Website Links**		
1	Ministry of Interior (MOI)	www.moi.gov.qa
2	Ministry of Foreign Affairs (MOFA)	www.mofa.gov.qa
3	Ministry of Business and Trade	www.mec.gov.qa
4	Ministry of Education and Higher Education	www.moe.edu.qa
5	Ministry of Labour	www.mol.gov.qa
6	Ministry of Social Affairs	www.mosa.gov.qa
7	Ministry of Environment	www.moe.gov.qa
8	Ministry of Culture Arts and Heritage	www.nccah.com
9	Ministry of Finance	www.mof.gov.qa
10	Ministry of Energy & Industry	www.mei.gov.qa
11	Ministry of Health	www.hmc.org.qa
12	Ministry of Endowments and Islamic Affairs	www.islam.gov.qa
13	Ministry of Municipality and Urban Planning (MMAA)	www.mmaa.gov.qa
14	Ministry of Justice	www.moj.gov.qa

Most Qatari ministries and public agencies started their online presence during the 90's, and were providing some of their limited information services to their citizens and customers via the web. These electronic services and websites did not provide complete and secure online transactions, but supplied inquiry services, such as the traffic violation service on the Ministry of Interior website. These transactional services and efforts, though, were the beginning of the e-government project presence. Before the launch of the e-government project and other public agencies electronic services presence, citizens used to complete their government procedures and services by going personally to the government locations and completing their inquiries in person.

According to the United Nations (UN) (2008) and the International Telecommunication Union (ITU) (2008) reports, Qatar ranks top in terms of basic ICT indicators including the number of computer and Internet users, mobile and fixed telephone line subscribers and broadband internet users (as outlined in Table 5.3). Additionally, it has been found that among the resident population (excluding transient labour), 63% have internet penetration, 54% are computer users, and 121% are mobile subscribers (ictQATAR, 2009a). Furthermore, these reports rated Qatar's schools with an average of 12.7 PCs per 100 students. This result ranks Qatar the highest in the Arab world in the number of PCs in schools per 100 students. Independent schools have a ratio of 16.2 PCs per 100 students, and it is ahead of other traditional school types in the number of computer users per 100 students and the number of internet connected computers.

Table:5.3: Qatar's Performance in Main ICT Indicators (Source: UN, 2008)	
Key ICT Indicator	**World Bank**
PCs per 100 Inhabitants	31 (out of 192)
Internet Users per 100 Inhabitants	64 (out of 203)
Mobile Subscriptions per 100 Inhabitants	55 (out of 203)
Fixed Telephone Lines per 100 Inhabitants	89 (out of 203)
Broadband Internet Subscriptions per 100 Inhabitants	58 (out of 203)

5.2 Evolution of E-government in Qatar (2000 till 2005)

The e-government initiative in the state of Qatar went through three phases from 2000 until the end of 2005, when the e-government efforts were merged with the ictQATAR supreme council in 2005. These phases are, the pilot phase, the assessment phase, and the implementation phase (Al-Shafi and Weerakkody, 2007b).

5.2.1   Phase - 1

The Qatari government launched the e-government project in July 2000 with a pilot project as the first phase to renew residential permits. This was an initiative of the Department of Immigration and Passports- Ministry of Interior (MOI). This service was chosen to be implemented as a pilot phase in only two months from conception to completion.

In the pilot project phase only three parties were involved a) The Ministry of Interior, as a service provider, b) Qatar National Bank, as a payment gateway, and c) Qatar central bank, as the host of the e-government pilot project system. The online Resident Permit Renewal service became available electronically on the 3rd September 2000.

5.2.2   Phase - 2

As a result of the success of the pilot project, the government of Qatar gave its support to start the second phase of the e-government project, by partnering with an international consulting company to draw upon international best practices. By partnering leading private sector experts, the Qatari government has demonstrated its desire to become a regional leader in e-government.

Based on the assessment that all ministries and government agencies in Qatar could commence electronic transactions, one consulting group found that local government agencies and ministries were providing 1350 different services (Al-Shafi and Weerakkody, 2007b; 2008a). From these services, 22 services were

grouped and assessed as being able to be available online within a two-year time frame commencing October 2002. However, by decree the Emir (who has overall responsibility for ICT strategy and funding in Qatar) gave the e-government executive committee thirty months to implement these services (Al-Shafi and Weerakkody, 2007b).

5.2.3   Phase – 3

This phase represented the implementation of the previous 22 grouped services. The vision of this phase was "Qatar online services, anytime, anywhere, providing government transactions information and knowledge" (Al-Shafi and Weerakkody, 2007b; 2008a).

This strategy was ineffective during the period 2000 until 2005; therefore, the government decided to establish ictQATAR to manage the overall ICT issues that relate to government, including the e-government initiative. The next section explains in more detail the evolution of e-government in Qatar and the role that ictQATAR played in facilitating this.

5.3 Evolution of E-government in Qatar (2005-)

The ictQATAR Supreme Council, established in the year 2004, took over the national e-government initiative with a remit to manage and develop the overall Information and Communication Technology (ICT) strategy in the state of Qatar. This related to infrastructure service delivery and legislation of public services.

A year later, in 2005, the ictQATAR supreme council took overall control of the national e-government initiative with an aggressive plan for e-health and e-education programs using a phased implementation plan (Al-Shafi and Weerakkody, 2009b).

E-government is part of ictQATAR's vision that is to connect people to the technologies that will enrich their lives, drive economic development and inspire confidence in Qatar's future (ictQATAR, 2009a: *ESCWA, 2007*).

The e-government master plan has been developed by ictQATAR, with input from other government agencies and councils for integrated e-government services (ictQATAR, 2008).

According to the ictQATAR master plan, the e-government program strategy will:

- Create momentum for developing and implementing new initiatives to benefit the public.
- Ensure initiatives also address government entities' goals.
- Align strategic initiatives with the highest priorities of the Qatar government.
- Support stakeholders to achieve effective implementation.
- Create partnerships among government agencies through an e-government program management office and dedicated ictQATAR stakeholder management framework.

The e-government master plan includes 54 groups of initiative that are to be implemented in four phases and waves (Table 5.4). These four phases are distributed to be implemented starting from 2006 and finishing in 2008 (ictQATAR, 2009b).

5.3.1   Four Phases (Waves) of E-government since 2005

The following four waves (phases) started in November 2006 with a planned completion time of November 2008 (Table 5.4).

Table 5.4: Four Phases of E-government Program Master Plan (Source: Ictqatar, 2009b)			
PHASE 1 (Nov/2006 to May/2007)	**PHASE 2** (May/2007 to Nov/ 2007)	**PHASE 3** (Nov/2007 to May/2008)	**PHASE 4** (May/2008 to Nov/2008)
Architecture and Standards.	Legislation and Regulatory Update.	Self Service Terminals.	Business Intelligence/Data Warehouse
Government Portal.	Government Information Security Governance.	SMS Mobile Notification/ Communication System.	Organisational Performance Management Tools.
Business Setup Services.	Public Key Infrastructure.	Government Resource Planning Phase 2. (Government Employee Career Services, Government HR Management, Planning and Policies, Financial Benefits Services Government Employees.	Government Resources Planning Phase-3.
Data Centre.	Enterprise Content Management.	Intra Government Financial Services.	Performance Appraisals, Government Employee On-Boarding and Training Services, Government Employee Administrative/ Logistics Services).
Government Network.	Personal Documents Services (ID/Passports).	Leisure, Culture and Sports Services.	Copyright Protection Services.
Payment Platform.	Housing, Real Estate and Land Services.	Participative Governance Services.	Public Transportation Services.
Enterprise Portal Management.	GIS.	Public Library Services.	Building Permits Services.
Marketing and Awareness Campaigning.	Residents Benefits Services.	Consumer Protection Services.	Islam Portal Services.
Government Resource Planning Phase 1	Export/Import Services.	Environment Protection Services.	Government Archive Services.
ICT Training and Computer Applications Training.	Visitors Information Services.	Zakat and Charity Services.	Provision of Information for Outgoing Travellers.
Government Procurement and Auction Services.	Professional Licenses Services.	Taxes and Fees Services.	Public Appointments and Citizen Nomination Services.
	Employment Rules, Regulations and Complaints.	Policy Making Support Services.	Transportation Permits for Special Goods.
	Legislation and Regulatory Update.		Inheritance Services.
			Prison Services
			Legal Services to Government Entities.

The current e-government project is overseen by a high political system designated to the state of Qatar. It is sponsored by various groups or committees that help in ensuring communication and coordination across government agencies and ministries (ictQATAR, 2009b). The first group or committee is called the 'e-government sponsor group' and is chaired by his Highness, the Heir Apparent, Sheikh Tameem Bin Hamad Al-Thani and membered by ministers of the Interior,

Finance, Economy, Municipality, Civil services, and ictQATAR secretary general (ictQATAR, 2009b). The objective of this committee is to steer the e-government master plan and to mobilise political support for e-government in the state of Qatar. According to the e-government project director, the steering committee started in the first quarter of 2006 and stated that the committee meets every six months.

The second committee is called the project steering committee for each phase and includes the Heads of government agencies as members. Its objectives are to:

- provide steering to the project.
- ensure appropriate resource allocation to the project.
- take strategic decisions concerning the project direction.

The third committee is made up of user committees that include members at a project level for cross governmental projects. Its objectives are to:

- provide input, critical review, and sign-off on deliverables.
- assure quality throughout the project.

In 2008, the ictQATAR Supreme Council decided to change the national e-government portal and domain name and called it *"Hukoomi"*. This new domain at *"www.gov.qa"* comes in default Arabic and English versions (ictQATAR, 2009a) .

Figure 5.4 shows the new layout of the national e-government website. As seen in the Figure, the Hukoomi website is divided into four main service segments (citizens and residents, businesses, visitors and information about the government). Under these categories various services are offered, including paying bills and downloading forms that mirror the e-government stage models discussed in Tables 2.8 – 2.11 in Chapter 2.
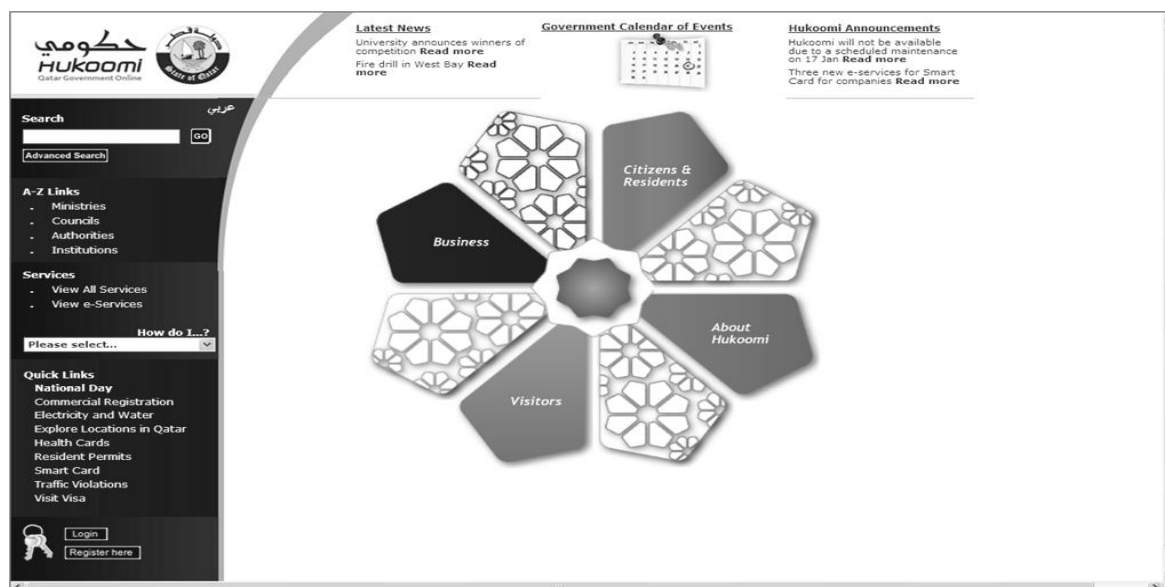
Figure- 5.4: Layout of the National E-government Portal

The electronic services that are available in the e-government "Hukoomi" portal and their owners are presented in Table 5.5.

<table>
<tr><td colspan="3">Table 5.5:
Summary of E-government Services and Their Owners (Source: ictQATAR, 2009a)</td></tr>
<tr><td>SEQ</td><td>E-Services</td><td>Owner</td></tr>
<tr><td>1</td><td>Traffic Violation</td><td>Ministry of Interior</td></tr>
<tr><td>2</td><td>Resident Permit</td><td>Ministry of Interior</td></tr>
<tr><td>3</td><td>Exit Permit</td><td>Ministry of Interior</td></tr>
<tr><td>4</td><td>Visit Visa</td><td>Ministry of Interior</td></tr>
<tr><td>5</td><td>Driving License</td><td>Ministry of Interior</td></tr>
<tr><td>6</td><td>Qatari Passport</td><td>Ministry of Interior</td></tr>
<tr><td>7</td><td>Qatari ID Cards</td><td>Ministry of Interior</td></tr>
<tr><td>8</td><td>Issue Smart Card</td><td>Ministry of Interior</td></tr>
<tr><td>9</td><td>Labour Permits</td><td>Ministry of Interior</td></tr>
<tr><td>10</td><td>Vehicle Registration</td><td>Ministry of Interior</td></tr>
<tr><td>11</td><td>Health Cards</td><td>Ministry of Health</td></tr>
<tr><td>12</td><td>Issue Birth Certificates</td><td>Ministry of Health</td></tr>
<tr><td>13</td><td>Test Food Quality</td><td>Ministry of Health</td></tr>
<tr><td>14</td><td>Students Registrations</td><td>Ministry of Education</td></tr>
<tr><td>15</td><td>University Students Registrations</td><td>University of Qatar</td></tr>
<tr><td>16</td><td>Collect Zakats</td><td>Ministry of Islamic Affairs</td></tr>
<tr><td>17</td><td>Collect Import/Export Tax</td><td>Ministry of Finance</td></tr>
<tr><td>18</td><td>Issue Tax Exemption</td><td>Ministry of Finance</td></tr>
<tr><td>19</td><td>Electricity and Water Bill Presentment and Pay</td><td>Kahramaa</td></tr>
<tr><td>20</td><td>Commercial Permit</td><td>Ministry of Municipal Affairs and Agriculture</td></tr>
<tr><td>21</td><td>Work Permit</td><td>Ministry of Civil Affair</td></tr>
<tr><td>22</td><td>Employment Services</td><td>Ministry of Civil Affair</td></tr>
<tr><td>23</td><td>Membership Registration</td><td>Chamber of Commerce</td></tr>
<tr><td>24</td><td>Issue Certificate of Origin</td><td>Chamber of Commerce</td></tr>
<tr><td>25</td><td>Trade License</td><td>Ministry of Economy and Commerce</td></tr>
<tr><td>26</td><td>Charity Donation</td><td>Red Crescent</td></tr>
</table>

The Supreme Council for ICT "ictQATAR" formulated the national ICT strategy in 2005 and includes Ultra High Speed Infrastructure for All, a regulatory and legal framework, safety and security, an integrated e-government system, e-education, e-health, e-business, innovation and capability building, and an inclusive society.

Finally, in global terms the ranking of e-government in Qatar ranked as 53 in 2008, and was ranked 62 worldwide in the year 2005 (UN, 2008; Al-Shafi and Weerakkody, 2008). In addition, the UN (2005) report considered the Qatari e-government project to have regional (West Asia) best practice.

From the abovementioned, this section presented a brief background about the state of Qatar, its geographic location, its political and economic systems, its resources, and population. These were presented to give a clear idea about the case study of this research and where it was conducted. Also, this section offered a brief background about the national e-government projects in the state of Qatar, starting from its first phase in 2000 until today. The next section will describe the research findings from the interviews that were conducted with the national e-government organisation members that were conducted in order to show the implementation, and the challenges that might hinder their efforts will also be examined.

5.4 Organisational, Technological, Political, and Social Challenges

In order to explore the practical issues influencing implementation of the e-government system, interviews were conducted with key government employees responsible for e-government and its services concerning e-government implementation in Qatar. The results of these interviews are outlined in this chapter. The following sub-sections aim to: a) identify the organisational, technological, political, and social challenges that are covered in Chapter 3, that encompass the e-government system in Qatar; b) explore and identify the other challenges that were not included in the proposed conceptual model in Chapter 3. The conceptual model formulated in Chapter 3 provided a frame of reference to conduct the case studies, and offered the key themes to explore in practice, in terms of the organisational, technological, social and political domains.

5.4.1 Organisational Issues

Literature research can act as a guide and, in this instance, has many benefits for implementing an e-government system. These benefits were discussed in Chapter 2. The findings of the case study discussed in this chapter showed that the government

would accrue many benefits from e-government implementation, by reducing operational costs, increasing its efficiency, transparency and accountability.

5.4.1.1 E-government Organisational Structure

When e-government organisational was first established, it was an independent organisation that was responsible for the entire Qatari national e-government activities. This independent organisation was owned by the government, and had its separate financial issues, focusing on accountability, transparency and cost efficiency. This initial e-government organisation was followed by a steering committee of three members (including the e-government director).

In the year 2005, the e-government organisation became part of ictQATAR. The Qatari national e-government project had decreased in influence and delayed activities until ictQATAR was fully ready to take on its new role. From the findings, it was determined that the e-government project was less flexible than in previous years in terms of staffing and procurement. This was a good time to change as the e-government project benefited because, at that time, the government changed its leadership, priorities and steering committee. This included its own members, most importantly the director of the Information Systems Department (ISD) within the Ministry of Interior (MOI). Furthermore, it was found that the ISD-MOI provided around 70% of the services to the e-government project according to the existing director of the e-government project. Moreover, director of the e-government stated that the MOI is the most important ministry/public agency in the country that provides services to the e-government project, and the MOI is in charge of implementing and maintaining smart cards and the public key infrastructure (PKI) in the country.

It is worth mentioning here that in the last quarter of 2008, the government also merged ictQATAR supreme with the business sector to become a part of (or a department within) the new Ministry of Business and Trade. This resulted in a lack of flexibility and imposed controls on the high-level decision making powers of ictQATAR.

This particular challenge was highlighted by the current e-government director; *"The quick developments and changes that are happening here in the government, at a time when it is undertaking a restructuring process at a very high level implies some changes in policies, procedures and business process ownership. Many business processes are being streamlined and are owned by different department and ministries"*. He also argued that the e-

government teams were very able and that he was working with them in the transformation of business processes and services. Furthermore, he added that most of the managers are *"normally mid-layer management from other government agencies who couldn't collaborate with e-government officials due to other commitments in different projects"*. Given this context, the organisation structure and allocation of responsibilities in ictQATAR became a major challenge for e-government implementation in Qatar.

5.4.1.2 E-government Strategy Alignment

This section highlights the aligning of e-government strategy with the overall ictQATAR strategy. Currently there are nine national initiatives that should lead to the development of ICT in the state of Qatar. These initiatives are under the jurisdiction of ictQATAR and, in particular, under one steering committee. The aligning of e-government strategy with other initiatives was identified as a key imperative. The e-government director stated that *"The government in Qatar has its own socio-economic development priorities; we have tried to base our master plan into this Qatar vision. Previously it was called Qatar vision 2025, and now it is called Qatar vision 2030"*.

5.4.1.3 Power Distribution

E-government system implementation will eventually be awarded to some organisational power, and then delegated to the employees and managers. If though, the number of employees is reduced because of business redesign, the question remains as to who is going to administer the e-government project? In this context, resistance to change is another challenge that needs to be faced in terms of the distribution of power and associated roles and responsibilities. This can impact the entire organisation from junior level staff to senior managers, who might resist by not committing much time or resources to the project.

5.4.1.4 Prioritisation of E-government

This issue requires a great deal of focus, especially in terms of identifying and prioritising the technical expertise required to create and deliver accurate e-government systems. The findings of this study show that the e-government development team and officials classified the prioritisation of deliverables of e-government services by adhering to the e-government master plan that aims to match the country's vision 2030. According to the e-government director, the government has its own development priorities and the objectives of ictQATAR accords to the master plan Qatar vision 2030. Also, he stated that e-government

"was one of the inputs that we used for the development of our master plan and priorities' this procedure".

E-government officials have followed some steps in terms of the preparation of e-government priorities that include: firstly, by meeting with key ministries and government agencies to understand their priorities, to know their high priority services that would impact their external users and customers; secondly, conducting workshops, seminars and focus groups to gather end users requirements. These workshops were held with the end users from different sectors, such as citizens, business people and residents in Qatar. After identifying their priorities and requirements, a list of services in a portfolio was created; and finally, a study was conducted by the planning council. This study has a detailed assessment on the government services which were taken into consideration.

Based on the previous steps, ictQATAR created a four year e-government master plan whereby they had clear priorities on what should be the primary objective to meet the citizens' requirements. The e-government project was going to be aligned along socio-economic lines for the wider development of the country. It was, in the words of the e-government director, going to be '*dynamic and open to change*'. Also, internal approval was granted for how the initial 52 services (identified in 5.4) would be included in 4 stages of development and implementation, each having an initiative and definite timeline to progress toward. Moreover, the e-government director explained in detail how they place these initiatives under each wave or stage; *"our 1st wave initiatives were to address the required shared services and infrastructure required that would enable the future e-services developments very quickly. So, a lot of infrastructure related initiatives have been kicked off as part of the 1st wave and some initial high important initiatives related to e-government services have also been kicked off under the wave-1".* Additionally, the e-government director clarified that the e-government implementation is currently in the 2nd wave of the initiative. The e-government director explained the reason for delaying some of the high benefit initiatives by specifying *"There are phases and waves and the positioning of the initiatives under each wave is basically driven by priorities".*

The criteria that e-government officials have used for prioritising e-government services include: the overall benefit of having a particular initiative to the end-user, benefits to the overall country, development priorities and ease of implementation.

The findings of this study illustrate that the e-government team had changed the implementation of the e-government master plan due to various challenges faced. These changes impact the 54 groups of initiative which are planned to be implemented in four phases (see Chapter 5, Table 5.4). These four phases were due to be implemented, starting from 2006 and finishing in 2008 (ictQATAR, 2008). The new implementation schedule focused on starting the implementation from 2007 and completing in 2011 (Al-Rayah newspaper, 2009).

To conclude, the changing of the e-government master plan and consequently the prioritisation of deliverables of the e-government services need to be considered as a major dilemma as this seriously hampered the initial stages of the e-government plan.

5.4.1.5 Future Need of an E-government System

As explained in Chapter 2, the benefits of implementing an e-government system are many (see Figure 2.2 in Chapter 2). So, governments around the world seek to implement these initiatives as long as it satisfies themselves, businesses, and mainly their citizens needs and expectations.

A senior e-government manager specified that ictQATAR had developed the infrastructure readiness for the easy developments and the developments of e-services in Qatar as main priorities. Also, it has been found that there is about a 35-40% accomplishment of the overall e-government master plan. Therefore, e-government implementers and officials are working on the development of the government to citizens and businesses, and at the same time the objective of the e-government program in Qatar is also to deliver internal government efficiency and to provide shared services, whilst also streamlining internal government processes that will increase the efficiency of the internal operation of the government that mirror the e-government interaction dimensions discussed in Figure 2.1, Chapter 2.

Therefore, various general government applications to be covered in the future include a lot of different types of projects that will run in parallel as government resource planning, human resources (HR) and finance, government procurement, government network, government data centre for hosting the shared application, and the infrastructure for the government.

