A FRAMEWORK FOR E-GOVERNMENT IMPLEMENTATION AT A NATIONAL LEVEL

By

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DEDICATION

For
My father Ali Bin Rashid AlDosari
My uncle Abdullah Bin Rashid AlDosari
My mother D. F. AlDosari
My mother in-law S. A. Zabin AlDosari
My wife N. A. AlDosari
My children Alwaleed, Shaika, Ghada, Sara, Alreem, Malak and Ali

ABSTRACT

This study attempts to explore and investigate empirically how an e-government system can be implemented at a national level; the key issues that might restrict its implementation; and how these issues could be treated in practice. Following a comprehensive review of the relevant literature, an initial conceptual framework for e-government implementation is formulated. The framework is then applied in a real world case study to support further data collection and to establish an exhaustive view of the e-government implementation process at a national level.

The case study examines the development of an e-government imlementation in Qatar and invloved 26 semi-structured interviews, 10 observations, 10 electronic reports, analysis of around 50 documents, and numerous newspaper articles and press releases. The interviewees included senior officials from the e-government steering committee, the e-government project team and various government ministries. The documentations included all the key documents relating the e-government project. Based on the data collected the initial framework is then revised by using the interpretive case study approach, which depends on an iterative research cycle where triangulated data are extracted. The study then combined the evidence from the literature with the case study data to narrow the gap between e-government implementation theory and practice.

As a result, a comprehensive framework including detailed measurments to differentiate four development stages is created. This framework classifies the key issues that might restrict e-government implementation into two main categories, organisational and technological issues, and uses other issues as the development measurements. The framework can be used as a tool to determine the road ahead for implementing an e-government system at a national level and to identify the main practices, processes, possible goals, progress indicators and key conditions to move from one stage to another. It can be claimed that this study has made a novel contribution to the area of e-government and has expanded the boundaries of knowledge, especially for governments that are seeking to implement an e-government system at a national level.

TABLE OF CONTENTS

APPENDICES

APPENDIX I: INTERVIEW GUIDE AND FACT SHEETS

APPENDIX II: SAMPLE OF INTERVIEW NOTES

APPENDIX III: SAMPLE OF DOCUMENTATIONS

APPENDIX IV: SAMPLE OF OBSERVATIONS

APPENDIX V: ISSUES RELATED TO THE RESEARCH METHODOLOGY

LIST OF TABLES

ix

LIST OF FIGURES

LIST OF ABBREVIATIONS

B2B:	Business to Business
B2C:	Business to Customer
BPR:	Business Process Reengineering
COC:	Chamber Of Commerce
DSS:	Decision Support Systems
EAI:	Enterprise Application Integration
EDW:	The Emiri Diwan Website
E-government:	Electronic Government
ERP:	Enterprise Resource Planning
E-service:	Electronic service
FEATM:	Finance, Economy and Trade
G2B:	Government to Business
G2C:	Government to Citizen
G2E:	Government to Employment
G2G:	Government to Government
GCC:	The Gulf Cooperation Council
ICTs:	Information and Communication Technologies
IS:	Information System
IT:	Information Technology
LAN:	Local Area Network
MCSAH:	Ministry of Civil Service Affairs and Housing
MEIA:	Ministry of Endowments and Islamic Affairs
MMAA:	Ministry of Municipal Affairs and Agriculture
MOE:	Ministry of Education
MOEC:	Ministry of Economy and Commerce
MOEI:	Ministry of Energy and Industry
MOF:	Ministry of Finance
MOFA:	Ministry of Foreign Affairs
MOI:	Ministry of Interior

MOJ: Ministry of Justice
MOPH: Ministry of Public Health
NNI: Network of National Information
NPR: National Performance Review
PKI: Public Key Infrastructure
QCB: Qatar Central Bank
QNB: Qatar National Bank
Q-Tel: Qatar Telecom
QU: Qatar University
RFPs: Requests For Proposals
RPR: Residence Permits Renewal
SCITC: Supreme Communication and Information Technology Council
WAN: Wide Area network

Chapter 1: Introduction

1.1 Research background

A brief review of the history of information technology (IT), focusing on Internet usage in government, shows a gradual shift in the past four decades. In the 1960s, the Department of Defense in the United States of America (USA) invented the Internet as a communication network for defence research purposes (Ho, 2002). The initial adoption of the Internet was primarily for internal communication and no one could have foreseen how it would transform society three decades later. In 1993, the Internet's rapid growth coincided with the National Performance Review (NPR) in the USA. The NPR was a major government reform initiative in the USA, which initially focused on developing regulatory and legal regimes conducive to e-commerce (Gore 1993). In the late 1990s and early 2000s, there was explosive growth in Internet usage and rapid development of e-commerce in the private sector. The Internet became an important medium for organizations which need to interact with a wide range of stakeholders and it has transformed the way members of the public interact and communicate with each other. The advances in the Internet have forced governments at every level and all over the world to move towards some form of information and communication technologies (ICTs) implementation, which is often known as electronic government (e-government).

E-government is a radical change and strategic tool that supports and simplifies governance for parties, government, citizens and businesses (Gupta and Jana 2003; Evans, 2003; Basu 2004). Its benefits can be divided into two broad aspects, specifically the transformation of government operations, and the transformation of governance positively affecting the relationship between citizens, businesses and governments through improving the interactivity between these parties and making it smoother, faster and more responsive (Moon 2002; Altallab 2001, cited in Al-Sebie *et al.* 2005). It is claimed that e-government can be used to address a number of the main aims of the total quality management philosophy (TQM) for the public sector, particularly those related to the need to be customer-driven, empowering for

communities, workers and customers; and to be effective and efficient (Sharifi and Zarei 2004).

However, these expectations and claims are filled-out by a multitude of discourses around the e-government implementation process as *"there are virtually no systematic research results to help guide this rapid transition"* (Holden and Flecher 2001, p. 75; cited in Holden *et al.* 2003). Unfortunately, the contemporary literature on e-government can be characterised as being both recent and scant (Holden *et al.* 2003). E-government implementation has been examined by only a few studies and most of these studies have examined the implementation process at local or state levels (e.g. Howard, 2001; Layne and Lee, 2001; West 2004; Moon 2002; McDonach 2002; and Deloitte Research 2000; cited in Silcock, 2001). In addition, each study has its own focus and perspective and the number of stages required for developing an e-government system have been classified into 3, 4, 5 or 6 stages. Furthermore, most of these studies are technology driven and lack the involvement and consideration of other important factors (e.g. human and organisational issues) that can restrict e-government implementation and do not provide clear progress measurements that can be used to differentiate between its stages of development. Moreover, there are some debates amongst scholars regarding whether the e-government development process should pass in a linear or curvilinear way (Ho 2002; and Moon 2002; Holden *et al.* 2003). Also there is a clear lack of a study that informs the e-government implementation process at a national level which is still neither well nor deeply understood yet.

Research into e-government implementation at a national level would benefit from reviewing previous literature on IS and public organization and from highlighting their specificities. Exploring the e-government implementation process is necessary to respond to managerial concerns, since there are many countries over the world that might invest in e-government and expect substantial changes and high returns from this investment. Therefore, there is a pressing need for empirical research to investigate the area and fill the existing gap. This study intends to explore the e-government implementation process at a national level and to identify the key implementation issues that can affect or restrict its implementation.

1.2 Research aim and objectives

The aim of this study is to explore, examine and understand e-government implementation practices at a national level and to identify the key issues that might affect or restrict its implementation. This should lead to the development of a framework that deals with e-government implementation at a national level, which enables and helps e-government implementers to understand e-government development practices and to identify the key factors that can affect its implementation. To reach this aim the following objectives need to be achieved:

1. To understand e-government implementation practices. This is done in order to relate the framework developed later to the current practices of e-government implementation. To achieve this objective there were three aspects that need to be investigated:

   - To study e-government implementation perspectives. This is done by studying e-government literature as well as the IS implementation literature.

   - To study those issues that might restrict e-government implementation. This is done by reviewing the literature of e-government, IS and public administration literature.

   - To explore e-government implementation practices at a national level from a real e-government project. This is done by means of interpretive case study research.

2. To develop a framework that models e-government implementation at a national level in various stages of development. The framework aims to help e-government implementers to understand e-government implementation practices and to identify the key issues that can affect its implementation.

1.3 Research questions

There is only one main research question that this study aims to answer. This is:

Can we develop an implementation framework that can help and guide e-government implementers at a national level to understand its implementation practices and to identify the key issues that might restrict its implementation?

This question can be subdivided into four sub-questions. These are listed below.

Q1: What is e-government?
Q2: How can e-government be implemented at a national level?
Q3: How can we differentiate between its development stages?
Q4: What are the key issues that might affect e-government implementation at a national level and how could these issues be treated in practice?

1.4 The term 'implementation'

The term implementation might be used in different ways in the context of computer-based information systems (Walsham, 1997). For example it can be used to indicate the technical implementation (i.e. the final stage in the development process of any information system) or to refer to the implementation of an information system within its organizational context (i.e. considering technological issues as well as other issues such as human issues, social issues, organizational issues, and any other issues that affect a successful implementation of that system). The focus of this study is on the second category (i.e. implementing an e-government system within its organizational context).

1.5 Context of the study

This study explores e-government implementation at a national level. This includes understanding the e-government implementation practices, development stages,

identifying the key issues that can affect its implementation and how these issues could be treated in practice, and determining the key progress measurements that can be used to differentiate between the different development stages. The context within which this study took place is a small, rich and developing country that is situated in the Arabian Gulf Region, Middle East. This country is the State of Qatar.

In the Gulf Region and the Middle East as a whole, a strong wind of change is affecting the area. The Region is now at a crossroads where they cannot move back and moving forward is a daunting task. Before 9/11 some countries in the Region began the reform of their governments, society, education, and culture. Although it was a small beginning, it was a revolution compared to the many years of using the old bureaucratic systems. These governments realised that they cannot stay on their current paths. Their people were changing and the whole world has changed. One of the causes of this was technology. Technology has brought the huge world into the houses of people and increased the transfer of information and ideas, and opened up the world. Now the whole world is one click away through the Internet, TV, and radio. This revolution in communication has changed society and culture. Most importantly it has changed people's expectations. After 9/11 the pressure has come from the West for change. Therefore, the people are wanting a change and pressure from the West demanding change has sped up the change in these countries.

However, the question is how to change. An important part is e-government. *"Information technology has become one of the core elements of managerial reform, and electronic government (e-government) may figure prominently in future governance"* (Moon 2002, p. 424). A deeper question is how to implement e-government at a national level in a region which is at the crossroads between the old and the new world. As a citizen of one of these countries that is leading the way to the new world and has committed itself to that objective, the researcher hopes to reach this objective. Therefore, the main question is how we get there.

An interpretive case study strategy was used to explore the practices of implementing the Qatar e-government system that is managed by an independent organisation country-wide. The research strategy used in this study is a single but embedded case study where multiple units of analysis exist such as the e-government organisation,

the participating ministries and public organizations, and the individuals who were the key players in the e-government entity and the participating ministries. In particular, this study involved the e-government organisation and four other organisations. Semi-structured interviews, direct observations, and documentation were used as primary sources of evidence in this study (i.e. triangulation). The major advantage of using triangulation rests on the premise that the weaknesses in each of the single data collection methods will be compensated by the counter-balancing strengths of another (Jick 1979) and reducing the chances of errors and misinterpretations (Duchon and Kaplan 1988; Stake 1994).

1.6 Significance of the study

This research presents a number of significant contributions to the researched area. The major contribution this study makes is to build a comprehensive framework that can inform e-government implementation at a national level. This framework makes the implementation process of an e-government system pass in a linear way. This is because of the development of some progress indicators (i.e. measurements) that can be used to differentiate between the different stages of development. The development of such measurements is another distinctive contribution of this study to the researched area. In addition, the framework enables the e-government implementers to identify the key organisational issues as it builds upon the previous research in IS and widens our understanding of what the possible organisational issues are that can affect the implementation process and how these issues could be treated in practice. Moreover, it classifies the main technological issues that might hinder or restrict e-government implementation and supports other research findings with regard to their impact on the process of the implementation. Finally, it is worth mentioning that there is another important contribution of this study which can be seen from a methodological perspective. The use of interpretive case study is found very helpful in providing a 'rich picture' and in-depth understanding of implementing an e-government system at a national level. A number of lessons learned are introduced in this study for other researchers who are interested in using this strategy in their area of interest.

1.7 Organisation of the thesis

Chapter 1: gives a background of the research, the identification of the gap that need to bridged by this study, the reasons behind undertaking this research and the significance of the study.

Chapter 2: reviews the relevant e-government, IS and public administration literature regarding the implementation process of e-government and IS. In particular, it includes an e-government definition taxonomy, e-government characteristics, the rationale for e-government implementation, and the different perspectives of implementing an e-government system. In addition, it sheds light into the implementation process of IS from two main perspectives, specifically the contextual perspective and the process perspective.

Chapter 3: analyses and discusses the key issues found in literature which might affect or restrict e-government implementation and assigns them into three classifications, specifically organisational, technological and other issues. In addition, it proposes an initial framework based on the gap identified in the literature discussed in Chapters 2 and 3 itself.

Chapter 4: describes the research philosophy and the main schools of thought in information systems (IS) research, presents the research strategy and explains the rationale behind its selection, explains the research method selected and the reasons behind this selection, and finally discusses the research design.

Chapter 5: gives a brief background about the case study site. In other words, it gives a brief idea about the country where the case study of this research was conducted.

Chapter 6: provides a descriptive analysis of the practices that took place in the case study site with regard to the development of the Qatar e-government system and discusses these activities in light of the initial framework as well as e-government literature. Towards the end of this chapter, the development stages and their related activities are identified based on the development of some progress indicators (i.e. measurements). Those measurements are developed based on the case study findings.

Chapter 7: discusses and analyses the case study findings with regard to the organisational issues and classifies those issues into four main categories.

Chapter 8: explains and analyses the case study findings that relate to the technological issues and classifies them into three key categories.

Chapter 9: brings all the case study findings together and presents them in the form a comprehensive framework that informs e-government implementation at a national level and answers the main research question.

Chapter 10: summarises and concludes the final results of the study, its implications for research and practice, its limitations, and gives recommendations for future research. Figure 1.1 below shows an overview of this thesis structure.
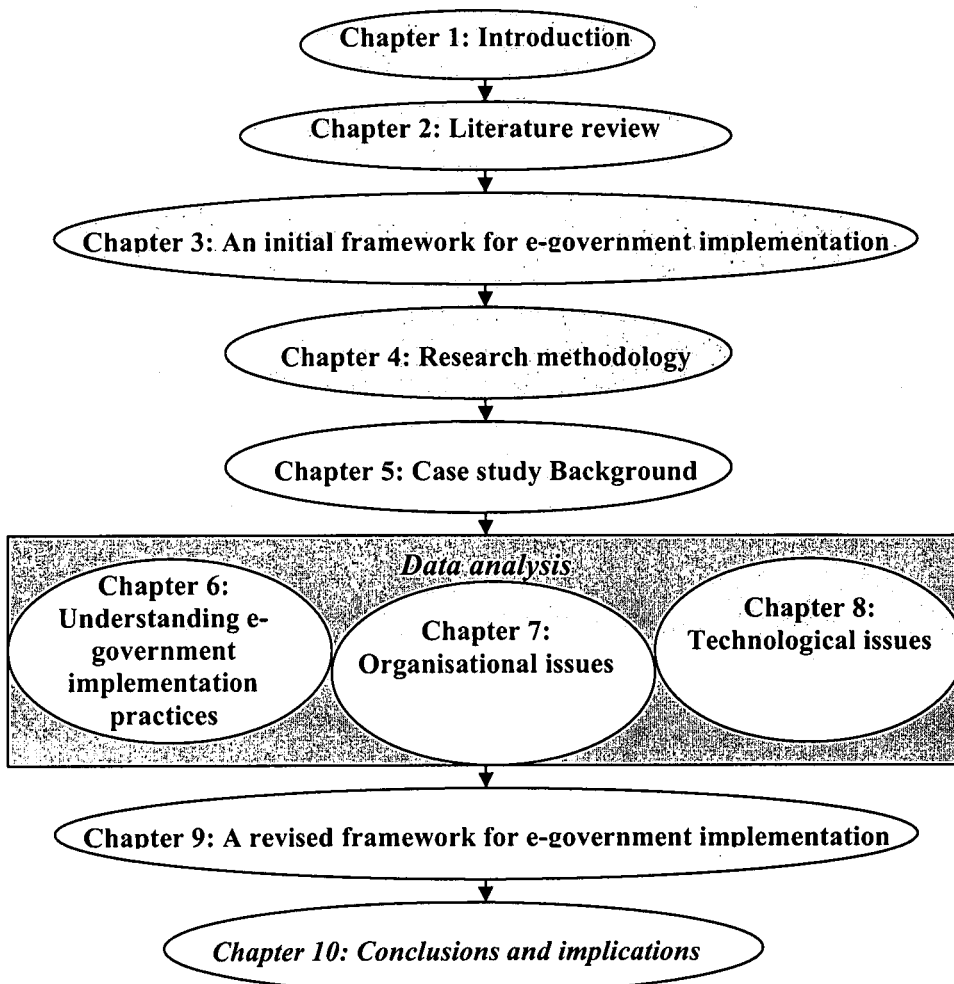
Figure 1.1: Thesis structure

Chapter 2: Literature Review

2.1 Introduction

Governments aim to turn the potential of the ICTs, mainly Internet usage, to their own purposes and they hope to have an administrative-focus as well as a customer-focus serving employees, citizens and business partners directly by providing services, information and transactions online. They realise that the drive is now towards radical government change and the re-invention of government by transforming the internal operations and documentation from paper to electronic format and using workflow engines to improve the productivity and the efficiency of their agencies. However, implementing e-government systems is not a straightforward task and accordingly most governments have been very slow or even unprepared for these transformations. In other words, there are many challenges and barriers that might affect or restrict this kind of implementation, such as the lack of fundamental infrastructure, organizational culture, lack of understanding of the technology or lack of transformation resources that e-governments require. Furthermore, e-government systems pose many challenges, because their hype, their youth, the difficulty to define them and their potential specificities. Challenges also involve the structure of the information technology marketplace, the clarity of the e-government outcomes sought by the projects owners and the size (or level) of projects. Moreover, there are some other challenges that relate to the governance issues such as privacy protection and accountability issues, which include maintaining accurate information about the appropriateness, success, reach and cost effectiveness of the other activities.

This chapter aims to review the literature in two main areas, namely the literature of e-government and IS implementation, and is divided into six sections. The next section discusses the taxonomy of e-government definitions. Then, Section 2.3 describes the main characteristics of e-government. The rationale behind e-government implementation is discussed in Section 2.4. The perspectives of e-government and IS implementation are discussed and assessed in Section 2.5, and finally, Section 2.6 summarises the chapter.

9

2.2 Taxonomy of e-government definitions

There is no specific, agreed or clear definition for e-government among scholars and practitioners of public administration. The e-government concept is still an arguable, suggestive, illusory and confusing term (Seifert and Petersen, 2002; Holden et *al.*, 2003; Jain, 2002). E-government means different things to different people in different countries and at different government levels (e.g. federal, state or local governments). It can be defined in a broad or a narrow sense. Defining e-government broadly means giving a more general, vague, or comprehensive definition that does not necessarily concentrate on any one perspective. While defining it narrowly means concentrating on a specific point of view such as a technological perspective, process perspective, business perspective, citizens perspective, government perspective or functional perspective. Al-Sebie and Irani (2003) suggest that there are two main reasons for the lack of an agreed definition of the e-government concept. The first is that e-government has different dimensions such as government to citizens (G2C), government to business (G2B), government to employment (G2E) and government to government (G2G). The second reason is that an e-government definition depends on the goals, values and cultures of a community.

E-government can be broadly defined as the use of ICTs with the aim of improving the efficiency, effectiveness and transparency of governments' organisations (Seifert and Petersen, 2002). Moon (2002) suggests that e-government refers to the use of IT to simplify and improve transactions between governments and other parties. E-government is also broadly defined as the electronic delivery of government services and information 24 hours a day, seven days a week (Holden *et al.*, 2003). Teicher *et al.* (2002) suggest that e-government is the application of ICTs to government organizations and operations. Other commentators perceive e-government as a radical change and fundamental transformation of government services from a physical to a virtual environment, which calls for a huge change in organisational responsibilities, duties, culture and transformation (Wimmer, 2002). From a more comprehensive point of view, Zhiyuan (2002) states that e-government can be defined as the means that enable governments to use the most innovative ICTs to provide citizens and businesses with more convenient access, to deliver government information and

10

services, to improve the quality of these services and to provide greater opportunities to participate in democratic institutions and processes. Furthermore, other authors argue that e-government refers to the use of IT to help in operating government daily operations, to engage its citizens and to deliver government services (Al-Sebie and Irani, 2003). Deakins and Dillon (2002), describe e-government as a rich combination of IT capabilities, competencies, and organisational administrative practice spanning both business to business (B2B) and business to customer (B2C) activities.

There are also many definitions that focus on just one particular perspective or a specific angle of e-government adoption (see Table 2.1). For example, from the functional perspective, e-government can be defined as specific actions such as using a government kiosk to receive some inputs from the users (or citizens), completing electronic forms through a Web site, procurement over the Internet or creating shared databases for multiple government organizations (Seifert and Petersen, 2002). From the citizens' perspective, e-government can be defined as citizens' services delivery or governments' efforts to provide citizens with the information and services they need by using a range of ICTs (Burn and Robins, 2003). From a more technological point of view, e-government is defined as an integrated tool that involves three enabling sets of new technology; specifically infrastructure, solutions and the exploitation of public portals (Zhiyuan, 2002). Whereas from a business perspective, e-government can be defined as the use of ICTs technology to enhance, re-engineer or transform any form of resource and information exchange between the stakeholders (such as companies or governmental agencies and their customers, suppliers or partners) by developing and maintaining dedicated inter-organisational systems, virtual organisational arrangements and (inter)national institutional arrangements (Wassenaar, 2000). E-government can also be described from governments' perspective as seeking to restructure administrative functions and processes, overcome barriers to coordination and cooperation within public administration and to monitor government performance (Wimmer and Traunmuller, 2000). From the process perspective, Bonham et *al.* (2001) argue that e-government is not an end in and of itself; it is a process, or a means to an end.

11

Table 2.1: Examples of e-government narrow definitions

Authors	Perspective
Seifert and Petersen (2002)	Function
Burn and Robins (2003)	Citizens
Zhiyuan (2002)	Technology
Wassenaar (2000)	Business
Wimmer and Traunmuller (2000)	Government
Bonham et al. (2001)	Process

From the selection of literature given above, it is clear that e-government can be and has been defined from both broad and narrow perspectives. In addition, there are some commentators who define e-government from both perspectives (e.g. Zhiyuan, 2002; Seifert and Petersen, 2002). Accordingly, the perceptions of e-government vary widely and there are many definitions of e-government that focus on certain perspectives and neglect other potential aspects. As a result of the multidimensional nature of e-government, there is no quick fix for the concerns raised; issues will need to be addressed with careful attention to context and precedent (Seifert and Petersen, 2002).

2.3 Characteristics of e-government

This section lists some key characteristics of e-government which can be derived from the taxonomy of its definitions, mentioned in Section 2.2 above. Based on these characteristics, a definition is proposed that reflects an understanding of e-government for this thesis. Although e-government has been defined in various ways, there are some features (or themes) that can help in understanding e-government characteristics. For instance:

- *Dimensions of e-government implementation:* e-government might be identified and implemented from different dimensions (focus) such as G2C, C2G, G2B, B2G, or G2G.
- *Levels of e-government:* e-government might be implemented at different levels such as national, federal, state or local levels.
- *Overall national aim:* governments ultimately aim to utilise the capabilities of ICTs in improving and refining the way they provide services to their

citizens, government agencies and business partners. The overall national aim would normally include:

1. Producing better services (i.e. more convenient and reliable, with lower compliance costs, higher quality and value);

2. Creating cost effectiveness and an efficient environment (i.e. cheaper, better information and services for customers and better value for stakeholders);

3. Improving their reputations (i.e. building an image that classifies them as modern nations and building an attractive location for people and businesses);

4. Encouraging greater government participation by a population (i.e. making it easier for those who wish to contribute); and

5. Building leadership skills (i.e. supporting the knowledge society through public sector innovation).

- *Individual project objectives:* each e-government project has its own objectives based on the dimension (or type) and level of the government. For example, a local government might have a different set of e-government objectives from a state government or the federal government.

- *Technological consideration (specifically, the Internet):* adoption of e-government requires a powerful ICTs infrastructure, integrated information systems, web-based applications and the use of Internet technology to enable the development and dissemination of information in different forms of media on a local, national and international level. In addition, it requires the use of workflow engines to improve the productivity of government agencies by transforming the internal operations and documentation from paper to electronic formats (or from a physical to a virtual environment).

- *Access availability:* services of e-government should be available 24 hours a day, 7 days a week to all its customers (citizens, employees, public agencies and business partners). In addition, citizens and businesses will be regarded as "customers", becoming the central focus in the process design of government services.

- *Ease of access:* this refers to the integration of public services to a single

13

point of access which is able to shift public services that are structured around a fragmented public administration towards a customer-oriented structure of public services. A single point of access requires all public authorities to be interconnected through a governmental portal in order to enable citizens, employees, other public agencies and business partners to access public services even if these services are provided by different government organisations. In addition, the government portal helps to replace a traditional bureaucratic government structure with cross-functional, cross-jurisdictional, and public-private networked virtual agencies.

Based on the above characteristics, e-government might be defined as the use of ICTs (mainly the Internet) to deliver online electronic services from a single point of access (or one-stop government) with the aim of improving the performance of governments' organisations and providing potential benefits to their customers (employees, citizens, public agencies, business partners and other governments). This definition can be classified in the broad category since it incorporates all the perspectives in Table 2.1.

2.4 Rationale for e-government implementation

"The reason behind the drive towards the e-Government agenda are compelling. Adopting the e-Government practices and underpinning strategies, effectively, is critical to meeting the challenges in the governance area."(Evans, 2003, p.27)

Despite the ambiguities surrounding the adoption of e-government more and more government leaders and officials are realizing its strategic potential and potential benefits. Its potential benefits include cutting costs, enhancing communications and coordination between government organisations and between government and their customers (i.e. citizens, public employees and business partners), expanding citizen participation, and increasing government accountability. Moon (2002) broadly divides the functionality of e-government into two categories specifically, internal and external. Internally, e-government holds potential promise as an effective and efficient managerial tool that collects, stores, organises and manages an enormous volume of data and information. Thus, government can exchange, transfer and share the

information files with and through its public agencies and can also transfer funds electronically to other governmental agencies. Moreover, e-government implementers can use e-government to do their daily activities and routine tasks more easily and quickly. The external category of e-government functions can facilitate government linkages with citizens, other governmental agencies, and business partners. In other words, e-government can help government organisations or public agencies to provide easier public access to services, increasing service volume and reducing employee time spent on non-customer activities. For example, Evans (2003, p. 5-6) classifies factors behind the implementation of the UK e-government into two main drivers, namely external and business drivers. Table 2.2 shows these drivers.

Table 2.2: The UK e-government driving factors

External Drivers				Business Drivers
Social Factors	**Political Factors**	**Economic Factor**	**Technological Factors**	
o Rise in the use of the Internet o 24/7 society o Demand for responsiveness o Population's use of technology o Social inclusion agenda	o Government desire o Citizen pressure o Targets and legislation o Funding	o Changes in the business models – rise in outsourcing o Government money available o Drive to reduce cost but increase efficiency across all departments	o Broadband access o Security and smart cards o Mobile access o Internet o Storage and management of information o Different methods of communication-email o Multi-channel options o ICT infrastructure	o Knowledge is recognised as being fragmented across departments o Governments at every level are seen as being unhelpful to individual citizens and are seen as not encouraging feedback or citizen consultation o Departments are seen by citizens as being 'solid' and they are passed from one to another o Citizens are demanding better and faster access to information, electronic communications and interactions and want to become part of the decision processes o There is huge scope to redesign systems internally to align with citizens-centric portals and to achieve significant cost savings by doing so o All information across the departmental and cross-departmental assets, whatever the platform, will need to be integrated to give citizen-wide holistic view o How do we support all our users effectively? What about our agency/departmental partners, suppliers, citizens? Today the boundaries have blurred between the intranet, the extranet and the Internet, and the technologies keep evolving o Government bodies will be differentiated by their ability to exploit their people's ideas, empower their staff, and harness their potential; training and skilling, delivered to the desktop and multiple devices, are vital to support this

Moreover, there are other intangible benefits that can encourage countries to implement e-government systems. It is difficult to identify all intangible benefits although, there are some studies that have tried to offer adaptable frameworks that can be used to assess tangible and intangible benefits of e-government projects (Gupta and Jana, 2003). In addition, the anticipated benefits of e-government initiatives will be based on the objectives and types (or levels) of those e-government initiatives. The following subsections summarise some possible reasons behind e-government implementation.

2.4.1 Efficiency and cost-reduction

One of the most important benefits of e-government is its role in improving efficiency, which can take many forms. For example, it is argued that e-government seeks to reduce errors and improve consistency of outcomes by automating standardised tasks, reduce costs and layers of organisational processes by reengineering and streamlining operating procedures, and reduce the amount of time spent on repetitive tasks (Seifert and Petersen, 2002; Basu, 2004, Gil-Garacia and Pardo, 2005; Carter and Belanger, 2005). In addition, Deakins and Dillon (2002) argue that e-government can save time and money as it creates the potential for savings on product prices and transaction costs. Furthermore, Sharifi and Zarei (2004) suggest that e-government can be used to address a number of the main aims of the total quality management philosophy (TQM) for the public sector, particularly those related to the need to be customer-driven, empowering for communities, workers and customers; and effective and efficient. Moreover, Moon and Norris (2005) expect that e-government will help in reducing the time demands on government staff and their operating costs, change staff roles and will reduce the size of governments.

2.4.2 Accessibility and availability

The strategies and the quality being followed by commercial organisations at the dawn of the Internet encouraged government officials to expect that e-government will improve public services by following the same strategies and the same quality. It is argued that e-government has the potential to improve the quality, range and

accessibility of public services (Basu, 2004; Sharifi and Zarei, 2004; Carter and Belanger, 2005). E-government is also expected to provide its customers with convenient and fast access to online public services (Basu, 2004). In addition, it will enable its customers to complete all transactions from a single point of access that is available 24 hours a day, 7 days a week rather than visiting several different departments, many different ministries, or several different Web sites, to obtain any specific service from the government (Holden *et al.*, 2003; West, 2004; Bonham *et al.*, 2001; Al-Sebie and Irani, 2003; Seifert and Petersen, 2002). Having online and immediate access will give e-government customers the required flexibility to access public services from any place regardless of any geographic constrains and without any limitation on how they can access services, so they can use their PCs, WebTV, mobile phones or any other wireless devices (West, 2004; Wimmer, 2002). Hence, this will increase the opportunities to overcome many other critical problems such as corruption, complexity and discrimination.

2.4.3 Accountability and transparency

"We live in a very sceptical age and the demands for full accountability are evidence of this basic distrust and requirement for evidence. The new set of technologies, together with an understanding of government aims and drivers, can be used to set up this background framework supporting accountability aims." (Evans, 2003, p. 25)

E-government increases government accountability and decentralises public administration and can be used as a reform tool (Ndou, 2004; Carter and Belanger, 2005; Ma *et al.,* 2005; Torres *et al.*, 2005). It enables governments to be more open and transparent and enables them to maintain accurate information about the appropriateness, success, and cost effectiveness of many activities. In addition, it supports collaboration, partnerships and joint ventures grow within governments, and between private and public organisations (Allen *et al.*, 2001; Evans, 2003; Ni and Ho, 2004). For example, citizens have the opportunity to become aware of their governments officials debates, discussion and minutes regarding any topic through the publishing of those debates on the web and giving citizens fast and easy access to the government website. (Silcock, 2001). Evans (2003, p.25) provided some key elements of the accountability that can be satisfied by having an e-government system. These

elements are: (1) in the day-to-day operation of government, identifying who is responsible for what; (2) auditing: knowing with certainty who did what when; (3) financial measurements: defining what was spent where and by whom; (4) fraud detection through transactional monitoring; (5) evidence trails: tracing related documentation; (6) incentivisation: rewarding success; (7) security: tracking who accessed what when; (8) ownership of errors: transaction monitoring and time-stamping; (9) accessibility to stakeholders: interaction and feedback; and (10) building relationships of trust based on evidence

2.4.4 Customer-centric focus

Government officials realise that e-government can play an important role in rebuilding the customer relationship concept and help their organisations to become customer-centric organizations, since this yields greater success in both organisations and governments and in serving the public (Sharifi and Zarei, 2004). In addition, they realise the importance of providing a good quality public services as it helps governments to change citizens' perceptions of the poor quality of public services. Teicher *et al.* (2002) mention that governments have turned their attention to e-government as it promises a quantum leap in service quality. Providing good quality services to citizens will help governments to regain public trust and confidence by putting the citizens at the centre of any service improvement initiative (Gilbert and Balestrinin, 2004). Burn and Robins (2003) argue that e-government provides the opportunity to rethink how governments provide services and how they link them in ways that are tailored to customers' needs. They emphasised that it is a must for governments to abandon their old method, which is 'build it and they will use it', since it permeates much of their online thinking. Also Silcock (2001) emphasises that the relationship is no longer just one-way; rather it is about creating a partnership between governments and their citizens. Furthermore, Seifert and Petersen (2002) state that implementing e-government aims to fully optimise the capabilities of available information technology in an effort to transform government from an agency-centric, limited operation into an automated, citizen-centric operation capable of delivering government services to citizens, businesses, and other government agencies 24 hours a day, 7 days a week. Accordingly, citizens will become more in

charge of their relationship with their governments and re-gain their trust and confidence in the public sector.

2.4.5 Economic development

E-government is expected to build a strong infrastructure that will help in creating a healthy business climate. Basu (2004, p. 110) states that e-government *"aims to help strengthen government's drive toward effective governance and increased transparency to better manage a country's social and economic resources for development"*. Seifert and Petersen (2002) mention that there are many firms that would like to extend the cost savings realised in business-to-business (B2B) transactions to their business with government (B2G) transactions. Businesses expect e-government to create new efficiencies that help them to become more competitive and to conduct online transactions with governments without having to visit several separate ministries/departments in separate physical locations. For example, it is expected that e-government will offer business firms online procurement that includes bidding, purchasing, and payment. In other words, business firms hope, for instance, to have electronic vendor cataloguing, bid submissions and tabulation, electronic purchasing and payment (Zhiyuan, 2002). In addition, providing business companies with an integrated and single-source of public services will create new opportunities for governments and businesses to partner together (Wimmer, 2002; Silcock, 2001; Al-Sebie and Irani, 2003). For example, the accounting industry and tax office could build on their existing relationship and work together in order to provide added value services for citizens and businesses filing online tax returns. Deakins and Dillon (2002) emphasize that e-government will enable those governments that desire partnerships with businesses in the private sector, as this is the area in which electronic tailing is growing rapidly worldwide. Partnering with local businesses will develop information and technology-based industries for local employment and to reach distant markets. E-government is also expected to assist in improving the business climate in the country to attract foreign direct investment.

2.5 E-government implementation perspectives

In relation to the research aim, objectives and the research questions, the literature of e-government as well as the IS implementation literature, has been reviewed from three broad perspectives, specifically from e-government evolution perspectives, contextual perspectives and process perspectives. These implementation perspectives are discussed and assessed for their ability to inform e-government implementation and particularly to help in understanding e-government development stages at a national level as well as how to differentiate between each stage and the next one. First, the evolutionary perspectives of e-government systems are assessed in Section 2.5.1. Then, Section 2.5.2 will shed light to some different IS implementation perspectives. Finally, 2.5.3 will summarise the discussions and the assessments of the mentioned perspectives in relation to the research theme.

2.5.1 E-government evolution perspectives

The e-government literature shows that there were many scholars who have tried to understand the e-government development from an evolutionary point of view by dividing the e-government development process into many stages. However, there are clear differences in the focus, perspective and number of the development stages among scholars. These different perspectives are represented by different models (or frameworks) which are described in more detail in the following sections.

Three stage models

Howard, (2001) suggests that the path of e-government evolution is composed of three main stages, namely publish stage, interact stage and transact stage. His model is built based on the characteristics and capabilities of the web technology. Figure 2.1 shows his e-government maturity curve. The first stage is the publish stage where e-governments have an electronic presence. The aim of this stage is to publish some public activities information and make them available online. In the second stage (interact stage), citizens will be able to have simple interactions with their e-governments through the use of interaction tools such as sending e-mails and

participating in "chat rooms" on specific policy questions. The third stage (transact stage) will enable citizens to carry out transactions over the Internet, for instance, applying for programmes and services, purchasing licenses and permits, signing up for classes, etc. Figure 2.1 shows the basic evolution that governments experience in responding to the new electronic tools and techniques, as proposed by Howard, (2001).

Figure 2.1 Howard (2001) model
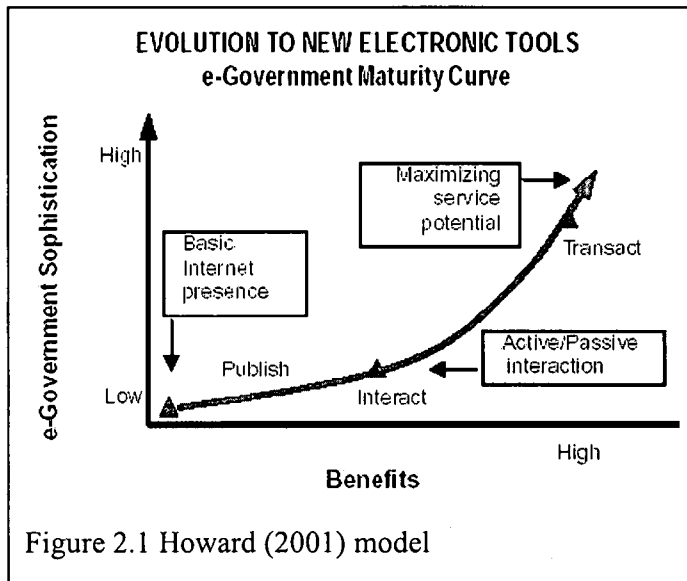
Four stage models

Layne and Lee model

Based on technical, organizational and managerial perspectives, Layne and Lee, (2001) suggest that e-government is an evolutionary phenomenon and propose a growth model for e-government that is composed of four stages (see Figure 2.2). Those four stages are: cataloguing, transactions, vertical integration and horizontal integration. Figure 2.2 shows the complexity involved and different levels of integration.
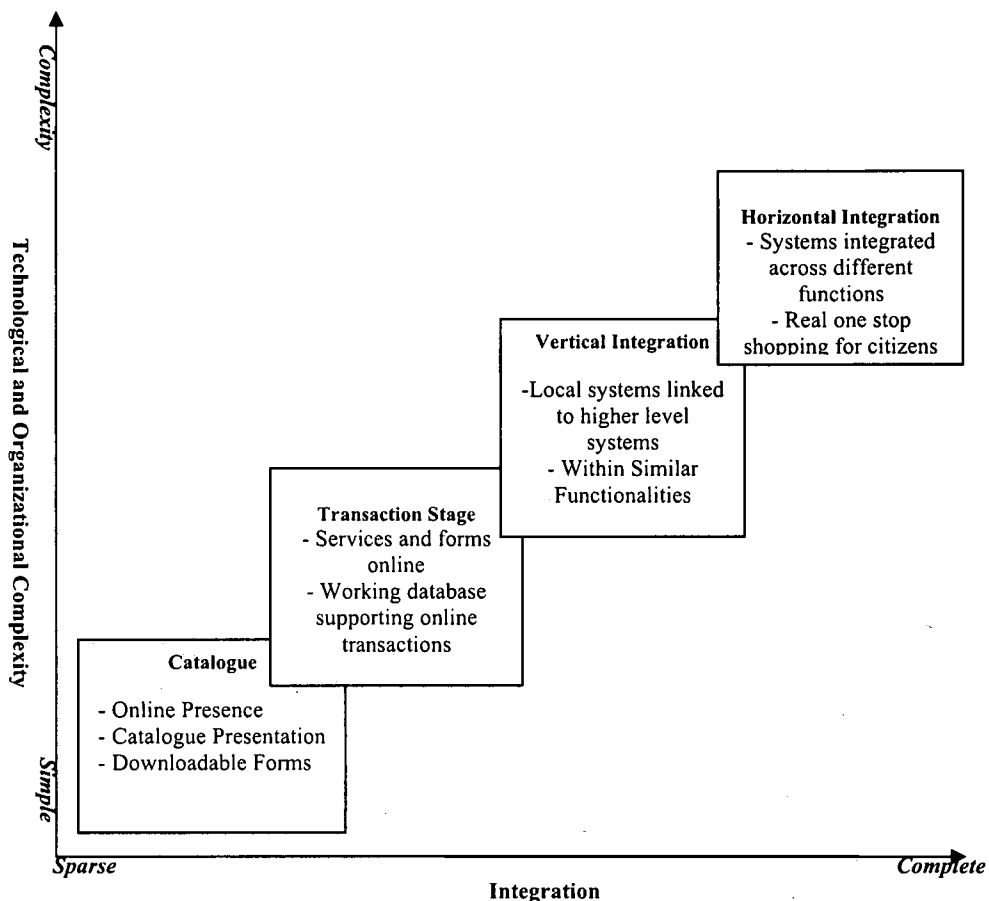
Figure 2.2: Layne and Lee (2001) Model

In stage one *(cataloguing)*, governments create their websites and focus on establishing an on-line presence as they do not have much Internet expertise and as they prefer to minimize the risk by carrying out small projects. Although this stage offers the least amount of functionality for the user, citizens might be able to use some search facilities. Layne and Lee (2001) justify calling this stage 'cataloguing,' since efforts during this stage are focused on cataloguing government information and presenting it on the Web. In other words, during this stage, the quantity of posted information will increase and governments will begin to see the need for an index site that provides links to other sites. They suggest that there are many challenges in this stage. These challenges are: (1) Resources allocation; (2) Information maintenance; (3) Privacy issues; and (4) Limited organisational challenges (e.g. assigning responsibility for the overall coordination and planning of services on the government website and assigning responsibility for the answering of emails).

23

The Transaction stage empowers citizens to deal with their government online any time, saving hours of paperwork. At this stage citizens will play an active role by not only conducting transactions online, but also by participating through online forums that allow citizens to talk directly to government officials or take an active role in public hearings. In addition, during this stage an e-government portal will be implemented to enable citizens to access government services from a single point of access. Furthermore, it was mentioned that there are some challenges that are associated with this stage. These challenges include: (i) Organizational challenges (they are much greater in this stage, for instance, reprogramming the existing electronic databases to handle such changes requiring internal committees to assess user demands and user interface in current systems; and (ii) Issues of confidentiality and security

Vertical integration stage: the focus during this stage will move toward the transformation of government services rather than automating and digitising existing processes. During this stage citizens will be able to access government services at the state or central level from the same entry in the local portal since the local system is connected to upper level systems, directly or indirectly. One application of vertical integration is the business license application process since in many business states, a business must obtain both a local and state business licence. Therefore, under the scenario of this stage, a citizen will file for a business license at the local government transaction server, and the local server by accessing the state database would check state and federal databases, retrieve corresponding records, propagate changes, and calculate the total licence fee. At this stage, communication and integration-oriented technologies become more important and challengeable issues. Although this stage might provide efficiencies, privacy and confidentiality issues must be first considered. In other words, government must consider the appropriate balance between the privacy of personal information and the right of individuals to access public records.

Horizontal stage: during this stage, databases across different functional areas will communicate with each other and ideally share information, so that information obtained by one agency will propagate throughout all government functions. In addition, citizens could conduct business across a wide variety of requirements. On the other hand and from the technical perspective, integration of heterogeneous

24

databases and resolving conflicting system requirements across different functions and agencies are major stumbling blocks for any government to reach this stage. In addition, there will be a management challenge during this stage since horizontal integration requires a change in the mindset of government agencies directors.

West transformation model

West (2004) suggests a four stage framework for e-government development. Those four stages are: (1) the billboard stage, (2) the partial-delivery-service stage; (3) the portal stage, with fully executable and integrated service delivery; and (4) interactive democracy with public outreach and accountability enhancing features.

In the first stage, government websites are treated much the same as highway billboards (i.e. static mechanisms to display information). Governments will use their websites for posting reports and publishing static information but there might be little opportunity for citizens to interact or to have two-way communication with government officials. In the second stage, citizens start to order and execute a handful of services online and to manipulate informational databases. In addition, West (2004, p. 17) mentions that *"posting of privacy and security statements are not very abundant, and there isn't much accessibility for non-English speakers and the disabled."* The third stage of West's model is the portal stage where all services can be accessed from a single point of access. During this stage the portal will provide fully executable and integrated online services. In addition, government officials will pay more attention to the security and privacy issues in this stage (e.g. posting policies online). Furthermore, there will be a transaction option for non-English speakers. The final stage (or fourth stage) is interactive democracy with public outreach and a range of accountability measures. In this stage governments' websites will move beyond a service-delivery model to system-wide political transformation. In addition, citizens will be able to customise their own particular interests and will be provided with e-mails and other sophisticated services such as providing an automatic update facility on issues or area citizens care about.

Five stage models

Moon model

Moon (2002) suggests that any e-government initiative should consider five major internal and external aspects specifically, the establishment of a secure government intranet and central database for more efficient and cooperative interaction among governmental agencies, Web-based service delivery, the application of e-commerce for more efficient government transaction activities (such as procurement and contract), and digital democracy for more transparent accountability of government. In addition, he proposes a five stage model for e-government development. Each stage reflects the degree of technical sophistication and interaction with the users. The proposed stages are: (1) Simple information dissemination stage (one-way communication); (2) Request and response stage (two-way communication); (3) Service and financial transactions stage; (4) Integration (horizontal and vertical integration); and (5) Political participation stage.

Stage 1 represents the most basic form of e-government since government starts to use IT for disseminating information or data on the websites for constituents to view. In stage 2 (or two-way communication stage) constituents will start to interact with the government and vice versa. During this stage the government will incorporate email systems as well as information and data-transfer technology into its websites. In stage 3, e-government will provide online services and financial transactions by completely replacing public servants with "web-based services". Stage 4 allows vertical (intergovernmental) and horizontal (intergovernmental) integration to take place. Integration is a major challenge in this stage since it requires a tremendous amount of time and resources to integrate online and back-office systems. Stage 5 involves web-based political participation as there will be online voting and online public forums in the government websites. In other words, stage 5 highlights web-based political activities by citizens.