5.4.1.6 Employees Training

The researcher will discuss training issues at the level of e-government for government employees that are involved in the e-government activities. These issues are seen from the viewpoint of an e-government organisation and the researcher will be discussing the steps that are followed against each level to benefit people. Many skills are required in the e-government organisation at all levels including technical and managerial. Therefore, training is necessary to broaden employee's skills, especially for the development team.

The researcher found that most of the e-government services were developed by participating public agencies or by a third contracted party, and the e-government team are responsible for some of the online e-government service maintenance and support only. Additionally, the e-government development team had participated in the completion of some major e-government services, such as Public Key Infrastructure (PKI) and payment gateway.

The e-government application manager stated that *"Usually training is one of the new components for any new e-services development. So, we are covering both the end user/ public. Not a physical training, but we provide some user manuals".* Furthermore, he added *"we are focusing on motivating employees by developing them to handle higher responsibilities, and attending different events related to e-government services from the technical side and/or government side by sending them to different conferences and trainings."* In contrast, an e-government developer was unhappy and complained about the level of technical training that they have and said *"technical training is so important, and we require training courses to enable us to be more active. However, some times as a non-citizen (Not Qatari) it is hard to get external technical courses outside of Qatar".*

In terms of higher level managerial training the e-government director described the training of e-government services amongst public agencies top management, (i.e. CIO level) and other government employees that are involved in the e-government implementation, as very important. The researcher found that e-government and ictQATAR officials have facilitated some types of tailored trainings, targeted at twelve government CIO's in different government agencies to experience and share the activities from the success of e-government in Singapore. The aim of this tailored CIOs' training was to educate the government CIO's as well as share the success of best practices in e-government.

To conclude, the case study findings confirmed the importance of the employees' training issue and it has to be treated well and considered an important issue mainly in relation to technical employees that are involved in the development of the e-government project.

5.4.1.7 Collaboration

This is a new challenge that was identified during the interviews and was not included in the conceptual model proposed in Chapter 3 (Figure 3.1).

The case study findings show that there is a limitation of capabilities in Qatar and e-government officials have realised a reason for this limitation is the country's size, population and capabilities. As a result, the e-government officials started to attract consultants and IT experts from outside Qatar to support the local e-government implementers on the development side. The external consultants/experts role was seen as imperative for sustaining the operations of the large application that the e-government system developers were implementing. Each employee and consultant has different experience and skills; therefore, it is important to align these efforts into one goal and to gain from these skills.

The e-government director highlights that "*the challenge we faced was around having a forum where we get in collaborations and discussions with a wide range of IT expertise and to share knowledge, ideas, and concepts because e-government has never been an individual champion effort. It should be a collaborative effort. So, we have found that there is no forum that gathers these employees and experts, mainly IT managers to come and discuss the efforts, and to feel that they are part of these transformation efforts*".

Finally, centralised government procurement, centralised government HR and finance, centralised customs, centralised business setup services, centralised data centre and government networks are large applications that require experts to operate. Therefore, the e-government director stated that a mixture of local and international expertise was required to manage these large projects.

5.4.2 Technological Issues

Technological issues that will be discussed are the common factors and issues that are seen from a higher level, not the detailed technical points.

The technological issues are classified into seven factors. These elements are security and privacy, information technology (IT) standards, e-government portal

and access, system integration issues, capabilities, business and IT alignment, and local industry partners.

5.4.2.1 Security and Privacy

The security and privacy issue is seen by e-government implementers and users as the most critical concern as a result of highly sensitive information that needs to be protected from technology criminals. The Qatari government realised the importance of this issue, which might hinder or affect the use of the national e-government project. Therefore, the government has implemented the use of smart cards, public key infrastructure (PKI) and biometrics that are utilised to provide and cover reliable and trusted security requirements for e-government services.

The e-government implementers and officials have selected the PKI and smart cards for their e-government system as a security mechanism. The Ministry of Interior (MOI) has been given the responsibility of issuance, organising and implementing this technology.

The case study findings showed that the smart cards were issued in two stages. The first stage was the actual issuing of the smart cards to companies that have more than 15 employees, in order to finalise all of their government activities for the e-government system because they have been forced to use the e-government system as the only method to finalise their required transactions and engagements with the government. The second stage was implemented during the year 2008, when the government issued the smart cards to the Qatari citizens only. As noted, non-Qatari residents will receive their smart cards in the third stage, which at the time of writing this thesis, had not been specified.

The author found that some e-government services comprised simple authentication security methods by only using the unique Qatari ID and passwords to facilitate the service to the wider sectors of citizens and companies. This happened effortlessly because each citizen, resident, and private sector in Qatar has a unique identifying ID. For higher-level, confidential and sensitive information that could be dangerous when exposed, or cause harm to an individual or government, the e-government implementers and officials, with the support of the Ministry of Interior in Qatar, have developed the authentication mechanism using, for the second stage, the combined use of smart card, PKI, and passwords. However, the e-government director also explained a scenario where credit card fraud had been carried out through the e-government portal in 2005, which was outside the control of the government.

5.4.2.2 Information Technology (IT) Standards

IT standards are an important factor for the success of any e-government implementation, mainly between the e-government organisation and other participating government agencies, and other users. In terms of their hardware and software, if the systems in place are not compatible with each other and, as such, may not work together, this could lead to e-government failure or dissatisfaction.

Based on the case study findings, the e-government officials have developed ICT standards during 2008, and they attempt to impose those standards on all of the Qatari government agencies. Additionally, to give some strength to this issue the policy was developed and it has been endorsed by the cabinet. The specified ICT standards include Reference ICT, government ICT architecture and standard.

Interviewees specified that basically, they want the Qatari government agencies to be responsible for compliance, and that the e-government implementers would undertake the auditing periodically; e-government officials are in the process of completing some training in order to ensure champions for the ICT standard for the government agency. Then, e-government implementers will be ensured compliance of certain values for any government applications or IT related projects.

The e-government application manager stated, *"we need to comply with the ICT standards for example IT project application whether infrastructure or within the government by providing services to our government agencies, citizens, and businesses with the need to be complied with the ICT standards".*

Currently, public agencies and citizens have various user interfaces, as acknowledged by many interviewees, and one e-government employee stated *"We have some standards problems, like JAVA, we have an old version. Whereas, in other government agencies and most users have new personal computers with latest and new versions of SW, which results to lack of use of e-government services".*

5.4.2.3 E-government Portal and Access

E-government implementers and officials decided to implement an online transactional service from the first day of the national e-government project, in the year 2000. Payment through the internet needs to have a very secure payment gateway. The payment gateway was developed and established according to very demanding standards and with a prioritised importance. The development of the e-

government payment gateway was chosen by the Emir to be the only government payment gateway for any public online services, and thus prevented other government agencies from establishing any other payment gateway for any of their e-services payments. The payment gateway was launched as an e-government pilot project in July 2000, and three parties were involved in the development namely, Qatar central bank, Qatar national bank, and the e-government team. Qatar national bank (QNB) was in charge of setting up the payment gateway, and Qatar central bank provided the financial-settlement network. The e-government team were responsible for providing a single point of authentication, and for maintaining the payment transaction details.

The case study findings showed that the payment gateway encountered serious problems and the system was occasionally unavailable. The following Figure 5.5, illustrates a payment settlement for a traffic violation in November 2008. This error occurred during the whole month of November 2008 without being rectified and without any notice from the e-government team.

Figure 5.5: Payment Settlement Error during November 2008

In terms of e-government accessibility usage, the e-government director stated that the national Hukoomi comprises a total of (1,400,000) e-government transactions in 2007, and (1,898,023) e-government transactions were adopted up to the end of year, 2008. The following Table 5.6, shows that citizen use and adoption of the Hukoomi website consisted of only (6.5%) with the remaining (93.5%) by businesses for the year 2007 from a total usage of (1,260,532) (citizens and businesses). For the year 2008, it can be seen that citizen usage and adoption

achieved only (8.7%), with (91.3%) coming from the business sector. This was from a total usage of (2,078,188).

SEQ	Years	Total usage	Citizens	Residents	Business
Table 5.6: Total E-government Adoption Rates By Customer Segments for the Years (2007 And 2008)					
01	2007	1,260,532	81739		1,178,793
02	2008	2,078,188	180165		1,898,023

From the above discussion, it is clear that the e-government team, other government agencies, businesses, and citizens are concentrating fully in this Hukoomi website and payment gateway. As it is the only payment gateway for any online e-government payment, it is a very important and challenging issue. However, even considering its importance and risk value, the e-government team did not resolve the payment gateway error for the whole month of November 2008. As a final remark in this section, the above Table 5.6 shows minimal usage and adoption by citizens which confirms that e-government implementers were targeting businesses more than citizens.

5.4.2.4 System Integration

System integration among ministries and public agencies, in terms of their different back-office applications, databases and interfaces, is a key factor for the success of any e-government project. As mentioned in Chapter 2, according to the Layne and Lee (2001) model, there are two types of integration, vertical and horizontal. As a reminder, horizontal integration is the integration across different functional areas, applications and databases. It leads to integrated government services and information that is accessible by citizens and other customers. The findings showed that the communication channel between the MOI system and other government agencies systems, including the e-government systems and the payment gateway service between the Qatar central bank, Qatar national bank, and national e-government portal, use MQserious software (middleware communication system). Also, these different public agencies have homogonous systems due to different databases and applications in each public agency. For example one MOI employee stated that *"We use DB2 and Oracle as our database systems and MQserious as our communication channels with other public agencies systems"*. The e-government application manager specified that *"we have only one way of integration which is limiting us to implement or develop e-services within efficient time and efforts. Having this service part with possibility of providing the different integration methods will improve and speed up*

the implementation and development of e-services. I think this is important and we realise that we need to give priority for this now and we really in the implementation stage of this platform which will enable any government agencies, even if they don't have enough platform or infrastructure to host those e-services".

To conclude, the integration issue is a very complicated and important factor and to achieve a successful e-government project, it must first be integrated, especially horizontally across different functional public agencies (Layne and Lee, 2001). Also, the author found that most of the applications and software used in the e-government systems and implemented by the e-government organisation are IBM products, and most other public agencies in Qatar do not use those, for example, the DB2 database. The reason for choosing these IBM products within the e-government system was because the Ministry of Interior was using IBM products, and when the e-government pilot project started in the year 2000, the MOI was the first service-provider to process resident permits, because most e-services were already online, based on the consultant readiness report presented in the year 2001 (see Section 5.2.2 in Chapter 5). Therefore, e-government officials decided to be compatible with the MOI's software in order to achieve the ease and fast success of e-government implementation during the first implementation (see Section 5.2 in Chapter 5).

5.4.2.5 Capabilities

Based on the empirical data, this sub-section seeks to explore new technological factor and challenges that were identified during the interviews, but were not included in the conceptual model proposed in Chapter 3 (Figure 3.1).

The e-government director particularly emphasised the importance of this capabilities issue and mentioned that the first and biggest challenge for the e-government implementers is the IT capabilities, and having the right capabilities locally in Qatar to drive the e-government implementation. The e-government director stated that, "*most of the e-government projects are very large information technology (IT) scale and e-services transformation projects in Qatar, and required the right skills to in order to achieve the success".* In Qatar, the situation of finding the right capabilities is not easy due to the size and demography, and because there are a lot of parallel developments, there are many opportunities for local resources in the country. The e-government implementers and officials have big ambitions and plans, and it was hard for the government to get the right capabilities in order to deliver those projects on time and on schedule.

The e-government director stated, "*this challenge will be not easy for us due to the developing that is happening here in Qatar nowadays*". The case study findings show that it was not easy to attract capable employees, especially local citizens, in the e-government and the IT field.

Finally, the e-government director stated that this is *"one of the greatest challenges that we are facing when implementing e-government and other related huge projects"*.

5.4.2.6 Business and IT Alignment

Based on the empirical data, this challenge is new technological challenge that has been identified during the interview and was not included in the conceptual model proposed in Chapter 3 (Figure 3.1).

The business and IT alignment challenge that e-government officials noticed is a misalignment between IT and business in the public agencies. The e-government director claims that "*in many cases for us to implement or to have a joint team working in certain initiative, we have to involve both the business and the IT people and normally we found that IT and business are not aligned",* and he stated that *"it is a challenge for us to put the business and the IT together to work with us in a joint project to implement or transform those government services*".

The e-government officials have developed a government standard to manage these initiatives and projects by aligning the business and IT together for each initiative by following a series of steps for categories that include a) setting up a users committee from IT government experts to give their input throughout the development, b) joint team to develop the strategy and prepare an implementation road map together; the project manager will be from the government agency side and a project coordinator will be from ictQATAR, c) one single owner as business setup services that have few licensing entities in Qatar and proving entities, and has one sole owner and a project owner for some services that have more than one owner, for example visa services at the MOI, and d) e-services related projects for government application that involve more than two to three government agencies or, on occasions even more than ten government agencies. So, there has to be one single owner for business setup services that have few licensing entities in Qatar and proving entities. So, there has to be a sole owner and a project owner. It is not ictQATAR because it is a business e-service transformation project.

IctQATAR's strong governance normally assures that one single owner will be always assigned to each e-service, where business and IT are involved in each service implementation.

5.4.2.7 Local Industry Partners

Based on the empirical data, this is new technological challenge that has been identified during the interview and was not included in the conceptual model proposed in Chapter 3 (Figure 3.1).

The author found that the e-government implementers and officials believe that a local industry/partner alliance is an interesting challenge, and that the most important point is to find the right local industry partners in Qatar to transform the e-government journey. The e-government transformation journey will not be a success unless a very strong industry/private partners alliance supports the project.

The findings showed that e-government officials and implementers claim that IT private partners and alliances in Qatar are not strong, and that they were looking to enhance the local industry partners in Qatar. The e-government director highlighted that the government would like to encourage international vendors and companies towards implementing the e-government system on the condition that there is long term commitment from these organisations; this is important to ensure sustainability of e-government in Qatar.

The e-government director stated that *"the government in Qatar has estimated around $ 400 million as a budget for the project, and that they have done some efforts to maximise the value for the end-user efficiency with some economy and sustainability of the country"*. Therefore, the Qatari government established a new IT company (Maalomatiih) which is owned by the government. This company is run by the ictQATAR team and the government claims that it has basically been established to overcome the challenges by having local industry partners and also to ensure local stability. E-government officials considered that the Maalomatiih company has to provide certain capabilities and expertise related to e-government, e-Education, and e-Health in the country. Furthermore, the e-government director justifies that *"It is a fast development that will take us a long time to recruit and find the right recruitment here locally. So, we have followed three approaches to achieve our objectives for this particularly IT company locally"*.

The government had followed three steps to ensure the stability of local alliances by a) setting up a committee that will be looking into some international IT companies that can be acquired in Eastern Europe, India, China, and the regional market, whilst retaining the IT Company's staff here in Qatar, b) building a strategic alliance with strategic international IT companies, and c) recruitment.

5.4.3   Political Issues

Political governing in the state of Qatar is hereditary and reign ruling. The ruler has the power of appointing any person to any position, even if this person is not qualified. The ruler also has the power to decide how to spend the money and allocate the financial budget among the government agencies. However, to highlight the political issues that need special and higher treatment during the development of an e-government system, the discussion will focus on four points, namely; leadership, government support, financial and fund and legislations and regulations.

5.4.3.1 Leadership

Most of the public agencies are managed as a one man show, and most of these organisations use a structure that has managers for most positions including finance, human resources, operations and IT. At the top there is a type of board of directors, and these top positions in some public agencies might be allocated based on the decision of the governor or government officials, without being qualified or suited to the position. The ictQATAR general or e-government director might also have these same issues. The general manager can be a one-man-show that controls and decides most procedures within the organisation. In government, there is a pattern where decision making is highly centralised in most public organisations.

A senior technical employee specified that the ictQATAR and e-government leadership support level is fair. Another e-government technical employee believes that the support of their e-government leadership is at an adequate level, and he does not know if the e-government project is a priority for the leadership or not. On the other hand, the e-government application manager stated that *"the e-government project is a priority for the leadership, and we are talking about improving government services. So, e-government project is one of the important projects that will play a route to improve the government services".*

5.4.3.2 Government Support

The e-government project is a continuous and long term project. Therefore, it needs high government support to serve and implement a successful e-government project.

One e-government employee explained his feelings about the top government support by stating *"The support and commitment of the top government and government officials toward the e-government project is big support"*. Another employee added that there is very strong support. Moreover, the e-government director explained in detail the following, *"I think there is a huge commitment. I think by taking the step toward setup the e-government sponsor group is a great commitment, and we are having all those key ministers headed by the heir apparent himself. Also, we have a periodic update to this sponsor group and we receive a great support overall and also in terms of some actions that we take. The normal meeting for this group is once in every six months. But, if there are any urgent requirements, we just write to them and it will be supported"*. In contrast, a senior e-government technical employee mentioned that the support of the government officials towards the e-government project varies from time to time, but in general it has a good support, and added *"as I understand that the steering committee always gets the right support from the top authority"*. Furthermore, the e-government application manager clarified that *"there are different levels of commitment at management level, and lower lever. The manager's support is required in the lower level to get the implementation without any issues"*.

5.4.3.3 Financial and Funding

Governments are aware and realise the relative advantage of having an e-government system. Implementing an e-government system is a radical change and a long-term project that requires attention and continuous financial support in order to achieve success in the project.

The author found that the budget for the first year of the e-government project was simply a lump sum without any details of spending and allocation for the project. Later, however, the e-government project was budgeted separately to reflect the total e-government budget. The e-government application manager specified *"Financials are neither an issue nor a challenge for e-government system in our country"*.

Another senior manager stated that *"I think we can not consider it as a key challenge to get fund, but it takes time due to the process of getting financial and fund resources"*. Another senior manager confirmed that fund and financial issues will be *"One of the*

main challenges, if it is not planned well. It will be continuous challenge". Furthermore, the e-government director mentioned that they do not have any problems with financial issues and they have great financial support from the leaders of this country for the transformation of e-government.

Finally, the case findings show that the estimated budget for the e-government implementation program and other public sector transformation efforts in Qatar is around $400 million for four years. Additionally, it showed that the e-government officials have also been involved in a lot of change management, reengineering, consultation, business analysis and infrastructure.

5.4.3.4 Legislation and Legal

Legislation is an important factor for the e-government system and it might be enacted prior to the implementation of the e-government project. Legislative acts include authentication, privacy, e-payment and electronic signature. It might be better for these laws to be in place prior to the implementation of the e-government project.

The researcher found that ictQATAR had drafted an electronic transactions law which will address issues relating to internet transactions and security. The draft legislation will also address issues relating to e-government.

"It is supposed that the law will be passed in 2007. IctQATAR will also be the Internet Domain Name Registrar for Qatar" (ESCWA, 2007:13).

The e-government director explained the privacy of information protected in e-government legislation; *"Just to highlight one of our initiatives under the e-government was to come up and develop the e-transaction laws or cyber law here in the state of Qatar, and cannot be drafted under the approval process by the cabinet. It is within the cabinet now to endorse, and this should provide the legal support"*. In addition, he added that steps were taken to put consumer protection for e-commerce transactions in place; *"All of cyber crime and protection to election property are covered actually in this e-transaction law"*.

The current situation is that the legislative process took some time to draft the law, because the e-government officials looked at the different aspects, and then engaged a third party vendor to support them. However, it was found that they also looked at regional gulf countries and international legislation, and then benchmarked the e-

government transaction law, which took around six to seven months to draft. This law is now with the cabinet ministers to basically review, share with some legal experts and then approve. Moreover, ictQATAR is the telecom regulatory as well as the ICT developer. Additionally, an e-government technical employee stated that the legislative process is *"Very slow and inefficient",* whilst another e-government employee stated that *"there are no regulations".*

5.4.3.5 The Pace of Development and Change in the Public Sector

Based on the empirical data, this is a new political challenge that has been identified during the interview and was not included in the conceptual model proposed in Chapter 3 (Figure 3.1).

The e-government director stated that quick government development and changes are an important challenge, and he highlighted that this issue is a very important and main challenge. The e-government director reported on *"the quick developments and changes that are happening here in the government. The government is undertaking a restructuring at a very government high level of its governance".* Also, it was found that this restructuring also implies some changes in policies, procedures and business process ownership. Therefore, a lot of business processes are streamlined for the business side. Services are owned by different departments and ministries, and for e-government officials to be an enabler and to work with other government officials and employees in the transformation of those business processes and services, normally they the mid layer management on those government agencies that they cannot commit to e-government officials in a project organisation to implement those projects because they are undergoing some reengineering exercise to the business process.

The e-government director claims that *"It was very important to align our priorities to the overall government priorities as much as possible. So, we have re-aligned a lot of times our priorities in respective of the implementation and unfortunately mainly because of the changes and developments that are happening in the country".*

5.4.4 Social Issues

This category, as mentioned in Chapter 3, is based on the institutional theory (Scott, 2001). The theory did not explicitly state these aspects and factors. These issues and factors are classified in this study into the following main categories, namely citizen centric focus, awareness, organisation and culture, and digital divide.

5.4.4.1 Awareness

The awareness issue should be well-planned and implemented by establishing a detailed communication plan. This plan involves communication between the e-government organisation officials and the beneficiaries of the online services: citizens, businesses, and other government agencies.

According to a senior e-government employee the *"E-government project was promoted by advertising campaigns and promotional material, and were targeting publics only"*. But the e-government officials could not provide evidence that the awareness and communication plan was targeting citizens. A senior e-government employee stated *"Although that the new e-government portal has been launched from February 2008, but we conducted three awareness campaigns for businesses and companies, the ministry of commerce, and finally citizens in public locations as shopping malls"*. Also, he added that they understand the importance of the awareness campaigns *"We have developed the marketing strategy for all the e-government program levels but we did not want to have a strong communication campaign and wanted to give some time in order to measure the success of these awareness and communication campaigns"*.

It has been found that the e-government and ictQATAR officials have conducted awareness campaigns that targeted the business sector more than other sectors, because most of the e-government services that are available in Hukoomi are targeted at businesses rather than citizens.

To conclude, it is clear from the interviewees' comments that there was much attention paid to the awareness and communication plan, but most of the available e-government services are targeting businesses more than citizens. Therefore, the awareness level of citizens is weak and needs an immediate action taken towards citizens, whilst this challenge might affect the interest of citizens' usage, e-government implementers should consider improvements to the e-government services for targeting citizens.

5.4.4.2 Citizen-Centric

The citizen centric issue concerns how e-government implementers consider citizens satisfaction and opinions. All of the interviewees specified that the e-government organisation is implementing an e-government project as citizen-centric; for example, one of the e-government senior employees explained that *"We are considering the usability and user centric which is considered important because of the*

Qatari culture". On the other hand, another e-government technical employee specified that *"It was initially focusing on transactional benefits for the citizens and moved to wider to give awareness information covering all aspects of benefits for the citizens".* The e-government director stated that they had spent around four months to develop the e-government strategy that is built in two main pillars, being citizen centric and government-related. Also, the e-government officials mentioned that they have targeted the Qatari citizens to see these services from a citizens' point of view. Additionally, they have set up services that have up to twelve government agencies involved, just to serve citizens. For measuring citizen satisfaction and feedback, one of the e-government technical employees specified that *"I do not think that we are measuring citizen or users satisfaction because possibly we are so busy with other issues"*, and when it comes to the type of relationship between the e-government team and citizens, the e-government implementers specified that there is a link for adding suggestions on the portal, and their help desk. Also, the findings show that the e-government implementers believe that the help desk were supposed to follow up suggestions, but they were not sure if this is effective or not.

To conclude, it is an extremely important issue for citizen centric to be considered and treated with careful attention and high priority. Additionally, e-government officials must be aware of the gap that might be created by ignorance of citizens' expectations and needs.

5.4.4.3 Digital Divide

Digital divide has many dimensions between gender, city and rural, young and old and socioeconomic groups. The gap might also be between users who are able to access and use ICT, and others who are not.

The case study findings show that there is a clear digital divide in Qatar. Whereas, at citizen level, the e-government director specified that *"we have adapted another department actually under ictQATAR called e-education program. One of their institutes is called "e-citizen". The e-citizen focus or objective is to increase the ICT literacy for all citizens in this country. They have partner with customised International Computer Driving Licence (ICDL) or IT training providers. For the last year, I believe they trained up to 8000 citizens".* Also, the case study findings showed that the Qatari government has launched the free wireless internet parks (iPark) concept under the national e-government initiative with a view to providing free internet access for all citizens whilst enjoying the outdoors. By offering free wireless internet access, the

government hopes to increase accessibility of e-government services and encourage citizens to actively participate in the global information society with a view of bridging the digital divide. Also, the author found that the Hukoomi portal is bilingual, using two different languages (Arabic and English) (see Figure 5.4 in Chapter 5). Furthermore, the e-government officials should be aware of the gap that might be created, because the most popular channel to access the e-government portal was via personal computers, laptops, or wireless mobile devices, whilst neglecting other accessible channels such as kiosks and digital TVs.

5.4.4.4 E-government Training and Education for Citizens

The training and education issue that targets citizens to become familiarised with and trained on the e-government system is an important issue. The case study findings show that the e-government organisation and officials consider it to be an important factor. IctQATAR has established a new program called the e-citizen program, that focuses on increasing the ICT literacy for all citizens. Therefore, the government adopted customised ICDL training for all citizens in Qatar. This training was initiated in the year 2008, and has so far completed around twenty to thirty government parties. The author found that e-government and ictQATAR officials have trained up to 8000 citizens, focusing on specific segments of citizens, including housewives and government employees. Finally, the ictQATAR portal contains information about the country's ICT educational curricula that was under development by the education department (Knowledge net portal).

Based on the aforementioned empirical findings, the following Tables (5.7; 5.8; 5.9; and 5.10) attempt to summarise the case study interviews findings:

Table 5.7: **Summary of Organisational Theme**		
ISSUE	**DESCRIPTION**	**SOURCE**
E-government Organisational Structure	The government faces huge quick developments and changes. Therefore, the government is undertaking a restructuring at a very high government level of its governance. This restructuring also implies some changes in policies, procedures, business process ownership. For this reason, a lot of business processes are streamlining the business side, services that are owned by different government agencies and ministries.	e-government director
E-government Strategy Alignment	The government in Qatar has its own socio-economic development priorities and hence the e-government officials have tried to affirm their master plan with the Qatar vision that was previously called Qatar vision 2025, and is now called Qatar vision 2030.	e-government director
Power Distribution	The e-government implementers and officials encounter some resistance because of the changes that the e-government project has caused. Also, for this reason e-government implementers rely on other government agencies' technical employees to develop most of the e-government services, instead of their own employees, who then implement them and get the accreditation.	government agency employee
Prioritisation Of E-government Deliverables	The e-government officials and implementers categorise 52 services in the e-government master plan which are grouped into four main stages, irrespective of implementation. Each stage will have a number of initiatives listed, and a clear timeline for each initiative or service has been defined. Furthermore, the placement of these initiatives and services under each stage is basically driven by the priorities.	e-government director; Al-Rayah newspapers
Future Needs Of The Organisation	IctQATAR had created the readiness/shared the infrastructure for easy development and for e-services development in Qatar as their main priority, and it has achieved around a 40% accomplishment of the overall e-government master plan. Therefore, that need of the project and also the organisation is sustained.	Senior e-government employee
Employees Training	Employees training shows as a very high importance for the e-government project due to the fact that training is usually one of the new components for any new e-services development; however the e-government officials have provided some user manuals and stressed that this type of training satisfies the training needs requirements. As for non-citizen (not Qataris) employees, they require training courses to enable them to be more active and it is hard to get technical staff externally and from abroad.	e-government application manager; e-government developer employee
Collaboration *(New Factor)*	*The e-government officials have provided a type of forum that includes both e-government officials and a technical team, and other government agencies' IT experts and managers mainly to participate on planning, share knowledge, ideas and concepts, and discuss the transformation efforts for the e-government project.*	*e-government director*

	Table 5.8:	
	Summary of Technological Theme	
ISSUE	**DESCRIPTION**	**SOURCE**
Security and Privacy	The e-government officials have implemented simple authentication for some basic services by using the unique ID and passwords. For higher confidential and private information that could be exposed and which might cause harm to an individual or government, they have adopted the authentication system that uses the smart card, PKI, and passwords with the support of the MOI.	e-government director
Information Technology Standards	E-government implementers have recently developed a reference ICT, government ICT architecture standards which will be imposed on all other different government agencies and participating agencies. Additionally, the policy was developed by the cabinet and which has now been endorsed. Additionally, e-government officials realised that they have some standards problems, like JAVA, while they still use old version of some software	e-government director; e-government employee; e-government application manager
E-government Portal and Access	Considering its importance and risk, the e-government team did not resolve the payment gateway error for the whole month of November 2008.	case study findings
System Integration	E-government implementers used a one-way integration system communication channel between the MOI and other government agencies' systems (MQSerious software) as a middleware communication system until today, and this system possibly delayed their efforts in reaching a higher system integration phase (Horizontal) and limited them to implementing or developing e-services in efficient time and effort. Moreover, the e-government team tried to provide different integration methods to different systems with the different government agencies.	MOI application manager; e-government application manager; MOI employee
Capabilities *(New Factor)*	*The e-government team faces a huge challenge for capabilities locally in Qatar, to drive the e-government implementation, and for business chances that Qataris might have as competition between different government agencies to attract the right employees. Moreover, most e-government projects are of a very large information technology (IT) scale or e-services transformation projects and Qatar want come due to the size and demography.*	*e-government director*
Business and IT Alignment *(New Factor)*	*The e-government team have involved both the business and the IT people, and normally share and discuss the alignment between IT and businesses in government agencies. The business and the IT employees are brought together to work with the e-government implementers and officials in a joint project to implement or transform those electronic and online government services. Furthermore, e-government implementers and officials helped in assuring that one single owner will be always assigned to each government-wide application or e-service. This is how they have managed to avoid the misalignment between the business and the IT employees.*	*e-government director*
Local Industry Partners *(New Factor)*	*The Qatari government realised that local industry partners in Qatar are not strong. Therefore, the government established a new government-owned IT company (called Maalomatiih). The main purpose is to overcome the challenges by having local industry partners and also to ensure local stability.*	*e-government director*

	Table 5.9: Summary of Political Theme		
ISSUE	**DESCRIPTION**	**SOURCE**
Leadership	Leadership is believed to be at an adequate level due to the influence of the ictQATAR Secretary General and the vague situation for some employees based on whether the e-government project is a priority for their leadership or not.	senior technical government agency employee; e-government technical employee
Government support	The e-government officials considered that government support and commitment towards the e-government project to be big support, that ensures the right support at the right time.	e-government employee ; senior e-government technical employee
Financial and Funding	Based on the empirical findings, the financial issue was supported and provided by the government within an estimated budget for the e-government implementation initiative and all other participated government agencies websites for the transformation of the e-government. This budget is estimated to be around $400 million.	e-government technical employee; e-government director; e-government application manager; e-government senior employee.
Legislation and Legal	The government has established a new initiative under the e-government umbrella by developing the e-transaction law or cyber law in Qatar. This initiative could not be drafted under the approval process by the cabinet, but it is now within the cabinet to endorse, and this should provide the legal support framework.	*(ESCWA, 2007:13).*e-government director
The Pace of Development and Change in the Public Sector *(New Factor)*	*The government is undergoing huge developments and changes that are happening in Qatar. Therefore, it was very important to the e-government implementers and officials to align their priorities with the overall government priorities as closely as possible. Also, the researcher found that e-government officials have re-aligned their priorities many times in respect of the e-government implementation.*	*e-government director*

ISSUE	DESCRIPTION	SOURCE
	Table 5.10: **Summary of Social Theme**	
Awareness	The e-government officials have stated that they have conducted some awareness campaigns that were promoted through advertising campaigns and promotional material, and that targeted the public only. The e-government officials could not show evidence of any awareness campaigns that targeted citizens. Also, the empirical findings show that e-government officials have conducted awareness campaigns that targeted businesses, because most of the e-government services that are available in that national e-government portal (Hukoomi) are targeted towards businesses rather than citizens.	Senior e-government employee; ex-member of e-government committee
Citizen Centric	Based on the empirical findings that most of the current e-government services that are available in the national e-government portal (Hukoomi) are targeted towards businesses rather than citizens.	e-government director; e-government senior employee; e-government technical employee
Digital Divide	The government undertook to train citizens about the e-government initiative. The Qatari government has launched the free wireless internet parks (iPark) concept under the national e-government initiative with a view to providing free internet access for all citizens while enjoying the outdoors.	e-government director
E-government Training and Education for Citizens *(New Factor)*	*The empirical findings show that the government has trained around 8000 citizens during the year 2008. They also intend to conduct similar training to some specific citizen segments, like housewives and government employees. Moreover, it shows that the government has adopted customised ICDL training for all citizens in the country and, during the year 2008, around thirty government parties completed the training. By doing this, government officials think that they can minimise the digital divide in terms of ICT literacy.*	*e-government director; Application manager; e-government senior employee*

5.5 Chapter Summary

This chapter presented the main organisational, political, social and technological issues that Qatari e-government implementers faced. These issues constituted the main challenges. The organisational issues were classified into seven categories, namely, organisational structure, e-government strategy alignment, power distribution, prioritisation of deliverables, future needs of the organisation, organisation culture, and employee's training. Furthermore, the technological issues were classified into four categories, namely, security and privacy, IT standards, e-government portal and access, and system integration.

Political issues were classified into four categories, namely, leadership, government support, financial and fund resources, and legislation and legal issues. Likewise, the social issues were classified into three categories namely, awareness, citizen-centric focus and digital divide. The four themes have been developed based on institutional theory. Based on the empirical data presented and analysed in this chapter, new organisational, technological, political and social challenges to the e-government system, that were not included in the proposed conceptual model in Chapter 3, were identified and explored. These will be further considered in the revised conceptual model in Chapter 7.

The case study findings showed that these issues are considerable and very challenging to the e-government system. They must be studied in depth before and during the implementation of an e-government system. Qatari e-government officials also demonstrated that they have put substantial efforts into developing the e-government system, but more work is needed in the monitoring of their citizens' expectations and needs in order to achieve the maximum success from this project and minimise the expected gap between the government' efforts and citizens' expectations. This will result in maximising citizens' usage of the e-government system in the country.

To conclude, this chapter showed that there are considerable issues that were considered by the e-government implementers, but, sadly not acted upon and rectified. In addition, there were some other issues that were not considered and, thus, not treated carefully during the e-government system implementation. These are natural teething problems and growing pains encountered when an organisation becomes more complex, especially where innovatory ideas are implemented. The case study findings showed that each challenge mentioned needs to be treated as a critical and important challenge.

6

Chapter 6: Survey Research Findings

The previous chapter (Chapter 5) described the case study findings. Chapter 4 provided a discussion and justification of the data collection and analysis methods. This chapter aims to present the findings that were obtained from a nationwide survey that was conducted to examine the adoption and usage of the e-government project among the citizens in the state of Qatar. To understand the aim of this research, the following sub-sections aim to identify the important factors that are identified and covered in Chapter 3 for e-government adoption. This chapter also discusses the results of a survey targeted towards e-government service users in the state of Qatar, and it provides a representative account of the citizens' perceptions of the e-government services adoption plan. The amended factors (if any) will be presented in Chapter 6, based on the empirical caste study findings.

6.1 Response Rate and Respondents' Profile

The survey questionnaire was distributed to a total of 1500 citizens between the period of August and December 2008. From 1500 questionnaires distributed, 1250 responses were received. Of the 1250 completed and received, seventy-one questionnaires were discarded (because the respondents gave more than one answer to a question that expected only one answer) and many questions were unanswered. This meant that, from the final sample of 1250 questionnaires, 1179 usable responses were obtained and used for all subsequent analysis. The total response rate obtained in this research was (83.3%), which is considered a very good response rate within the field of IS research.

Of these 1179 usable respondents, the demographic background is as follows:

Relating to the respondent's gender, (37.1%) of the 1172 usable responses were females, while (62.9%) of the total respondents were male (see Figure 6.1).

Table 6.1: Gender of Respondents			Figure 6.1: Gender of Respondents
	Frequency	Percent	
Male	737	62.9%	
Female	435	37.1%	
Total	1172	100.0%	

In terms of age, the results revealed that the largest percentage of respondents were in the age group of 30-44 (41.1%), followed by the age group of 18-24 constituting around (22%) of the total respondents. The age group 25-29 consisted of (20.2%), whilst the age group 45-54 comprised of (12.2%) of the total respondents. In contrast, the youngest (less than 18) and the older (greater than 54) age groups together consisted of (4.5%) of the total respondents (see Figure 6.2).

Table 6.2: Respondents' Age			Figure 6.2: Respondents' Age
Category of age	Frequency	Percent	
18	28	2.4%	
18-24	258	22.0%	
25-29	237	20.2%	
30-44	482	41.1%	
45-54	143	12.2%	
>54	25	2.1%	
Total	1173	100.0%	

Figure 6.2 (bar chart):
- < 18 : 2.4%
- 18 - 24 : 22%
- 25 - 29 : 20.2%
- 30 - 44 : 41.1%
- 45 - 54 : 12.2%
- > 54 : 2.1%
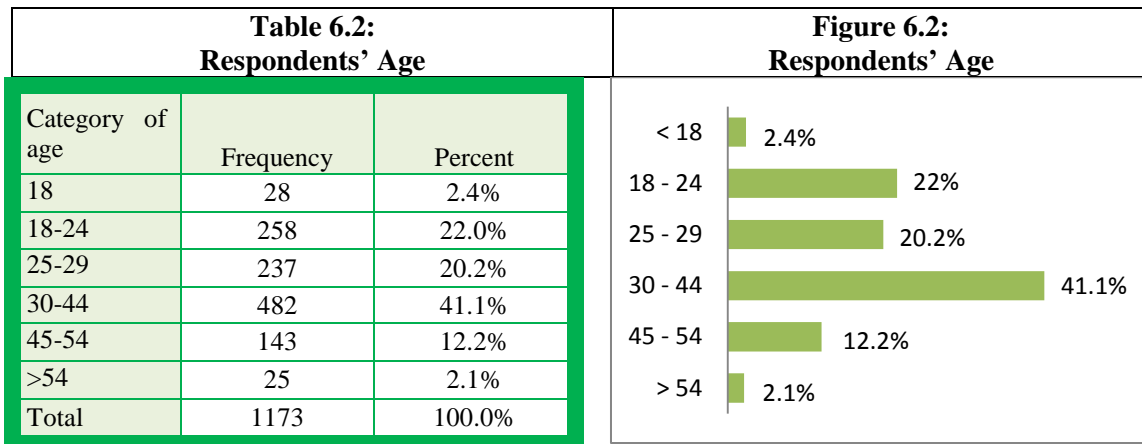
When examining the professional backgrounds of the respondents, (82.3%) were employees in public/private organisations and (17.7%) were university/high school students (Figure 6.3).

Table 6.3: Respondents' Professional Backgrounds			Figure 6.3: Respondents' Professional Backgrounds
	Frequency	Percent	
Employee	881	82%	
Student	190	18%	
Total	1071	100.0%	

Figure 6.3 (pie chart):
- Student 18%
- Employee 82%
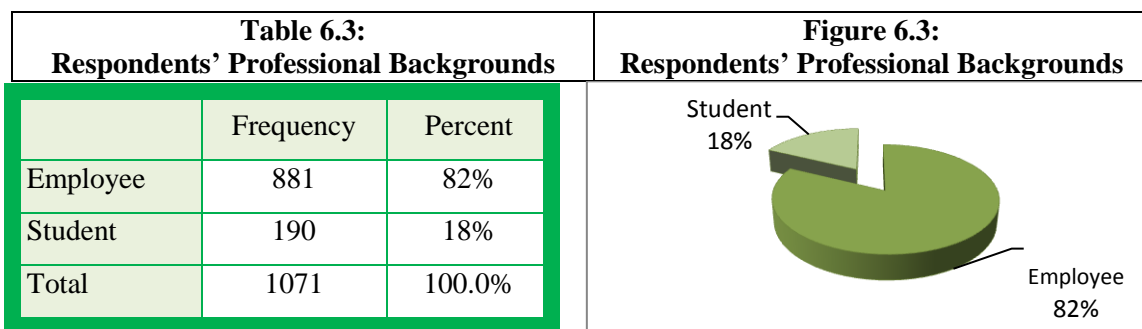
In terms of educational backgrounds, the majority of respondents (63%) hold undergraduate level qualifications degrees, (10%) hold postgraduate degrees (Masters and PhD) and (27%) hold either secondary school certificates or below, (see Figure 6.4).

Table 6.4: Education of Respondents			Figure 6.4: Education of Respondents
	Frequency	Percent	
High school and below	308	27%	
Undergraduate	730	63%	
Postgraduate	117	10%	
Total	1155	100.0%	

Figure 6.4 (pie chart):
- Post-graduate 10%
- High school and below 27%
- Undergraduate 63%
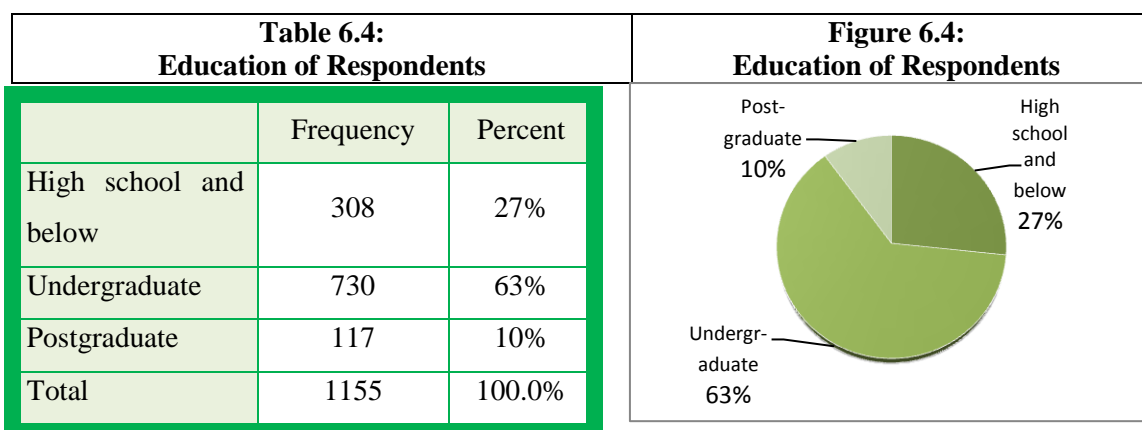
In terms of nationality, Figure 6.5 shows that the majority of respondents (58.2%) are Qatari (citizens by birth) and (41.8%) are non-Qatari (residents who live or work in Qatar and are not Qatari by birth).

Table 6.5: Nationality of Respondents			Figure 6.5: Nationality of Respondents
	Frequency	Percent	
Qatari	679	58%	
Non-Qatari	487	42%	
Total	1166	100.0%	

Figure 6.5: Nationality of Respondents
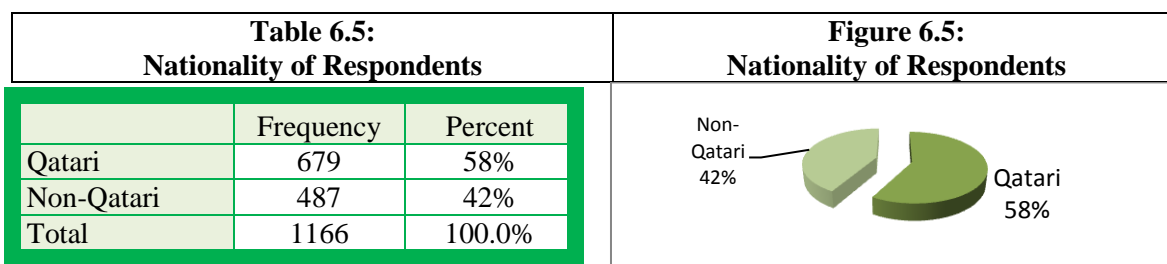
In terms of internet experience, the results revealed that the majority of respondents (57.7%) were found in the internet experience group, over 4 years. This was followed by the internet experience group of 3-4 years, constituting (16.8%) of the total respondents, and finally the internet experience group of 1-2 years, constituted (13.6%). In contrast, the groups with the least internet experience (1-6 months and 7-12 months) together consisted of (11.8%) of the total respondents (see Table 6.6).

Table 6.6: Respondents' Internet Experience			Figure 6.6: Respondents' Internet Experience
	Frequency	Percent	
1-6 months	92	7.9%	
7-12 months	45	3.9%	
1-2 Years	158	13.6%	
3-4 Years	195	16.8%	
>4 Years	669	57.7%	
Total	1159	100.0%	

Figure 6.6: Respondents' Internet Experience
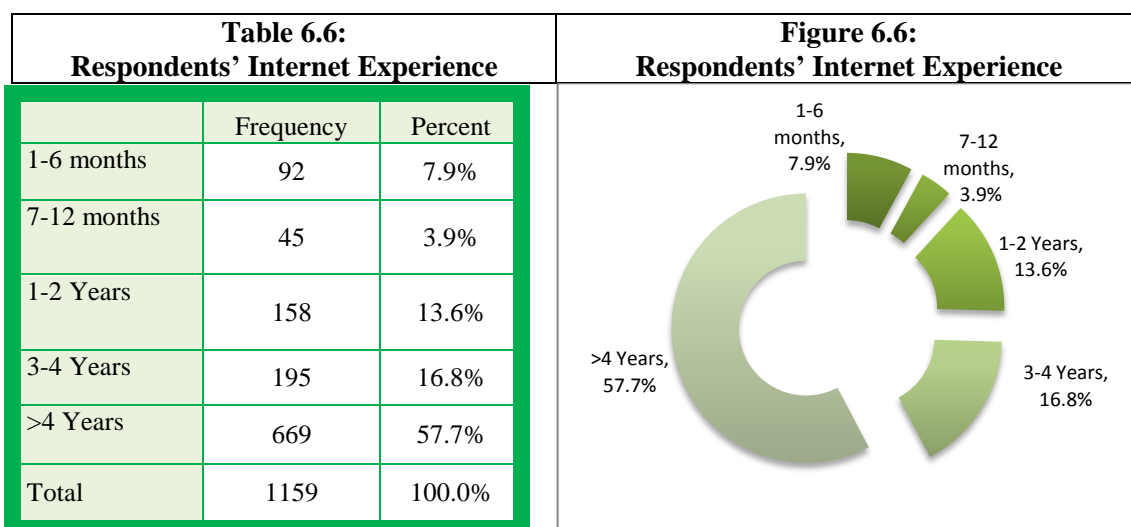
In terms of internet usage in Qatar, the results revealed that the majority of respondents (67%) were found to use the internet on a daily base. This was followed by (21.4%) of respondents who use the internet several times a week. Finally, the internet usage groups of several times a month and once a month together equalled (10.1%) of the total number of respondents. In contrast, (1.4%) of the total respondents mentioned that they do not use the internet at all (see Table 6.7).