McDonach model

McDonach (2002) suggests that e-government can operate at five stages. The first stage is similar to the first stage in many other models, information dissemination. In

the second stage, citizens will start to communicate and interact with governments by submitting some electronic forms. During the third stage citizens will start to make some complex interactions and transactions with their governments (e.g. vehicle registration). The focus of the fourth stage will be on the delivery of access to a wide range of government services across a whole government administration through a single contact point. The fifth stage is not yet fully realized in practice where government applications become intertwined with commercial applications. Therefore, e-government users are facilitated in building their own interfaces designed around their personal interactions with both government services and commercial entities.

Six stage models

Deloitte Research (2000; cited Silcock, 2001) proposes a six stage model for e-government development and based on the eminence of Web-based applications. The suggested stages are information publishing, "Official" two-way transactions, multi-purpose portals, portal personalisation, clustering of common services, and full integration and enterprise transformation. In the first stage (Information publishing stage) individual governmental departments set up their own web sites that provide basic information such as lists of services provided, contacts for further assistance and links to other relevant sites. In the second stage ("Official" two-way transactions) users can engage in monetary transactions with governments electronically; this requires stringent measures for security and privacy. Multi-purpose portals is the third stage which enables citizens to use a single point of access for a wide variety of government services ranging from simple information requests to completing financial transactions across departmental boundaries. In stage 4, portal personalization stage, customers of e-government will be allowed to customize portals for their specific needs which reflects an improvement in the customer-government relationship. Clustering of common services is the fifth stage, which gives an opportunity to the e-government customers to change the way they perceive government organizations and their service structures. This stage is more perceptual than the previous ones. Therefore, shifting from the traditional perception of different services scattered over numerous agencies and departments, users begin to approach governments in terms of actual services provided rather than their organizational

structure. Full integration and enterprise transformation is the final stage. During this stage all old barriers separating organizational boundaries are torn down and replaced by a full-service centre that seamlessly integrates all facets of government operations.

Assessment

The above sections (i.e. Sections 2.5.1.1, 2.5.1.2, 2.5.1.3 and 2.5.1.4) showed that there are clear differences in the focus, perspective and number of the development stages among scholars. Each framework has its own focus and perspective and the number of stages required for developing an e-government system has been classified into 3, 4, 5 or 6 stages. For example, Howard, (2001) suggests that the e-government evolution path is composed of three main stages but based on the characteristics and capabilities of the web technology. This model is very limited as it oversimplifies the e-government implementation and treats it as normal website development. In addition, it does not cover other important issues such as the challenges that might face e-government implementers. Whereas, Layne and Lee (2001) suggested another model that is composed of four stages and which stresses the evolutionary nature of e-government. Their model focuses on the levels of organizational and technological complexity as well as the degree of integration of data and service delivery. One of the strengths of Layne and Lee's (2001) model is the recognition that enabling more mature and therefore more complex e-government offerings involves organizational issues as much as technological ones (Holden *et al.*, 2003).

On the other hand, their model has been criticized as being cumulative in that a government has to pass through all preceding stages to move to the next higher one and hence does not provide clear measurements that can be used to differentiate between the different stages of development. For example, Ho (2002) pointed out that such conceptual models must not be interpreted to mean that e-government progress always proceeds in a linear fashion, since public organizations might decide to skip over certain stages or offer different services at varying stages of maturity. This criticism highlights the danger of classifying e-government development services based on the type of services introduced only and the importance of determining other clear progress measurements that can help e-government implementers to identify the different development stages and anticipate the required actions in each stage.

28

Furthermore, although the Layne and Lee (2001) framework highlighted the importance of considering the technological and organisational issues as key challenges, particularly in the last two stages, they did not provide clear classifications of those challenges; they simply provided some examples. In addition, Murray *et. al* (2004) criticized this model as it initially (i.e. at the first stages) ignores the organisational aspects in favour of adopting a technically focused strategy and consequently when the e-government reaches stage 3 of the model, where organisational issues become the focus of the implementation process, key stakeholders may have already formed strong resistance endangering the overall success of the development.

Similarly, West (2004) suggested four stages for developing public websites but his model is based on the characteristics and the capabilities of the web technology. In addition, he considers the delivery of services as key distinction between his model stages although he did not state clearly how e-government implementers could measure their progress in each stage (i.e. what sort of services should be included or excluded). In addition, West (2004) treats the development of e-government as normal website development which is not valid as developing an e-government is more complex than developing normal websites. Moreover, West (2004) did not consider the challenges that might restrict e-government implementation at any stage of his model.

Moon's framework is based on the technological characteristics of e-government. He mentioned that his five stages are just a conceptual tool to examine the evolution of e-government and it is not necessary to follow a true linear progression during the adoption of e-government practices. Moon's framework also focuses on improving internal managerial efficiency and builds basic infrastructures rather than supporting a customer-oriented perspective. In addition, it is only tested at a local government level. Furthermore, Moon's (2002) framework lacked any progress indicators (or measurement) and there was a clear lack of classifying the key challenges that might face e-government implementers and the sorts of action required to avoid or treat those challenges.

Similarly, McDonach's (2002) model suggested that e-government can operate at five stages. His model is based on web technology characteristics but there was no indication regarding its testing in practice. In addition, his model did not mention any clarifications regarding the challenges that might face e-government implementers or restrict its implementation at any stage of the model. Finally, Deloitte Research (2000) suggested six stages of e-government transformation based on the eminence of Web-based applications. However, it was noted that there is an overemphasis on the technological issues, specially portal technology. Moreover, the model did not take other challenging issues (e.g. organisational issues, political issues, or legal issues) into consideration. Furthermore, it was not clear at which level it could be applied. Again the classification of this model's stages is based on the type of the services introduced and technology characteristics. Table 2.3 summarises the above models, their stages, focus and their limitations.

Table 2.3: Summary of different e-government evolution frameworks (models)

Model	Stages	Focus/Criteria	Limitations
Howard (2001)	(1) Publish, (2) Interact and (3) Transact	o Characteristics and capabilities of web technology (i.e. type of services that can be introduced)	(1) Treated e-government implementation as a normal website development. (2) Did not cover those key challenges that might face the e-government implementation process. (3) Other than the characteristics and the capabilities of the web technology, there are no other measurements that can be used to differentiate between its different stages (4) Not clear at which level of government (i.e. local, stage, or federal) it should be applied to.
Layne and Lee (2001)	(1) Cataloguing, (2) Transactions, (3) Vertical integration and (4) Horizontal integration	o Characteristics and capabilities of web technology o The degree of organizational, technological complexity and the degree of integration in terms of data and service delivery	(1) Other than the characteristics and the capabilities of the web technology as well as the integration complexity, there are no other measurements that can be used to differentiate between its different stages (2) Although it highlighted the importance of considering the technological and organisational issues as real challenges, particularly during the 3rd stage, it did not provide clear classifications of those challenges; it provided some examples only. In addition it ignored these issues at its first and second stages. (3) It was not developed to be used for e-government implementation at a national level for those countries that have only one government level.
West (2004)	(1) The billboard stage, (2) the partial-service-delivery stage, (3) the portal stage, and (4) Interactive democracy stage	o Characteristics and capabilities of web technology; Portal technology o The impact of technology on democracy	(1) Treated e-government implementation as a normal website development. (2) Did not highlight any challenges that might restrict the e-government implementation process. (3) Used the characteristics and the capabilities of the web technology as measurements that can be used to differentiate between its different stages (4) Not clear at which level of government (i.e. local, stage, or federal) it should be applied. (5) Although that creating democratic environment is one of the e-government key objectives, it must not be restricted to the ultimate stage of the model.

Moon (2002)	(1) Simple information dissemination (one-way communication), (2) Request and response (two-way communication), (3) Service and financial transactions, (4) Integration (horizontal and vertical integration) and (5) Political participation	o Characteristics and capabilities of web technology o Technological integration complexity o The impact of technology on democracy	(1) Used the characteristics and the capabilities of the web technology to differentiate between the different stages of the model. (2) Except the complexity of integrating the systems involved, it ignored any key challenges that might face the e-government implementation process. (3) Considered democracy (i.e. political participation) as an ultimate stage of having an e-government system, which must not be the case. Democracy is just one objective of having an e-government system. (4) Not clear at which level of government (i.e. local, stage, or federal) it should be applied.
McDonagh (2002)	(1) Information dissemination stage,(2) communication stage,(3) interaction and transaction stage,(4) government-wide access stage, and (5) government applications and commercial applications interaction stage	o Characteristics and capabilities of web technology	(1) Treated e-government implementation as a normal website development. (2) Ignored other important factors such as organisational issues, technological issues, legislations, and security issues. (3) Did not provide any clear progress measurements and depended on the characteristics and the capabilities of the web technology. (4) Not clear at which level of government (i.e. local, stage, or federal) it should be applied.
Deloitte Research (2000; cited in Silcock, 2001)	(1) Information publishing, (2) "Official" two-way transactions , (3) Multi-purpose portals, (4) Portal personalization, (5) Clustering of common services, and (6) Full integration and enterprise transformation	o Characteristics and capabilities of web technology o Portal technology o Technological integration complexity	(1) Considered e-government implementation as a normal Intranet project development. (2) Ignored mentioning any key challenges that might face the e-government implementation process. (3) No clear progress indicators that can be used to differentiate between the different stages of the model, except the characteristics and the capabilities of the Web technology. (4) Not clear at which level of government (i.e. local, stage, or federal) it should be applied. (5) Considered some servers' built-in features (i.e. personalisation and services clustering) as stages of development.

From Table 2.3 and based on the above discussions of the e-government evolution perspectives, the following points summarize the discussion of this section (2.6):

- These models lack a holistic approach that informs the difficulty and the complexity of implementing an e-government system. Based on the taxonomy of e-government definitions, e-government has been described as a radical change and a reform tool that can be used to reinvent public services. This then requires a more comprehensive model that covers the key related issues to that change.

- Most of these models interpret e-government progress based on the type of services that can be reproduced to be accessed online (i.e. based on the web characteristics). This interpretation is not always true because public organizations might decide to skip over some services or offer different services at the same stage of development. In other words, there is a lack of clear measurements that can help in identifying the different stages of development.

- Most of the above studies built their frameworks for e-government implementation based on local or state governments which might make them inapplicable or difficult to apply in countries that have only one central government.

- From a technological perspective, transforming government organizations into a fully integrated and automated (digital) establishment requires an effective data infrastructure in which applications can exchange data seamlessly. However, it is very difficult to achieve such an infrastructure since each organization might have different database technology, different platforms, different experiences, etc.

- Since the Internet and its applications have become more sophisticated and complex, it has become increasingly clear that successful e-government requires careful attention to many issues other than technological issues. These issues include: strategic planning that aligns with the business objectives, concerted efforts to develop, commitment from government officials, change management, awareness, and training.

- Unlike other IT projects, e-government has its own specificities since it deals

with many public agencies and different kind of users (e.g., citizens, government employees and business partners) and different environments. These specificities make it very difficult to manage since it will be affected by different issues such as organizational aspects, human aspects, social aspects, political aspects, legal aspects, financial issues, security and privacy issues, and of course the technological aspects.

- From these studies, it is clear that there is a little understanding of how governments could achieve their e-government maturity, although there is a strong consensus on what the ultimate e-government should be. In addition, there is a lack of studies that guide e-government implementers and make them aware of the challenges that might face them and hence might restrict the implementation process. Therefore, it is critical for any government to understand that there are a number of fundamental issues that have to be addressed in order to ensure successful e-government, regardless of what route the government should take.

- At present there is no a comprehensive framework that can be used to understand e-government implementation at a national level.

Having highlighted the shortcomings of the above models that deal with e-government implementation from an evolutionary perspective, the next section considers the IS implementation perspectives and how these perspectives can help in understanding the e-government implementation process and its related issues.

2.5.2 Information systems implementation perspectives

Section 2.5.1 described and discussed e-government implementation from an evolutionary perspective. However, it is very important to review other IS implementation perspectives as it is expected that these will provide useful insights which can inform the process of e-government implementation. The implementation process of any IS could be studied from many different perspectives. However, given the purpose of this study, the implementation process of IS will be explained and discussed from two main perspectives, specifically the contextual perspective and the process perspective. The ability of these perspectives to inform e-government

implementation will be investigated, especially after determining the main characteristics of e-government, as outlined in Section 2.3, and identifying the main shortcomings of the evolutionary perspectives, discussed in Section 2.5.1.

Contextual perspectives

This section aims to give some examples from IS implementation literature which can inform e-government implementation within its organizational context. Implementing IS within an organizational context means considering the processes of transformation and organizational change which take place over time (Walsham 1997; Zmud and Cox, 1979; Lucas, 1994).

> *"Human actors draw on elements of context, such as resources or perceived authority, to carry out actions, and this activity can reinforce existing systems or resource distribution or power, or can create new systems of authority or meaning. Thus human action draws on context or structure and, in so doing, reinforces existing structures or context, or create new systems. An investigation of this dynamic process of action/context interviewing is fundamental to an understating of the process of organizational change within which the information systems is one element"*(Walsham, 1997, p.5).

A typical example of implementing IS as organizational change is the Leavitt (1965) framework. Leavitt (1965) recommended four interdependent elements promoting analysis and evaluation of interrelationships occurring between: task, actors, structure and technology. The task element refers to the rationale behind establishing an organization. The employees who are carrying out the organizational tasks are referred to as actors, while the direct invention in solving problems, techniques and tools used to perform organizational tasks are represented by the technology element. The final element of the Leavitt Model is the structure element which refers to the systems of communication, systems of workflow and systems of authority. Leavitt (1965) emphasizes that any change in any one of those elements will result in changes in the others since they are highly interdependent. Therefore, the implementation of a new information system, for instance, will result in changes in the task (new task definitions might develop, certain tasks might become unnecessary, etc.), actors (e.g. new roles and skills sets might be required), and structure changes (e.g. new ways of communication or organizing). Similarly, a change in structure would have an impact

on work practices and changes in the way IS are used.

On the other hand, changes are often faced with resistance from most organization's members and hence many theories on resistance to change associated with IS implementation processes appeared. Markus (1983) examined a number of those theories and concluded that resistance to change cannot be attributed solely to deficiencies of a system or users, but it can be predicted by politics resulting from the interaction between a system and its context. Markus (1983) argued that resistance to change would be likely to occur if the implementation of a certain system is perceived to be an attempt at upsetting the balance of intra-organizational power. In addition, many other commentators claimed that conventional systems development approaches concentrate on the technical process of implementation and ignore the significance of the political process associated with organisational change (Keen 1981; Hirschheim and Newman, 1991). Others highlighted the importance of examining the social and political factors (e.g. user resistance, power, politics, and value conflicts) as well as the organisational context, since they have an essential role in the study of implementing information systems and they are crucial for successful IS implementation (Kling, 1987; Robey and Newman, 1996; Markus and Robey, 1988; Joshi, 1991; and Levine and Rossmoore 1993). Furthermore, organizational culture was identified as one of the main factors that affect successful implementation of IS (Pliskin *et al.,* 1993; Cooper, 1994).

In summary, contextual perspectives are very useful in identifying the relationship between elements in the broader organizational context. In addition, they will help the researcher in identifying the key organizational challenges that might restrict e-government implementation. These perspectives are further discussed and summarised in Section 2.5.2.3.

Process perspectives

This section gives some examples of those IS implementation perspectives that come from the literature by briefly reviewing some theories, such as the diffusion of innovation theory (DOI), theories that derive from DOI, IT penetration process models, and process event sequences, and assessing their usefulness in informing the

e-government implementation process. The adoption and diffusion of innovations has been a popular theme of studies in various disciplines. The term adoption refers to the single decision of any individual or organisation to make use of an innovation, while diffusion refers to the accumulated number of users who have adopted a technology (Rogers 1995). Diffusion of innovation (DOI) theory has been widely applied to the study of IS implementation process (Tornatzky and Klein 1982; Kwon and Zmud 1987; Cooper and Zmud, 1990). Broadly, DOI (be it a new idea, technology, or product) is a process of communication among members of a social system whereby its adoption potential becomes clearer over time and consequently its implementers will evaluate it and consider its implementation (Rogers 1983).

With regard to the IS implementation, DOI considers IS as part of the organizational innovation process and distinguishes three phases whereby an innovation proceeds through an initiation phase, the implementation phase and finally an institutionalisation phase (Zaltman *et al.* 1973; Swanson 1987; Rogers 1995). The initiation phase starts when a small group of actors carry out certain activities that can lead, at a later stage, to an organizational decision to implement the innovation (i.e. the mentioned activities). Then, the implementation phase, which includes all the events, actions and decisions involved in putting the innovation into use, will take place by a larger group of the organisational members (Rogers 1995). Finally, an IS will be institutionalised when it becomes a taken-for-granted means to accomplish organisational ends (Meyer and Rowan 1977).

Some authors subdivided the innovation process into more subdivisions. For example, Rogers (1995) subdivides the initiation phase into the two sub-phases: agenda-setting and matching, and subdivides the implementation phase into three sub-phases: redefining/restructuring, clarifying and routinizing. In addition, there were many IS implementation models which were derived from DOI. For example, Cooper and Zmud (1990) developed a six-stage (initiation stage, adoption stage, adaptation stage, acceptance stage, routinization stage, and infusion stage) IS implementation model based on organizational change literature as well as the earlier work of Kwon and Zmud (1987). Cooper and Zmud (1990) identify such stages as adaptation and acceptance, which include the activities of developing and installing the technology, revising organizational procedures, and training organizational members to gain commitment

37

to use the technology. The initiation stage considers IS as solutions to change pressures. Once change pressures occur, rational and political negotiations that aim to gain organizational backing for the intended IS implementation will take place (i.e. the adoption stage). The adoption stage is characterised by a decision to invest organizational resources with the aim of sustaining the implementation. The adaptation stage is the third stage where the IS installation process takes place and which includes some alterations and developments of some organizational procedures in light of the IS as well as training sessions for the organizational actors on the technology and the new procedures. The acceptance stage is the fourth stage where technology is employed in organizational work and actors are encouraged to commit to applying the technology. The fifth stage is the routinization stage which was considered as a crucial stage through which the technology becomes a normal activity and is no longer perceived as something out of the ordinary. The final stage is the infusion stage where increased organizational effectiveness results from use of the IS. In other words, when infusion is reached it means that the technology is used within the organization to its fullest potential and increased organizational effectiveness is obtained through this usage.

IS penetration models also offer another process perspective on how computer-based information technology evolves over time (Galliers and Sutherland 1991). Nolan (1973) is considered as a typical example of IS penetration models, although the Nolan model *"does not appear in the literature as a single model, but rather as a number of versions of the same model developed between 1969 and 1979"* (King and Kraemer, 1984, p. 466). Nolan (1973) defines four stages of growth which, together, are concerned with technology management (initiation stage, contagion stage, control stage, and integration). The initiation stage witnesses the introduction of computing into organisations to meet basic needs (i.e. slow growth in use; beginning of problems caused by computing's role as a "change agent"). Rapid growth in computing use due to management commitment will occur in the contagion stage. In the control stage, cost control measurements will be instituted by top management. In the final stage (i.e. integration stage) controls will be refined to allow exploitation of computing without runaway cost. Nolan associated the notions of managerial control and slack with the process. While managerial control denotes formal planning, budgeting, and project management to ensure that computing activities are efficient and effective,

slack denotes the absence of such controls. Nolan (1979) argues that an imbalance of high control and low slack in the early stages, will impede the organizational use of IS, whereas an imbalance of low control and high slack in the later stages will cause a budgetary explosion and inefficient systems. However, the empirical bases of Nolan's model were questioned in the literature and it was argued that some evidence is available that they are factually mistaken (King and Kraemer, 1984). In addition, King and Kraemer (1984, p.474) argued that *"many of the other structural assumptions of the model are too simplistic to be useful, or are simply implausible"*.

The final perspective that will be explained under this section (process perspectives section) is the process event sequences perspective. Some scholars (e.g. Robey and Newman, 1996) emphasise the importance of empirically examining the IS implementation process at a much finer level of detail. In other words, they argued that examining the sequences of events that occur (and might re-occur) during the implementation process will enable researchers who operate from different perspectives to enrich their understanding of the process of IS development. They suggested that there are two types of events, namely episodes, which have a relatively long period of equilibrium; and encounters, which are shorter in duration and serve as punctuation between longer episodes. They traced the process of developing and implementing a materials management system in one company over a 15-year period and identified 44 events over the duration of the process (of which some re-occurred). Examples of encounters included in that process are: the appointment of a project manager; sign-off of systems requirements; the arrival of software; and project cancellation and proposals to rewrite systems specifications while examples of episodes included are: acceptance; equivocation; and rejection. By comparing events and episodes, different and potential implementation process patterns were typified. For example, they examined the sequence of events over the 15 years of the case, and identified a pattern of repeated failure, followed by success.

Assessment

In relation to the research questions, the literature of IS implementation was reviewed from two broad perspectives, specifically from contextual perspectives and process perspectives. Contextual perspectives were discussed from two main aspects, namely

organisational change perspectives and social perspectives. Organisational change perspectives are useful since they help in determining those organisational challenges that might restrict e-government implementation in a broader organisational context and also in determining the mutual influences between e-government projects and their contexts. E-government was described as a radical change and a reform tool, which could influence and be influenced by its context and hence generates many challenges for its implementers. However, those changes and challenges might differ from the normal computer-based systems' changes and challenges since the organisational change in e-government projects is not restricted solely to the e-government organisation but also affects many other public organisations (i.e. countrywide changes). Thus, there might be new challenging factors that were not considered in the previous studies.

Regarding the social perspectives, there is no doubt that these perspectives are useful in general to inform the understanding of e-government implementation since they consider technologies as a social construction and that political and cultural influences can explain non-rational aspects of IS implementation. Based on these perspectives, e-government and its organisational application can be regarded as socially constructed. However, social perspectives have not considered the possible mutual influences of e-government in shaping social structures. In addition, those perspectives were derived from studies that have not considered cross-organisational changes that can be caused by e-government implementation.

From the IS implementation process point of view, many perspectives were explained and discussed above. The discussion started with DOI; it is believed that although DOI provides a useful delineation in understanding IS implementation as a broad phase between initiation and institutionalisation, it disregards some key facets in the case of complex and networked technologies which then raises problems. For example, in its initiation phase, it assumes that certain activities within a specific organisation can lead to an organisational decision to implement the innovation. Nevertheless, in the case of e-government implementation, specifically at a national level, there is no specific organization that might host this kind of activities and the decision normally comes from the highest authority in the country. In addition, based on evolutionary perspectives of e-government, it can be argued that such technologies

40

evolve in terms of their features and attributes (e.g. as with the increasing sophistication of e-governments) and tend to gain meaning to constituents over time. E-government is also described as highly context-specific (i.e. affected by the organizational culture, and supporting infrastructure). Hence, this calls into question the broad applicability of a DOI theory to study e-government implementation, especially across different organizational contexts (i.e. at a national level).