Table 6.7: Respondents' Internet Usage			Figure 6.7: Respondents' Internet Usage

	Frequency	Percent
Daily	788	67.0%
Several times a week	252	21.4%
Several times a month	73	6.2%
Once a month	46	3.9%
Never	17	1.4%
Total	1176	100.0%

Figure 6.7: Respondents' Internet Usage
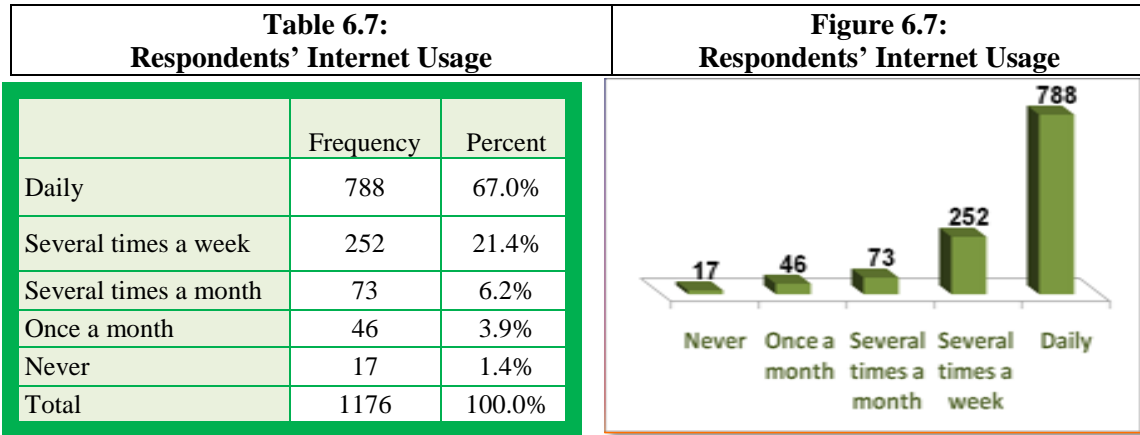
Figure 6.8 shows the majority of respondents use internet services for: Email (78%); Research (63%); Purchasing (32%); Fun (53%); and other reasons (6%), and each respondent had the choice of choosing more than one answer.

Figure 6.8: Respondents Internet Usage Purpose

	Email	Research	Purchasing	Fun	Others
■ Series1	925	742	381	624	266
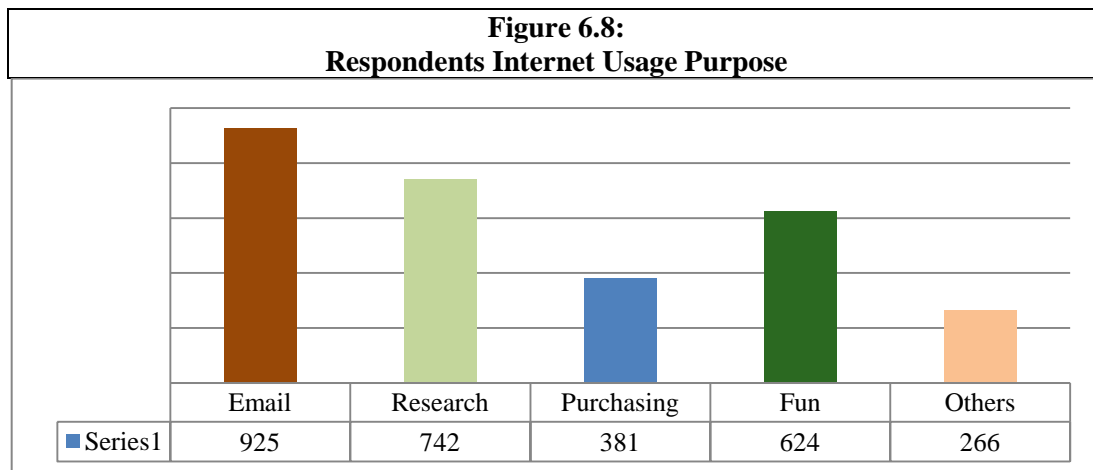
Figure 6.9 shows the that (27%) of respondents used the (internet once a month) for gathering information from government websites. Then those who used internet several times a month, revealed around (26%) of the total respondents. This was followed by the group of those who used the internet several times a week and got (18%). Respondents whom used the internet for gathering information from the government in a daily usage revealed only (11%). In contrast, (18%) of the total respondents mentioned that they do not gather government information from the internet neither e-government websites.

Figure 6.9:
Respondents' Usage for Gathering Information from E-government

	Daily	Several Times A Week	Several Times A Month	Once A Month	Never
■ Series1	11%	18%	26%	27%	18%
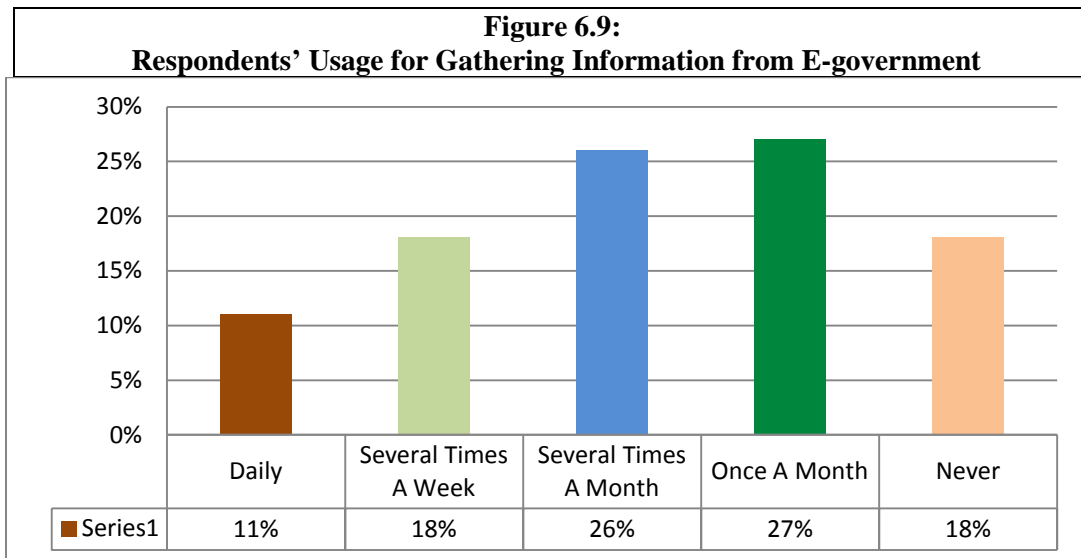
While the majority of total number of respondents (55%) specified that they had completed at least one service via the national portal of the e-government system and the remaining (45%) mentioned that they had not completed any e-service through the national portal of the e-government system.

Finally, Table 6.8 outlines the key factors of the research that influence e-government adoption. These were identified in the literature and the survey data under six key factors: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Behavioural Intention (BI), demographic variables (age, gender and education level), and e-government adoption. The columns outline the participant's decision against different factors; this indicates that the respondents have identified a particular factor as influencing e-government adoption in Qatar.

Factors	Description	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Table 6.8: **Survey Participants Respondents**						
PE1	Online government system would enable me to access government information and services when I need them - 24 hours/day, 7 days/week.	1174	2%	4%	9.6%	57%	27.4%
PE2	E-government system via the Internet will not be useful due to inefficient availability of government information and services in the e-government portal.	1166	1.3%	5%	13.5%	56.9%	23.3%
PE3	Using the e-government system will enable me to accomplish tasks more quickly.	1160	1.5%	4.7%	13.2%	57.3%	23.3%
PE4	I do not think that the e-government project integrates well with other government agencies/ministries	1176	1.9%	3.8%	13.5%	56%	24.7%
PE5	E-government systems seem incompatible with most aspects of my channel devices HW/SW.	1151	2.1%	3.1%	13%	56.1%	25.6%
PE6	Overall, the e-government system is useful to me and other citizens.	1145	2.4%	3.4%	11.6%	55.7%	26.8%
EE1	Learning to operate the e-government system is easy for me.	1143	1.9%	4.7%	29.7%	47.8%	15.9%
EE2	I would find the e-government system easy to use if I got suitable training.	1178	2.5%	5.8%	29.9%	45.9%	15.9%
EE3	It is easy for me to become skilful in using the e-government system.	1149	1.7%	4.6%	30.1%	48.1%	15.4%
EE4	Overall, I believe that the online government system is easy to use.	1165	2.3%	5.5%	28.4%	47.1%	16.6%
SI1	My friends and colleagues think that I should use the e-government system.	1168	1.9%	3.4%	8.6%	40.3%	45.7%
SI2	My family members and relatives think that I should use the e-government system.	1167	2.2%	2.8%	10.4%	49.4%	35.2%
SI3	People around me who use the e-government system have more prestige.	1165	1.7%	3.5%	10.9%	52.4%	31.5%
SI4	I find it difficult to use the e-government services due to lack of information and awareness campaigns.	1157	1.8%	2.5%	9.9%	49.7%	36%
SI5	Overall, I am not satisfied with the awareness campaign's (TV, radio, newspapers, banners in government agencies websites, and in shopping malls) level obtained from e-government officials.	1176	1.8%	3.5%	13.4%	47.6%	33.8%
FC1	I have the resources necessary to use the online government system.	1149	1.7%	4.8%	9.1%	61.4%	23%
FC2	Given the resources, opportunities and knowledge it takes to use the e-government system, it would be easy for me to use the system.	1168	2.8%	2.1%	7.7%	46.7%	40.7%
FC3	I have enough Internet experience to use the e-government services.	1163	0.9%	3.4%	9.7%	52.1%	33.8%
FC4	There is no doubt of the high government support towards the e-government project.	1159	2.2%	2.8%	8.3%	46.9%	39.8%
FC5	I am satisfied with the security and privacy measures provided with the e-government system.	1138	2%	2.8%	10.4%	50.9%	33.9%
FC6	I feel assured that the legislation level currently implemented encourage me to adopt e-government services.	1109	1.3%	4.7%	14.1%	51.8%	28.2%
BI1	I predict using the e-government system in the future.	1142	2.6%	2.8%	8.3%	47.8%	25.8%
BI2	I plan to use e-government system in the future.	1140	1.8%	3.1%	19.3%	47.7%	28.1%
BI3	I intend adopting e-government system in the future.	1176	3.5%	6.9%	28.1%	46.5%	15.1%
------	--	**N**	**Yes**			**NO**	
U	Have you ever adopted any e-government service previously?	1152	54.8%			45.2%	

6.2 Adoption of E-government

6.2.1 Factor Analysis

In order to verify the construct validity, a factor analysis was conducted utilising Principal Component Analysis (PCA) with the varimax rotation method. The results of the PCA are presented in Table 6.9.

6.2.1.1 Factor Loading

Table 6.9 shows the factor loading for the six constructs that are loaded. All the items loaded above (0.40), which is the minimum recommended value in IS research (Straub, 2004; Dwivedi *et al.,* 2008). Moreover, cross-loading of the items was not found above (0.40).

ITEMS	(1) Performance Expectancy	(2) Effort Expectancy	(3) Facilitating Conditions	(4) Social Influence
PE1	.813			
PE2	.800			
PE3	.796			
PE4	.741			
PE5	.523			
PE6	.481			
EE1		.868		
EE2		.864		
EE3		.861		
EE4		.829		
FC1			.661	
FC2			.650	
FC3			.606	
FC4			.579	
FC5			.565	
FC6			.512	
SI1				.695
SI2				.683
SI3				.656
SI4				.613
SI5				.603

Table 6.9: Rotated Factor Matrix

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

All six items of the Performance Expectation constructs loaded at factor (1) and represents the underlying constructs of Performance Expectancy. Coefficients for the first construct varied between (0.48) and (0.81). Then, all four items of the Effort Expectancy construct loaded at factor (2). The coefficient for this component varied between (0.82) to (0.86). All six items of the Facilitating Conditions construct loaded at factor (3). The coefficient for this component varies between (0.51 and 0.66). finally, all five items of the Social Influence construct loaded at factor (4). The coefficient for this component varied between (0.60 to 0.69).

Factor analysis using the principle components with varimax rotation was used to evaluate construct validity (Table 6.9). As can be seen from Table 6.9, all of the items loaded properly in the construct discremint valididty (loaded with at least .40, and no cross loaded of at least than .40)(*Straub et al.,* 2004; Dwivedi *et al.,* 2006; Carter *et al.,* 2008), and the factor analysis results satisfied analysis. This means that the collected data and the findings that were obtained from this instrument are valid and reliable. Findings from both the reliability test and the factor analysis confirm internal consistency of measures and construct validity.

6.2.2 Reliability Test

The research instrument was tested for its reliability and construct validity before presenting the findings. The following section illustrates reliability.

Cronbach's coefficient alpha values were estimated to examine the internal consistency of the data post-gathering, and Cronbach's alpha is a measure of reliability (Hinton *et al.,* 2004; Field, 2005). More specifically, alpha is a lower boundary for the true reliability of the survey. Mathematically, reliability is defined as the proportion of the variability to the responses to the survey and is the result of differences in the respondents. Also, the results of the survey will differ because respondents have different opinions, not because the survey is confusing or ambiguous with multiple interpretations. The computation of Cronbach's alpha is based on the number of items in the survey (k) and the ratio of the average inter-item covariance to the average item variance.

$$\alpha = k(\text{cov}/\text{var})1/(k-1)(\text{cov}/\text{var})$$

Under the assumption that the item variances are all equal, this ratio simplifies to the average inter-item correlation, and the result is known as the Standardized item alpha (or Spearman-Brown stepped-up reliability coefficient).

Cronbach's coefficient alpha values were chosen to examine the internal consistency of the measure (Hinton *et al.,* 2004; and Field, 2005) (see Table 6.10). Hinton *et al.,* (2004) have suggested four different points of reliability: excellent reliability ranges (0.90 and above), high reliability (0.70- 0.90), high moderate reliability (0.50-0.70) and low reliability (0.50 and below). The reliability for each construct is illustrated in Table 6.10. A high Cronbach's value for all constructs implies that they are internally consistent and measure the same content of the construct.

Table 6.10: Reliability of Measurements				
Constructs	N	Number of items	Cronbach's Alpha (a)	Type
Performance Expectancy	1100	6	0.884	High Reliability
Effort Expectancy	1123	4	0.918	Excellent Reliability
Social Influence	1120	5	0.794	High Reliability
Facilitating Conditions	1025	6	0.745	High Reliability
Behavioural Intention to Use	1134	3	0.744	High Reliability
N = Sample Size				

The aforementioned Table 6.10 illustrates Cronbach's coefficient alpha values that were estimated to test the internal consistency of the measure. Cronbach's results varied between (0.744) for the Behavioural Intention to adopt e-government and (0.918) for the Effort Expectancy constructs. Social Influence revealed a reliability of (0.794) and Facilitating Conditions possessed a reliability of (0.745). The remaining construct, namely Performance Expectancy had a Cronbach's score of (0.884).

These values show that some of the constructs achieved between high reliability (from 0.70 to 0.90) according to Hintons' cut-off points of reliability (Nunnally, 1978). The high Cronbach's values of the constructs means that constructs were internally consistent and the reliability of the same construct is measured (Field, 2005). The findings show that all the alpha values indicates the study's instrument is reliable and the higher the Cronbach's (α) value of construct, the higher the reliability is of measuring the same construct (Dwivedi *et al.,* 2006).

6.2.3   Descriptive Statistics

Table 6.11 presents the means and standard deviations of the items related to all 6 constructs included in the study. As found in the study (see Table 6.11), the average scores of respondents' for Performance Expectancy ranged from (3.29) and (4.07), which is reasonably high.   Effort Expectancy ranged from (3.22) to (3.97). Descriptive statistics show that these scores are reasonably high. Concerning Social Influence, the score ranged from (4.08) to (4.25), indicating that the scale is high. Facilitating Conditions ranged from (3.51) to (4.20), which is also high. Behavioural Intention to use e-government system, ranged from (3.96) to (4.04). Descriptive statistics show that these scores are high. (The last score ranged from (3.94) to (3.97) for use behaviour, indicating that the scale is quite high.

Factors			Std.	Factors			Std.
	N	Mean	Dev.		N	Mean	Dev.
Performance Expectancy	-	-	-	**Facilitating Conditions**	-	-	-
PE1	1174	4.04	.840	FI1	1149	3.99	.818
PE2	1166	3.96	.826	FI2	1168	4.20	.883
PE3	1160	3.96	.828	FI3	1163	4.14	.799
PE4	1176	3.98	.839	FI4	1159	4.19	.870
PE5	1151	4.00	.837	FI5	1138	4.12	.851
PE6	1145	4.01	.861	FI6	1109	4.01	.851
Effort Expectancy	-	-	-	**Behavioural Intention**	-	-	-
EE1	1143	3.71	.857	BI1	1142	3.91	.910
EE2	1178	3.67	.899	BI2	1140	3.97	.873
EE3	1149	3.71	.844	BI3	1176	3.63	.936
EE4	1156	3.70	.891	--------------------------	-----	------	-------
Social Influence	-	-	-				
SI1	1168	4.25	.889				
SI2	1167	4.13	.869				
SI3	1165	4.08	.844				
SI4	1157	4.16	.836				
SI5	1167	4.08	.876				

Table 6.11:
Descriptive Statistics

Notes: SD = Standard Deviation.
** Scores range from 1 to 5, where 1 = Strongly Disagree and 5 = Strongly Agree.

The aforementioned descriptive statistics are the cumulative scores obtained from Qatari citizens.

6.3 Demographic Differences

6.3.1 Gender and E-government Adoption

Table 6.12 exemplifies that from the adoption of e-government amongst the Qatari citizens, there are (73.6%) males compared to (26.4%) females. Interestingly, within the non-adopters, females (50.5%) exceeded males (49.5%) showing a minimal difference.

The Pearson's chi-square test validated that there was a significant difference between the gender of the adopters and non-adopters (χ^2 (1, N =1146) =70.411, $p <$ .001) (Table 6.12).

Table 6.12: Gender as a Determinant of E-government Adopters and Non-adopters					
Gender	**Non-Adopters**		**E-government Adopters**		**Total**
	Frequency	Percent	Frequency	Percent	
Male	258	49.5	460	73.6	718
Female	263	50.5	165	26.4	428
Total	521	100	625	100	1146
χ^2 **Test (N=1146)** **Gender X E-government Adoption**					
	Value		**Df**		**P (2-sided)**
Pearson χ^2	70.411		1		< .001

Also, a binary correlation test was conducted to examine any association between the gender of respondents and e-government adoption. The following Table 6.13 shows the results obtained. The findings suggest that there was a significant positive correlation between the respondents' gender and the e-government adoption (Table 6.13).

Table 6.13: Spearman's rho Correlations which show the association between Gender and E-government Adopters		
		E-government Adoption
Gender of Respondents	Correlation	.248(**)
	Sig. (2-tailed)	.000
	N	1146
** Correlation is significant at the 0.01 level (2-tailed).		

6.3.2   Age and E-government Adoption

Table 6.14 exemplifies that from the adoption of e-government amongst the Qatari citizens there is an increase of e-government adoption with the increase of age. However, the adoption rate decreases after the (30-44) years age category years. The largest percentage (46%) of e-government adopters were between (30) and (44) years. In contrast, the younger age group, less than 18, (1%) and the older age group, greater than 54 (2%), were reported as very low for adopting the e-government system in Qatar (see Table 6.14). The findings in Table 6.14 show that the majority (66%) of citizens adopting e-government are in the age groups from (25) years to (44) years. Also, for non-adopters the same age bands also showed a majority (55%). Furthermore, the elder (more than 54) and younger (less than 18) age groups combined consisted of (5%). Table 6.14 represents Pearson's chi-square test that confirmed that there was a significant difference between the ages of the adopters and non-adopters (χ^2 (5, N =1147) =83.655, $p < .001$).

Table 6.14: Age as a Determinant of E-government Adopters and Non-adopters					
Age	Non-Adopters		E-government Adopters		Total
	Frequency	Percent	Frequency	Percent	
Less than 18	17	3	9	1	26
18-24	170	33	85	14	255
25-29	107	20	123	20	230
30-44	182	35	288	46	470
45-54	35	7	106	17	141
More than 54	10	2	15	2	25
Total	521	100	626	100	1147
χ^2 Test (N=1147) Age X E-government Adoption					
	Value		Df	P (2-sided)	
Pearson χ^2	83.655		5	< .001	

Also, a binary correlation test was conducted to examine any association between the age of respondents and e-government adoption. The following Table 6.15 shows that from the results obtained that there was a significant negative correlation between the respondents' age and the citizen adoption of e-government (Table 6.15).

Table 6.15: Spearman's rho Correlations which show the association between Age and E-government Adopters		
		E-government Adoption
Age of Respondents	Correlation	-.252(**)
	Sig. (2-tailed)	.000
	N	1147
** Correlation is significant		
at the 0.01 level (2-tailed).		

6.3.3   Education and Adoption of E-government

Table 6.16 represents the adopters and non-adopters of e-government amongst the Qatari citizens. The table illustrates that the majority of adopters are educated to an undergraduate degree level (64%), followed by high school and below level of education (22%). Finally, the education level of postgraduate had lower levels of adoption (14%). In comparison to the adopters, the majority of non-adopters were reported to have higher levels of education. The Pearson's chi-square test validated that there was a significant difference between the education levels of the adopters and non-adopters (χ^2 (2, N =1130) =26.833, $p < .001$) (Table 6.16).

Table 6.16: Education as a Determinant of E-government Adopters and Non-adopters					
Education	**Non-Adopters**		**E-government Adopters**		**Total**
	Frequency	Percent	Frequency	Percent	
= < High school	158	31	139	22	297
Undergraduate	321	63	396	64	717
Postgraduate	29	6	87	14	116
Total	508	100	622	100	1130
χ^2 **Test (N=1130)** **Education X E-government Adoption**					
	Value		**Df**	**P (2-sided)**	
Pearson χ^2	26.833		2	< .001	

Also, a binary correlation test was conducted to examine any association between the education level of respondents and e-government adoption. The findings suggest that there was a significant negative correlation between the respondents' education level and the e-government adoption (Table 6.17).

Table 6.17: Spearman's rho Correlations which show the association between Education and E-government Adopters		
		E-government Adoption
Education of Respondents	Correlation	-.145(**)
	Sig. (2-tailed)	.000
	N	1130
** Correlation is significant		
at the 0.01 level (2-tailed).		

6.4 Regression Analysis

A regression analysis was performed with Behavioural Intention as the dependent variable and Performance Expectancy, Effort Expectancy, Social Influence as the predictor variables.

6.4.1 Regression Analysis I: Examining the Relationship Between the Overall Performance Expectancy, Effort Expectancy and Social Influence Constructs and Behavioural Intention

A binary correlation test was conducted to examine the association between Performance Expectancy (PE), Effort Expectation (EE), and Social Influence (SI) and Behavioural Intention to adopt e-government. The result from this test shows that the correlation is significant to all the factors: *Performance Expectancy (0.470), Effort Expectancy (0.923), and Social Influence (0.443)* (Table 6.18).