Section 2.5.2.2 also described a number of IS implementation models derived from DOI theory, mainly the Cooper and Zmud (1990) model. Their model is useful in reducing the complexity of the implementation process by subdividing it into stages. In addition, they stated that the initiation stage is caused by change pressures stemming from either an organizational need or technology innovation which might be true in the case of e-government implementation. However, Moon (2002) argues that e-government (as complex and networked technologies) does not necessarily diffuse and follow a true linear progression (i.e. e-government implementation stages may concurrently be taking place). In addition, their studies dealt with and proposed IS implementation within a single organisation, which is not the case in implementing an e-government system at a national level. Therefore, the usefulness of such models in informing e-government implementation is limited.

Another model that was explained in 2.5.2.2 is Nolan's model. His model is useful in relation to IS implementation with the management of the process during the various stages of the development (Lucas and Sutton, 1977; Zuurmond, 1991) but its stage-hypothesis in particular is regarded as controversial (King and Kraemer, 1984; Lee, 1992). This is because it uses the growth of the organization's computing budget as surrogate to delineate the stages in the model. In addition, King and Kraemer (1984, p.474) argued that *"many of the other structural assumptions of the model are too simplistic to be useful, or are simply implausible"*. Another shortcoming of Nolan's model is its belief that over time, the final stage will ultimately be reached; this does not necessarily or accurately reflect e-government implementation.

The final perspective in this category (process perspectives category), which was explained in 2.5.2.2, is to view the implementation process as "event sequences". This perspective offers a useful analytical alternative to broad implementation stages.

41

Another good point in this perspective is that the implementation process patterns indicate a long term view of planned IS implementation, which might be the case in the e-government implementation process. However, this perspective assumes that it is the responsibility of management or the organisation's IT to initiate the implementation process, which might not be the case for e-government implementation. In addition, this perspective was derived from studies that were conducted on a single organisation regarding the implementation of a single system, whereas e-government implementation is a process of implementing many systems (i.e. services) country-wide.

To conclude, the theories and perspectives discussed provide many useful insights which can inform the process of e-government implementation. However, to some extent all the perspectives also exhibit some shortcomings in capturing the complexities associated with e-government implementation, particularly at a national level.

2.5.3 Assessment summary

E-government is a means by which public services are changed and reinvented. By introducing this change, governments hope to eliminate or blur traditional organization boundaries, empowering their employees, citizens and business partners via readily available information and online services. In addition, governments ultimately expect e-government to enhance the ability of constituents to participate more directly in government activities. Section 2.5.1 showed that there were many scholars who have tried to understand the e-government phenomenon from an evolutionary point of view by dividing the e-government development process into many stages. However, there are clear differences in the focus and perspectives, and there is no agreement between scholars on a specific approach to e-government systems, nor has there been agreement on the number of stages required for developing an e-government system (e.g. the number of stages required for developing an e-government system has been classified into 3, 4, 5 or 6 stages). In addition, all the discussed models are technology driven and most of them do not consider other important factors such as organisational change factors, political factors, and human factors. In other words, many scholars have emphasized that

achieving effective Internet usage is a vital stage in the transformation process of government services and have forgotten the multidimensional nature of e-government as well as neglecting how governments can reach that transformation in the presence of other obstacles. Furthermore, from a government levels point of view, there is a lack of studies that conceptualise the e-government implementation process at a national level, and which might help those countries which have a central or one level government to understand this kind of implementation. Moreover, it is worth mentioning that there is a lack of studies that classify those key challenges that might restrict e-government implementation whether at local, state or at national level. With regard to the perspectives derived from the IS implementation literature, there is no doubt that they provide many useful insights which can inform the process of e-government implementation but at the same time they have their shortcomings in capturing the complexities associated with e-government implementation (as discussed in Section 2.5.2.3).

In light of the above, the purpose of this study is to gain an in-depth understanding of the e-government implementation process and to identify the key challenges that might restrict e-government implementation at a national level by developing an implementation framework that can help e-government implementers in understanding the complexities involved in such implementation. In Chapter 3, the researcher tries to combine the various implementation perspectives mentioned above together with the possible challenges that might face e-government implementers in an initial framework for e-government implementation at a national level.

2.6 Summary

Explosive growth in Internet usage and rapid development of e-commerce in the private sector have forced governments at every level and all over the world to move towards some form ICTs implementation, which is often known as e-government. The aim is to deliver electronic services to the public and to administer their internal programmes more effectively and in an efficiency manner. This chapter was formulated from an extensive review of the e-government literature and IS development literature, and has focused on the e-government phenomenon and its

implementation issues, in particular e-government implementation perspectives. It started with a discussion of the taxonomy of e-government definitions and found that e-government is relatively new notion and its concept is still debatable, illusory and a confusing term among scholars. As a consequence, there is no specific, agreed or clear definition. To look closer at e-government definitions and to understand its characteristics, e-government definitions were classified into two main perspectives, broad and narrow. Based on those definitions, it was possible to identify the main characteristics of e-government and to propose a broad definition for e-government. Then, to give an idea of the rationale behind e-government implementation, its benefits were discussed and described. After that, e-government implementation was discussed and analysed from three different aspects in light of the e-government and IS implementation literature. These aspects were e-government evolution perspectives and two main perspectives of IS implementation, specifically the context and process perspectives. The aim was to obtain useful insights which can inform the process of e-government implementation at a national level. Chapter 3 will propose an initial framework for e-government implementation and will shed light to those challenges that might face e-government implementers or restrict its implementation.

Chapter 3: Research framework

3.1 Introduction

This chapter aims to develop an initial framework for e-government implementation at a national level. The framework is suggested for countries with just one government level (or central government), as is the case in many developing countries. In addition, it is based on a synthesis of different suggestions found in the literature of IS implementation and e-government literature (i.e. discussed in Chapter 2 and throughout this chapter as well). The aim of building this model is to structure the study and to avoid the twin dangers of being overwhelmed by data and being drawn into narrative rather than theory building (Hartley, 1994). In addition, the model will be used to support further data collection, data analysis and to establish an exhaustive overview of the e-government implementation process at a national level.

Having given the research aim, research objectives and the research questions, it is necessarily to consider two main issues during the development of the mentioned initial framework. Firstly, the framework should consider the complexity of the e-government implementation process and should provide a way to make that process fairly understandable (i.e. to conceptualise e-government implementation process). In so doing, it is proposed to divide the e-government implementation process into four main stages. The reason for choosing four stages is explained in Section 3.2. The second consideration was to make the framework consider the challenges that might restrict e-government implementation at a national level. Consequently, three classifications are proposed for those challenges which are linked to the initial framework.

This chapter is divided into four main sections. Section 3.2 explains and discusses the proposed dimensions of e-government implementation. These dimensions are illustrated by three main classifications of those challenges that might face e-government implementers and which might restrict its implementation. Then, Section 3.3 describes and discusses the four main stages of the initial framework. After that,

Section 3.4 presents a summary of this chapter and sheds light on the gap that will be bridged by this study.

3.2 E-government implementation dimensions

This section aims to identify those issues that might create a wide gap between the anticipated benefits and their realization as well as reducing the possibility of successful adoption of e-government. Like any other IT projects, benefits of e-government are associated with risks and challenges that should be taken into consideration before, during and after the implementation of e-government projects. There are many types of challenges that can be identified, such as organisational change challenges, political challenges, technological challenges, organizational challenges, usage challenges, and human-centred challenges. Therefore, it is essential for the initial framework to consider the major implementation challenges surrounding the implementation process.

Extensive work has been carried out in order to find a way that includes all those possible key challenges that might restrict e-government implementation in the proposed framework. Consequently, three main classifications (or dimensions) were proposed. These are: organisational issues, technological issues and other issues. The purpose of such a classification is twofold. Firstly, the researcher aims to involve all the possible key challenges that are found in the IS development literature as well as e-government literature and classify them in a way that allows him to examine their strengths during the e-government implementation process. Secondly, he seeks to understand the e-government implementation process itself through these dimensions.

The organisational issues classification in this study is based on the Doherty and King (1998a, 1998b, 2001, and 2003) studies. The aim is to use a classification which has already been tested in many empirical studies. In addition, this classification will be further tested in the case of e-government implementation; hence this will give an opportunity to add/delete other factors to/from this classification. This classification and its related issues are described in more detail in Section 3.2.1. The technological dimension involves those technological issues that are considered as key barriers to e-

46

government implementation in the e-government literature, namely ICT infrastructure, systems integration, accessibility and availability, and security issues. These technological factors are described in Section 3.2.2. The third dimension (or classification) of the proposed categories is the other issues category. It consists of four main factors, namely legal issues, digital divide, usage issues, and change management.

There are two main reasons for proposing this third dimension. First, there are some factors that cannot be classified either as organisational or technological issues (e.g. legal issues). The second reason is that there are other factors that were not considered by the Doherty and King (1998a, 1998b, 2001, and 2003) studies explicitly, and hence they have been classified in this 'other issues category' until they can be tested in the case study. Therefore, based on the case study findings those issues might be mapped later to their respective classifications. Another important issue is that there might be other factors not mentioned in the literature or in this initial framework which might appear in the case study. In this case, they will be mapped to their correct category later. In summary, this other issues dimension will be used, at this stage, on a temporary basis and, based on the case study findings, it might be improved or removed. The elements of the other factors category are explained in more detail in Section 3.2.3.

3.2.1 Organisational issues

Although the term organisational issue has not received universal acceptance, it has frequently been used as a generic expression to describe a wide range of non-technical aspects which have an impact upon the outcome of information systems projects (Dohert and King, 1998b). The phrase has been used differently among scholars as they used alternatives such as *'organisational validity'* of systems (Markus and Robey, 1983), *'human and organisational factors'* (Clegg *et al.*, 1997), or *'human and organisational issues'* (Hornby *et al.*, 1992; Lacus, 1975). According to Doherty and King (2003, pp. 25) organisational issues can be defined as:

"Those issues which need to be treated during the system development process to ensure that the individual human, wider social and economic impacts of the resultant computer-based information system are likely to be desirable."

Organisational issues have also been classified differently among researchers. For example, while some scholars stress the impact upon specific individuals within an organisation, others emphasise wider issues, which have an impact on the organisation as a whole. Pliskin *et al.* (1993), for instance, classified these issues into two main classifications, specifically micro and macro. The micro issues include user satisfaction, user familiarity with the task, user motivation, user quality, user involvement, and user cognitive style. Whereas macro issues involve organisational hierarchy, channels of communication, distribution of power, IS as a strategic weapon within the organisational environment and organisational culture. On the other hand, Clegg *et al.* (1996) divided those issues into five aspects and emphasised the importance of these aspects to the success of new systems. Their classification includes the designing of work organisations, the planning of the organisational impacts, job design, the allocation of tasks between human and computers, and the usability of new systems.

Doherty and King (1998a,1998b, 2001 and 2003) classified these issues into five groups. These five groups are: organisational alignment, organisational contribution, human issues, transitional issues and system integration issues. This classification is used as a base for the proposed organisational issues dimension in the proposed framework. However, the researcher deleted some factors from that classification, particularly health/ergonomic and safety factors, job redesign factors, user motivation/needs factor, and transitional issues. The reason for this is because these factors are proposed for those systems that are implemented within a single organisation and thus they are applicable within that organisation's boundaries. In addition, e-government deals with different kinds of users such as public employees, business partners and citizens, and its services are provided through its websites/portal. Hence there is no need to worry about those safety factors. Moreover, e-governments implementation still in their early stages so it will not be possible for the researcher to test those transitional issues. Regarding the user motivation/needs factor, the researcher sees that it can be considered as a success factor rather than a challenge and it might better be considered under some other categories (e.g. training

and awareness). Moreover, some of the deleted factors (i.e. job redesign) are not applicable in the case of the e-government implementation process since there will be a dedicated team (i.e. an e-government organisation/unit) for developing and maintaining the e-government services starting from the initial phase of the project. However, e-government might omit some of the existing jobs or create new ones. Finally, it is worth mentioning that some factors (e.g. system integration issues) have been removed from the organisational category proposed by Doherty and King (1998b) to another category (i.e. technological issues category). The key elements of the proposed organisational issues dimension are described in the following sections.

Organisational alignment

Doherty and King (1998a) used the term *organisational alignment* to describe the degree of match between any specific system and its organisational context. In addition, Walsham (1997, p.3) mentions that *"most computer-based information systems at the present time are developed and used within the context of a specific organisation"*. Hence, this study aims to understand the challenges that might be generated by such organisational alignment factors for the e-government implementers. Organisational alignment factors, according to Doherty and King (1998a), are composed of three organisational issues namely the systems impact on organisational structure, organisational culture and the distribution of power. These issues are described briefly below.

Organisational structure: according to Mullins (1996, p.332), organisational structure refers to *"the pattern or relationships among positions in the organisation and members of the organisation"*. The role of the structure in any organisation is to define and distribute responsibilities and tasks between the organisation's members. In addition, it plays an important role in coordinating routine activities between the organisation members and in establishing channels of communication within the three levels of the organisations, specifically technical, managerial and community levels. IS, according to many scholars, can play an important role, either directly or indirectly, in changing the structure of an organisation (Markus and Robey, 1983; Stebbins *et al.*,1994; Raymond *et al.*, 1995). However, the effect of this role might be greater in the case of e-government implementation since the expected changes will

occur across many public organisations (or ministries) and hence the changes and challenges will be greater. Ho (2002) mentions that, in contrast to the traditional bureaucratic paradigm, which emphasizes standardisation, departmentalisation, and division of labour, the new e-government paradigm emphasizes coordinated network building, external collaboration, and one-stop customer services.

In addition, Layne and Lee, (2001) state that as e-governments become more prevalent, the organizational structure of the public sector will change accordingly in two main aspects: internal and external. While internally the change will focus on the system efficiency, externally the change will focus on the users. Therefore, it is expected that e-government implementers will face serious challenges, which might then call for organizational risk. Internally, changes will involve reengineering work-processes within the public agencies, retraining and re-staffing programmes. These changes will raise many challenges (e.g. change resistance) as the use of technology threatens job losses for public employees.

Organisational culture: culture refers to set of significant assumptions, beliefs, values that members of a community share in common (Sathe, 1985). The IS literature showed that the introduction of IS can have an important influence on the culture of the organisation (Romm *et al.*, 1991; Pliskin *et al.*, 1993; Flowers, 1996). This study seeks to understand the challenges that might be caused by the organisational culture in the case of e-government implementation. According to Irani *et al.* (2005, p. 68), *"The organisation sees itself as progressive and does not wish to lag behind other authorities with regard to service delivery and e-government infrastructure.[..] Generally, departments do not act corporately but instead, compete for political recognition, status and resources. Departmental objectives are idiosyncratic, and there is often a limited corporate approach to issues, including IS evaluation."* The effect of the above issues and other organisational culture issues is expected to be greater in the case of implementing an e-government system at a national level. Therefore, public sector administrations are required to be prepared for that change and to adapt new strategies and culture of e-government (Burn and Robins, 2003; Lenk and Traunmuller, 2000).

Power distribution: the IS literature showed that implementing new systems or even the modification of existing ones in an organisation often causes redistribution of power in that organisation. *"Information systems increasingly alter relationships, patterns of communication and perceived influence, authority, and control"* (Keen, 1981, p. 24). As a result, those members who lose power will of course resist these new systems or this kind of modification (Markus and Robey, 1983; Hornby *et al.,* 1992; Pliskin *et al.,* 1993; Doherty and King, 1998a). The effect of this factor might be greater in the case of e-government implementation especially at a national level. According to Jaeger and Thompson (2003, pp.390), *"A recent U.S. government study found that the biggest concerns for e-government managers were not technical issues, but instead were policy issues, including coordination and collaboration between agency leaders, agency-centric thinking rather than focusing on the overall goals and functions of e-government, and communication to better understand and foster inter-relationships between e-government projects."* (Jaeger and Thompson, 2003, p.390). Political problems are often found in public administration, and there might be some government officials who see new systems (e.g. e-government initiatives) as a potential threat to their power (Heeks, 1999).

Organisational contribution

The organisational contribution group (or category) includes issues that determine whether a proposed system will make a valuable contribution to the performance of the whole organisation or some parts of it. Doherty and King (1998b) suggested that this group involves four organisational issues: IS strategy, cost-benefit analysis, prioritisation and future needs of organisation. These issues are explained briefly in the following sections.

Information system strategy alignment: IS strategy helps and guides organisations in the selection and development of their information systems. Therefore, it is essential for any organisation to make sure that there is a clear IS strategy that is tightly aligned with its business goals (Coombs, 1992). E-government is a strategic issue as it has the potential to change the way governments operate, and their political structure. *"The strategic objective of e-governance is to support and simplify governance for parties,*

government, citizens and businesses" (Basu, 2004, p.109). Therefore, the development of an e-government strategy is fundamental and must be enterprise-wide to most effectively and efficiently serve the digital society.

> *"E-government not only points to the concrete implementation of projects, but it also has a political dimension, where strategies are worked out and where some of them are concretised and packed into indicatives and projects"* (Wimmer, 2002, p. 95)

For example, e-government strategy addresses many key areas such as the mission, vision and the objectives of having an e-government system. In other words, it should include e-government customers, a vision that is easily understood and succinctly expresses the organization's concept of and plans for e-government, identification of policies necessary to support e-government, specific goals and objectives that can be measured and monitored, a methodology for determining organizational readiness, a process for identifying and prioritising e-government services and so on (Wimmer, 2002). In addition, e-government strategy should address some other important aspects such as business processes reengineering issues. The poor treatment of these issues might cause undesired outcomes for the whole initiative.

Cost-benefit analysis: an explicit cost-benefit analysis exercise is a very significant factor before proposing any new information system in order to make sure that this new system will meet the needs and business requirements of the organisation (Doherty and King 1997). Since one of e-government's objectives is to reduce the cost of operating government services by automating them and reproducing them with high quality online, it is very important for e-government implementers to have a clear mechanism for analysing the cost and benefits of those services before starting the development of any services. However, government officials might overestimate the benefits and disregard other challenges and problems (e.g. financial challenges) that might face e-government implementers. For example, they might launch such projects based on non-economic reasons such as a web-based service delivery vision, pressure from a certain authority or a desire to experiment with new technologies. However, it is obvious that e-government is no longer just an option but a necessity for countries aiming for better governance (Gupta and Jana, 2003).

Lack of financial resources is expected to form a major challenge for e-government implementers (Chen and Gant, 2001; Heeks, 1999; Ho, 2002). In a survey of European government department heads, over 80 per cent cited lack of finance as the main obstruction to progress in e-government initiatives (Heeks, 1999). This financial challenge will, of course, increase should any government decide to implement an e-government system at a national level. It is, therefore, important for governments to evaluate their projects in order to determine the necessary efforts and their expected impact before embarking on such ambitious initiatives.

Prioritisation of deliverables: this issue represents the ability of an organisation to create an accurate priority system based on its business requirements. This will help that organisation to have a strong focus on its organisational needs (Doherty and King 1998b). Indeed, this factor is particularly essential in the e-government case (as it will be overloaded with thousands of public services that need to be developed) and should be given high priority in the processes of implementing e-government services. The cost-benefit analysis issues discussed above may play a major role in setting the priority list for those e-services that need to be developed.

Future needs of the organisation: Gilb (1988) emphasised the importance of developing an open architectural framework that enables an organisation to accommodate changing requirements. Creating such a framework is much better than spending too much time in evaluating the current requirements since an IS operates in a highly dynamic environment (Gilb, 1988). This factor must be true in any e-government initiatives since they are strategic tools while are growing over time (i.e. e-government is a continuous project that must stay as long as it satisfies its customer needs).

Human-centred issues

Human-centred issues include those issues that have a significant impact on the working practices and the environment of the individual users who directly interact with the system, such as training issues, motivation issues, health and safety impact and job redesign (Doherty and King 1998b). Some of these issues (e.g. training) are useful in understanding their influence on the e-government implementation and in

identifying their challenges. For example, training ensures that all the system's users have the necessary skills to successfully operate the system (Clegg *et al.*, 1997). Heeks (1999, pp.32) states that *"senor public officials – both managers and politicians- often lack IT skills and even IT awareness"*. He continues *"they are therefore reluctant to support, or even to discuss, reforms that involve information technology"*. Thus, e-government users (citizens, public employees, and business partners) should be aware of e-government services and should be given the required training. Training also ensures that the development team themselves have the necessary skills to successfully develop such a complicated system. Many commentators emphasise that the shortage of IT skills is one of the key obstacles that generates real challenges for the e-government implementers (Ho, 2002; Heeks, 1999; Chen and Gant, 2001; Moon, 2002). E-government officials might find difficulty in attracting and retaining the right IT talent, especially considering the competition for these workers. According to Chen and Gant (2001, p. 344), *"the shortage of IT workers is ranked as the number one barrier to e-government, based on the 2000 E-government Survey conducted by the International City/Country Management Association and Public Technology, Inc"*. Thus, it is essential for e-government to train the available development team, improve their technical skills and provide them with those sophisticated development tools that enable them to deliver the expected outcomes.

3.2.2 Technological issues

This section represents the second dimension of the initial framework. Although technology would not guarantee e-government success, it is vital for any e-government initiative to ensure the availability of sufficient resources, capable ICT infrastructure, capable IT staff, integrated information systems and advanced technologies that are necessary to maintain security and integrity (Layne and Lee 2001; Moon 2002). The lack of any of these requirements will lead to major technological challenges. Also web technology is relatively new and uses new standards that are constantly being developed, hence technological risk might take place as it can make an e-government investment obsolete in a matter of months leading to higher costs for modernizing and upgrades. Therefore, this dimension

involves those technological issues that are considered as key barriers to e-government implementation in the e-government literature, namely ICT infrastructure, systems integration, accessibility and availability, and security issues. These technological factors are described in the following sections in more detail.

ICTs infrastructure

ICTs infrastructure is a high-priority subject and a possible major barrier for e-government adoption. In this case, infrastructure generally means bringing electronic communication closer to the e-government customer (i.e. citizens and business partners) by, for instance, promoting home computers with Internet access or providing public connections to electronic services (Strejcek and Theil 2002). ICTs infrastructure is composed of hardware and software that provide secure electronic services to citizens, businesses, and government employees. The most important aspects of ICTs infrastructure are the network capacity and communication infrastructure (Layne and Lee 2001; Deakins and Dillon 2002). These aspects act as an important foundation for integrating information systems across government organisations (and maybe other business partners) and should be ready before offering any reliable (and effectible) e-government services to the public. Bonham *et al.* (2001), argue that the lack of technical infrastructure is a major barrier to the development of e-government capability to provide online services and transactions. In addition, it is worth mentioning that unreliable IT infrastructure in public sector organisations (or ministries) will degrade e-government performance. Thus, it is essential for e-government implementers to make sure that there is an adequate IT infrastructure in place before providing any electronic services to the public. Otherwise, they will face a key barrier that could restrict e-government implementation.