Table 6.18: Correlations		
		Behavioural Intention to Adopt E-government
Performance Expectancy (PE)	Pearson Correlation Sig. (2-tailed) N	.470(**) .000 1030
Effort Expectancy (EE)	Pearson Correlation Sig. (2-tailed) N	.923(**) .000 1091
Social Influence	Pearson Correlation Sig. (2-tailed) N	.443(**) .000 1051

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

A regression analysis was performed with Behavioural Intention to adopt e-government as the dependent variable and Performance Expectancy, Effort Expectancy and Social Influence as the predictor variables.

A total of 1179 cases were analysed. From the analysis, a significant model emerged (F (3, 1179) = 2105.155, p < 0.001) (Table 6.20) with the adjusted R square being 0.86.5 (Table 6.19). The significant variables are shown in Table 6.21 that include Effort Expectancy (= .876, *p* < .001) and Social Influence (= .100, p < .001) on Behavioural Intention to adopt e-government. In contrast, Performance Expectancy (= .024, *p* = .111) was not considered to be significant predictor in this model.

The measure *R Square,* usually written as R^2 is the square of R, representing the proportion of variation in the response variable, explained by the regression model, and consists of a value between (0) and (1). A high R^2 value may be seen as evidence of a good fit of the model tested. In this test, the R^2 explains (86.5%) of the changes in the Behavioural Intention to adopt e-government services. Other unidentified factors account for the remaining (13.5%).

		Table 6.19: Regression Analysis I : Model Summary		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930(a)	.865	.865	.262

a Predictors: (Constant), Performance Expectancy, Effort Expectancy, Social Influence

		Table 6.20: Regression Analysis I : ANOVA(b)			
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	435.138	3	145.046	2105.155	.000(a)
	Residual	67.936	986	.069		
	Total	503.074	989			

a Predictors: (Constant), Performance Expectancy, Effort Expectancy, Social Influence
b Dependent Variable: Behavioural Intention to Adopt E-government services

	Table 6.21: Regression Analysis I : Coefficients(a)							
Model	Unstandardized Coefficients		Standardized Coefficients				Collinearity Statistics	
	B	Std. Error	ß	t	P	Partial Correlations	Tolerance	VIF
(Constant)	.195	.066		2.972	.003			
Performance Expectancy	.028	.017	.024	1.595	.111	.019	.596	1.678
Effort Expectancy	.807	.012	.876	66.424	.000	.777	.787	1.270
Social Influence	.120	.018	.100	6.782	.000	.079	.634	1.577

a Dependent Variable: Behavioural Intention to Adopt E-government services

As demonstrated in the previous Table 6.21, the size of (ß) suggests that Effort Expectancy has the largest impact in the explanation of variation of Behavioural

Intention to adopt e-government. This is followed by the Social Influence construct and then Performance Expectancy.

In regression analysis, the existence of multicollinearity negatively affects the predictive ability of the regression model (Myers, 1990) and causes problems to the success of a model. Therefore, examining the existence of the multicollinearity problem in this study is required. Tracing whether the data suffers with this problem of multicollinearity, SPSS software provides two options to estimate the tolerance and variance inflation factor (VIF). Myers (1990) specifies that if the (VIF) value exceeds (10), this results to a detection and availability of a problem (VIF) in the construct that needs to be deleted. An alternative to this is to approximate the tolerance value that measures the correlation between the predictor variables that vary from (0) and (1). The closer the tolerance value is to (0), the stronger the relationship between this and the other variables. Also, in this research the author has provided both the (VIF) and tolerance that were shown and shown in Table 6.21. Values achieved for both (VIF) and tolerance signify that there is no problem of multicollinearity in this study. Table 6.21 illustrates that the (VIF) for the model varied between (1.27) for Effort Expectancy and (1.678) for Performance Expectancy which are below the recommended level (Myers, 1990; Stevens, 1996). Also, Table 6.21 shows that all the predictors have a higher tolerance value than (0.59). As a result, both the (VIF) and tolerance values suggest that the independent variables (Performance Expectancy, Effort Expectancy, and Social Influence) included in this test of study do not suffer from the problem of multicollinearity.

This means that:

- (H1) There is insignificant positive relationship between Performance Expectancy and Behaviour Intentions to adopt e-government services.
- (H2) There is a significant relationship between Effort Expectancy and Behaviour Intentions to adopt e-government services.
- (H3) There is a significant positive relationship between Social Influence and Behavioural Intentions to adopt e-government services.
- (H6) There is a significant difference between the gender of the adopters and non-adopters.
- (H7) There is a significant difference between the ages of the adopters and non-adopters.
- (H8) There is a significant difference between the education levels of the adopters and non-adopters.

6.5 Logistic Regression

The dependent construct that measures the e-government adoption behaviour is categorical in nature and represented by (Yes) and (No). Number (1) represents yes, when the particular respondent chose e-government and (0) to represent no, if they have not used e-government. The logistics regression model was chosen because it was found to be most appropriate for estimating the factors which influence e-government adoption behaviour. Also, the logistics regression analysis had been chosen as a result of the limitation of the Linear probability model which might predict probability values beyond the (0), (1) range (Greene, 1997).

6.5.1 Logistics Regression Analysis II: Examining the Relationship Between the Facilitating Conditions and Behavioural Intention Constructs, and E-government Adoption Behaviour

A logistic regression analysis was conducted with e-government adoption behaviour as the dependent variable and Facilitating Conditions and Behavioural Intention as the predictor variables. The full model was considered to be significantly reliable (X2 (2, N= 1179) = 30.706, p < .001) (Table 6.22). This model accounted for between 3.2% and 4.3% of the variance in e-government adoption (Table 6.23), and 58.5% of the e-government adopters were successfully adopted (Table 6.24). Moreover, 77.9% of the predictions for non e-government adopters were accurate, and overall predictions were accurate by 58.5% (Table 6.24).

Table 6.22: Logistic Regression II: Omnibus Tests of Model Coefficients				
		Chi-square	Df	Sig.
Step 1	Step	30.706	2	.000
	Block	30.706	2	.000
	Model	30.706	2	.000

Table 6.23: Logistic Regression II: Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1275.362(a)	.032	.043

a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 6.24: Logistic Regression II: Classification Table(a)				
Observed		Predicted		
		E-government Adoption Behaviour		Percentage Correct
		Yes	No	1.00
Step 1 Have you adopted any E-government service Yes		415	118	77.9
No		277	142	33.9
Overall Percentage				58.5

a The cut value is .500

The following Table 6.25 describes the coefficient, Wald statistics, associated degrees of freedom and probability values for all of the predictor variables. This Table 6.25 shows that Facilitating Conditions did not reliably predict e-government adoption. The coefficients values expose that an increase in the Facilitating Conditions score is associated with an increase in the odds of e-government adoption by a factor of (1.021) (see Table 6.25). Also, Table 6.25 shows that Behavioural Intention to adopt e-government reliably predicted e-government adoption. The coefficients values expose an increase in Behavioural Intention score is associated with an increase in the odds of e-government adoption by a factor of (0.584).

Table 6.25: Logistic Regression II: Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a) Facilitating Conditions (FC)	.021	.137	.024	1	.878	1.021
Behavioural Intention (BI)	.537	.105	25.984	1	.000	.584
Constant	1.708	.568	9.042	1	.003	5.516

a Variable(s) entered on step 1: Facilitating Conditions, Behavioural Intention to Adopt E-government.

6.6 Validating Factors Affecting E-government Adoption in Qatar

The following Figure 6.10 shows the results of the aforementioned validation factors that affected the e-government adoption in the state of Qatar.
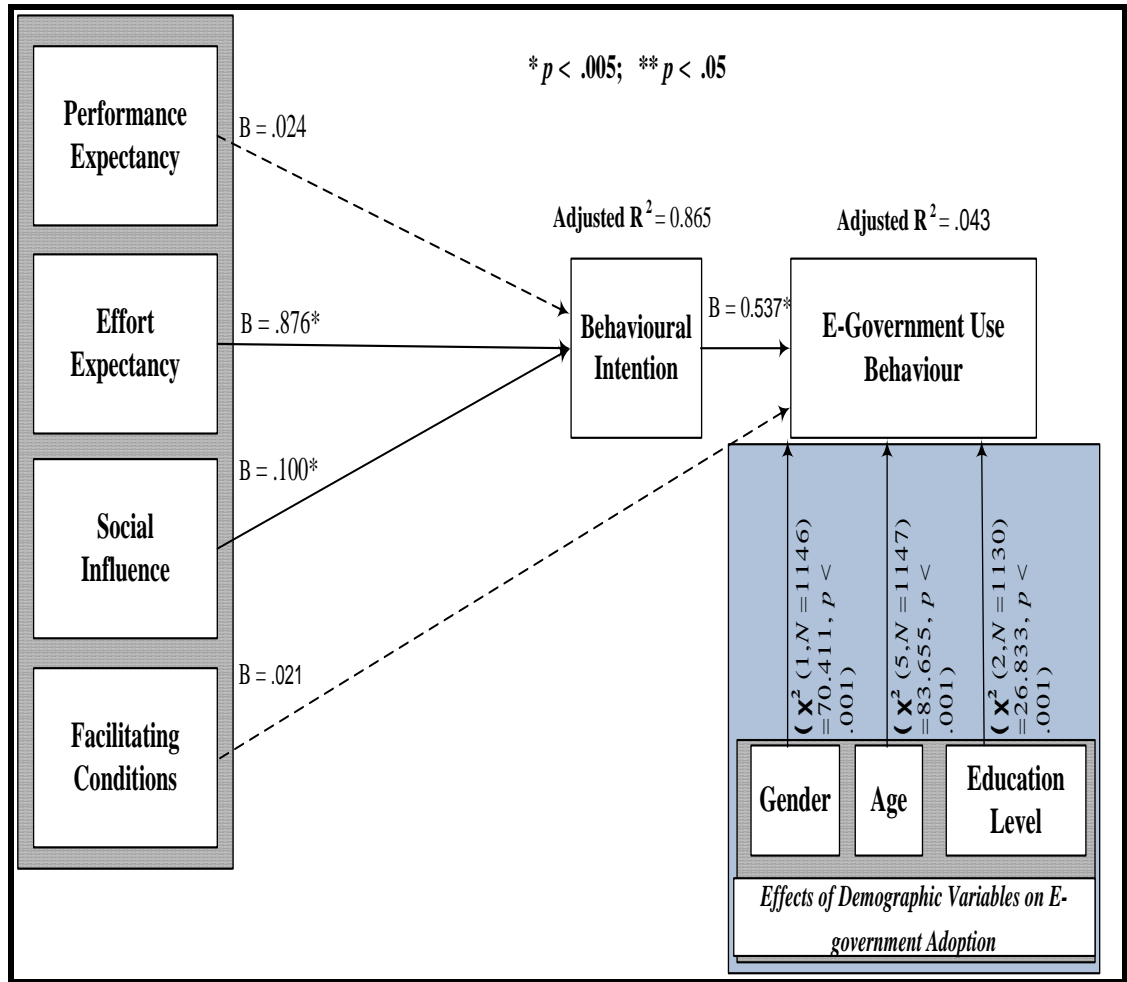
Figure 6.10 : Validated Factors Affecting E-government Adoption in Qatar

6.7 Response Hypotheses

The following Table 6.26 summarises the numbers of the hypotheses suggested and offered in Chapter 3. Additionally, it shows whether these research hypotheses are supported or not. Table 6.26 demonstrates a total of eight research hypotheses that were tested to examine whether the independent variables significantly explained the dependent variables. The eight research hypotheses were supported by the data and it means that all the independent variables significantly clarified and explained the intention to adopt e-government.

HN	Table 6.26: Summary of research hypotheses Research Hypotheses	Results
H1	Performance Expectancy will have a positive influence on Behavioural Intentions to use e-government services.	**Not supported**
H2	Effort Expectancy will have a positive influence on Behavioural Intentions to use e-government services.	Supported
H3	Social Influence will have a positive influence on Behavioural Intentions to use e-government services.	Supported
H4	Facilitating Conditions will have a positive influence on e-government usage behaviour.	**Not supported**
H5	Behavioural Intentions to use e-government services will have a positive influence on e-government usage behaviour.	Supported
H6	The adopters of e-government will be more from male than female gender.	Supported
H7	There will be a difference between the e-government adopters and non-adopters of various age groups.	Supported
H8	There will be a difference between the adopters and non-adopters of e-government in different levels of education.	Supported

6.8 Chapter Summary

This chapter presented the findings obtained from the data analysis of the survey that was conducted to examine citizen's adoption and usage of the national Qatari e-government services. The findings were shown in several sections. The first step was a discussion of the validation and findings obtained on the adoption of the e-government system. The section presented findings that illustrated that the reliability test was confirmed and that the measures were internally consistent, as all of the constructs possessed a Cronbach's alpha above (0.70).

The construct validity was established utilising the PCA. A significant probability tests resulted. The components consistent with the number of independent factors in the conceptual model resulted that Eigenvalues above (1), and factors validity were loaded and resulted in all items having a score of at least (0.40) (Straub *et al.,* 2004; Dwivedi *et al.,* 2006)In addition, the results revealed that there were no cross loading above (0.40), and this confirmed that both types of the construct validity existed in the survey instrument.

Findings from descriptive statistics imply that all the constructs rated strongly in the (1-5) likert scale. This concludes that the respondents showed strong agreement with factors included in the study for examining the adoption of the e-government system.

Examination of the demographic differences (gender, age and education) as a social variables by employing the Pearson chi-square test, the results show that the e-government adopters in the state of Qatar differ significantly in terms of gender, age and education level.

Linear regression analysis provided evidence that Performance Expectancy and Social Influence (independent variable) significantly explain Behavioural Intentions to adopt e-government (dependent variable). In contrast, Effort Expectancy was not considered to be a significant predictor in this model. Finally, the logistics regression analysis provided evidence that Behavioural Intentions (independent variable) significantly explain the e-government adoption behaviour (dependent variable), whilst Facilitating Conditions was not considered to be a significant predictor in this model.

The next Chapter (7) will discuss the findings in light of previous studies. This chapter will provide a discussion on the conceptual model that includes both the proposed government and citizens' acceptance model. The discussion will also cover the proposed conceptual model enhancement and modifications.

7

Chapter 7: Discussion and Research Synthesis

7.1   Introduction

The corpus of literature presented in Chapter 2 demonstrates an absence of studies of theoretical models concerning e-government implementation; this includes the in-depth understanding of organisational, technological, social and political challenges facing e-government implementation. A great deal of work has been conducted toward the feasibility of extending e-government services in Qatar, but the innovation has come with a lack of contemporary, theoretical comment. This study has investigated these concerns in order to contribute towards providing a better understanding of e-government implementation and adoption in a Qatari context.

Chapters 5 and 6 provided the data to assess the conceptual model that was presented in Chapter 3, and to accomplish the aim of this study. This chapter seeks to synthesise the empirical findings with the literature and revise the conceptual model proposed in Chapter 3 based on the factors found to most influence e-government implementation and adoption in a Qatari context that were not included in the original conceptual model. As a result, in this chapter, a revised conceptual model for e-government implementation and adoption will be proposed. Such a model can be used as a tool for decision-making when implementing and adopting e-government systems.

7.2   Lessons Learned From the Empirical Research Data Findings

This section aims to provide a clear idea of the main findings of Chapters 5 and 6, to enable others to relate their efforts and experiences and behaviours to those suggested here. In Chapter 2, a comprehensive literature review showed that there is a lack of studies that focus on challenges that face e-government implementation, and citizens' behaviour and usage toward e-government adoption. However, based on the findings from the case study in Chapter 5 and the survey in Chapter 6, a number of factors were identified and these are listed in Table 7.1. These additional factors are detailed in the Table 7.1 below and revealed changes and modifications to the conceptual model outlined in Figure 7.1 (see Section 7.8).

Table 7.1: Additional Organisational, Technological, Political and Social Challenges Derived From Empirical Evidence of E-government Implementation	
Additional organisational challenges	➢ Internal and external collaborations
Additional technological challenges	➢ Right Skills Capabilities in Qatar ➢ Business and IT Alignment ➢ Local Industry Partnerships
Additional political challenges	➢ Government's responsiveness to development and change
Additional social challenges	➢ Citizens' training and education to be more computer-literate

7.3   E-government Implementation: The Literature and Empirical Perspectives

Since the emergence of the e-government concept, there have been many studies that have explored the factors and challenges that influence e-government implementation in various different national contexts. These factors were particularly discussed in Chapters 2 and 3 previously. The empirical research that was carried out in this thesis showed that while some of these factors were prominent in a Qatari context, others were less obvious. This section offers a discussion of these factors under the same broad themes of organisational, technological, political and social domains.

7.3.1   Organisational Issues

The impacts of organisational challenges on Qatari e-government implementation initiatives were largely influenced by the prevailing organisation and management structure of the overall e-government program in the country. The key influencing factors are described in the following section.

7.3.1.1 Forming an E-government Organisation

Chapter 5 revealed this issue as one of the key factors that must be planned for before the implementation of e-government in Qatar. From the empirical findings, it appears that forming an e-government organisation influences every government department; sustaining the organisation after the initial implementation period demands that even more challenges need to be faced. The e-government project in Qatar has been in operation since 2000. Although the organisational model has been well established to oversee all aspects of e-government implementation, the case study results revealed that it needs to be revised and continuously updated to meet current needs and challenges. This not only includes the organisational model, but also roles, responsibilities, and employees' needs. The case study revealed that project leaders were frequently hindered due to the rigid organisation structure, where the coordination of activities with other public agencies was impossible to execute. These findings confirm the previous literature such as the research of Layne and Lee (2001), Al-Shehry *et al.,* (2006), Al-Mashari (2006), Strens and Dobson (1994), and Scholl (2005)) who present organisational structure as a key factor.

7.3.1.2 Power Distribution

Norris *et al.,* (2000) report that e-government implementation is influenced by power distribution as a result of organisational change and shift within the organisation. The case study data show that the quick developments and changes that are happening within the government in Qatar at present are causing power distribution, and this is found to be a major challenge to the e-government plan. However, the case study indicated that the government is undertaking restructuring at a very high level of governance. Such a shift and change will result in redistributing the power between public agencies, and redesigning jobs. Those consequences would lead to changes of priorities and resistance to these changes. Therefore, e-government officials and implementers should plan this change and treat the changes as resistance to the e-government organisational plan as discussed

by Heeks (1999) and Weerakkody and Choudrie , (2005). Otherwise, it may lead to a failure in the project.

7.3.1.3 Prioritisation of E-government Deliverables

The case study findings indicated that the e-government implementers recognised the importance of a priority system for their services, but unfortunately, the e-government implementers and officials had not considered and treated this issue carefully. In this way, e-government sustainability was greatly affected. What is definite is that the prioritisation system of delivering services used by the Qatari government must be considered as very important as many critical factors, such as the complexity of technology, readiness of the service provider, organisational issues and organisational change, need to be predicted and planned for (see Lee *et al.,* 2008; AlHamidah, 2007). The case study findings revealed that the e-government implementers and officials had not considered some of these challenges; therefore they have faced these difficulties during the implementation stage of the project. As a result, some of the services that were planned to be implemented have been delayed or shifted to a lesser priority status. These findings confirm the literature findings of Rotchanakitmnuai (2008), and AlHamidah (2007), who suggest that such changes will delay the implementation of new services.

7.3.1.4 Future Needs for an E-government System

From the empirical perspective, it appears that the future need for e-government systems is a major factor that influences the sustainability of the Qatari national e-government initiative. In this context, the e-government implementers and officials feel and realise the importance of continuation of the e-government initiative. The case study findings showed that the e-government officials were cautious and uncertain about the future of the overall e-government organisation and project management structure. This situation is important to ensure continuous implementation, maintenance, and improvements of e-government systems. This confirms the previous literature findings by authors such as Marchewka (2006) and Ebrahim and Irani (2005).

7.3.1.5 Organisational Culture

An analysis of the empirical data indicates the need for high consideration of the above factors, especially at the early stages of developing an e-government system. This is for several reasons. Power-shifts are dangerous and, one example is an organisational culture based on a dictatorial leadership (Weerakkody and Dhillon

2008; Irani *et al.,* 2005; 2007). In this situation, appointments to new positions are based on political orientation and family or tribal background; here decisions are centralised and resistance to change grows as less able people are in positions of power. All interviewees during the case study supported organisational culture as a factor and a potential hurdle for the implementation of e-government. The literature (Hofstede, 1998; Irani *et al.,* 2005; Weerakkody and Choudrie et , 2005) has also highlighted the importance of organisational culture in previous studies.

7.3.1.6 Employees Training

The case study also identified the need for training of employees, especially technical staff before and during e-government implementation. Many interviewees agreed that lack of employee training has affected the implementation of e-government in their institutions. Some senior officials identified several training methods that included training for public agencies' top management (CIO's) and technical training for operational level staff. These efforts made it possible for the respective public agencies to recognise the importance of the national e-government initiative. The literature (e.g. Kim *et al.,* 2009; Al-Sebie and Irani, 2005; Heeks, 1999) also highlights the need for training, especially IT training, during the implementation of an e-government system.

7.3.1.7 Collaboration

This is a new factor derived from the case study that needs to be addressed and refers to the collaboration between the e-government implementers and officials, and the government agencies, especially IT experts. The empirical data show that collaboration comprises an important factor that affects the implementation of e-government systems. Additionally, in the literature, collaboration is considered important in the implementation of IT projects, especially when implementing IT systems in an e-government context (Chen *et al.,* 2006b: Ndou, 2004). Analysis of the case study showed that the e-government officials identified several methods of collaboration, and these efforts include IT forums that join together a wide range of IT experts. Workshops and conferences were also cited as being important in this area.

7.3.2   Technological issues

The technological challenges of an e-government system were classified into seven main technological issues in Chapter 5: IT standards, security and privacy, system integration, e-government portal and access, skills and capabilities, business and IT alignment, and local industry partners. These factors and their impact on implementation of e-government systems are discussed in the light of the literature.

7.3.2.1 IT Standards

In the literature, several authors such as Nyrhinen (2006), Irani *et al.,* (2008), Elliman *et al.,* (2007) identified IT standards as a major factor during the implementation of various integration technologies like e-government. The case study results showed that the e-government initiative in Qatar was impacted by the lack of IT standards, especially between government agencies and the services delivered to citizens due to various legacy applications and hardware used. However, new plans are in place to rectify this issue by introducing reference ICT architecture and standards to facilitate better integration between systems in different government agencies. These plans confirm the literature findings of Fedorowicz *et al.,* (2009) and Nyrhinen (2006) which suggest the need for standards due to different hardware and software used by different government agencies and citizens.

7.3.2.2 Security and Privacy

The empirical evidence derived from the research findings shows that the security and privacy of the e-government system represents an important factor during the implementation of the e-government system. The security and privacy factor refers to the security and confidentiality concerning its stakeholder's data, particularly citizens. In the literature, these have always been considered very important in the implementation of e-government and to attain citizen's trust (Smith and Jamieson, 2006; Al-Khouri and Bal, 2007). The interviewees identified several privacy and security mechanisms that include passwords, smart cards, public key infrastructure (PKI), and biometrics authentication equipment. These efforts aim to provide reliable and trusted security requirements for e-government services to citizens.

7.3.2.3 System Integration

The case study findings indicate that the integration issue represents an influential factor for the implementation of e-government in Qatar. The effect of the integration

issues increases gradually in the higher stages of e-government development, particularly in the horizontal stage, which assumes all participant agencies are joined together (Layne and Lee, 2001). The case study findings indicate that the existing IT infrastructure that has been implemented to integrate various services has not resulted in improvements in the e-government project and citizens' participation. As a result of having a one-way integration system (MOI uses MQSerious software as a middleware communication system to integrate e-government applications), the e-government implementers developing e-services are hindered in their efforts to offer joined-up services. These findings accord with previous research by Layne and Lee (2001), Al-Khouri and Bal (2007), Al-Sebie and Irani (2005); Kamal *et al.,* (2009); Weerakkody *et al.,* (2007a); Janssen and Creswell (2005) which suggest that seamless integration is essential to achieve e-government success. Furthermore, these researchers suggest that when e-government systems are highly integrated, this results in higher levels of citizens' participation, trust and satisfaction.

7.3.2.4 E-government Portal and Access

The case study results indicate that the e-government project has experienced several challenges and potential hurdles regarding accessibility, availability and usability of the Qatari e-government portal. This supports the literature findings that suggest the introduction of new technologies often present numerous challenges (Trkman and Turk, 2009; Wittmann *et al.,* 2007; Carter and Bèlanger, 2005; Carter and Weerakkody, 2008). The interviewees agreed that the access factor is one of the most significant issues during e-government implementation. For instance, it was discovered that during the introduction of the e-government payment gateway, major system related problems resulted in the payment gateway not being available for around one month in October 2008. These findings confirmed previous research that access and availability of on-line services is of prime importance for e-government success.

7.3.2.5 Skills and Capabilities

This is a new factor derived from the empirical data, and refers to the employee's skills and capabilities. In the literature, these have been considered important in the technology implementation (Al-Sebie and Irani, 2005). The analysis of the case study shows that e-government implementers and officials were fully aware of the importance of the employees' skills and capabilities in facilitating successful e-government implementation. Thus, they offered incentives to attract capable skilled

employees and made it possible for all e-government implementers and officials to attract the right skilled employees who can help deliver the complex and large e-government systems on time. All interviewees shared the same perceptions of this factor and viewed it as a key challenge of e-government implementation.

7.3.2.6 Business and IT Alignment

This is a new factor that was derived from the empirical data, and refers to the alignment between an organisation's businesses strategy and its IT/IS applications. It examines infrastructure plans and activities. In the literature, this has always been considered important in the IS environment (Chan and Reich, 2007). The analysis of the case study shows that e-government implementers and officials realised the importance of their business and IT alignment. The Qatari e-government officials have thus identified several ways to align their plans and efforts by, for instance, establishing a government data centre and government network, creation of a project manager position and project owners, and setting up IT expert users from different IT government agencies and setting up user committees. These committees share the setting up and development of the national e-government strategy and also share the implementation road map. These findings mirror previous research by Weerakkody *et al.,* (2007c) who have compared e-government strategies between the UK and Norway.

7.3.2.7 Local Industry Partners

This is another new factor derived from the case study and refers to partners from private industry collaborating with government to help overcome some of the e-government project challenges. In the literature, this factor has been considered important in the e-government environment (Al-Sebie and Irani, 2005). The case study shows that e-government implementers and officials have already realised the importance of this factor to achieve e-government implementation success in Qatar. The establishment of a new government owned IT company (Maalomatiih) to ensure that local industry partners will participate in projects and continue to maintain local stability by setting up large scale technology architecture capabilities locally is one of the strategies used by the government to ensure private-public partnership. In this context, the Qatari government is following a strategy of acquiring private companies through strategic alliances (see for instance Chen and Gant, 2001; Hsu *et al.,* 2009). These efforts make it possible for e-government officials and implementers to attract the right industry partners with the required IT experience and skills for the implementation of e-government initiatives.

7.3.3   Social Issues

The research findings showed that there were many social issues that need to be addressed and required considerable attention from the e-government implementers. The social issues that were found in the case study include the dictatorial leadership of ictQATAR and, in particular, the problem of nepotism. The research findings also revealed that awareness issues are not being treated as an important factor in practice and this mirrors prior research (see Al-Omari, 2006; Reffat, 2003; Choudrie *et al.,* 2005). The research also showed that more emphasis should be placed on communication. Sharifi and Zarei,, (2004), point out that an understanding of social challenges determines society's readiness for accepting changes in a given system.

7.3.3.1 Citizens-Centric

The rapid changes taking place in the government sector have prompted e-government organisations to pay more attention to the satisfaction of their stakeholders, especially citizens. In the literature, the implementation of new e-government services has been considered as a means for adding value to this sector (Heeks, 2007; Al-Sebie and Irani, 2005; Parent *et al.,* 2005); this was confirmed in the case study findings where many interviewees agreed that citizens' satisfaction has a great influence on adoption and plays an important role in e-government implementation. It was also identified that e-government implementation has resulted in improvements in the work environments of businesses and government agencies, but with only limited improvements to citizens.

7.3.3.2 E-government Training and Education for Citizens

This is a new factor derived from the case study and refers to the need for education and training for the e-government users during the implementation of the e-government project. There are several reasons for this. For example, it was identified that, due to several problems such as resistance to change, trust, and lack of literacy, ictQATAR started a campaign to educate the entire body of e-government stakeholders (businesses, employees and citizens), focusing mainly on citizens. Analysis of the case study findings show that ictQATAR officials have realised the importance of the citizen's education and training that is mainly focusing on ICT literacy in general, instead of training citizens specifically on the use of e-government services. The training of citizens in basic ICT skills is significant given the host of literature that identify ICT literacy and digital divide as key determinants of e-government adoption (see for example Weerakkody and

Choudrie, 2005; Kurunananda and Weerakkody, 2006, Caldow, 2001; Im and Seo, 2005).

7.3.3.3 Awareness

The analysis of the empirical data indicated that, in the case of e-government, the need for awareness among citizens during e-government implementation was imperative. This is for several reasons. For example, most of the available e-government services in Qatar are targeting businesses rather than citizens and the perceived project failures in Qatar before 2005 was attributed to the lack of awareness campaigns. Although, some awareness campaigns were conducted in shopping malls, newspapers, media, and other government agency websites, these efforts have had little impact on citizen's adoption of e-government services. However, these efforts are consistent with the literature (e.g. Al-Omari, 2006; Reffat, 2003; Navarra and Conford, 2003; Morris and Venkatesh, 2000; Fang, 2002; Choudrie *et al.,* 2005) that highlight the need for awareness campaigns during e-government projects.

7.3.3.4 Digital Divide

This factor has been frequently discussed in the literature, and it is stated that digital divide can occur due to different dimensions, such as gender differences, place of habitat - city or rural, age differences, socioeconomic groups, and differences in language (Im and Seo, 2005; Caldow, 2001). In the context of e-government implementation, the case study findings reflect this dimension. In this context, the empirical data shows that e-government implementation has achieved some success in terms of the iPark initiative introduced in Qatar (Al-Shafi and Weerakkody, 2008a; 2008b 2009a;2009b).

7.3.4   Political Issues

The various impacts of political challenges on the Qatari e-government implementation are described in the following section.

7.3.4.1 Government Support

In the literature, several authors such as Heeks (2003), Weerakkody and Dhillon (2009), AlTameem *et al.,* (2006), and Zarei *et al.,* (2008) identified commitment and support as a vital factor during the implementation of various projects like e-government. The case study shows that the e-government initiative in Qatar has a high level of support from top management in government. The reasons for this are

many: firstly, e-government projects are emerging as new innovations in the public sector worldwide, especially in the Gulf region and are very large, complex, prestigious projects; secondly, there is a huge expectation from the government behind this initiative; thirdly, it is seen that this initiative will be a way of developing government services that might fulfil the citizens' expectations and participation; and finally, the government of the State of Qatar aspires to be leaders in technology initiatives in the region and to be a good role model to other countries. Therefore, the government provided all the commitment, support and momentum for this project. These findings confirm prior research by Chen and Gant (2001), Heeks (2003), Weerakkody and Dhillon (2008) and Zarei *et al.,* (2008) which suggest that top managers in the government should fully understand the strategic objectives and the associated benefits of a given project.

7.3.4.2 Financial and Funding

This factor represents a potential hurdle to implementation, especially when large-scale IT innovative projects are being considered. Empirical evidence from the case study indicates that the funding and budgeting for the e-government initiative represent a very influential factor for the implementation and sustainability of e-government. All interviewees shared similar perceptions regarding government funding for the project; that costs were rapidly increasing with little evidence of increase in adoption of the on-line services. These findings confirmed the literature findings of Heeks (2003), Eyob (2004), Gottipati (2002) and Okiy (2005) that highlight the challenges of obtaining required funding for e-government.

7.3.4.3 Leadership

The empirical evidence derived from the findings shows that the leadership factor represents an important aspect during the implementation stages of an e-government system. The literature findings of Jaeger and Thompson (2003), Ke and Wei (2004), and Elnaghi *et al.,* (2007) also support the importance of leadership in e-government initiatives as an important element in the success of e-government projects. As discussed in Chapter 5, the e-government officials realised that the successful implementation of e-government depends not just on the implementation of the project, but also on a suitably strong leadership, which should not be centralised. This has validated the implication and quality of the leadership factor in e-government implementations.

7.3.4.4 Legislation and Legal

The case study results also pinpoints and identifies legislation as an important factor for e-government implementation and adoption. This accords well with the literature findings of Heeks (2001), Bonham *et al.,* (2003), and Elliman *et al.,* (2007), that show legislation challenge as a pivotal factor for e-government implementation. All interviewees reported that they share the same perceptions that legislation is an influential factor prior to and during the implementation of a large-scale IT project in government.

7.3.4.5 The Pace of Development and Change in the Public Sector

The rapid changes taking place as a result of advancements in ICT have prompted governments around the world to pay more attention to the development of their ministries and agencies. The need for rapid development and change often influences priorities and, when considering an e-government implementation, it is imperative to respond to changing user requirements by utilizing the latest advancements in ICT. The findings from the case study in Chapter 5 indicate that the Qatari government's willingness to respond by using advancements in ICT demonstrated their enthusiasm in this medium. For instance, the new Internet park initiatives launched in 2007 to offer free internet access to citizens in public parks is a good example of this (Al-Shafi and Weerakkody, 2008a; 2008b; 2009a;2009b). Furthermore, it was also revealed that the government's quick response to developments and changes in the country have resulted in numerous re-alignments of large projects. The best example in terms of e-government is where the implementation plan and other priorities had to be postponed to match the government 2030 development master plan. Other key examples include related projects launched for e-health and e-education.

The main consideration is to allow the model to consider the challenges that might hinder e-government implementation from the governments' perspective, whilst simultaneously examining the adoption of e-government among citizens (or users) from a technology-acceptance perspective. Therefore, the next section will cover e-government adoption from the citizen's perspective.

7.4 E-government Adoption: The Literature and Empirical Perspective

The previous section offered a discussion and reflection of the case study findings (from Chapter 5) on e-government implementation from the perspective of the Qatari context. This section discusses the empirical issues regarding e-government adoption from the citizen perspective, that were identified from the survey findings in Chapter 6 in relation to the literature.

7.4.1 Response Rate

The total response rate obtained in the survey, as discussed in Chapter 6, was (83.3%). Fowler (2002) suggests that the survey response rate is satisfactory between the values of (5%) at the lower end and (95%) at the higher end. Thus, the survey response rate of this research is considered satisfactory and acceptable.

7.4.2 Instrument Validation

The instrument validation processes that have been used in this research include content validity, construct validity and reliability. In order to have a reliable survey instrument and thus confidence in the research findings, the researcher employed content validity (interviews) as a pre-data collection validity, and a construct validity and reliability for post-data collection validity. These validity techniques are recommended standards in IS research (Straub *et al.,* 2004). Cronbach's coefficient alpha value was assessed to examine the internal research consistency of measuring (Hinton *et al.,* 2004; Field, 2005; Straub *et al.,* 2004). Hinton *et al.,* (2004) suggest four points of reliability, excellent (0.90 and above), high (0.70 - 0.90), high moderate (0.50 – 0.70), and low (0.50 and below). The reliability values reported in Straub *et al.,*'s (2004) study should be equal to or above (0.70) for a confirmatory study.

Reliability values of the various constructs reported in this research vary between (0.74) and (0.91), which means that all the constructs possessed reliability values above the minimum recommended level of Straub *et al.,* (2004) and resulted in high- and excellent-range scores as per Hinton *et al.,*'s (2004) suggested four points. This suggests that the measures for this study revealed an appropriate level of internal consistency.

7.5 E-government Adoption Constructs

7.5.1 Performance Expectancy

As per the discussion provided in Chapter 3, performance expectancy consists of perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT) and outcomes expectations (SCT) and these are employed as a single dimensional construct which is directly related to behavioural intention.

Findings from this study provide evidence that the performance expectancy factor was considered an insignificant influence on the behavioural intention to adopt e-government systems. This clearly suggests that efforts are required from the e-government officials and implementers to develop the content of the system to be more useful to citizens.

7.5.2 Effort Expectancy

As discussed in Chapter 3, if the effort expectancy factor toward e-government adoption of behaviour factor is positive, then citizens are likely to perform online activities (Venkatesh *et al.,* 2003; Al-Gahtani *et al.,* 2007). This theoretical assumption is confirmed in the survey findings that are obtained in this research which suggest that the effort expectancy factor has a significant positive influence on the behavioural intention to adopt e-government. While the literature defines effort expectancy as the degree of ease of use of the system (Venkatesh *et al.,* 2003), findings from this study provide evidence that the effort expectancy factor has a significant positive influence on the behavioural intention to adopt e-government. The survey findings are consistent with the UTAUT model, which suggests that the presence of constraints might inhibit the behavioural intention to adopt e-government (Venkatesh *et al.,* 2003). This also suggests that there is a need to equip citizens with the skills to use computers, the internet, and the e-government system. Although the findings of this research and previous theoretical studies illustrate that the effort expectancy is a significant predictor of behavioural intention (Venkatesh *et al.,* 2003), some scholars (Agarwal and Prasad, 1997; Davis *et al.,* 1989; Thompson *et al.,* 1991; 1994) state that this factor is becoming non-significant over periods of usage (post-training).

7.5.3   Social Influence

As discussed in Chapter 3, awareness messages that are produced and gained via mass media, such as television and newspapers, are considered to have an effect that is likely to influence citizens' intentions to adopt or refuse technology (Rogers, 1995; Venkatesh and Brown, 2001; Venkatesh *et al.,* 2003; Dwivedi *et al.,* 2009; Dwivedi *et al.,* 2008; Dwivedi and Lal, 2007; Dwivedi *et al.,* 2007; Dwivedi *et al.,* 2006). In terms of this research, social influence has a positive influence on explaining citizens' behavioural intention to adopt e-government, and on those who have already adopted e-government but are not satisfied with the project quality. Thus, governments should encourage citizens to influence their family and relatives who have still not adopted the e-government system. Moreover, the advertisement and awareness campaigns on television, newspapers and government agencies websites, that offer better quality services, are more likely to convince the citizens to adopt e-government systems. The aforementioned theoretical argument was justified and supported by the findings derived from the research findings in Chapter 6. The results show that social influence has a positive influence on the perceived behavioural intention to adopt e-government. Also, social influences are assumed to be important in the early stage of individuals' experience.

7.5.4   Facilitating Conditions

As previously discussed, facilitating conditions is considered to be directly related to usage behaviour (Venkatesh *et al.,* 2003; Hennington and Janz, 2007; Dasgupta and Gupta, 2009; Ilie *et al.,* 2009). The inclusion of the aspects of technological and organisational environment that are meant to minimise the challenges and barriers that hinder the system use, directly adds to this relation. Examples of these technological and organisational environment aspects include compatibility to the specification of e-government systems and other software and hardware, integration amongst public agencies that would provide full resources to citizens, legislation that would support the citizens using the e-government system, government commitment that would ensure the sustainability of the project and its continuation, and security and privacy mechanisms that increase citizen participation and maximise their trust and usage. Therefore, it is expected that if these items are perceived as high, then e-government adoption will be high. In contrast to the theoretical bases (e.g. Venkatesh *et al.,* 2003; Dasgupta and Gupta, 2009), these findings suggest that the facilitating conditions are considered an insignificant predictor to the actual adoption of the e-government system. This might be due to lack of availability and accessibility in terms of other accessibility channels, trust

and security, government commitment and support, and therefore the government should think about more citizen-centric services instead of business services.

7.5.5 Behavioural Intention

The findings of this research provided evidence that behavioural intention has a positive influence on the e-government usage behaviour. Venkatesh *et al.,* (2003) suggest that behaviour intention affects the adoption and technology usage significantly and positively.

7.5.6 Gender

The findings suggest that gender has a positive influence on e-government adoption behaviour. The theoretical research on gender indicates that men tend to be highly task oriented; this research suggests otherwise. This may be explained using the high levels of education that Qatari women have gained in recent times, where the role of women is now beginning to change in modern Qatari society.

7.5.7 Age

The findings suggest that age has a negative influence on e-government adoption behaviour. This means that people in the older age groups are less likely to adopt e-government, and a possible reason for this could be a lack of awareness about the probable benefits of e-government adoption, insufficient resources, and lack of skills and training.

7.5.8 Education Level

The findings suggest that there was a significant negative correlation between the respondents' education level and the e-government adoption. This can be explained by the fact that the e-government system is not a utility tool for accessing government information and it is not an effective system. Furthermore, highly educated citizens are more likely to have a higher level of education and occupation; hence, they may not need an e-government system to conduct or complete any government service.

7.6 Discussing the Need to Examine Citizens' Behavioural toward the E-government System

As outlined in Chapters 1 and 3 one of the key objectives of this research is to understand the relationships and gaps between e-government implementation and adoption. This section will aim to establish these relationships by analysing the case study (implementation) and the survey (adoption) findings from a Qatari context in order to offer a more holistic picture of the concept of e-government. Of the various factors proposed in the conceptual model (Chapter 3, Figure 3.1) and empirically found in Chapters 5 and 6, a number of factors emerged showing clear relationships between e-government implementation and adoption. However, it was discovered that not all of the factors proposed in Chapter 3 (Figure 3.3) and mapped empirically in Chapters 5 (Figure 5.1) and 6 (Figure 6.1), show clear relationships between e-government implementation and adoption. The following section describes the factors that have clear relationships and identifies the gaps where the link between implementation and adoption are not apparent.

7.6.1 Accessibility and Availability

The case study evidence shows that e-government officials and implementers have provided a "one stop" access to the national e-government system, and presented information in more user-friendly formats. Furthermore, the Qatari government has launched the free wireless internet parks (iPark) concept under the national e-government initiative with a view to providing free internet access for all citizens while enjoying the outdoors. The Qatari government can thus expect to attract more citizens; many studies of e-government implementation and adoption have highlighted this aspect in previous research (Ho, 2003; Carter and Bèlanger, 2005; Carter and Weerakkody, 2008). The survey findings in Chapter 6 shows that facilitating conditions has resulted as an insignificant construct in explaining behavioural intention to adopt e-government, whilst access and availability was a key issue for e-government adoption in Qatar. In response to the question about the availability of e-government services (and portal) via the Internet and its usefulness, Table 6.8 (see Chapter 6) shows around (82.2%) of citizens thought that the e-services offered on the Internet would not be useful to them. Regarding the adoption rate, the case study findings in Table 5.6 (see Section 5.4.2.3 in Chapter 5) told a similar story, and it shows that citizen's adoption of e-government for the year 2008 was only around (8.7%) whereas businesses achieved a high (91.3%) adoption rate

from a total usage of (2,078,188). Moreover, the survey data reveal that only around (55%) have accessed the e-government portal.

Given the above discussion, it can be concluded that the citizen's access level of e-government services in Qatar is not encouraging. One key reason for this could be due to the e-government implementers and officials not targeting the citizens with their services, as much as they do for businesses. Therefore, these findings establish that there is a clear relationship between e-government service availability and accessibility in the context of implementation and adoption.

7.6.2 E-government System Integration

In the literature, several authors, such as Layne and Lee (2001), Al-Khouri and Bal (2007), Al-Sebie and Irani (2005), and Kamal *et al.,* (2009), considered system integration to be an important factor for e-government implementation and adoption. The more complex and transformational e-government development is, the more it requires application integration internally and externally, such as horizontal integration between different agencies (Layne and Lee, 2001; Baum and Di Maio, 2000; Weerakkody and Dhillon, 2008). The case study identified a shortage of system integration between the e-government system and the other participating government agencies. The reason for this is that citizens are required to personally complete some procedures face-to-face with the government agencies, for example, for services such as passports and driving licenses. The e-government officials put this down to the middleware communication system, currently implemented and running between e-government system and MOI systems. The survey data analysis in Chapter 6 showed that the performance expectancy is insignificant which may be as a result of lack of usefulness and system integration, as from the (1176) respondents, (80.7%) respondents considered that the e-government systems were not integrating well between different participated government agencies (see Table 6.8).

The above discussion shows that there is a lack of integration in e-government systems in Qatar; this is reflected in the views of e-government implementers and the majority of citizens surveyed. These results confirm that integration of e-government systems have a two dimensional impact that spreads across both implementation and adoption.

7.6.3   Security and Privacy

In the literature, this factor has been considered as an important factor to e-government implementation and adoption (Al-Khouri and Bal, 2007; Smith and Jamieson, 2006; Al-Sebie and Irani, 2005). In the context of Qatar, the e-government officials implemented an e-government system with several privacy and security mechanisms that include passwords, smart cards, PKI, and biometrics-authentication equipment. Because of these efforts, the government was able to provide a reliable and trusted security environment. Comparatively, the survey data findings in Chapter 6 show that the facilitating conditions construct is found insignificant in explaining e-government adoption. One reason behind this might be lack of security and privacy mechanism that the government implemented and also citizens trust. Table 6.8 shows that of the (1138) respondents, (84.8%) of the respondents considered that security and privacy provided by the e-government system was satisfactory (Table 6.8).

Therefore, these results indicate that there is a strong relationship between the measures taken to ensure security and privacy during the implementation stages of e-government and the citizens' expectations of the same during adoption.

7.6.4   E-government Training and Education for Citizens

In the literature, several authors such as Kown and Zmud (1987), and Anderson and Young (1999) argue that there is a positive relationship between the training of potential users and implementation success. The empirical findings in Chapter 5 identified that e-government implementers and officials in Qatar specified that citizens' training is under the responsibility of the ictQATAR's jurisdiction and its objective is to focus on increasing ICT literacy among citizens. Up to the end of 2008, around (8000) citizen had been trained. The survey data findings in Chapter 6, identified that effort expectancy is significant in explaining behavioural intention to adopt e-government. This suggests that there is a strong need to train and provide the required skills courses to citizens and especially to those who do not have regular opportunities to learn and use the computer, internet and other e-government applications. The survey findings in Chapter 6 revealed that (61.8%) of the respondents believed that the e-government initiative is lacking in the area of offering e-government training opportunities for citizens, and only (8.3%) voiced their satisfaction of the level of citizen training.

Also, in the UTAUT model, Venkatesh *et al.,* (2003:450) specify that *"the effort expectancy construct within each model is significant in both voluntary and mandatory usage contexts; however, each one is significant only during the first time period (post training)"*. The results of the survey findings showed that the effort expectancy constructs revealed that a significant model emerged between this construct and behavioural intention. This result proves that there is a lack of e-government system training amongst citizens. These findings show a clear relationship between implementation and adoption when examined in the context of citizens (user) training of e-government services.