Systems Integration

Systems integration can be divided into two types of integrations, specifically horizontal (intra-governmental) integration and vertical (intergovernmental) integration (Layne and Lee 2001; Moon 2002). Both types are very important should governments seek to enhance the efficiency, user friendliness and effectiveness of

their e-government services. Vertical integration refers to local, state and federal governments connected for different functions or services of government while horizontal integration is defined as integration across different functions and services (Layne and Lee, 2001). Horizontal integration is a big issue and critical challenge that could affect the success of e-government implementation at a national level. In other words, integration of heterogeneous databases and resolving conflicting system requirements across different functions and public agencies (or ministries) are major stumbling blocks for any government initiative since this kind of integration is not only a technical challenge but also management challenge. Layne and Lee (2001) mention that intra-governmental integration requires a change in mindset of public agencies chief executives as functional specialization may not be suitable as a governing structure in e-government. On the other hand, they emphasise that *"The full potential of information technology, from the citizen's perspective, can only be achieved by horizontally integrating government services across different functional walls (or "silos")"* (Layne and Lee, 2001, p.132). This issue was confirmed by Traunmuler and Wimmer (2003, p. 6) who stated: *"The negligence of back-office developments integrated with the front-office, of overall system and media interoperability, of module integration (digital IDs, electronic signatures, payment, service application, service delivery, etc.) in all phases of service delivery (information – communication – transaction – aftercare) leads to large investments that do not pay back and that hamper the overall vision of e-government"*. Therefore, it is essential for e-government implementers to be aware of the importance of this issue and the impact that might be caused of poor treatment of this important factor.

Security issues

> *"Security issues exist where secure infrastructure for transmission of personal information is absent."* (McDonagh 2002, p.331)

E-government literature shows that security is a key barrier for e-government adoption (Chen and Gant 2002; Layne and Lee 2001; McDonagh, 2002; Bonham et al. 2001). Security issues involve computer security, privacy and confidentiality of personal data. E-government initiatives are expected to provide sophisticated applications (e.g. e-voting, and e-billing) that serve governments and their public

through different types of networks (e.g. Internet, intranets and/or extranets) which often require e-government customers to pay online or to submit critical personal data. Thus, it is very important for e-government implementers to make sure that their applications are secure and protected with the latest security technologies (both hardware and software), otherwise, they will lose the confidence and the trust of their customer (i.e. citizens, public employees and business partners). Silcock (2001, p. 96) mentions that *"in a survey conducted by Gallup (1998), 54% of respondents cited security as a major drawback of electronic service delivery"*. However, e-government implementers might succeed in gaining their customers trust by introducing an electronic a legislative framework besides the technological aspects, since the presence of such legislative framework would help in minimising their concerns regarding the security issues. The legislative framework is described in Section 3.2.3.3.

Accessibility and availability

"E-government will only be successful when access to the Internet is widespread and available to every citizen." (Deakins and Dillon 2002, p.388)

Every citizen must have access to e-government services as it is one of the major success factors (Deakins and Dillon, 2002). As mentioned in Chapter 2, one of the key benefits (or anticipated benefits) of e-government is that it has the potential to improve the quality, range and accessibility of services. It is expected that e-government will enable citizens, businesses, employees and other governmental agencies to complete all transactions from a single point of access that is available 24 hours a day, 7 days a week. This will relieve them of visiting several different departments, many different ministries, or several different Web sites, to obtain a specific service from the government (Seifert and Petersen, 2002). Silcock, (2001) mentions that citizens will only be encouraged to use e-government services if they find them easy to access, up-to-date, accurate and reliable. However, accessibility and availability might form real challenges to e-government implementers since maintaining them is very expensive and requires solid ICT infrastructure. Hence, the absence of such a facility will impact on the whole image of the e-government services.

3.2.3 Other issues

This section describes the third dimension of the initial framework. As stated above, the main reason for proposing this dimension is because there are some factors found in the e-government literature which cannot be classified either as organisational or technological issues, at least at this phase of the study. Therefore, this 'other issues dimension' will be useful to hold those issues at this stage, but at a later stage of this study, it might be removed or further improved depending on the case study findings. It consists of four main factors found in the literature, namely change management, legal issues, digital divide, and e-service usage issues. These factors are explained in the following sections.

Change management

Change management is a process that is often carried out in a phased manner and which involves effectively balancing forces in favour of a change over forces of resistance (Burn and Robins, 2003). Burn and Robins (2003, p.28) state that the key constructs of change management are: *"pattern of change, management's readiness to change (committed, participative, resistant), scope of change (improvement, radical change), managed change (alleviation of dissatisfaction, a vision for change; and a well-managed process of change, evolutionary or revolutionary change tactic use)"*. E-government is a radical change and a strategic issue that has the potential to change the way governments operate and their political structure. In other words, implementing an e-government system at a national level is a fundamental transformation of government services from a physical to a virtual environment, which calls for a huge change in organisational responsibilities, duties, culture and transformation (Wimmer, 2002). Thus, public sector administrations are required to prepare and reengineer their business processes for that change (Burn and Robins, 2003; Lenk and Traunmuller, 2000). In addition, public organisations' employees should be prepared for that change and should be aware of new ways of dealing with new technologies that emerge with e-government (i.e. e-government allows its customer -citizens, and business partners- access to the organisations back-office

remotely to complete the transaction processing, which emerge with new technology solutions such as electronic receipts and certificates). Furthermore, organisational culture also forms challenges to e-government implementers since there might be some public organisations (or ministries) that are reluctant to share their business data or processes with other organisations or with external partners (e.g. they believe that this data sharing or connection will weaken their authority). It is believed that there are two main factors that help in managing the mentioned changes, specifically sustaining committed executive leadership and the support of top level authority. The absence of these two factors is expected to create big challenges for the e-government implementers. These two factors are explained below.

Sustaining committed executive leadership: sustaining committed executive leadership is an important factor for any IT investment strategy. The importance of this factor increases in conducting more complex IT investments that are associated with a large scale of changes such as e-governments initiatives (Burn and Robins, 2003; Bonham *et al.*, 2001). However, some government officials perceive such IT investments as a potential threat to their power and viability because it might reduce their authority in their public organisations. In addition, they might ignore this kind of IT investment because they are not aware of the potential benefits of the investment. Heeks (1999, p.33) mentions that *"the public sector has had more than its fair of IT project failures, and of reports questioning the value of benefits, if any, produced by IT-based reforms. In this situation, public sector managers may rationally choose to ignore IT, as they perceive a lack of clear evidence about its positive impact"*. Thus, it is very important for any e-government initiative to be aware of the impact of this factor and its associated challenges.

Top level authority support: this factor might be considered as a part of the above factor "sustaining committed executive leadership" but in the case of implementing e-government at a national level it is not. There should be a sponsor for the project from the top authority level in the country. In the traditional IT projects, the sponsor is usually a senior manager who realizes the potential of the IT in the organization and who can allocate or negotiate organisational resources towards further implementation of the technology (Lucas 1994). However, in the case of a national e-government project, the person who has this kind of authority might be a minister, prime minister

or even higher. Hence, achieving top level authority support is a significant factor in implementing e-government projects at a national level.

Legal issues

"Legal interpretation is an activity that has to precede any attempt to automate the sequence of steps." (Wimmer 2002, p. 100).

Legal issues involve a range of legal aspects that need to be addressed in order to have a fully functional e-government. They include some necessary strategies for handling those sensitive issues such as data security and integrity, user authentication, privacy protection and legal liabilities (Caffrey, 1998). Those strategies should be in place before automating any government services (Wimmer, 2002). E-government users should feel that their privacy is protected by establishing secure communication channels and by protecting their information (including storage and management) and their transactions. According to McDonagh (2002), there are many privacy problems that arise from e-government applications but the privacy focus is on matters such as the method of collection of personal information, the use of personal information, the disclosure to third parties of personal information collected about individuals and security of personal information held by government agencies. Therefore, without establishing sensible policies and regulations that are necessary to develop trust in e-transactions and to balance the need for economic development with the protection of data privacy, it will be very difficult to convince e-government customers to use those electronic services. On the other hand, establishing such policies and regulations may create a major challenge to e-government implementers since most countries over the world suffer from a lack of such regulations or are slow in establishing the required legislative framework.

Digital divide

"The 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." (Silcock, 2001, p. 94)

E-government offers governments opportunities to help the less fortunate in society to have access to any new technology besides providing them with suitable computer

60

literacy education. This is particularly the case for young and elderly people. E-government technology can enable individuals and communities (cultural, shared interest, and geographical) to enhance their social and economic well-being and enable them to participate more actively in society and the economy. In addition, e-government encourages governments to provide a continuous learning process for their citizens by giving them access to sophisticated and personalized education tools, which will be available online. Therefore, the idea that education does not end when a person finishes school can be realized through widespread electronic learning. However, some scholars identify a growing gap between those who are able to access and use ICTs, and those who cannot, this is often referred to as the "digital divide". This gap has many dimensions such as those between young and old, between city and country, between rich and poor people and between different ethnic and socioeconomic groups. Thus, e-government officials should be aware of the "digital divide" that exists in terms of citizen knowledge, and be careful not to exacerbate that gap. *"For this reason, the British government has committed £252 million to create network of ICT learning centers across the country"* (Silcock, 2001, p.94).

Usage issues

Usage is also another kind of challenge that might affect the acceptance of e-government services or might lead to very low adoption rates. The lack of Internet access, very slow connections, lack of Internet navigation, lack of computer operation skills, issues of security or privacy, or payment methods are the main sources of usage challenges which lead to a low level of user acceptance. This challenge could significantly decrease the benefits derived from e-government. Access to e-government services is one of the major success factors for any e-government system (Deakins and Dillon, 2002). Another source for usage challenges is the citizens' concern about privacy of their life and the confidentiality of the personal data that they provide as part of obtaining government services (Layne and Lee, 2001; Deakins and Dillon, 2002). Many scholars emphasize the idea that privacy and confidentiality have to be highly valued in establishing and maintaining government websites (Chen and Gant, 2002; 2000, Layne and Lee, 2001; McDonagh, 2002; Bonham *et al.*, 2001). Providing easy to use, secure, accurate, up-to-date and reliable services will encourage e-government customers to use its services (Silcock, 2001). E-government

customers also need to be aware about e-government services and to be educated on how to use those services, as awareness and training are very important factors that affect the usage of e-government services (Heeks, 1999).

3.5 E-government implementation: Initial framework

This section highlights the main stages of the initial framework. It splits the implementation process of e-government into four stages, namely: (1) Initial stage; (2) Developing stage (3) Advanced stage; and (4) Optimal stage. These four stages are explained in terms of: (a) Technology Complexity; (b) Organizational issues; and (c) Other issues. In other words, the framework considers a multidimensional change along the line of e-government progressiveness. The proposed framework is split into four stages since there are certain key characteristics that enable e-government implementers to differentiate between those for stages. Table 3.1 shows those key characteristics. The next subsections explain the stages of the proposed model in detail.

Table 3.1: Key characteristics of e-government stages

Stage of e-government	Key Characteristics		
	G2C, G2B, G2G Communication	Information Systems	Web Presentation
Initial Stage	Internal communication and static information dissemination	stand alone systems	Basic presence; Publishing generic, static and downloadable information
Developing Stage	Two-way communication	Cooperating	Interactive information exchange, transaction
Advanced Stage	Two-way communication (but single sign-on portal)	Integrated	Dynamic information across departmental functions
Optimal Stage	networked communication	Highly integrated	Dynamic information across jurisdictions

3.5.1 Initial stage

During the initial stage, governments prepare for e-government under their strategic plan. Strategic IT planning, as emphasized by many commentators, is a key ingredient in the successful development of IT resources. Holden et *al.* (2003) examine a survey conducted in the autumn of 2000 of 3749 local governments in the United States. They found that 71% of state and federal Chief Information Officers (CIOs) indicated that their organizations had undertaken some form of strategic planning to assist their deployment of e-government. The British government was aware of this and

considered e-government strategic issues in its strategy (Silcock, 2001). An e-government strategic plan should be clear and cover all related issues. As an example of what might be included in an e-government strategy Silcock (2001, p.91-92) mentioned that Britain's e-government strategy *"envisages that services will be accessed by multiple technologies, including web sites accessible from PCs, public information kiosks, digital television and mobile phones, and call and contact centers"*. Other strategic issues are the security and privacy issues as emphasised by many commentators (e.g. Chen and Gant, 2001; Layne and Lee, 2001).

Through this stage, governments also endeavour to improve their internal IT capacities and focus on back-end systems, such as database systems, web access, Ethernet connections, email, and so on. The Singapore government, for instance, took some necessary steps to prepare for the new transformation (e-government). For example, the broadband cabling of the whole island was promoted to enable high-speed access to all electronic services (Devadoss et *al.*, 2002). In addition, during this phase governments will try to scan and know the total number of services that need to be automated and give each service a suitable priority. A typical example of this exercise was done by the Qatar government during the initial phase of its e-government project. All ministries were studied to ascertain the number of services that could be provided electronically. They found that there are 1350 services that might be implemented but they selected only 22 services as a first stage. Then, those 22 services were given suitable priorities to be developed over a 20 month period.

Other activities that can be pursued during the initial stage are the analysis, design, and modelling of selected business services with the aim of making these business processes ready for the intended change. In other words, it is necessary for any government during this phase to make sure that its business processes are in place in order to provide the required quantity and quality of data. Furthermore, governments might initiate pilot projects that include some of the services that they intend to automate. The aims of these projects are twofold: firstly, to make the stakeholders aware of this change; secondly, to ascertain the type, size and sources of the difficulties in implementing such services in future. For example, the Qatar government practised this exercise by providing a service called "Resident Permit Renewal (RPR)" to some selected corporate and national organizations. This

electronic service was used to enable those selected organizations to renew the resident permits for their staff electronically and through an extranet. Towards the end of this stage, governments will start to create their websites and focus on establishing an on-line presence. The presence of e-government during this stage is very simple and characterized by posting generic and static information that is relevant to the public. Table 3.2 summarises the main characteristics of the initial stage.

Table 3.2: Summary of the initial stage characteristics

Stage of e-government	Stage Characteristics					
	Goals	G2C, G2B, G2G Communication	Technologies	Information Systems	Web Presentation	Examples
Initial Stage	Establishing strategic plan for e-government; Improve ICT capacity; Business processes modeling (BPM); Prototyping; prioritizing e-government services; Customer-oriented focus shift	Internal communication and static information dissemination	PCs, database systems; messaging system (email); Web access; Ethernet web technology; Internet speed improvement	stand alone, other legacy systems	Basic presence; Publishing generic, static and downloadable information	Instructions; announcements; Telephone directories; awareness information; downloadable forms (services forms); etc.

In terms of external functionality this stage is similar to the first stage in many other models such as the Layne and Lee (2001) model or the Moon (2002) model. Most of the services in this stage will be internal; however, the government might publish some static information (some examples are shown in Table 3.2). In addition, e-government might use its web site at this stage as tool to "sell" itself to the public by publishing some critical information about the project itself such as e-government objectives, and expected benefits.

The technological challenges are relatively simple in this stage, since there is no clear picture of what e-government is going to deliver in terms of electronic services. However, towards the end of this stage, those technological challenges might be increased. On the other hand, there are some factors of the organisational and Other dimensions which are more of a challenge than other factors in the same dimension. For example, the organisational contribution factor is very important at this stage. Government officials in the initial stage should have a clear vision of the expected benefits and services of the e-government and the cost-benefit aspects of those

64

services. The expected electronic services and their priority should be clear in the e-government strategy or at least part of the main national IS strategy (if any) since this relieves e-government implementers from the impact of their absence. Other challenges during this stage include scanning, selecting and prioritising services that need to be automated, as well as business processes modelling (BPM) activities. Change management is another management challenge during this phase as such change can often face bureaucratic resistance and slack resource constraints (Ho, 2002). Furthermore, the financial factor is a major challenge since it affects the whole e-government project (e.g. the allocated budget should be compatible with the expectations of the e-government project). Finally, and as noted by Layne and Lee (2001), resource allocation is a problematic issue in a political organization but the impact of this issue will increase in the next stage.

3.5.2 Developing stage

In the developing stage, governments will start building important infrastructures such as the institutional, human, legal and technological infrastructures. The institutional infrastructure will also include building a network of ICTs learning centres across the country. For example, the British government has committed £252 million to creating such networked ICTs learning centres (Silcock, 2001). By building such an institutional infrastructure, governments will be sure that their human infrastructure (e.g. attitudes, knowledge and skills) is ready for the intended change. In addition, the technological infrastructure must be improved as it is the backbone of the whole change process. Technological infrastructure is composed of hardware and software that will provide secure electronic services to citizens, businesses, and employees. Network capacity and communication infrastructure are also critical when integrating information systems across government organisations (Layne and Lee, 2001; Deakins and Dillon, 2002).

Another important activity during this stage is building the legal framework for electronic processes and services. Governments should address a range of security and legal issues and develop strategies that enable them to handle these issues. Legal issues involve creating a legislative framework for data security and integrity, user

authentication, privacy protection and legal liabilities. This might require changes to generic legislation, as well as enabling legislation for individual agencies (Caffrey, 1998,). For example, the Singapore government has promoted its electronic commerce legal infrastructure which was established in 1998 among its public and businesses (Devadoss et *al.*, 2002). Moreover, governments will try to conduct some business processes reengineering (BPR) activities to ready their business processes for the intended automation. This will require an extensive review of governments' business processes and the procedures followed in performing those processes. Towards the end of this stage, government employees, citizens and business partners should be aware of e-government benefits, of the changes that will be caused and of their roles during these change processes. In addition, technological, human, legal, and institutional infrastructures should also be ready for the movement to the next (advanced) stage.

This stage features two-way communication as well as interactive services that will be provided online. Table 3.3 summaries the main characteristics of the developing stage and shows examples of some services that might be introduced during this stage.

Table 3.3: Summary of the developing stage characteristics

Stages of e-government	Stage Characteristics					
	Goals	G2C, G2B, G2G Communication	Technologies	Information Systems	Web Presentation	Examples
Developing Stage	Building human, institutional, and technological infrastructures; building legal framework; Business processes reengineering (BPR); Providing interactive and transactional services	Two-way communication	Electronic data interchange; search engines; digital signature; public key infrastructure	Cooperating	Interactive information exchange, transaction	Customers complaints and service requests; Online payments; fund transfers; renewing some official documents (e.g. resident permit, and licenses); etc.

Governments should be able to maintain and manage the security and privacy issues during this stage as there will be some services that require transactional processes such as online payment. Other challenges include change resistance, change management, acceptance challenges, technological challenges, organizational challenges, financial challenges and BPR challenges. For example, Holden et *al.* (2003) mentioned that 66% of people viewed the lack of technology as a barrier that

restricts e-government adoption while 54%, 42.1%, 33.9% of people view financial resources, issues regarding security and the need to upgrade existing IT respectively as being barriers to adoption. Heeks (1999) also mentioned that the cost of providing desktop computing, software and support in government is around US$ 10,000 per employee.

3.5.3 Advanced stage

During the advanced stage governments will attempt to build up their intra-governmental portal which will enable citizens, public agencies and business partners to access government services from a single point of access (one-stop government or e-government portal). Developing an integrated one-stop government portal requires tremendous resources as well as the most advanced technologies. It requires the integration of various government functional agencies (or ministries) to provide real time services online. Thus, citizens and businesses no longer need to know which ministries are responsible for any individual service within the e-government portal. In other words, functional departmental structures and production processes of public services will not be visible to the e-government portal users. In addition, it is necessary to enable access to public services via different media channels and devices such as Internet, PDA, WAP, call centres, and citizen offices. Furthermore, the government should guarantee the necessary level of security, authentication and privacy in communication and transactions via the Internet, particularly for personal data and information that is highly sensitive. Moreover, it requires a highly skilled development team that can identify and, if required, develop appropriate software for the success of the project, within the constraints of the project. For example, there were problems with the implementation of the Singapore government procurement system when the development team tried to integrate that system with the ERP packages implemented in individual organizations. This was because each organization has its own ERP package, such as Oracle Financials, SAP, PeopleSoft and so on. Consequently, the development team explored these systems and developed an in-house system in order to integrate all of these ERP packages (Devadoss et al., 2002).

This stage also calls for a huge change in organizational responsibilities and duties since governments are fragmented into functional units independent of each other. As an outcome of this phase the internal concerns will be shifted to user satisfaction concerns and to flexibility in service delivery. In addition, public administration will focus on network management with both internal and external parties. Table 3.4 summarises the main characteristics of the advanced stage.

Table 3.4: Summary of the advanced stage characteristics

Stage of e-government	Stage Characteristics					
	Goals	G2C, G2B, G2G Communication	Technologies	Information Systems	Web Presentation	Examples
Advanced Stage	Building governmental intranet (one-stop shop); introducing real time services across functions; horizontal and vertical system integration; networked organizational structure rather than bureaucratic structure	Two-way communication (but single sign-on portal)	Electronic data interchange; electronic filing system; and workflow engines; ERP; and CRM	Integrated	Dynamic information across departmental functions	Electronic services through One-stop non-stop government (single point of access) ; voter registration; market place for vendors

This stage is complex and requires consideration of many issues. From the technological perspective, there are very critical challenges such as security and privacy, lack of development standards, compatibility issues, accessibility problems and availability constraints. Technological issues together with change management issues form critical challenges during this stage. The changes during this phase involve changing the traditional bureaucratic system that focuses on internal productivity, functional rationality, rule-based management, cost-efficiency, and hierarchical control, since this no longer meets the requirements of such highly integrated systems. From the organizational structure perspective, the new paradigm will emphasize teamwork and network communication instead of the top-down management and hierarchical communication used by the traditional bureaucratic structure. Moreover, through this stage, leadership should encourage cooperation and coordination between the related parties rather than the command and control that is practised by the bureaucratic paradigm.

3.5.4 Optimal stage

The optimal stage is an array of cross-jurisdictional, cross-functional and public-private networked virtual organizations where most ultimate objectives of e-government are achieved. It is a very complex stage and very difficult to reach since it requires the integration of many heterogeneous systems and the resolution of conflicts in systems requirements across different public agencies. From a public services delivery perspective, each ministry (or department, public agency, etc) is no longer a stand-alone organization during this stage, since all government organizations will be integrated with each other and with other non-government organizations. This integration allows all the related parties to have intensive information sharing and large scale privatisations and out-sourcing. Furthermore, this stage requires re-evaluation of the concept of governance and management in managing and governing public organizations staff. Functional specialization might not be suitable at this stage as, with the presence and the support of the Internet, the government processes defined by specialization may not be efficient, effective, or citizen friendly (Layne and Lee, 2001). So far, there is no complete (or typical) example that represents e-government at this stage in the literature of e-government (and even in practice). Table 3.5 presents a summary of the optimal stage characteristics.

Table 3.5: Summary of the optimal stage characteristics

Stage of e-government	Stage Characteristics					
	Goals	G2C, G2B, G2G Communication	Technologies	Information Systems	Web Presentation	Examples
Optimal Stage	Introducing highly integrated services across jurisdictions	networked communication	More sophisticated interface and interoperable technologies; very advanced portal technologies; ERPII (supply chain management)	Highly integrated	Dynamic information across jurisdictions	Introducing most government services through e-government portal (One-stop non-stop government portal) ; voting online, market place for vendors

The focus of this stage will be on introducing the most sophisticated and advanced technology as well as on integration processes and the improvement of the internal workflow. Therefore, there are many possible major stumbling blocks for any

government that reaches this stage. This is because it requires institutional as well as ideological changes. For example, political issues might be one the biggest concerns for e-government implementers in this stage.