7.6.5   Awareness

In the literature, some scholars (e.g. Al-Omari, 2006; Choudrie *et al.,* 2005, Navarra and Conford, 2003; Reffat, 2003) consider awareness to be an important factor that the e-government officials and implementers need to focus on and redress. It was revealed that although the e-government initiative in Qatar conducted some awareness campaigns, these had little impact on citizens' adoption of services. Comparatively, the survey data findings in Chapter 6 show that the social influence construct was significant in explaining the behavioural intention to adopt e-government. This has some implications to e-government officials and implementers. For example, citizens should be encouraged to adopt e-government via the internet or any other type of accessing channels as Kiosks. In such situations, existing users, mainly citizens, will influence other citizens (family, relatives, friends) to adopt e-government. Therefore, television and radio advertisements, and newspaper advertising is one way of encouraging citizens to adopt e-government, and Table 6.8 showed that (81.4%) of respondents believed that the current e-government awareness campaigns are insufficient and that citizens are experiencing difficulties in using the e-government systems.

In this context, the findings have shown that the lack of awareness campaigns targeting citizens acted to minimize citizens' interest in adopting e-government systems. These results therefore show a clear relationship between the implementation and adoption aspects of e-government in terms of awareness.

7.6.6   Legislation and Legal

In the literature findings of Elliman *et al.,* (2006), Bonham *et al.,* (2003), and Heeks (2001), it is suggested that legislation is an important factor for e-government implementation and adoption. The empirical evidence gathered from the case study showed that government officials agreed on legislation issues and pointed out this factor as a key issue that is impacting the national e-government system in Qatar. Comparatively, the survey data findings in Chapter 6 shows that the facilitating conditions construct resulted insignificant in explaining e-government adoption which means that citizens are less likely to adopt e-government, and one possible reason for that could be legislation and legal issues. In this case, the findings shows that (80%) of the citizens felt assured by the legislation level currently implemented, resulting in a maximisation of their encouragement to adopt the national e-government systems. Therefore, these findings show a clear link between the government's perceptions and citizens' views on legislation that would ultimately impact e-government adoption.

7.6.7   Government Support and Commitment

According to the case study in Chapter 5, all interviewees share a similar perception and opinion regarding government support of the e-government initiative in Qatar. The government in Qatar have supported the national e-government project from inception and in 2006, to ensure sustainability of the national e-government project, the government provided funds of ($400) million. Comparatively, the survey data findings in Chapter 6 shows that the facilitating conditions construct resulted insignificant in explaining e-government adoption which means that citizens are less likely to adopt e-government, and one possible reason for that could be lack of government support and commitment towards the e-government project. In this case, the survey evidence collected from the research indicates that the majority of citizens (86.7%) from the sample of (1159) believed that the e-government project has high government support and commitment.

These findings confirm the literature findings of Weerakkody and Dhillon, (2008: 2009), Carter and Belanger (2005), and Heeks (2003) which suggest that governments should support and understand the benefits of e-government projects to achieve success of implementation and adoption.

7.7 Relationships Between E-government Implementation and Adoption: Government and Citizens Perspectives

The discussion and reflection offered in this chapter has shown that a number of factors that influence e-government implementation have a direct impact on the citizens adoption of these services. The overall perspectives of the government officials implementing e-government services and citizens adopting these services in Qatar can be summarised as follows in Table 7.2.

Table 7.2: Summary of the Overall Perspectives of Government Official's Implementing E-government Services and Citizens Adopting Services in Qatar		
Factors Influencing E-government	**E-Government Implementation (Government's Perspective)**	**E-government Adoption (Citizen's Perspective)**
Government Support and Commitment	Government support was seen to be high according to the various interviewees. Most attributed this to the proactive steering committee overseeing the national e-government project. Furthermore, Qatar has an excellent ICT infrastructure and is one of the regional broadband leaders.	Many citizens surveyed (86.7%) of the total sample of (1159) citizens who answered this question) thought that government support and commitment for the e-government project was sufficient.
Legislation and Legal	Electronic services legislation was seen as a highly important factor by many of the interviewees. Most suggested that they were happy with the current legislation in place in Qatar to facilitate online services.	The majority of surveyed citizens (around (80%) of the total sample of (1109) citizens who answered this question) thought that the legislation level is satisfactory and available. They suggested that this environment encouraged them to adopt e-government services.
E-government Awareness	The majority of government officials interviewed thought that there was a reasonable level of e-government awareness among work colleagues. However, most interviewees thought that the awareness campaigns conducted in Qatar were inadequate to encourage adoption.	Analysis of the survey responses indicate that (85.7%) of the total sample of (1157) respondents who answered this question believed e-government awareness campaigns were not enough and encountered difficulties in using the system due to a lack of awareness campaigns. Also, (81.4%) specified that they are not satisfied with the awareness campaign in Qatar.
E-government Training and Education for Citizens	Many interviewees felt that the citizens training and education is high, especially after the establishment of the e-citizen institute that focuses on increasing the ICT literacy among citizens. It was specified that 8000 citizens had been trained by the end of 2008.	Majority of respondents criticized the current e-government project and believed that the e-government initiative has not done enough to encourage any training. Only (8.3%) of the citizens surveyed revealed that they were happy with the training opportunities offered by the government.
Security and Privacy	The interviewees mentioned that they have implemented several privacy and security mechanisms that include passwords, smart cards, PKI, and biometrics authentication equipment. Therefore, they believe that they	(84.8%) of the respondents specified their satisfaction and confidence with the security and privacy mechanisms that are offered in the context of e-government systems. This issue might increase the citizens' trust to participate in e-government and maximise the citizens'

	have provided a reliable and trusted security environment for the e-government project, and for protecting citizens' data and privacy.	adoption and usage of services.
E-government System Integration	The majority of government officials interviewed thought that there was a reasonable level of e-government system integration between the different applications and databases of the different government agencies. Also, they referred this challenging issue to the communication channel between the MOI and other government agencies' systems and the payment gateway between Qatar central bank, Qatar national bank, and national e-government portal. This one-way communication system resulted in delaying the progress of the national e-government efforts.	Analysis of the survey responses indicate that (80.7%) of the total sample of 1176 who answered this question believed that e-government system integration in Qatar was hindering the provisioning of joined-up e-government services. Most suggested that they find difficulties in using the system due to the lack of system integration between different government agencies.
Accessibility and Availability of the Qatari E-government System	The interviewees mentioned that the access levels were seen to have increased to an adoption usage rate of 2,078,188 by the end of 2008. Also, a 'one stop shop' philosophy is available with more user-friendly formats. Moreover, the portal and domain have been renewed recently to increase availability and usability.	Access was considered as 'not useful' for (80.2%) of a total sample of 1166 citizens from the survey who answered this question, with some limitations, particularly when it came to the availability of the service and also, other internet channels such as Kiosks, SMS, and digital television.

7.8 The Revised Conceptual Model for E-government: Implementation and Adoption

Based on the investigation of research issues identified and presented in Chapters 5 and 6 and the research syntheses and analysis carried out in this chapter, the conceptual model presented in Chapter 3 can be revised. The revisions will take into account the newly discovered factors influencing implementation identified in Chapter 5, and the validated research hypotheses discussed in Chapter 6. Moreover, the revised conceptual model will aim to map the relationships and/or gaps between e-government implementation and adoption as summarised in Figure 7.1.

Figure 7.1: Revised Model for E-government System Implementation and Adoption

7.9 Chapter Summary

The focus of this chapter was to examine the factors influencing e-government implementation and adoption from a holistic angle to establish potential relationships between implementation challenges and adoption constructs. In doing so, this chapter revisited the conceptual model proposed in Chapter 3 (Figure 3.3) and revised it to map possible relationships between factors influencing implementation and adoption.

The case study led to a number of additional organisational, technological, social and political challenges facing e-government implementation which were added to the conceptual model proposed in Chapter 3. The organisational challenges added is collaboration, the political challenges added is governmental response to change; the technological challenges added are a) skills and capabilities, b) business and IT alignment, and c) partnerships between government and local industry partners and the social challenges added is citizens' training and education.

The revised conceptual model presented in Figure 7.1 is a novel contribution in itself as it encapsulates the following:

➢ This model is one of the first attempts to explore and understand organisational, technological, social and political challenges facing governmental efforts in terms of e-government implementation. At the same time, it also aims to explore and take into consideration citizens' behavioural opinion and usage of e-government in terms of its adoption. The initial conceptual model was influenced by institutional theory and unified theory of acceptance and use of technology, thus providing a strong and theoretically supported frame of reference for studying e-government implementation and adoption.

➢ The revised conceptual model (Figure 7.1) includes a comprehensive set of organisational, technological, social and political challenges that face e-government implementation. The factors mapped in the conceptual model was initially influenced by the literature and later explored in practice. This resulted in the identification of additional factors and its subsequent modification.

➢ Decision makers can use the conceptual model as a tool to support government institutions and agencies when taking decisions to develop and maintain e-government systems.

➢ The revised conceptual model presented in this Chapter (Figure 7.1) can be used by academics and researchers to understand and analyse challenges and factors facing government efforts in terms of system implementation, and citizens' behavioural opinion and usage in terms of adopting e-government initiatives.

➢ Most importantly, the research established some relationships between the factors influencing e-government implementation and adoption.

Finally, to re-iterate, the research has outlined the importance of organisational, technological, social and political challenges facing e-government systems, and citizens' behavioural intention to use e-government services. These are included in the revised model as outlined in Figure 7.1.

8

Chapter 8: Conclusions and Further Research

This chapter seeks to provide a conclusion to this thesis and examine again the more pertinent areas the research covered in this study. In addition, this chapter will present the research overview and provide a discussion of the contributions the thesis has made in the area of e-government implementation and adoption. This will then be followed by a brief discussion of the practical implications of the research findings, an outline of possible research limitations, and a review of future research directions in the area of e-government implementation and adoption.

8.1 Research Overview and Findings

8.1.1 Research Overview

E-government promises to emulate the private sector by offering more efficient, transparent and accessible public services to citizens and businesses (Flak *et al.,* 2009; Al-Shafi *et al*, 2009: Sofiane, 2005). Although, the benefits of e-government are well documented, implementation and adoption progress of the concept has been sparse in both developed and developing countries. This is particularly true in the Western Asian region where although large sums of money and enormous resources have been invested in developing solutions and services, higher levels of e-government maturity (such as horizontal integration - see Chapter 2, Tables 2.8 to 2.11) have not been realised yet. Even though the interest for e-government was high amongst citizens and other stakeholders (such as business and employees), the adoption levels have not fulfilled expectations. One of the reasons for this might be the lack of awareness; when service users' (citizen) do not know about the existence of e-government services, consequently they will not adopt online government services even if those services have an added value. Therefore, the aim of this study was to develop a conceptual model to investigate and map the relationships between citizens' adoption of e-government services against the governments' expectations for adoption. By simultaneously analysing and aligning the implementation issues of e-government with the adoption aspects, this study aimed to develop a better understanding of the gaps that exists between implementation and adoption.

Chapter 1 defined the research problem and showed various motivations for conducting this research. It also, stated the aim of this study, which is to develop a conceptual model of e-government implementation and adoption. This model can inform decision-makers and implementers of e-government.

The literature findings in Chapter 2 (Background theory) discussed the issues related to e-government in general with a view of identifying the scope of the research problem. It started by presenting a brief history of the emergence of e-government, and then went on to focus upon the taxonomy of e-government definitions and the possible reasons behind the debatable issues between researchers in search of an agreed definition. As a result, a taxonomy for e-government definition classifications was proposed. E-government interaction dimensions were also discussed and classified into G2C, G2B, G2G, and G2E. These dimensions explained initiative and the interaction-patterns of each sector.

Chapter 2 further discussed the different models of developmental stages of e-government, with their relationship, type of online services, and benefits for each stage. Finally, the benefits and challenges of e-government were discussed and this led to offering a contribution to the area of e-government between the government efforts in terms of e-government implementation and the citizens' expectation in terms of e-government adoption.

In Chapter 3 (focal theory), the researcher has focused on the research issues derived from Chapter 2. The researcher identified a gap in the literature in relation to the lack of a cohesive theoretical model for understanding e-government implementation and adoption. In doing so, Chapter 3 aimed to provide a clear framework for this research. In this context, Chapter 3 examined in detail e-government challenges for the various government agencies involved in implementation and e-government adoption factors that influence citizens' perceptions of usage. For better understanding the implementation aspects of e-government, a conceptual model was proposed in Chapter 3 which was influenced by institutional theory. This model contained a set of organisational, technological, political and social challenges facing e-government system implementation. In the area of e-government adoption, the researcher made use of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.,* 2003), as the basis for studying the factors influencing e-government adoption. The UTAUT model was justified as the most appropriate model for studying e-government adoption, while institutional theory was proposed and supported as appropriate for understanding the wider challenges that influence implementation (see Chapter 3).

Based on these factors, the researcher developed an e-government implementation and adoption model (see Figure 3.1). It is proposed that this model provides a good understanding of the phenomenon of implementing and adopting an e-government initiative. Moreover, it is proposed that this model will provide better support to decision-makers for facilitating e-government implementation and adoption. The proposed model also makes a novel contribution at a conceptual level for e-government implementation and adoption. Therefore, the conceptual model was examined and validated in Chapters 5 and 6, and revised in Chapter 7.

Chapter 4 (data theory), outlined the research approach, methodology, and design to carry out the research under study. The research methodology was developed and adapted by first discussing and justifying a selection of qualitative and quantitative research approaches to collecting data in an e-government context that covers both

organisational (implementation) issues and citizens' (adoption) issues in Qatar. The data were collected through interviews with government employees involved in e-government implementation activities and a survey among citizens (potential users) in order to test and validate the proposed conceptual model presented in Chapter 3.

Chapter 5 (data theory) reported a case study detailing the background and implementation of e-government in the state of Qatar. This chapter began with information pertaining to the country background, population, economy, and political situation. Then, the ICT and technology backgrounds were covered. The chapter presented the evolution of the e-government in Qatar followed by a discussion of the empirical evidence derived from the case study of e-government in the state of Qatar. In particular, the chapter investigated the organisational, technological, political and social problems facing the implementation of e-government in Qatar. The empirical data confirmed the conceptual issues that were identified in Chapter 3 from the literature and a number of new organisational, technological, political and social challenges that were not covered in the proposed conceptual model in Chapter 3 were identified. These findings were considered in Chapter 7, and led to a revised conceptual model (see Figure 7.1)

Chapter 6 (data theory) presented the findings obtained from the data analysis of the conducted survey that examined citizen's adoption, usage and impact of e-government in Qatar. A high survey response rate of 83.3% was reported in the study. This chapter presented a reliability test (to ensure) construct validity and affect the ordering of the questionnaire items. The reliability test possessed a Cronbach's alpha score of above 0.70. This was followed by factor loading. Following this was a report of the descriptive statistics of the study. The findings suggested that the survey respondents showed strong agreement for some of the construct prompts. Finally, demographic analysis was conducted between gender, age and educational level, and e-government adoption construct to test the relationship and illustrate the adopters and non-adopters.

Chapter 7 (novel contribution) confirms and reflected upon the findings of the theoretical perspectives. It then presented, discussed, refined, and validated the conceptual model proposed for e-government implementation and adoption.

8.1.2   Research Findings

The main literature review and the innovative contribution derived from the empirical research are summarised and presented as follows:

- *Finding 1:*   The literature review in the e-government area revealed an absence of theoretical models associated with e-government implementation and adoption. Therefore, there is a need to develop and propose a conceptual model, firstly to facilitate better understanding of e-government implementation in a Qatari context; and secondly to capture the most salient factors influencing citizen's expectations in terms of e-government adoption and usage. It is proposed that this conceptual model offers the Qatari government and the wider e-government research community a cohesive frame of reference for better understanding e-government implementation and diffusion

- *Finding 2:*   Institutional theorists have ascribed the institutionalisation of organisations to sources internal or external to the organisation. Therefore, this study adopts the approach to study e-government related change by considering the key forces influencing implementation from organisational, technological, social and political themes from an institutional theory lens.

- *Finding 3:*   A conceptual model has been proposed to address the void in literature of e-government implementation and adoption (Figure 3.1). This model has been validated and modified to contribute an innovative proposal for e-government implementation and adoption (Figure 7.1). The proposed model encapsulates a review of e-government implementation challenges under four themes, namely: a) organisational, b) technological, c) political, and d) social. On the adoption side, the proposed model includes six constructs namely: a) performance expectancy, b) effort expectancy, c) social influence, d) facilitating conditions, e) behavioural intention, and f) e-government usage behaviour, and three demographic variables, namely, gender, age and education level.

- *Finding 4:* The revised conceptual model in Figure 7.1 can be recommended and used as a frame of reference for decision-making by government officials and it will enable researchers to understand e-government implementation and adoption themes and factors. Additionally, these themes can be analysed and their relationships can be better understood using the conceptual model.

- *Finding 5:* Two types of constructs, namely effort expectancy and social influence significantly explained the behavioural intention of citizens when adopting e-government. Social influence contributed to the largest variance (B= 0.876) when explaining behavioural intention of e-government adoption. Also, the effort expectancy construct contributed to the second largest variance (B= 0.100), and performance expectancy construct (B= 0.024) revealed the least variance. Both performance expectancy and facilitating conditions constructs correlated positively but not significantly and did not explain e-government adoption in Qatar.

8.2   Meeting the Aim, Objectives and Questions of this Thesis

To achieve the aim and objectives of this thesis, two research questions were defined in Chapter 1; how they were addressed in the thesis is summarised in Table 8.1 and outlined in the following paragraphs.

Table 8.1: Meeting the Aim, Objectives and Questions of the Thesis	
Research Question	**Section/Chapter**
Question 1	Chapter 2, Chapter 3 and Chapter 5
Question 2	Chapter 2, Chapter 3 and Chapter 6

- *Question 1:* What are the key (macro) factors that might influence e-government implementation in the State of Qatar?

    Based on the literature review, a number of e-government implementation challenges were identified and analysed by the researcher (Chapter 2 and Chapter 3). Chapter 5 analysed and presented the empirical data collected from the organisation responsible for e-government implementation in Qatar to identify the challenges faced in practice.

- *Question 2:* What are the key (micro) factors that might influence citizen' adoption of e-government in the State of Qatar?

    Based on the literature review, e-government adoption factors were identified and analysed by the researcher (Chapters 2 and 3). Chapter 6 then analysed and presented the empirical data collected from Qatari citizens to record their perceptions of adoption.

8.3 Research (Innovation) and Contribution

Although research exists that explores citizen adoption of e-government services in many countries, the author argues that currently there are no independent studies that examine e-government adoption in the State of Qatar. The full potential of electronic government services is unlikely to be realised without substantial citizen adoption of such services and their participation in such initiatives. This point is clearly reflected in the Qatari government's recent efforts on e-government development and diffusion within which one of the major objectives outlined is to promote design, development and diffusion of citizen centric online services for efficient delivery of public services. In this context, the outcome of this research has extended the boundaries of knowledge in the area of e-government by making a valuable and innovative contribution to implementation and adoption.

This research has contributed to the conceptual aspects of e-government in Chapters 1, 2, and 3, and to the domain of research methods in Chapter 4 through a review and synthesis of normative literature. From a practical angle, the thesis has contributed to better understanding e-government efforts particularly in a Qatari context through the empirical work undertaken in Chapters 5 and 6. Finally, the overall aim of the research is revisited in Chapter 7 where the links between e-government implementation and adoption are further explored through a synthesis and analysis of empirical results against the literature. By these research efforts this study has provided a novel contribution to the area of e-government implementation and adoption. The section that follows aims to outline the main innovative contributions of this research.

8.3.1 Novel Model for Understanding E-Government Implementation and Adoption

The researcher claims that this thesis makes novel contributions in the following areas:

- *Contribution 1:* Chapter 2 identified that there is an absence of theoretical models to understand the different challenges hindering e-government implementation. To fill this void, in Chapter 3 the author proposed a conceptual model for better understanding these challenges and the potential relationships that may exist between challenges influencing implementation and factors influencing adoption and usage. This model is discussed and analysed in Chapters 5 and 6. Based on the results, a revised conceptual model is presented in Chapter 7 (Figure 7.1). This is based on empirical research and survey evidence that was derived from the case study and survey data.

- *Contribution 2:* The proposed (revised) conceptual model in Chapter 7 provides a contribution by combining the two aspects of e-government (i.e. implementation and adoption). Firstly, the model combines the challenges that e-government implementation has encountered that are identified in previous studies. These challenges were themed and examined under four key areas that were influencing implementation, namely, organisational, technological, social and political using institutional theory as a lens. Under these four main themes, a number of challenges were identified that were impacting e-government implementation. The consequent case study then contributed to extending these factors further by identifying new challenges (e.g. government responses to change, citizens' training, collaboration, skills and capabilities, business and IT alignment, and local industry partnership). On the adoption side, this study contributed by proposing five salient factors that influence e-government adoption, namely, performance expectancy, effort expectancy, social influence, facilitating conditions and behavioural intentions to adopt e-government services in Qatar. The study found that: a) performance expectancy was insignificant when explaining the behavioural intention to adopt e-government services; and b) facilitating conditions were insignificant when explaining the adoption of e-government services.

- *Contribution 3:* The revised conceptual model has confirmed the role of social variables such as gender, age, and education level when explained the actual adoption of e-government and use.

- *Contribution 4:* At a practical level, the author proposes that the revised conceptual model offered in Chapter 7 can be used as a guide for decision-makers to support government officials and implementers who seek success in e-government implementation and adoption. Also, the revised conceptual model can be used by researchers to understand and analyse e-government challenges that might hinder implementation; it can also be used to predict and subsequently manage citizens' expectations of e-government adoption and usage. Given the aforementioned contributions, this research represents an initial and pioneering effort towards the understanding of e-government implementation and adoption, particularly in a Gulf Cooperation Countries' and more specifically in a Qatari context. It also informs subsequent usage behaviour in the state of Qatar. Also, this study is one of the few studies that address the issue of government implementation efforts toward an individual's adoption and usage of e-government systems. Moreover, by

employing qualitative and quantitative approaches to research, this study is an initial work that confirms the role of various challenges and factors toward understanding implementation and adoption of e-government in the state of Qatar. Furthermore, to the best of the authors' knowledge, this research is the first study that addresses the issue of citizens' adoption of e-government services at a national level in Qatar. By utilizing well established theoretical models such as Institutional Theory (for understanding implementation) and the UTAUT model (for understanding adoption), this research offers a well justified theoretical framework for studying e-government. Moreover, the large sample of citizens surveyed and the significant role played by the case study organisation researched in this thesis makes the findings very relevant and reliable for the Qatari context.

As outlined in Chapter 1 of the thesis, the key aim of this research was to understand the potential relationships and gaps between e-government implementation and adoption. This was particularly significant as the motivation for this research was influenced by the lack of literature and studies offering a unified view of e-government implementation and adoption. Although there is an abundance of literature on e-government, most studies have only focused on either implementation aspects or adoption and diffusion aspects (independently). This literature void is concerning given the number of e-government initiatives that are facing delayed implementation (outcomes) particularly in developing countries. This is further compounded by the lack adoption of already available services in these countries. Therefore, this research set out to explore the potential relationships between e-government implementation and adoption by conducting a case study (implementation) and survey (adoption) in Qatar to offer a more holistic picture of the concept of e-government. Nevertheless, as outlined in Chapter 7, the literature and empirical findings in this research indicate that it is difficult to identify explicit relationships between e-government implementation and adoption. This may explain why researchers have failed to thus far examine the concept (and stages) of e-government from implementation to adoption.