3.5.5 Stages summary

Figure 3.1 indicates that the e-government development process starts simply but ends with a very complex phase. In addition, the figure shows that the implementation process is surrounded by three implementation dimensions, specifically technological issues, organisational issues and Other issues. At this stage of the study, it seems that although each of these three dimensions has an impact at each stage of development, their impact, significance and complexity are greater in the later stages. Figure 3.1 also shows dotted arrows that indicate the previous stages. The aim of these arrows is to show the reader that the implementation process of e-government does not necessarily follow a true linear progression (i.e. e-government implementation stages may concurrently be taking place). This is because there are no clear measurements that can be used to differentiate between these stages in a linear way. However, this issue might be clearer after conducting the case study and analysing the collected data.
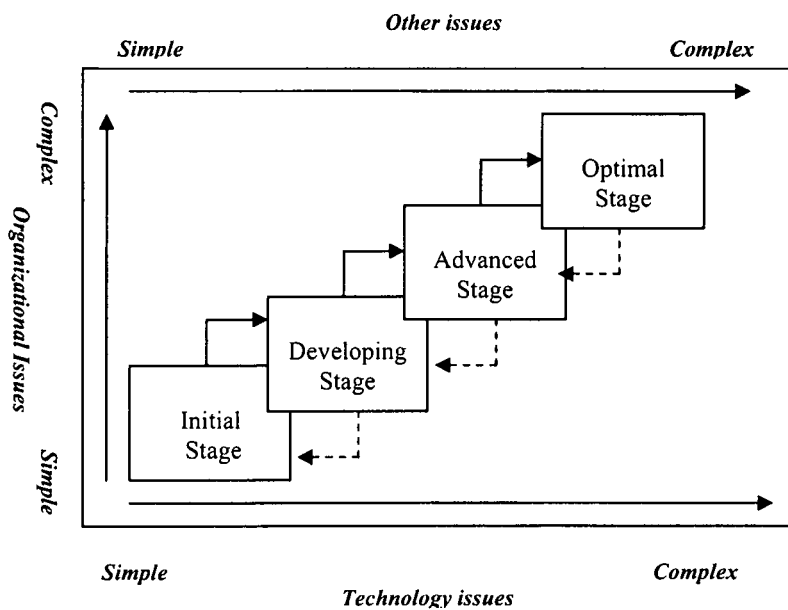
Figure 3.1: E-government implementation framework

3.6 Summary

This chapter proposes an initial model that aims to bridge a multifaceted gap found in the e-government literature. It was found that there is no comprehensive framework that can adequately conceptualise all the features of e-government implementation at a national level. In addition, there was neither a clear picture of the challenges (or barriers) that might restrict the e-government implementation process, nor a framework that takes all those challenges into consideration. Furthermore, there was no attempt to classify those factors that might have critical influences on the implementation process or might generate challenges to its implementers. Moreover, there was no clear agreement among scholars on the number of development stages of e-government, although there are strong indications of agreement between them on its evolutionary nature. Therefore, the researcher has tried to propose a comprehensive model that takes all those issues into consideration and which might help him to structure the study, size its theme, and help him in the data collection and data analysis processes.

As a first step in building the mentioned model, the researcher has proposed a classification of those challenges that might restrict the implementation process of any e-government imitative at a national level. The challenges were divided into three major dimensions (or categories), specifically organisational issues, technology complexity and other issues. The classification was based on the literature of IS implementation and e-government literature. For example, the Doherty and King (1998a, 1998b, 2001 and 2003) studies were used as a base for organisational issues category. After that, and based on the assessment of the mentioned literature (both IS implementation literature and e-government literature), a comprehensive framework for the implementation process of an e-government at a national level is proposed. In other words, the model was based on a synthesis of different suggestions found in the literature together with ideas which have surfaced from actual e-government projects. It is composed of four stages that were described in light of those three dimensions. However, it is worth mentioning that the framework simply provides an exploratory conceptual tool that aims to help in understanding the nature of e-government evolution in those countries that have one level or central government (e.g. many

developing countries). So far this model is a conceptual tool that is based on theoretical considerations and still needs to be tested through case studies of real e-government projects. In addition, the researcher aims to use this framework in gathering and analysing the field study data and at the same time it will be tested and refined by the collected data. By the end of this study, the researcher aims to have a comprehensive and refined framework that conceptualises and informs the complexity of the e-government implementation process at a national level, and which can be used as a roadmap by e-government implementers during that implementation process.

Chapter 4: Research methodology

4.1 Introduction

The aim of this chapter is to present the philosophical assumptions underpinning this research and to introduce the research strategy and the empirical techniques that were applied. The chapter is composed of six sections. First, Section 4.2 describes the research philosophy and the main schools of thought in information systems (IS) research. Then, Section 4.3 presents the research strategy and the rationale behind the selected strategy. The research methodology and research design are discussed in Sections 4.4 and 4.5 respectively. Finally, Section 4.6 summarises the chapter.

4.2 Research philosophy

Research philosophy is concerned with the way in which data about phenomena should be gathered, analysed and used. The literature showed that there are three types of questions that are at the heart of any research act. Answering those questions is essential in the underlying research assumptions which are often characterized by the way that the researcher responds to ontological, epistemological, and methodological questions (Guba and Lincoln, 1994). Ontological questions focus on discerning the nature of reality and what can be known about it. Epistemological questions explore the nature of knowledge and the relationship between researchers and the people or phenomena under study (e.g. objectivist, subjectivist). The methodological questions focus on which methods are appropriate, given the researcher's ontological and epistemological beliefs. Answering these questions depends on a number of different schools of thought. In the context of IS research, there are three main schools of thought which have been widely debated in the IS research literature. These schools are: the positivist school, the interpretivist school and the critical social school (Orlikowski and Baroudi 1991; Galliers 1991; Walsham 1997; Myers 1997; Ngwenyama and Lee 1997). These three schools are summarised in the following sections.

73

4.2.1 Positivist school

In the positivist school of thought, the answer to the ontological question is that reality exists independent of humans and it is objectively given. Thus, researchers must strive for objectivity and discover reality that can be replicated by other researchers (Myers, 1997; Walsham 1997). Positivists not only believe that truly objective research is possible, they also posit that it is the best approach to discovering the world and then making prediction about. Positivists maintain the epistemological position that the only valid way of studying reality is for the researcher to remain objective and detached. Objectivity can be maintained by using scientific methodologies, and by relying on the rules of formal logic and statistical inference to test theories and draw conclusions in an independent and unbiased manner (Myers 1997). In other words, the assumption behind the positivist school is that there is an objective truth existing in the world which can be discovered by using scientific methods where the focus is on measuring relationships between variables systematically and statistically (Cassel and Symon, 1994). The positivist paradigm typically isolates dependent and independent variables with the aim of explaining and predicting the phenomenon under study (Ngwenyama and Lee, 1997; Cassel and Symon, 1994).

4.2.2 Interpretivist school

The emphasis in the interpretivist school is on constructivist approaches where there is no clear-cut objectivity or reality (Cassel and Symon, 1994). Social phenomena emerge from the shared creativity of individuals and cannot be studied objectively. Therefore, the interpretivist school's answer to the ontological question is that reality is a social construction which is constructed by human beings in relation to each other (Guba and Lincoln, 1994; Schwandt, 1997; Lincoln and Guba, 2000). In other words, reality is contingent upon human meaning making, which forms a vital part of the study matter (Walsham, 1995; Lee, 1991). The epistemological position acknowledges the inter-subjectivity between researchers and those being researched since both engage in dynamic interaction that creates the meaning of findings. Access to social reality is gained through constructions such as language, consciousness and shared meanings and hence knowledge is always a human construction and never value free

74

(Myers, 1997). Therefore, the interpretivist school's answer to the methodological question is that research methodologies must cover the complexity of human sense making and deal with interpreting the meanings and behaviour of the observed human actors not only with the collection of objective facts and data (Myers, 1997; Lee, 1991).

4.2.3 Critical social school

In contrast to the positivist and interpretative schools, the critical social school believes that reality is historically constituted and that it is defined through a discourse. Thus, it takes the ontological position that reality is historically constituted and incorporates various forms of social, political, cultural, ethnic and gender domination. The epistemological position is that the researcher and investigated object are interactively linked, and knowledge of the social world is value loaded (Guba and Lincoln 1994). This school's researchers recognize that their ability to conduct their researches are constrained by various forms of social, cultural and political domination so their role is to expose and critique unjust and inequitable conditions in society from which people require liberation and not only to explain (or understand) the social phenomenon (Lee, 1991). The critical social school adapts the interpretive school research methodology with the aim of meeting certain requirements.

Having discussed the main schools of thought in IS research, the research approach that was followed throughout this study can be positioned as broadly interpretive. Interpretive studies usually endeavour to understand phenomena through the meanings that people assign to them. In addition, 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, 1997, p. 4-5). Ontologically, the researcher considers e-government implementation at a national level as a complex process that is taking place within an organizational context and which influences and is influenced by the context over time. E-government can be seen as an interactive and communicative medium that might become deeply embedded within the social practice within a specific organizational context. Being multi-faceted and highly impressionable, an e-government system can be shaped according to many organisational and technological

75

issues, and can affect every aspects of how public organizations deliver their services to citizens, other public agencies and businesses. In other words, e-government implementation at a national level can be affected by a combination of complex issues such as technologies, business processes and human resources (Silcock, 2001). Therefore, it is very important to gain an in-depth understanding of e-government implementation through the meanings that its implementers assign to it and by drawing attention to the required development activities and the number of development stages required to fully implement an e-government system at a national level.

The epistemological posture adopted by the researcher is one that would allow sense to be made of this complex social reality in the light of the inherent influences and restrictions of the technology. Consequently, examining only the objective facts surrounding the technology itself, the implementation process and contextual influences would be insufficient (as in a pure positivist fashion). Thus, the researcher selected a methodology that enabled him to interpret the subjectively constructed meanings and behaviour of actors pertaining to these same issues. In doing so, the research endeavoured to gain a deep understanding of the implementation process of e-government at a national level, and in particular he was curious about the critical issues and challenges that might restrict e-government implementation. In the spirit of the interpretivist school, the researcher's approach throughout the study was to understand e-government implementation at a national level and to build theory, rather than to test established theories or to expose unjust conditions. This was achieved by studying a number of existing theories and implementation perspectives as different 'theoretical lenses' on a complex phenomenon.

4.3 Research strategy

An interpretive case study was selected to be used as research strategy for the reasons mentioned above. This strategy is under the umbrella of the qualitative category. The motivation for following a qualitative approach comes from the observation that a qualitative approach is more beneficial to the area of this study given the descriptions of qualitative and quantitative methods found in the literature. The qualitative approach is useful in the exploration of behaviour and the perspectives and

76

experiences of people studied. Based on existing theories and implementation perspectives, an initial conceptual framework was built for implementing an e-government system at a national level. The framework was based on a synthesis of different suggestions found in the literature of IS implementation process and e-government literature. The aim of building that framework was to structure the study and to avoid the twin dangers of being overwhelmed by data and being drawn into narrative rather than theory building (Hartley, 1994). In addition, the initial framework was used to support further data collection and to establish an exhaustive overview of e-government implementation process at a national level. After that, the study combined evidence from the literature of IS implementation process and e-government literature with the researcher's instrumental case study to narrow the gap between the e-government implementation process in theory (that represented by the mentioned framework) and practice (i.e. the case study findings). Finally, the conceptual framework was refined and proposed in its final shape.

4.4 Research method

The research methods that might be considered in the IS field have been a topic of much discussion, debate and controversy among scholars. There are four approaches available for undertaking qualitative research, namely action research, ethnography, grounded theory and case study approach. The first three methods (i.e. action research, ethnography, and grounded theory) are described briefly in Appendix IV. Whereas case study approach are described below.

4.4.1 Case study approach

The case study method is one of several accepted research methods of performing research in the IS discipline. The case study approach refers to an in-depth study of a contemporary phenomenon using multiple sources of evidence within its real-life context. Yin (1994, p. 13) defines the scope of a case study as follows:

> *"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"*

The case study method has been used by many researchers as a research approach (Benbasat *et al.*, 1987; Duchon and Kaplan, 1988; Lee, 1989; Galliers, 1991; Gable, 1994; Yin, 1994; Cavaye, 1996). It is useful when a phenomenon is broad and complex, where the existing body of knowledge is insufficient to permit the posing of causal questions, when a holistic, in-depth investigation is needed, and when a phenomenon cannot be studied outside the context in which it occurs (Benbasat *et al.*, 1987; Bonoma, 1985; Yin, 1994). In addition, it combines several data collection methods such as interviews, observations, questionnaires and documentary materials. This research method was selected for this study for many reasons. First, there are two main advantages of the case study approach: (1) it enables researchers to let the subject unfold naturally as it gives them the ability to develop and refine concepts and frames of reference while studying the phenomena; and (2) it helps researchers to understand and capture the dynamics of the process of organisational change (Galliers.1992).

Secondly, case studies can be used to describe phenomena, build theory, test theoretical concepts and relationships, or be used for all three (Irani *et al.*, 1999). Given the previously stated aim, research questions and research strategy, this study used the case study approach for the purpose of discovery and theory building. According to Irani *et al.* (1999) case studies have a strong tradition of description and theory building because of their inductive characteristics. In addition, Benbasat *et al.* (1987) argue that although case study research can be used for providing explanations and for testing hypotheses, it is more widely used for exploration and hypothesis generation. Therefore, the researcher used the case study approach to describe and conceptualise the e-government implementation process at a national level, and to identify the main challenges that might restrict or affect that process.

Another reason for adoption of the case study approach is the novelty of the e-government phenomenon, since the method is particularly appropriate for problems where research and theory are at their early, formative stage, as in the case here (Benbasat et al., 1987; Eisenhardt, 1989; Yin, 1994). In addition, the evolutionary nature of e-government, and the complexity and dynamics associated with the e-government implementation process are considered. The literature indicated the

complexity and the evolutionary nature of e-government and that various organizational actors and units could be involved in the process. As mentioned above, the e-government phenomenon has been described as a combination of many complex issues such as technologies, business processes and human resources (Silcock, 2001). Moreover, the case study is able to examine a phenomenon from the perspectives of multiple theories. This was useful for this study since the researcher aimed to examine the e-government implementation process from different perspectives of multiple theories. Finally, a case study was the logical method to adopt because this study focuses on a "how" and "why" questions about a set of contemporary events surrounding the process of e-government implementation at a national level and the challenges that might affect or restrict its implementation (Yin, 1984, Benbasat *et al.*, 1987; Eisenhardt, 1989).

4.5 Research design

This section describes the research design and the significant steps that the research passed through. In addition, it justifies each step that was considered and explains the research activities during each step. The main design components (or steps) that were considered in this study are given below.

4.5.1 Single versus multiple case studies

Having chosen the case study as a research methodology for this study, a major decision in developing the research design was the decision to study either a single, or multiple set of cases (Irani *et al.*, 1999). The decision between a single case and multiple-case studies design approach is one that remains within the same methodological framework, and is simply a choice of research design (Yin, 1994). While a single case study is one in which a single research object/research event is used, a multiple case study is one in which several cases are compiled with the intent of logically replicating the observations (Yin, 1994). In addition, the case study can be embedded as well as holistic (Yin, 1994). A holistic case study is one in which there is but one unit of analysis in the research project, whilst an embedded case study is one in which multiple units of analysis exist (Yin, 1994). A multiple case study design

might be appropriate when researchers seek replication of findings. This will require the examination of several cases, some with similar outcomes and others with different outcomes with the aim of understanding the factors that lead to these similar or dissimilar outcomes. Broadly, this approach is preferred when seeking generalisable knowledge rather than seeking to understand the idiosyncrasies of the particular case (Stake, 1995; Yin, 1994).

In this study, a single case study was used for three main reasons. Firstly, the purpose of this study was to understand the study phenomenon and to build theory rather than to test an established one, and to generate hypotheses rather than to generalize. Secondly, the study was seeking to gain better understanding of e-government the implementation process at a national level and to identify the organisational and technological challenges that might restrict its implementation. Therefore, it was very difficult (or maybe impossible) for the researcher to find and to examine several cases under similar conditions (i.e. at a national level). Thirdly, because of the nature of the selected case study (i.e. an embedded case study), and the limitations of the time and the resources, the researcher would not be able to apply this study to several cases within one PhD study. However, it is worth mentioning that the selected case study was an embedded case study where multiple units of analysis exist: the e-government entity, the participating ministries (or other public organizations) and the individuals who were the key players in the e-government entity and the participating ministries.

4.5.2 Case study site selection

There were three main considerations that were taken into account with regard to the case study selection. First, e-government implementation at a national level formed the main criterion, so the e-government system in Qatar, which was in its early stages of implementation was considered. Secondly, it was chosen so as to overcome any problems related to the access issues. *"Unless you are already known in the organisation or the industry, you are likely to be in the position of 'cold calling' the organisation."* (Hartley, 1994, p. 216). Gaining and maintaining access to the case study was not a problem in this study. The researcher was already known by most of the e-government organisation members particularly by the e-government director and

by most of the e-government project's managers. In addition, the researcher has a good relationship with some of the e-government steering committee members. Furthermore, he was also very well known by some senior managers in some of the participating ministries in the e-government project. This kind of relationship gave him the chance to have the required access and time. In addition, it helped him to be introduced to other key informants. When the researcher gained the required access, he strove to maintain it by continual attention to established relationships and by regular reporting back and discussions with the principal managers in the studied organisations. Finally, there was another important criterion which was to ensure that the appropriate level of analysis is chosen in the light of the intended level of inference. In Qatar, the government implementation process was taking place at a national level as a project that was managed by a separate organisation. However, there were many ministries and public agencies that participated in that project. Not only this but also the e-government steering committee was composed of members who were working in different ministries or public agencies. This called for an embedded case study design (Yin 1989) which allowed analysis of not only the e-government implementation within its organisation as a project, but also analysis of embedded units that are related to the implementation of the e-government system in Qatar.

4.5.3 Developing an initial theoretical framework

"Empirical research without theory produces a series of anecdotes, and the research aimed to avoid this by using theory both to guide the field work carried out and to provide ways of synthesizing the results." (Walsham, 1997, p. xiii)

Based on the literature of IS implementation process and the literature of e-government, an initial theoretical framework was developed. This framework was fully explained in Chapter 3. The aim of creating this initial model was to structure the study and the data collection process. However, the framework at the outset of the study (see Chapter 3) was not the same as the final framework that is presented at the end of the study (see Chapter 9), since the researcher used it to structure the empirical case study and used the results of the case study to evaluate and refine the framework itself. According to Hartley (1994, p. 217), *"theory building is key to case study*

81

analysis but to do this there has to be theory to examine, contest, find supporting or conflicting evidence for". In addition, Hartley (1994) argued that developing an initial framework is necessary even for the most open-ended approach to theory building. Furthermore, Yin (1993) emphasized the importance of such theoretical framework. He stated that *"an appropriately developed theory not only facilitates the data-collection phase of a case but also reflects the level at which the generalization of the case study results will occur"*. However, he mentioned that the generalization here might be characterized as analytic generalization rather than statistical generalization.

4.5.4 Time frame of the study

Another important part of the research design was to decide the time frame needed for the study. Since the study was concerned with the implementation of an e-government system at a national level, the ideal design for the research was to start collecting data at the initiation stage of the implementation process and then collecting data from each succeeding stage in the process. However, the nature of e-government projects differs from other normal IT projects in terms of the time needed for such projects. E-government projects, particularly at a national level need many years to be 'fully' implemented (although there is an argument around the ultimate stage of e-government projects and whether it can be achieved). For example, the e-government project in Qatar started in the second half of 2000 and there was a plan to finish the first part of the project within two years, but the project exceeded the expected time and till the date of finishing the data collection no one could predict the date of reaching its final stage. Therefore, it will be difficult to trace all the stages of the project within the time frame allocated for a PhD study. Consequently, it was decided to focus on the case study activities till the end of the first phase of the e-government project. Thus, an extensive process of data collection was undertaken in Qatar from the beginning of June/2004 till April/2005. In addition, there were three tools that were used to collect the required data about the early activities of the project before June 2004. First, the researcher was in touch with e-government project members from the early stages of the project. Secondly, the researcher strove to collect many newspapers articles that related to the e-government project from the beginning till the date of finishing the data collection process. These articles helped a great deal in

tracing the most important events regarding the e-government project. Section 4.5.5.2 lists these newspapers details. Thirdly, there were many official e-government documents that collected and analysed with the aim of tracing all activities of the project (see Section 4.5.5.2).

4.5.5 Data collection strategy

Having chosen an embedded single case study, the question of methodological approach was still left open. Marshall and Rossman (1999, p. 159) stated that *"case studies rely on historical and document analysis, interviewing, and typically, some forms of observation as data collection."* These three data collection techniques and others were used in this study. In particular, semi-structured interviews, documentations, observations, electronic reports, and fact sheets were used as primary sources of evidence in this study. The aim of using these instruments was to facilitate the process of data collection and to validate the collected data. In addition, the exploratory nature of the research encouraged the researcher to include rather than exclude items for investigation in the instruments. Moreover, many newspaper articles that related to the e-government implementation in Qatar and one TV interview with the e-government director and with some of the public users were collected. Furthermore, the researcher attended some e-government exhibitions, invited workshops and seminars during the period of data collection, whilst informal meetings, visits, and telephone conversations took place. Table 4.1 provides some information about the type of the instruments used and the size of the collected data.

Table 4.1: Types of research instruments used in this study

Semi-structure interviews	Official documents	Observations	Newspaper Articles	TV interview tape	Electronic reports
26*	47	10	35	1	10

* *NB: 26 different persons were interviewed but some interviews involved more than one interview session.*

Interviews

Yin (1994, p.84) argued that *"one of the most important sources of case study information is the interview"*. He suggested that although interviews are subject to the

83

common problems of bias, poor recall, and inaccurate articulation, they are essential since most case studies are about human affairs which should be reported and interpreted through the eyes of specific interviewees. In addition, he emphasized that they also can provide shortcuts to the prior history of the situation, helping the researcher to identify other relevant sources. Hence, interviews were used in this study to get an insight into the thoughts and experiences of people. However, they were used in conjunction with other data collection techniques, specifically with observation and documentations techniques with the aim of overcoming the mentioned shortcomings of this technique.

Qualitative interviews vary in the degree to which they are structured so they can be structured, semi-structured and unstructured (Yin, 1994; Marshall and Rossman, 1999). Yin (1994) suggested other names to these forms of interview technique namely, open-ended, focus and structured (or survey) interviews. Structured interviews entail more structured questions and could be designed as part of a case study. Open-ended (or unstructured) interviews enable researchers to ask respondents for the facts of a matter as well as for the respondents' opinions about events. Focus (semi-structured) interviews allow researchers to approach the research questions in a purposeful way. For the purpose of this study the researcher used this type of interview technique.

> *"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 cannot be planned in advance but must be improvised in a careful and theorized way."*
> (Wengraf, 2001, p.5)

The main advantage of using semi-structure interviews over other types of interviews is their flexibility and the ability to extract more detailed information from the respondents. Also they allow the exploration of those areas where the interviewee perceives gaps, contradictions and difficulties which would not be picked up via pre-set structured questions. Furthermore, they give the freedom to explore, probe, and ask questions that helped the researcher to understand and capture the perspectives of the programme participants, and thus to cover all particular subject areas without predetermining them. An interview guide was developed and used during the data

collection process. The initial framework together with the research questions was used in preparing the initial semi-structured interview guide. The interview guide was reviewed by the researcher's supervisor and then discussed amongst his PhD panel meeting members. In addition, it was evaluated by conducting five pilot interviews.

The pilot interviews were conducted with different interviewees from different managerial levels with the aim of testing the interview questions and the time needed for each interview. The people who were interviewed were: one of the e-government steering committee members, one of the consulting team, one current e-government member, one previous e-government member and one public employee (i.e. e-government user). All the interviewees were asked (e.g. by email, telephone calls or sometimes in a direct visit to the interviewee office) to give their permission for the required interviews and were informed about the research aim. Based on these pilot sessions, the interview guide was refined before being used consistently with all participants. Questions covered many areas, such as general information about the e-government entity and other related public organizations, background for the e-government implementation, current status of the projects, and experiences during the implementation, with special emphasis on problems, barriers or challenges encountered. From those pilot interviews, it was noted that:

1. Most of the interviewees speak English fluently; some studied their degrees in the United States of America and some have US Nationalities.
2. Tape-recording was not allowed by interviewees.
3. It was found that people like to talk about their own experiences, personal problems and interests, and spend a great deal of time in answering one question (i.e. they did not concentrate on answering the questions raised).
4. Some interviewees asked the researcher to mention their names and their opinions explicitly in the research.
5. Some interviewees were not able to answer some of the proposed questions due to their knowledge limitation.
6. It has been noted that there is a need to interview each interviewee twice (at least) in order to answer every question. Each interview would last at least an hour.

7. Most did not mind being interviewed more than once but the opportunity for further interviews was subject to the availability of time.

8. It was observed that some of the raised questions did not suit the managerial level of the interviewees so they were deleted or moved to another managerial level.

9. During the interviews, the researcher took notes and wrote down the interviewees' answers.

Based on the above remarks, the interviews' questions were refined and categorised based on the managerial level of the interviewees. Specifically the following actions were taken by the researcher:

1. First he reordered the interviews questions by putting the most important questions (i.e. those questions that relate directly to the research topic) in the first part of the interview protocol. The aim was to collect the most relevant data within the shortest possible time.

2. The questions were grouped according to the interviewees' level and role within the organisation (e.g. steering committee members, managers' level, developers, public employee, and e-government users) and his/her specialization.

3. Some irrelevant/redundant questions were deleted or moved to another category (i.e. some questions were put to gather more data but they were not particularly relevant to the research topic).

4. The researcher took into consideration the need to interview each respondent more than once, to inform his interviewees about the time issue and receive their permission in advance.

5. It was decided to conduct all interviews in English, because all the respondents speak English very well and they did not have any objection to using it as the main language of the interviews. This gave the interviews an additional advantage since the research concerns technology and most of the technological terminologies used are in English so if the interviewees spoke in Arabic, difficulties in translation may have been encountered. However, the researcher gave the respondents the freedom to answer some of the raised questions in Arabic, if they wished to, and at the same time noted their

answers in Arabic. Then, once the researcher returned to his office he could translate Arabic answers into English.

Appendix I, Part 1 presents the interview guide, which contains the interviews questions for all levels of the interviewed people. Having developed and tested the interview guide, the researcher began to identify his interviewees. Since the main unit of analysis was the Qatar e-government entity, the researcher strove to interview as many people as possible from different managerial levels within that organisation. In addition, the researcher was able to interview many other people from different organisations. However, the sample size in this study was restricted by the availability of many conditions, including the willingness of the interviewees to be interviewed, their availability, the importance of their roles, their managerial levels, the importance of their organisations in relation to the e-government organisation, and the availability of time. Consequently, the sample size was restricted to the 26 respondents who granted the request for participation in this study. The majority of these were from the e-government organisation while the remaining were from other four organisations (ministries), namely the Ministry of Interior (MOI), the Ministry of Municipal Affairs and Agriculture (MMAA), the Ministry of Endowments and Islamic Affairs (MEIA) and the Supreme Communication and Information Technology Council (SCITC). Furthermore, some e-government users were interviewed. The logic behind the selection of those four organisations (i.e. the embedded unit of analysis) is described below. The 14 respondents from the e-government entity (the main unit of analysis) were classified as follows:

o   All the e-government steering committee members (3 members). These steering committee members act as board members that report directly to the Emiri office (i.e. the office of the highest authority in the country).

o   The e-government director (1)*. This is the highest managerial level in the e-government agency.

o   The e-government programme manager (1). This is the second managerial level in the e-government agency.

NB: The e-government director is one of 3 members of the e-government steering committee so does not count as a separate respondent.

o   The e-government projects/departments managers (3). The middle managerial level.

o   The e-government project office manager (1). This position reports directly to the e-government director.

o   The e-government developers (5). Technical department.

o   The e-government help desk operators (1). Network and support department.

The remaining 12 respondents (embedded units of analysis) were classified as follows:

o   The MOI team (3 members). The team involves the IT director*, one member of the network team and another from the development team.

o   The MMAA team (2 members). The IT manager and one member of the development team.

o   The head of the development department in MEIA (1 member).

o   The general secretary of SCITC (1 member).

o   6 public users (6 members).

The MOI was selected to be part of the study because most of the e-government services that were implemented are from that ministry. In addition, the IT director of the MOI is a member of the e-government steering committee and the current e-government director was also the IT director of the IT department in the MOI before occupying his current position. Therefore, the researcher decided to investigate some important issues such as the nature of the relationship between the e-government organisation and the MOI, the reason for selecting the MOI to be the main partner, and the technology used in both organisations. Whereas, the MMAA was selected to be part of the study because it was initially identified and described by e-government officials as a main partner in the e-government project but the researcher discovered that there was no single e-service from the MMAA in the e-government portal. Thus, the researcher wanted to investigate the reason behind the absence of such an important ministry and its services from the participation in the e-government project.

NB: The MOI IT director is one of 3 members of the e-government steering committee so does not count as a separate respondent.

Regarding the MEIA, it was noted that there was only one e-service that was implemented in the e-government project, although there were other important e-services that were neglected or ignored. Hence, the researcher tried to understand the reason and the logic behind the selection of e-services. The SCITC was selected because it was established recently (i.e. in the 3ʳᵈ of August 2004) so the researcher was trying to understand its objectives and the nature of the relationship between SCITC and the e-government organisation. Finally, the researcher interviewed six e-government users. The selection of those public users came as a reaction to complaints that arose during certain events (e.g. the participation of the e-government in some local exhibitions, visiting some private companies, etc) so the researcher tried to clarify certain issues relating to their dissatisfactions with the e-government services. The respondents from each organisation and their details are summarised in Table 4.2 below (Some interview notes presented in Appendix II as examples).

Table 4.2: Respondents' organisations and positions

Organisation Name	Interviewee Designation	Number of Interviewees	Remarks
E-government	Steering Committee Member	3	Decision makers
	Director	1 (already calculated above)	The chairman of the e-government steering committee/ Decision maker
	Program Manager	1	Senior manager
	Department manager	3	Senior manager
	Project office Manager	1	Senior manager
	Developer	5	
	Help desk Operator	1	
MOI	IT Director	1 (already calculated above)	A member of the steering committee mentioned above/Decision maker
	Network team	1	
	Development team	1	
MMAA	IT Manager	1	Senior manager
	Development team	1	
MEIA	Head of Development Section	1	Senior manager
SCITC	General secretary Of SCITC	1	Reports directly to the board of SCITC which is chaired by the Deputy of His Highness the Emir of the State of Qatar.
N/A	E-government users	6	

Table 4.3 below presents the characteristics of the interviewees. It can be noted that the sample has a good spread of age and education background, and the experience of the subjects ensures that they are familiar with the study theme.

Table 4.3: Subject characteristics

Sex:
   o 24 male
   o 2 Female
Age Range:
   o 26 – 51 years old
Education:
   o 2 PhD
   o 2 MBA
   o 1 MSc
   o 17 University Degree (e.g. BSc, BA, etc)
   o 2 Diploma
   o 2 Undergraduates
	Experience:
	   o Average of 13.2 years total experience in their respective areas of specialisation.

The researcher was aware of the importance of increasing reliability in the study; hence he gave the interviewees the possibility to study the questions in advance. This enhanced the quality of the answers since interviewees could give more consideration to their responses. The interviews were conducted using a printed, standardized instrument as an interview guide for semi-structured interviews (See Appendix I, Part1). However, the interview questions were classified based on the interviewees' managerial positions. In other words, the researcher did not ask all interviewees the same questions but rather questions were asked depending on the interviewees' different managerial positions (See Appendix II). However, each question asked was presented in the same way to each interviewee to minimize bias. Furthermore, all interviewees were asked some open questions with the aim of giving them the chance to speak more with more freedom and at the same time there were some unplanned questions that emerged from the interviewees' answers. All the interviewees' answers were typed up by the researcher in draft responses, then each interviewee was given the opportunity to review the final draft of their answers. Appendix II, Part 2 shows an example of how the interviewees' were given chance to update or change their answers. In doing so, the researcher intended to reduce the risk of interview responses being misinterpreted. This procedure was found very useful in overcoming the tape-recording issue since none of the interviewees allowed the researcher to tape-record their interviews.

Documentation

Documents, as a source of evidence, were used to complement the interviews and other sources of evidence. Indeed, documents provided useful additional information to supplement information available from other resources and sometimes highlighted new areas that needed to be investigated further by the researcher (Yin, 1994). Documents in this study involved brochures, regulations, strategies, plans, newspaper clippings, schedules, presentations, and reports (Patton, 1990; Yin, 1994). Documentation, as a complementary instrument, was mainly used to provide background information about the e-government project in Qatar and other related public organizations and describing some specific events during the early stages of the e-government implementation process. The use of this instrument helped a great deal in revealing meanings, developing understandings and discovering insights (Merriam, 1988). However, it is worth mentioning that the researcher was aware of the built-in-bias that might be contained in the collected documents, and which was unknown to him (Marshall and Rossman, 1999; Yin, 1994), hence they were used as complementary source of evidence for the data collection. The collected documents were classified as follows (Appendix III, Part 1 gives some samples of the collected documents):

o Official e-government documents (22 documents); Table 4.4 shows the collected documents' names, their date and descriptions.

o Official e-government presentations (23 documents); Table 4.5 shows the collected project presentations, their dates and descriptions.

o Newspapers articles (35 articles); Table 4.6 list the serial, dates and topics of those newspapers articles.

o Transcript of a formal TV interview with the e-government director (1);

o 10 electronic reports. The researcher was able to obtain 9 electronic reports generated from the e-government database which showed some valuable statistical information about e-government services (Appendix III, Part 2 gives some samples). In addition, the researcher was able to collect a report that details the number of users' problems raised with the help desk operators for each service, from the beginning of that e-service being provided till the date of completing the data collection process.

91

- o   11 government websites. Table 4.7: List the visited websites.

- o   Notes of 26 face to face semi-structured interviews

Table 4.4: Summary of the major collected documents

Document name	Date	Description
EGITOSP	9 July 2001	E-government IT operations standards and policies.
EGBM	11 July 2001	E-government business model
EGCP	4 July 2001	E-government communication plan
EGDPA	19 May 2001	E-government detailed pilot assessment
EGESP	30 June 2001	E-government electronic services plan
EGETLI	16 July 2001	E-government electronic transaction legal issues
EGITAR	9 July 2001	E-government IT architecture report
EGITDS	9 July 2001	E-government IT development standards
EGITSR	19 May 2001	E-government IT strategy report
EGKPIR	4 July 2001	E-government key performance indicators report
EGQMP	26 May 2001	E-government Quality management plan
EGRFPE	15 July 2001	E-government request for proposal for the e-services implementation
EGRFPH	15 July 2001	E-government request for proposal for Hardware and Software
EGRFPP	15 July 2001	E-government request for proposal for program management
EGRFPT	15 July 2001	E-government request for proposal – templates
EGRMP	26 May 2001	E-government risk management plan
EGSV	20 May 2001	E-government strategic vision
EGCPS	13 July 2001	E-government communication plan schedule
EGDSP	15 July 2001	E-government detailed stamped plan
BAM	26 July 2001	Business assessment matrix
EGOS	N/A	E-government organisational structure handout
EGIBH	N/A	E-government Implementation brochure

Table 4.5: Summary of the collected presentations

Presentation name	Date	Description
BMP	12 July 2001	Business model presentation
EGKPIS	20 June 2001	E-government key performance indicators scorecard
EGAPO	14 July 2001	E-government assessment project overview
EGPM	12 July 2001	E-government business model
EGCP	16 July 2001	E-government electronic services plan
EGDPE	16 July 2001	E-government detailed pilot evaluation
EGDSPP	14 July 2001	E-government detailed stamped plan presentation
EGESPP	2 July 2001	E-government electronic services plan presentation
EGETI	15 July 2001	E-government electronic transaction Issues
EGITA	25 June 2001	E-government IT architecture
EGITDS	9 July 2001	E-government IT development standards
EGITOS	7 July 2001	E-government IT operations standards
EGITS	30 April 2001	E-Government IT strategy
EGOP	30 June 2001	E-government organization plan
EGRMPP	16 July 2001	E-government risk management plan presentation

EGSVP	21 May 2001	E-government strategic vision presentation
QEGPS	9 April 2001	Qatar e-government project start up
SCM1	06 May 2001	Steering committee meeting (1)
SCM2	26 May 2001	Steering committee meeting (2)
SCM3	26 June 2001	Steering committee meeting (3)
SCM4	10 July 2001	Steering committee meeting (4)
DMP	29 June 2004	Qatar e-government presentation by its director
EGRP	N/A	[ERP] E-government roadmap presentation

Table 4.6: Summary of the collected newspapers' articles

Newspaper Name	Serial No	Date	Description
ARRAYAH	6656	28-06-2000	Interviews with some of the Planning Council Employees with regard to having an e-government system.
ARRAYAH	6695	05-09-2000	The Deputy of the Emir was on a visit to the e-government team and reviewing the progress of the e-government pilot project.
Al-Watan	2122	25-06-2001	"24 ministries are ready to be linked to the e-government", the e-government director said.
ARRAYAH	7434	14-09-2002	An interview with the General Manager of the Administration and Development Institute. The interview was about the role of the institute in preparing public employees to use the e-government services
ARRAYAH	7451	01-10-2002	A report about the advantages of implementing an e-government system in Qatar
ARRAYAH	7457	07-10-2002	The Emiri Decree with regard to the establishment of the steering committee
ARRAYAH	7457	07-10-2002	"We have completed the first phase of the project and we are preparing for signing the agreements that related to the second phase"; the e-government director said.
Gulf Times	5786	19-04-2003	An article about a system that verifies smart card
Gulf Times	1271	15-05-2003	An article about online visas for tourists
Al-Sharq	5448	17-05-2003	Extensive interview with the e-government director
ARRAYAH	7708	15-06-2003	"An electronic ZAKAT within one month"; the e-government director said.
Gulf Times	5860	30-07-2003	"It's a window of facility", the e-government director said.
Gulf Times	5905	01-10-2003	Qatar, Microsoft sign IT agreement
Gulf Times	1300	11-12-2003	Qatar's e-government project wins prize
Gulf Times	1301	18-12-2003	Qatar Electricity and Water Company work vivis visas go online
Gulf Times	5973	06-01-2004	Online service launched for Qatari job-seekers
Gulf Times	1314	18-03-2004	E-government visa service is a year old
Gulf Times	1317	08-04-2004	Qatar Fuel Additive Company sign licence agreement with the e-government
Gulf Times	6045	19-04-2004	"Four key services through e-portal 'soon'"; The e-government director said.
Gulf Times	6051	27-4-2004	E-government raffle draw winner gets laptop
Gulf Times	6068	22-5-2004	Hamad Medical Hospital launches online renewal of health cards
Al-Sharq	5843	15-06-2004	Qatar post office establishes a new system that is called "follow me"
Al-Sharq	5878	20-06-2004	An interview with the e-government director with regard

			to the smart cards technology
Al-Sharq	5908	19-08-2004	The MOI provides online inquires about visas
Al-Sharq	5920	31-08-2004	Conducting an official summit about the use of the smart cards
Al-Sharq	5940	20-09-2004	An interview with Q-Tel Manager
Al-Sharq	5948	28-09-2004	An interview with the e-government director
Al-Sharq	5961	11-10-2004	A report about illiteracy percentage in Qatar
Al-Sharq	5991	10-11-2004	The use of SMS by the commercial permits department
Al-Sharq	6011	30-11-2004	The Minister of Education approves the link between all the databases amongst the different departments
Al-Sharq	----	12-12-2004	Electricity shutdown in many areas of the country
Al-Sharq	6027	16-12-2004	The immigration/labour committee conducts a training program for the new electronic system
Al-Sharq	6031	20-12-2004	The results of the 2004 population census
Al-Sharq	6124	23-03-2005	Online student registration
Gulf Times	6289	30-03-2005	Emir urges 'Serious will for reform' in the region

In addition to the above documentations, many websites of the participating ministries and other public agencies were visited during the data collection period (i.e. June/2004-Apri/2005) and analysed. The researcher used a fact sheet tool (see Appendix I, Part 2) to collect some valuable information about those websites. Table 4.7 shows all the websites that were visited by the researcher. A fact sheet instrument was also used to collect technical information and statistical data about e-government services, transactions and usage.

Table 4.7: List of the visited websites in the period (June/2004-Apri/2005)

Ministry name	Its Website link
Ministry of Foreign Affairs (MOFA)	www.mofa.gov.qa
E-government website	www.e.gov.qa
Ministry of Interior (MOI)	www.moi.gov.qa
The Planning Council	www.planning.gov.qa
Ministry of Municipal Affairs and Agriculture (MMAA)	www.mmaa.gov.qa
Ministry of Civil Service Affairs and Housing (MOCSAH)	www.mcsah.gov.qa
The Emiri Diwan Website (EDW)	www.diwan.gov.qa
Ministry of Education (MOE)	www.moe.edu.qa
Ministry of Public Health (MOPH)	www.hmc.org.qa
Ministry of Economy and Commerce (MOEC)	www.mec.gov.qa
Ministry of Endowments and Islamic Affairs (MEIA)	www.awqaf.gov.qa

Observation

"Observation entails the systematic noting and recording of events, behaviors, and artefacts (objects) in the social setting chosen for study." (Marshall and Rossman, 1999, p.107)

Observation was one of the main research instruments used in the case study where

94

detailed descriptions of the setting and the meanings and values of its inhabitants needed to be explored. Yin (1994) divided observation into two main categories, direct observation and participant-observation. Direct observation takes place when a researcher makes a visit to the case study site, and this can range from formal to casual data collection activities. While participant-observation takes place when a researcher considers himself as an active observer by assuming a variety of roles within a case study situation and may actually participate in the event being studied.. In this study, the researcher used only direct observation but both types, formal planned observation as well as casual unplanned observation. He used his interview notebook to record case study notes (two samples are available in Appendix IV). Indeed, observations have helped the researcher to gain a 'rich picture' of the case study and allowed him to see processes at work, rather than depending on his respondents' observations. During the data collection period, six planned observations and four unplanned observations occurred.

Although the researcher was known by some key members of the e-government development team, he was introduced by the e-government director to those managers who report to him directly. After a few weeks the researcher started to establish good relationships with most of the middle level managers. Those managers also introduced the researcher to their respective teams and asked them to cooperate with him. Then, the researcher become known by most of the e-government development team. During some of his visits, the researcher explained his desire to some members of the development and support teams to visit them from time to time and conduct some observation sessions. The researcher told them that the aim was just to gain an understanding of some events that take place inside the e-government building and during some other events taking place in some other places, such as exhibitions and invited workshops. His request was welcomed and he started to conduct his observation sessions. However, before conducting any observation session, the researcher called or visited the e-government team and informed them in advance of the date and time for any intended observation. There were also some unplanned observations that took place accidentally during his visits to the case study site. As mentioned above, six planned observations and four unplanned observations took place during this study. The planned observations are as follows:

o   Observation 1: Dealing with customer requests; how the help desk operators deal with any new customer request.

o Observation 2: Subscription request; how the e-government customers subscribe and what main requirements are of them.

o Observation 3: Customer complaints; how the help desk operators deal with customer complaints

o Observation 4: Vendors Offers; how the e-government management deals with the vendor offers.

o Observation 5: Public reaction towards the e-government during formal exhibitions; how the public react towards the e-government during formal e-government exhibitions

o Observation 6: The use of the e-government services; *how e*-government customers use the available e-services

The unplanned observations involve:

o Observation 7: Electricity shutdown problem (2/12/2004);

o Observation 8: Unsatisfactory indications about the e-government services noted from e-government users;

o Observation 9: The delay in solving customer problems;

o Observation 10: The ill-feeling amongst e-government employees about the way e-government was managed.

These observations are used to support the analysis and the discussion of the collected data in Chapter 6, 7, and 8.

4.5.6 The end of data collection process

"When you have collected enough data (...) you will have to leave" (Hartley, 1994, p. 221).

The researcher tried to spend as much time as possible in the case study until he answered the research questions and achieved its aim. Specifically the data collection exercise started at the beginning of June/2004 and ended by the end of April/2005. The case study site was left when the researcher perceived that the empirical returns had become marginal. In addition, it is worth noting that the date specified for the steering committee by the Emiri decree to finish the first phase of the project was the 31st of March 2005. Thus, the researcher planned to stay in the case study site a month

after the specified deadline for the steering committee, even though staying this extra time extended the data collection period almost beyond the length feasible within the other constraints of completing the PhD.

4.5.7 Data analysis

"The analysis of case study evidence is one of the least developed and most difficult aspects of doing case study" (Yin, 1994, p.102)

Data analysis involves examining, categorizing, tabulating or otherwise recombining the collected data with the aim of finding answers to the stated research questions (Yin 1994). Hartley (1994) suggests that data analysis and data collection are developed together in an iterative process that allows for theory development. However, before discussing the data analysis techniques that were used in this study it is important to draw a general strategy for the data analysis process. The role of that strategy was to help the researcher to choose among different techniques and to complete the analytical phase of the research successfully. Yin (1994) states that there are two main strategies which are: relying on theoretical propositions and developing a case study description. Relying on theoretical propositions is the first and more preferred strategy since the original objectives and design of the case study presumably are based on such propositions, which in turn reflect a set of research questions, reviews of literature, and new insights. Whereas developing a case study description strategy refers to the development of a descriptive framework with the aim of organizing the case study. This strategy is less preferable than the use of the theoretical propositions strategy but it serves as an alternative when the theoretical propositions strategy is absent (Yin, 1994).