8.4   Practical Implications

The e-government literature has emphasised the fact that citizens who use e-government will benefit from the services and consequently be encouraged to adopt e-government as a regular method of accessing and interacting with public services. Empirically, this research has shown that if e-government provides more benefits to its citizens in terms of convenient access and prompt services, when compared to the

old and traditional means, then possibly this practice might spread the use of e-government services throughout the Qatari society. Furthermore, the practical lessons that have emerged from the analysis presented in this study are as follow:

- The full potential of electronic government services is unlikely to be realised without substantial citizen adoption of such services and their participation in such initiatives. This point is clearly reflected in the Qatari government's recent efforts on e-government development and diffusion within which one of the major objectives outlined is to promote design, development and diffusion of citizen centric online services for efficient delivery of public services. However, the challenges outlined in this study indicate that these objectives are not easy to realise in practice and that more focus is needed to develop strategies which would minimise the negative impact of these challenges.

- Likewise, from a user adoption perspective, a number of factors were identified from the existing literature and considered important for understanding citizens decisions for adopting e-government services from a Qatari national perspective. In this respect, well coordinated efforts are needed by the policy makers and implementers to ensure that user friendly, accessible, transparent and value online services are provided to the citizens.

The e-government services initiative in Qatar has been successful initially in promoting wider access to public services and this is encouraging for all stakeholders (government, businesses and citizens). Yet, much more can be done to raise awareness of e-government in Qatar such as advertising and promoting the national e-government website and setting up citizen service centres to assist those who are less-computer-savvy to adapt e-government services. While the research findings outlined in this thesis are encouraging from a practical perspective for the Qatari government, from a theoretical perspective these results reconfirm that technology acceptance is influenced by key constructs such as Performance Expectancy, Effort Expectancy, Social influence, and Facilitating conditions (factors) of the e-government services used. From a practical perspective however, one has to recognise the fact that although the findings in this research are encouraging, e-government has yet to mature in the state of Qatar since its inception in 2000. As the empirical results reflect, some of the reasons for this can be attributed to the fact that citizens are still not fully aware of e-government services,

are concerned about security and some are hindered by the lack of internet access. In this respect, it can be concluded that in order to successfully diffuse e-government services in Qatar, the government will need to understand citizens' needs, their perception on relative advantage, ease of using the services and lifestyle, and subsequently use this knowledge to develop citizen centric electronic services.

8.5   Research Limitation

As with any research that deals with new technology, this research has also encountered some limitations.

- One limitation for this research study has been the time factor. While research had to be completed within a reasonable time frame allocated for a PhD research (3 – 4 years), if more time was allocated for the empirical work, the level of detail obtained particularly from the case study would have been greater. This would have added further value to the study.

- This research was conducted with only one case study, and hence it is hard to decide whether the conceptual model proposed is applicable in other e-government implementations and whether it could be applied in the context of other countries.

- Some limitations were also faced during the empirical survey as details of the national population (such as addresses) were not available to the public due to legal restrictions. The survey protocol utilised a convenient sampling method by selecting to distribute the questionnaire in the above mentioned different agencies/organisations, yet randomly distributed the survey to the citizens attending the agencies/organisations. This was possible due to personal contact in all eight municipalities. Although the survey participants represents only around one percent of the Qatari national population, the findings of this study are considered to be a representative sample, particularly as it covers all eight municipalities (regions) of Qatar and represents a good demographic mix.

8.6   Areas for Future Research

Research can usually be further developed and the research presented here is no exception. However, there are some areas that relate to this research which need to be investigated and explored further. Also, there are some alternative recommended directions that further work could be embarked upon. These are as follows:

- *Recommendation 1:* A number of challenges facing e-government implementation were proposed in the study based on literature and single case study. The author proposes that these can be further studied and may lead to an exploration of more challenges facing e-government implementation.

- *Recommendation 2:* In Chapters 2 and 3 previously published literatures was used together with Institutional Theory to suggest a number of challenges facing e-government implementation under the broad themes of organisational, technological, political and social. However, a number of e-government literatures have also identified and classified economic and cultural challenges; this study only considered as part of the four main themes outlined above. Therefore, a further recommendation can be to explore the challenges that fall under the cultural and economic themes which impact e-government implementation.

- *Recommendation 3:* Another area of future research could be to examine the impact of implementing e-government on the formal structures and political fabric of a country.

- *Recommendation 4:* Chapter 3 suggests the UTAUT model for the e-government adoption aspect. The UTAUT model contains five direct determinants of behavioural intention and use behaviour and these include performance expectancy, effort expectancy, social influence, facilitating conditions and behavioural intention. In this study the focus was on five direct determinants of behavioural intention to adopt e-government and e-government adoption behaviour. Gender, age, and education level were used as direct determinants influencing e-government adoption. A further recommendation is to explore adoption factors such as culture and trust that might affect the citizen's intention to adopt e-government in Qatar as well as other gulf and regional countries.

- *Recommendation 5:* A part of this study focused in the area of citizens' adoption of technology (in this case, e-government applications and services) by testing the UTAUT model in a developing country (Qatari) context. Future research can focus on extending this study to other GCC and regional countries, and draw comparative analysis of e-government adoption.

8.7   Summary

To the best of the author's knowledge, this research is the first study that addresses the issue of e-government implementation and citizens' adoption of e-government services at a national level in Qatar. The author also claims that this research study is the first to survey a large proportion of citizens (1000+) in any single country within the entire GCC region. By doing so, it can be concluded that this study extends the knowledge in the area of citizens' adoption of e-government applications and services, as it utilised two well established theories (Institutional Theory and Unified Theory of Acceptance and Use of Technology) and confirmed the impact of some of the salient factors identified in the extant literature on e-government implementation and adoption from a Qatari national context.

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Abbreviations

ACE	Access Channel for Employees
BI	Behavioural Intention to Adopt E-government System
B2G	Business-To-Government
DBA	Data Base Administrator
DOI	Diffusion Of Innovation Theory
C2G	Citizen-To-Government
CDT	Centre for Democracy and Technology
CIO	Chief Information Officers
CRM	Customer Relationship Management
E-Business	Electronic Business
E-Commerce	Electronic Commerce
E-Education	Electronic Education
E-Government	Electronic Government
E-Health	Electronic Health
E-Learning	Electronic Learning
E-Participation	Electronic Participation
E-Services	Electronic Services
EE	Effort Expectancy
ESCWA	Economic and Social Commission for Western Asia
FC	Facilitating Conditions
FTS	Federal Technology Service
G2B	Government-To-Business
G2C	Government-To-Citizen
G2E	Government-To-Employee
G2G	Government-To-Government
GCC	Gulf Co-Operation Countries
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GSA	General Service Administration
HMC	Hamad Medical Corporation
HR	Human Resource
IBM	International Business Machines
ICDL	International Computer Driving Licence

ICT	Information and Communication Technology
ictQATAR	Supreme Council of Information and Communication Technology in Qatar.
IS	Information Systems
ISD	Information Systems Department
IS/IT	Information Systems and Information Technology
iPark	Free Wireless Internet Parks
IT	Information Technology
ITU	International Telecommunication Union
MATH	Model of Adoption of Technology in Households
MIIIT	Manipal International Institute of Information Technology
MM	Motivational Model
MMAA	Ministry of Municipal Affairs and Agriculture
MOI	Ministry Of Interior
MOFA	Ministry Of Foreign Affairs
N	Sample Size
NECCC	National Electronic Commerce Coordinating Council
NEGIS	Northeast Gang Information System
NNI	Network of National Information
PC	Personal Computer
PCA	Principal Component Analysis
PE	Performance Expectancy
PEST	Political-Legal, Economic, Socio-Cultural and Technology Forces
PKI	Public Key Infrastructure
QNB	Qatar National Bank
QSA	Qatar Statistic Authority
R²	R Square
SCT	Social Cognitive Theory
SD	Standard Deviation
SI	Social Influence
TAM	Technology Acceptance Model
TPB	Theory Of Planned Behaviour
TRA	Theory Of Reasoned Action
UK	United Kingdom
UN	United Nations
US	United States
UTAUT	Unified Theory of Acceptance and Use of Technology
WWW	World Web Wide

Appendix A: Interview Agenda Template

The interview agenda aims to identify challenges influencing e-government implementation in the State of Qatar.

SECTIONS
Section A: Interview Background:
Section B: General Interviewee Information
Section C: General E-government Processes and Challenges Influencing
E-government Implementation.

Part 1: Interview Guide

Instructions:

1. Give an overview of the study and its aim.

Explore the potential organisational, technological, political and social challenges influencing the e-government implementation in the State Of Qatar.	

2. Ask for a permission to use the cassette recorder. Explain that a copy of the transcription will be sent to the interviewee.
3. Ask if further contact can be made afterwards for data saturation.
4. Clarify the nature of confidentiality and the use of the quotes.
5. Make clear that the interviewee can refuse to answer any question.
6. Explain that an opportunity will be available for comments off the record at the end.

Part 2: General Interviewee Information (**Interviewee demographics)**

Title …………………………………………………………………………….
Name…………………………………………………………………………….
Position……..………………………………………
Organization……………………………………………………………
Phone/ E-mail……………………..……………………………………
Date of interview …………………..……………………………………
Venue……..……………………..……………………………………
Duration : Start …………………………………………Finish: ……………………..

a) Education Background:
b) Age:
c) Career: (including number of years)
d) Experience level with IT in general?
e) How would you describe your role in respect of the e-government project?

Part 3: General E-government Processes and Challenges Facing E-Government Initiative.

1. Implementation Process:

Aims: obtain an understanding of the e-government implementation process to date

a. When did the e-government project start?
b. Is e-government purely driven by political appointees (Or embedded in the public sector and independent of a particular appointee)?
c. What are the government vision, strategy, plan, and program to tackle e-government goals?
d. To what extent was the e-government implementation planned?

1.	Systematically planned and controlled.
2.	Systematic in some cases
3.	Ad hoc, evolved over time

e. How would you recapitulate the implementation process to date? (Key events, incidents).
f. What are the stages/phases that you followed to fully implement the e-government in Qatar?
g. How would you differentiate between each stage?

    h.   In which phase is e-government project now from your opinion?

    i.   What are the key challenges that influence e-government implementers?

2. E-Government Strategies and Plans.

    a.   What are the plans for the e-government in the future?

    b.   Does a politically pronounced e-government strategy exist or is it being considered as part of another strategy and plan (e.g. ictQATAR strategy)

    c.   How was the strategy developed? (e.g. centrally or though participatory process, stakeholders involved)

    d.   What are the key objectives of the Qatari e-government strategy?

    e.   How this strategy would prioritise e-government goals?

3. Commitment and Support Executive Leaderships and Top Authority Level

    a.   How would you illustrate the support and commitment of the government officials towards the Qatari e-government project?

    b.   How would you describe the support and commitment of the top authority level and Leaderships towards the e-government project?

    c.   Is e-government project a priority for the leadership?

4. Financial Issues

    a.   Is e-government funding aligned with priorities outlined in its strategy? If no, is it aligned with public sector reform and development goals?

    b.   Would you consider financial issues as a key challenge in developing the Qatari e-government?

5. Legal/ Regulatory Framework

    a.   Is privacy of information protected in e-government organisation legislation?

    b.   Is there any clear rules established permitting the use of cryptography, and policy set concerning key recovery in order to ensure security of data and transactions?

    c.   Are there any regulations that ensure security and privacy of the Qatari e-government users and mainly citizens?

    d.   Is there any online services regulation and legislation in place in the country (covering for example: government online publications, Digital Authorizations, E-signature, Cyber crime, Data protection , and Copyrights).

    e.   How would you describe the current legislative process? (E.g. efficient/ inefficient).

6. Institutional E-Government Coordination

    a.   Is there any respected coordination institution that motivates and coordinates the e-government development process?

    b.   How many e-government employees do you have in the development team here?
Less than 20 ⬭   between 20 and 50 ⬭   between 51 and 100 ⬭   More than 100 ⬭

    c.   Who is responsible about e-government development of each public organisation/ ministry?

    d.   Do government agencies have their own IT units that relate to the e-government project organisation?

7. E-Government Evaluation and Monitoring

    a. If there is a provision for monitoring of e-government process, how often does it take place?

Every 3 months ◯ every 6 months ◯ once a year ◯ other... ◯

    b. Is a periodic adjustment of the e-government strategy and action plan foreseen, that will take into account the dynamism of the sector and ensure proper fine-tuning to respond to changes in development priorities, user feedback and technology**?**

8. User Relations

    a. How would you describe the communication strategy with the public, especially citizens?

    b. Is there any available strategy documentation?

    c. Does the government have metrics about usage of e-government services? Specify.

9. Organisational and Knowledge Management Issues

    a. Are there any data standards in place? (e.g. for application forms, software packages, computer interfaces, language, and data format) .

    b. Does an education/knowledge management strategy for citizens exist? If yes, pls. briefly describe its main objectives, methods for implementation.

    c. Can you explain the collaboration between the e-government organisation and other government organizations?

10. Change and Change Management

> Change management refers to both structural adjustments in government to facilitate change as well as the human relationships and the ability to adjust to and accommodate change

    a. Would you describe change management as a skill that can be found as a part of e-government implementation? If yes, explain?

    b. Who are the main creators of the content on the e-government website/portal?

    c. How widespread is the use of the e-government portal (i.e. e-services that available online on the e-government portal), amongst public organisations? Specify.

    d. Are there any examples of bad incidents you faced previously regarding the use of Qatari e-government portal?

12. Human Issues

12.1 Citizen-Centric

    a. Does your organisation implementing e-government as "customer-centric"?

    b. Do you measure citizen satisfaction regularly?

    c. Is there any type of association between the e-government team and citizens by email/any type for collecting their suggestions?

12.2 Awareness level

    a. How was the e-government project promoted (e.g. advertising campaigns, promotional material or initiatives)?

    b. Describe the present awareness strategy amongst the citizens.

    c. Are there any awareness programmes of the benefits of e-government (i.e. amongst policy makers, managers, citizens and business partners?).

12.3 Training

a   Is there any training facilities for the public service? If yes, please describe training available (e.g. ICT literacy, e-government).

b. If no, is training provided by universities/organisations/companies?

d.   Please indicate how many citizens have undergone in ICT training (If Available)?

Less than 25% ⬭ 25% - 35% ⬭ 36% - 50% ⬭ 51% - 65% ⬭ More than 65% ⬭

12.4 Technical resources and use

Would you consider the following as **factors** that would **influence** the development of the e-government in the State Of Qatar?

S.	Target Audience	Yes	No	Don't Know
1	Access Internet in cities			
2	Access Internet in rural areas			
3	Lack of government wide intranet (central and local level connectivity)			
4	Lack of LANs in government offices			
S.	Infrastructure	Yes	No	Don't Know
1	Inefficient technology legacy system in place (e.g. phone, fax computers, databases, and existing networks)			
2	Internet access providers (Qtel/Vodapone)			
3	Unreliable internet connections			
4	Adequate bandwidth (Speed of connections)			
5	Adequate computing and processing speed			
6	Reliable power supply			
7	Adequate network security			
S.	Technical Support	Yes	No	Don't Know
1	Availability of technical support for design			
2	Availability of technical support for implementation			
3	Availability of technical support for operations			
4	Other (Specify):			

13   Technical Development

a.   Is there any partnership with industry have been developed? If yes specify:

S.	Industry partnerships	Yes	No	Don't Know
1	Technical consultants			
2	Computers and networking equipment			
3	Telecommunications			
4	Database management and hosting			
5	Servers			
6	Security, firewalls, intrusion detection			
7	Software			
8	Other (Specify)			

b. Are there **standards** for database and application development? (relevant documentation)

c. Is there any ICT infrastructure development plans? If yes, do they comprise:

S.	ICT infrastructure plan	Yes	No	Don't Know
1	Universal access to Internet			
2	Backbone network development			
3	Wireless technology			
4	Broadband technology			
5	Open standards			
6	Other (Specify):			

d. Is there any on-going program to track usage trends in citizens' usage of e-government services and to ensure that adequate ICT infrastructures exists support future projected usage trends?

14   Technical Support

a. Is the local industry of ICT strong enough? and is it reliable?

b. Are any of the below areas of Qatar e-government program being outsourced?

S.	Outsourced Qatar e-government program	Yes	No	Don't Know
1	Network architecture and online service delivery development			
2	Website development			
3	Human resources training			
4	Ongoing operations and technical support			
5	Transactions and collections			
6	Other (Specify):			

c. Is internal ICT technical support easily available?

d. How would you describe the external technical support?

1	Scarcely available and/or of low quality	
2	Is widely available and of high quality compared to the most advanced countries	

e. Can you describe what best characterises the provision of online government services?

S.		
1	No services online	
2	Only information available online	
3	One way interaction possible	
4	Two-way interaction possible	
5	Complete transaction possible within single agency	
6	Complete transaction across multiple agencies	

15   Technical Easiness, Standards and Usability.

a. Does the e-government organization have set standards for the national e-government portal usability (look and feel) to the following:

S.	Portals Standards	Yes	No	Don't Know
1	Interface			
2	User feedback			
3	Usage metrics			
4	Indexing of Information			
5	Other (Specify):			

b. How would you describe technical and organisational safeguards for ensuring reliability of services to the public? (e.g. low in priority and highly constrained by budget or of high priority and with specific resources allocated in the budge)

16   Digital Divide

a. What is the percentage of non educated ICT adults in the country?

b. Are there standards curricula in ICT?

c. Are there curricula in ICT focused on business/citizen needs?

d. Is there infrastructure for ICT literacy training in:

S.	ICT literacy training infrastructure	Yes	No	Don't Know
i	Primary and secondary public schools			
ii	professional or technical			
iii	University			
iv	Private			
v	Online learning			
viii	Other (Specify)			

e. Is there a portal or website that contains information about the country's ICT educational curricula and study programs? If yes, would you provide the url:
http:// ……………………………………………………………………………………

f.   Are people encouraged to build their skills in ICT? If yes, please describe:
………………………………………………………………………………………..

17.   Closing Questions

a. Are there any specific areas that you would like to be included and/or excluded in this research instrument?

b. What would you have done differently?

c. What do you think is the most interesting part of the interview?
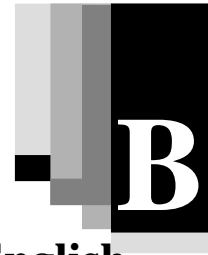
Appendix B: Questionnaire Survey in English

The questionnaire survey attempts to identify factors that might influence citizen' adoption of e-government in the State of Qatar.

SECTIONS

Section A: General Interviewee Information*:*
Section B: Performance Expectancy
Section C: Effort Expectancy
Section D: Social Influence
Section E: Facilitating Conditions
Section F: Behavioural Intention to Adopt E-government
Section G: E-government Adoption

E-government Adoption Survey

COVER STATEMENT

The objective of this research is to investigate citizens' adoption of electronic government (e-government) services in Qatar. I wish to identify the factors that influence your adoption of the e-government initiative in the state of Qatar.

I would greatly appreciate your participation in this study. There is no personally identifiable information on the questionnaires. Participation is voluntary. You may decide to stop participation at any time. All answers to this survey will be kept in strict confidence. Only summary measures and conclusions will be reported in the research. No data or opinions will be associated with specific individuals. All questionnaires will be returned directly to the researcher, and will be destroyed once the data have been entered into my system, where it will be secured and will not be available to anyone outside of the researcher. The data will be used solely for research purposes.

➢ Electronic government has been defined as *"a radical change and strategic tool that supports and simplifies government for other stakeholders such as government agencies, citizens, and businesses"*.

➢ It can be connected to the online government services through the Qatari national e-government website WWW.GOV.QA.

Instructions

I am interested in your opinions and perceptions of interacting with the national e-government system. Your participation in this study is appreciated. Please respond to the following questions.

Demographic Information

1	What is your gender?	1. Male 2. Female
2	What is your age?	1. under 18 2. 18-24 3. 25-29 4. 30-44 5. 45-54 6. 55 and older
3	What is your occupation?	
4	What is your educational background?	1. Secondary Education or less 2. Bachelor 3. Higher Education (postgraduate qualification)
5	What is your nationality?	1. Qatari 2. Others
6	How many years have you been using the Internet?	1. 1 – 6 months 2. 7 – 11 months 3. 1 – 2 years 4. 3 – 4 years 5. more than 4 years
7	How often do you use the Internet?	1. Everyday 2. Several times a week 3. Several times a month 4. Once a month 5. Never
8	What is the purpose of using Internet?	Email. Research, Purchasing, Fun, other( )
9	How often do you use the Internet to gather information about or from the government?	1. Everyday 2. Several times a week 3. Several times a month 4. Once a month 5. Never

➢ **Circle the Most Suitable Number to Your Opinion From the Following Scale:**

1 = Strongly Disagree.   2 = Disagree.   3 = Neutral.   4 = Agree.   5 = Strongly Agree.

11	Performance Expectancy Statements	
PE1	Online government system would enable me to access government information and services when I need them - 24 hours/day, 7 days/week.	1 2 3 4 5
PE2	E-government system via the Internet will not be useful due to inefficient availability of government information and services in the e-government portal.	1 2 3 4 5
PE3	Using the e-government system will enable me to accomplish tasks more quickly.	1 2 3 4 5
PE4	I do not think that the e-government project integrates well with other government agencies/ministries	1 2 3 4 5
PE5	E-government systems seem incompatible with most aspects of my channel devices HW/SW.	1 2 3 4 5
PE6	Overall, the e-government system is useful to me and other citizens.	1 2 3 4 5
12	**Effort Expectancy Statements**	
EE1	Learning to operate the e-government system is easy for me.	1 2 3 4 5
EE2	I would find the e-government system easy to use if I got suitable training.	1 2 3 4 5
EE3	It is easy for me to become skilful in using the e-government system.	1 2 3 4 5
EE4	Overall, I believe that the online government system is easy to use.	1 2 3 4 5
13	**Social Influence Statements**	
SI1	My friends and colleagues think that I should use the e-government system.	1 2 3 4 5
SI2	My family members and relatives think that I should use the e-government system.	1 2 3 4 5
SI3	People around me who use the e-government system have more prestige.	1 2 3 4 5
SI4	I find it difficult to use the e-government services due to lack of information and awareness campaigns.	1 2 3 4 5
SI5	Overall, I am not satisfied with the awareness campaign's (TV, radio, newspapers, banners in government agencies websites, and in shopping malls) level obtained from e-government officials.	1 2 3 4 5
14	**Facilitating Conditions Statements**	
FC1	I have the resources necessary to use the online government system.	1 2 3 4 5
FC2	Given the resources, opportunities and knowledge it takes to use the e-government system, it would be easy for me to use the system.	1 2 3 4 5
FC3	I have enough Internet experience to use the e-government services.	1 2 3 4 5
FC4	There is no doubt of the high government support towards the e-government project.	1 2 3 4 5
FC5	I am satisfied with the security and privacy measures provided with the e-government system.	1 2 3 4 5
FC6	I feel assured that the legislation level currently implemented encourage me to adopt e-government services.	1 2 3 4 5
15	**Behavioural Intention Statements**	
BI1	I predict using the e-government system in the future.	1 2 3 4 5
BI2	I plan to use e-government system in the future.	1 2 3 4 5
BI3	I intend adopting e-government system in the future.	1 2 3 4 5

16. Have you ever used the national e-government system?   YES / NO.

C

Appendix C: Questionnaire Survey in Arabic Language

The questionnaire survey attempts to identify factors that might influence citizen' adoption of e-government in the State of Qatar.

SECTIONS

Section A: General Interviewee Information*:*
Section B: Performance Expectancy
Section C: Effort Expectancy
Section D: Social Influence
Section E: Facilitating Conditions
Section F: Behavioural Intention to Adopt E-government
Section G: E-government Adoption

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