This study relied on theoretical propositions which helped the researcher to focus on certain data and ignore other data. Having chosen the general strategy for the data analysis phase, it was very important for the researcher to decide on specific analytic techniques that will be used as part of the selected general strategy. The initial framework that was developed in Chapter 3 prior to the data collection exercise was a very useful tool in structuring and in guiding the data collection and data analysis processes. In addition, some other data analysis techniques, such as content analysis, cross-interview analysis, interview guide approach, coding, and classifications, were

used in this study. However, content analysis strategy was mainly adopted as an analytical approach for this study with the aid of NVivo software. Content analysis is *"the process of identifying, coding, and categorising the primary patterns in the data"* (Patton 1990, p. 381). In particular, the researcher followed broadly the three streams (i.e. data reduction, data display and data conclusion drawing) that were suggested by Miles and Huberman (1984, p.22). They suggested those streams *"as interwoven before, during and after data collection in parallel form, to make up the general domain called "analysis""*. Figure 4.1 shows the main components of the data analysis approach that was suggested by Miles and Huberman (1984) and which was followed in this study.
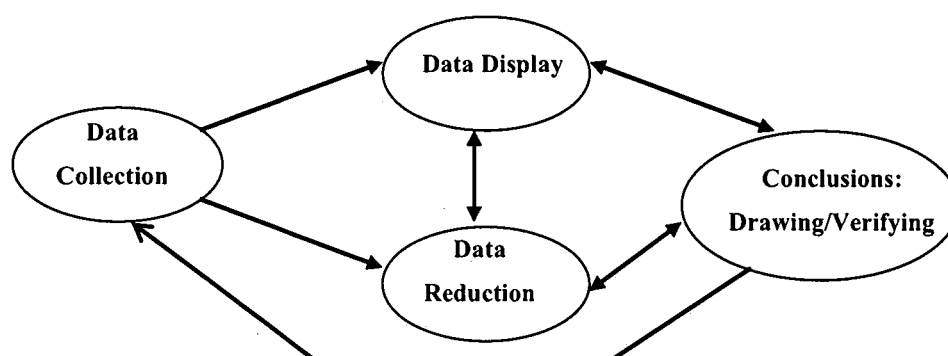
Figure 4.1: Components of data analysis; interactive model; adapted
from Miles and Huberman (1984, p. 23)

As a first step in the data analysis process, the initial framework and the interview guide were used in identifying the primary patterns in the data. The researcher started reading through all the collected data (i.e. official documents, interviews notes, observation notes, electronic reports and other official brochures, and local newspapers articles) with the aim of creating a rich picture of the whole case study including its embedded units of analysis. Then, the data was coded according to the themes identified by the initial framework and the interview guide. The collected data were then analysed based on the themes that emerged from the literature review prior to the data collection. Any new theme which occurred from the data analysis was added to the mentioned framework and treated carefully. In other words, new themes were separated, classified and added to their respective classes within specific categories or sometimes by creating new classes within the same categories.

Coding, categorising and classifying the identified pattern were carried out using the NVivo package. As a result of this step, the volume of the data was reduced and

presented in an organised way (i.e. data reduction). According to Miles and Huberman (1994), the data reduction process refers to the process of selecting, focussing, simplifying, abstracting, and transforming the data. Specifically, they defined data reduction as *"a form of analysis that sharpens, sorts, focuses, discards, and organises data in such a way that "final" conclusions can be drawn and verified"* (Miles and Huberman 1984, p. 21).

After that, the researcher moved to the second major flow of analysis activity which was "data display" (Miles and Huberman, 1984). Data display is concerned with the visualisation of the data. The researcher used various display techniques such as the creation of tables and matrices of categories, narrative text, quotation, figures, screen shots, tabulating the frequency of different issues and examining their complexity and their relationships (Gibbs 2002, Miles and Huberman, 1994; Patton, 1990; Yin 1994). Tables are *"a convenient way to make comparisons across different subgroups of the data set and between different attributes of individuals"* (Gibbs 2002, p.187). Indeed, tables of data, also referred to as matrices, helped the researcher much in summarising, combining or separating, comparing and contrasting, and reporting findings visually. In addition, one of the major advantages of using matrices is that they increased the reliability of the research so that any later researcher may repeat the process and might duplicate the findings (Miles and Huberman, 1994). The researcher also used direct quotes from the case study with the aim of adding qualitative insights and providing support to the data interpretation (Paton, 1990).

The third major flow of the data analysis process is the need to organise the researcher's thoughts and to get focus. That means *"finding a structure that can bring together all the researcher disparate jottings into a coherent 'story'"* and drawing meanings from the displayed data (Gibbs 2002, p. 222; Miles and Hubreman, 1994). In this study, the researcher used various analytical techniques with regard to this step. This involves classifications and categorisation of the data, noting regularities and patterns, deriving explanations, and reviewing and rechecking findings amongst colleagues and the researcher's supervisor. In addition, he was always relating all these processes to the initial framework and at the same time enhancing and revising the framework with the analysed data. Appendix IV explains how the researcher used NVivo software in the data analysis process.

4.5.8 Criteria for judging the research quality

This section discusses the standard criteria, namely validity and reliability which will be used for evaluating the quality of this research. According to Yin (1994), there are three types of validity that are often used in social science research, specifically construct, internal and external validity. Reliability is also another criterion (or objectivity criterion) for carrying out unbiased research whereby the researcher strives to remain neutral to the phenomenon studied. Table 4.8 summarizes these criteria, their objectives, different tactics that need to be followed to meet these criteria and in which phase they have to be accomplished.

Table 4.8 Conventional criteria for judging the adequacy of research;
(adapted from Yin (1994, p.33))

Criteria	Objective	Tactic	Research Phase
Construct validity	Establishing correct operational measures	-Use of multiple sources of evidence -Establish chain of evidence -Have key informants review draft case study report	Data collection Data collection Composition
Internal validity	Establishing causal relationships	-Do pattern matching -Do explanation-building -Do time-series analysis	Data analysis Data analysis Data analysis
External validity	Establishing the domain to which a study's findings can be generalized	-Use replication logic in multiple case studies	Research design
Reliability	Ensuring that the operations of a study can be repeated with the same results	- Use case study protocol - Develop case study data base	Data collection Data collection

However, the conventional criteria presented in Table 4.8 were built based on the ontological and epistemological assumptions of the positivist paradigm, presented in section 4.2.1 (Guba and Lincoln, 1989). Therefore, many scholars argue that these criteria cannot be expected to apply to interpretive research. Thus, they emphasize that there is a need to develop new criteria for judging this type of research. In an attempt to address this, Guba and Lincoln (1989) developed a set parallel to those conventional four criteria presented in Table 4.8 for judging interpretive research. These parallel criteria are presented in Table 4.9:

Table 4.9 Parallel criteria for judging interpretive research
(adapted from Guba and Lincoln, 1989)

Parallel criteria	Objective	Tactic
Credibility	Establishing the match between the constructed realities of respondents (or stakeholders) and those realities as represented by the evaluator and attributed to various stakeholders	-Prolonged engagement -Persistent observation -Discussion of data and results with external peers and informants (member checks)
Transferability	Offering a sufficiently detailed account of the findings to enable the reader to judge how these findings can be transferred to other contexts	Thick description
Dependability	Ensuring the stability of the data over the time (i.e. Documenting any methodological changes and the interpretive process itself so that the reader can follow the process and the choices made by the researcher)	Making the research process explicit
Confirmability	Ensuring that the data, interpretations and results are rooted in the context and not just a result of the researcher's imagination	Making data available Describing the logic used for moving from data to the final results

According to Guba and Lincoln (1989), these parallel criteria (credibility, transferability, dependability and confrimability) are intended to replace the conventional criteria of internal validity, external validity, reliability and objectivity, respectively.

Credibility criterion

The credibility criterion is developed to replace internal validity. Internal validity is concerned only with explanatory case studies since it aims to ascertain that the causal relationships established are 'true' (i.e. *"in which an investigator is trying to determine whether event x led to event y"*) (Yin, 1994, p.35). However, the reality (see section 4.2.2) can only be seen as a social construction in the interpretive perspective. Thus the credibility criterion moves the focus from establishing causal relationships explaining an objective reality, to establishing the match between the constructed realities of the respondents, and those respondents as represented by the investigator and attributed to the stakeholders (Guba and Lincoln, 1989). This can be done through ensuring involvement at the site of the inquiry, and through discussing data and results with external peers and respondents (member checks).

In the process of the research design, this study started with a literature review of prior theories then the gap was identified and an initial framework was developed. Hence, the researcher had a pre-understanding of the phenomenon of e-government implementation. While in the process of data collection and data analysis a triangulation technique was used to enhance the credibility of the case study findings. Three main sources of evidence were used in the data collection with the aim of increasing the accuracy of the research findings (Patton, 1990, Yin, 1994). Patton (1990, p. 464) suggested four types of triangulation:

o *Methods triangulation*: method triangulation (i.e. the use of three main data collection instruments) used in this study to check the consistency of the case study findings.

o *Triangulation of sources*: the research findings were collected from three different sources, namely interviewees, documentations, and the researcher's observations.

o *Analyst triangulation*: the research findings were checked by the researcher, his supervisor and his panel meetings members.

o Theory/perspective triangulation: the researcher used multiple perspectives (theories) to interpret the data. This issue was discussed in Chapters 2 and 3.

Transferability criterion

The transferability criterion is developed as parallel to external validity or generalizability. External validity *"deals with the problem knowing whether a study's findings are generalizable beyond the immediate case study"* (Yin, 1994, p.35). The transferability criterion aims to give the reader the chance to judge how the research findings can be transferred to another context through offering a sufficiently detailed account of the findings. Consequently, while the burden of proof for claimed generalizability is on the researcher, the burden of proof for claimed transferability is on the receiver (Guba and Lincoln, 1989). Table 4.9 shows that the main tactic for establishing transferability in this research was the use of thick (or detailed) descriptions. This research differs from quantitative studies, which depend on statistical generalisation. Since this is a qualitative study, the database is crucial to determining the possibility of transferring the findings to other similar cases (Lincoln

and Guba, 1985). Transferability was achieved in the research design and data analysis of this study. As mentioned above, this study provided a thick description of the case study design and findings. In addition, content analysis technique was applied and particular procedures for coding were undertaken using themes identified in previous literature with the aim of achieving transferability. Furthermore, the data was analysed in the light of the developed initial framework which was developed based on a synthesis of different suggestions found in the literature of IS implementation and e-government literature. Finally, findings were constantly discussed with reference to the related literature.

Dependability criterion

The dependability criterion is developed as parallel to the conventional criterion of reliability. The reliability aims to ensure that the same findings would be arrived at if a later researcher conducted the same study following the same procedures (Yin, 1994). In other words, ensuring the stability of the data over time (Guba and Lincoln, 1989). However, based on the interpretive school perspective applied in this study, the researcher's understanding was developed through a hermeneutic process that involves continuous interaction with the data so it cannot be expected that a later researcher would arrive at exactly the same findings. This is because data on real-life events might not come together into one consistent picture as different researchers will not collect the same data. At the same time, this difference can provide a valuable source of information about the case studies investigated.

As an alternative, the dependability criterion is developed to ensure that decisions and interpretations made by the researcher are documented so that they can be traced by outside reviewers. The tactic used in this study is shown in Table 4.9 which is making the research process explicit as this will enable other researchers to follow in detail the process used by the researcher for arriving at his conclusions. As mentioned earlier, a pilot study was conducted to test the interviews questions, the time needed for each interview and the suitability of the questions to the interviewees' managerial levels. Based on the pilot study results, the interview guide was refined and made ready to use in the data collection process. Moreover, a case study database was

established to increase the reliability and the general quality of case study research. As recommended by Yin (1994) and Patton (1990), the database of this research involves: (1) notes of all interviews which were stored electronically; (2) interview guide; (3) original copies of the case study documentation. Most of these documentations are stored electronically; (4) an electronic observations document; and (5) an electronic database for the data analysis notes (i.e. NVivo and word processor copies).

Confirmability criterion

The confirmability criterion is developed as parallel to the conventional criterion of objectivity. Many interpretive researchers argue that there will always be some form of interaction between the researcher and the phenomena being studied in the interpretive research so this must be accepted as a natural part of the research process, as long as the nature of this interaction is documented explicitly. The confirmability criterion is developed to ensure that the data, interpretations and findings of the inquiries can be tracked to their sources, and are not simply the product of the researcher's imagination (Guba and Lincoln, 1989). Table 4.9 showed that the main tactic for obtaining this is by making data available for inspection by others, and by describing the logic used for moving from the data to the final findings (or conclusions). This tactic was followed in this study. Most of the data that related to this research are available electronically. The small non-electronic part of the data is filed and stored as a hard copy database.

Construct validity criterion

Although Guba and Lincoln (1989) do not propose any specific criterion parallel to construct validity, it can be seen that these four parallel criteria together can cover this. The construct validity criterion aims to establish correct operational measures for the concepts being studied (Yin, 1994). As shown in Table 4.8 three tactics are available to increase construct validity. These tactics are considered to be important for this study and were fulfilled as discussed above.

4.5.9 Ethical considerations

Ethical considerations were a significant factor in conducting this study and hence the researcher strove to protect the individual participants and their organisations from harmful consequences from the research activities. Ethical considerations require a careful treatment of respondents and should consider many major ethical issues that include privacy, deception, anonymity, accuracy and confidentiality (Miles and Huberman, 1994; Neuman, 2000). These ethical issues were achieved by: (1) making respondents aware of the research aim prior to the interviews; (2) assuring their privacy and anonymity; (3) giving them the chance to withdraw from the case study; (4) giving them another opportunity to back-out of the research during the review of the interview notes, by either modifying the interview notes or deleting any unwanted part of the interview notes/questions; (5) The privacy of the individuals was protected by conducting interviews in a private, closed office, by transcribing interviews away from research participants and colleagues, by referring to individuals by their nick names which were selected by the researcher and storing those nicknames in an electronic file together with the real interviewees names in a very secure folder maintained only by the researcher; (6) Electronic versions of interview notes were kept on the researcher's laptop; and finally, the researcher tried to behave in a manner that would not harm the integrity and reputation of the interviewed organisations.

4.6 Summary

This chapter explained the research strategy and the methodological steps that were used in this study. It started with describing the research philosophy and the main schools of thought in information systems (IS) research. In the light of those main schools of thought, the research approach that was used throughout this study was positioned as broadly interpretive case study. In addition, the chapter sheds light on the research methodology and the rationale for choosing it. Also, a detailed research design that covers all issues related to the research methodology was explained. This included a description of the five criteria that were used for judging the research quality and a discussion of the ethical considerations that were taken into account throughout the case study.

Chapter 5: Case study background

5.1 Introduction

There are many reform programmes that are affecting the Gulf Region and the Arab world as a whole. Arab countries are now at a crossroads where they cannot move back and moving forward is a complicated task. However, as mentioned in Chapter 1, there were some countries in the Gulf Region that began the reform of their governments, society, education, and culture before 9/11. As a matter of fact, the State of Qatar was one of the first countries in the region to start the reform process. It was started in 1995 with the peaceful transfer of power to the Emir, His Highness Sheikh Hamad Bin Khalifa Al-Thani. His Highness the Emir with his wisdom, insight and vision as a leader has highlighted the main points of conducting such a reform programme. The main points can be extracted form His Highness speech at the opening session of a conference on democracy and reform in the Arab World, which was held in Doha between the 3rd and 4th of June 2004; he said:

> *"The reform culture we mean calls for implanting solid values that fights corruption and consolidates transparency, builds institutions and resorts to law, respects the citizen and safeguards rights, broadens the scope for dialogue and opens the way for sharing responsibility. It is not a culture for the few but for all; or for the governed alone but for the governor as well, and as Imam Ali Bin Abi Taleb said, "the subjects would not behave righteously unless their leaders do so. Reform is not a process that starts and then ends; it is an integrated method of thinking, and a comprehensive way of life; it is about time that our nation lives it and adopts it to be able to lead its way amongst the advanced nations. These nations did not reach their status because they reformed themselves once, but because they have preserved what they had reformed time after time, and they are keen to correct their mistakes publicly rather than in the dark." (EDW, 2710912005)*

In line with His Highness vision, many projects were initiated such as education reform, the national administrative development project, and the national e-government project. Since this study is dealing with the implementation of an e-government system at a national level, this chapter aims to briefly give an idea about the country where the case study of this research was conducted. In particular, this chapter is divided into four sections. Section 5.2, presents a general background about

the State of Qatar. Then, Section 5.3 highlights the Qatar e-government and its phases, strategic vision, goals, involved parties and its future. Finally, Section 5.4 summarizes this chapter.

5.2 The state of Qatar

5.2.1 Location and area

The State of Qatar is a peninsula with a strategic position that is situated halfway along the west coast of the Arabian Gulf between latitudes 24.27°-26.10° North and longitude 50.45°-51.40° East. Qatar borders Saudi Arabia on the southwest and has a number of important islands such as Halool, Shira'aw, and Al-Ashat. The total land area of Qatar is approximately 11,431 square kilometres (i.e. slightly more than half of Wales area) with a topography that is composed of a rocky flat surface with some limestone outcrops.

5.2.2 Population

According to the results of the 2004 population census, the population of Qatar amounts to 744029 inhabitants compared to 522023 inhabitants in the last census conducted in 1997 (Al-Sharq Newspaper, 20/12/2004). A minority (20%) of the population are citizens while the rest are residents (e.g. other Arabs, Pakistanis, Indians, and Iranians). Residents are those who live in Qatar but they are not Qataris. In addition, around 83% of inhabitants reside in Doha, the capital city, and its main suburb Al-Rayyan. The number of the people who use computers in Qatar amounts to 244126 inhabitants, a majority (80%) of these have internet access (Al-Sharq Newspaper, 20/12/2004). In other words, 26.2% of the population have access to and use the internet. Arabic is the official language, but English is also widely spoken.

5.2.3 Economy

Qatar's economy is dominated by oil and natural gas, which accounts for 70% of its export income. Comparing its economy with its population, Qatar has been considered as

one of the richest countries in the world. *"Qatar's rapid economic growth is fast enabling it to reach the top ranks of the wealthiest countries in the world, through the measure of per capita incomes. In 2003, Qatar's GDP* [Gross Domestic Product] *per capita reached a high of $31,897 with the 2004 figure showing a record level of $36476. Qatar's GDP capita will remain at enviable levels in the coming years"*(QER 2005, p. 6). Oil and gas revenues helped the country in diversifying its economy, which includes the development of chemicals, fertilizer industries, cement, steel, and banking.

5.2.4 Political system

Qatar starts its new era and modern history with the rule of His Highness Sheikh Hamad Bin Khalifa Al-Thani who succeeded his father in 1995. The new era is characterized by many features, particularly the wider public participation in decision making. His Highness the Emir is the Head of the constitutional authorities, holding both legislative and executive powers. In addition, there is a council of ministers which assists in implementing the general policies of the State. HH the Emir appoints the prime minister and ministers, accepts their resignations and relieves them from their posts by Emiri Decrees.

The prime minister chairs the sessions and discussions of the council of ministers and supervises work coordination between different ministries with a view to achieving unity and integration among all government organs. In addition, the prime minister signs, on behalf of the council of ministers, the resolutions issued by the council. According to the provisions of this basic statute, the prime minister submits to the Emir, for ratification and issuance, the resolutions taken by the council of ministers and pertaining to matters to be decided by Emiri Decrees. The council of ministers, being the supreme executive authority in the country, is mandated to monitor all the internal and external affairs within its jurisdiction in accordance with the provisions of the basic statute and the law. At present, there is no form of election to these governing bodies, although this is under consideration. For example, the Qatar government is to hold parliamentary elections before the middle of the year 2006. This issue was confirmed by His Excellency the first Deputy Prime Minister and

Foreign Minister Sheikh Hamad bin Jassim Al-Thani. He said *"Though the election committee is not ready at the moment, the government is trying its best to hold the elections by the end of this year or definitely not later than the middle of next year"* (Gulf Times, 30/03/2005)

5.3 Qatar e-government in brief

5.3.1 Overview

With the presence of the internet in the mid 1990s, most of the ministries and public agencies in Qatar started thinking about having an online presence and providing some web services for their visitors. They started with giving some limited information services and generally served as public information sources. Gradually, those websites were able to introduce some good interactive services. However, none of these websites enabled visitors to conduct complete and secure online transactions, such as obtaining visas, passports, birth certificates, or driving licences. These transactional services appeared in the presence of the so called e-government project. Before, the presence of the e-government project, there were some government to government (G2G) IT activities and another national IT project that was called the Network of National Information (NNI) project. A detailed description of the development of the web services in Qatar and other IT initiatives is presented in Chapter 6. However, the following sections will give an overview of the e-government development phases, its strategic vision and goals.

5.3.2 E-government project phases

Phase I

According to the e-government director, the e-government project has gone through three main stages, the pilot phase, the evaluation (assessment) phase, and the implementation phase (Al-Sharq Newspaper, 17th May 2003). His Highness the Emir gave the green light to start the first phase (i.e. pilot project) of the e-government in July/2000 with the aim of proving the feasibility of the e-government concept and to build a foundation for a flexible, scalable and robust e-service platform for the

government of Qatar (E-government director, Al-Sharq Newspaper 17th May 2003). The service of Residence Permits Renewal (RPR), provided by the Department of Immigration and Passport, was chosen randomly to be developed electronically and to serve as the pilot project. The pilot project was contracted, executed and implemented in a very short time, with only two months from conception to completion. Mr. DS stated:

> *"The e-government pilot project was not planned as required but fortunately we succeeded in delivering the project on time. I remember that when we started there was not any service in our plan so we randomly selected the Residence Permit Renewal service to be the pilot project"*

There were three main parties involved in this pilot project, the MOI, Qatar National Bank (QNB) and Qatar Central Bank (QCB). Their roles were developing and providing the service, developing a payment gateway for the service and hosting the project itself, respectively. In addition, it was supervised by an executive committee that represented some ministries and was directed by one of the of the executive committee members. The executive committee was under the supervision of the Planning Council. That committee had decided to contract with a third party software firm, BROKAT, and its subcontractors STS and Ideal Solutions (a local Qatar company) to perform the implementation, and another third party firm (Booz – Allen and Hamilton, Inc) to manage the project. The selection of those vendors was made without a competitive bid processing due to the time limitation.

The pilot project architecture was based on the BROKAT twister web server and interface middleware, BROKAT Xpresso security system, and Vasco Token password validators. In addition, Microsoft's SNA Server was chosen to provide a connection to the MOI systems. The implementation was accomplished by Ideal Solutions in two parallel tracks, the application development track, and the interface and connectivity implementation track. The testing processes were carried out by the MOI staff. After that the RPR application was deployed on schedule and became available electronically on the 3rd September 2000.

Other than MOI, Qatar Armed Forces was the first user who went on-line on that date. In late September 2000, another eight public agencies joined the application as users.

110

In May 2001, the total numbers of public agencies/ministries that used the application was 14. In the same month, there were around 6300 transactions that had been processed as an accumulated figure since the start of the pilot project. However, by the end of the pilot project, the total numbers of transactions increased to 67000 transactions and caused financial movement worth 74 million Riyals. The e-government director stated:

> *"The project in its pilot phase that ended last June performed 67 thousand electronic transactions and triggered financial movements worth 74 million Riyal which was transferred electronically."*(Al-Sharq Newspaper, 20th June 2004)

Phase II

The evaluation of the e-government pilot project and the readiness assessment of the ministries and other public agencies represented the second phase. An international consultancy firm was contracted to review the pilot project and to conduct a comprehensive readiness exercise with aim of evaluating the technical adequacy of the e-government pilot implementation, learn its lessons and propose recommendations for improvement of subsequent e-service implementations, and to assess the readiness of the government ministries and other public organisations to commence electronic transactions (i.e. to implement online transactional services). Generally, the consulting group found that the pilot project was successful as a proof of concept. However, they found that it was not an adequate model for future e-government application development.

With regard to the readiness exercise, the consulting group found that there were 22 service groups (37 individual services) that could be implemented in the first stage of the real e-government project. These 22 service groups had been approved by the e-government executive committee to be developed within the 20-month timeframe. However, the Emiri decree gave them 30 months to implement those services. Figure 5.1 shows these 22 service groups and their providers (i.e. owners).
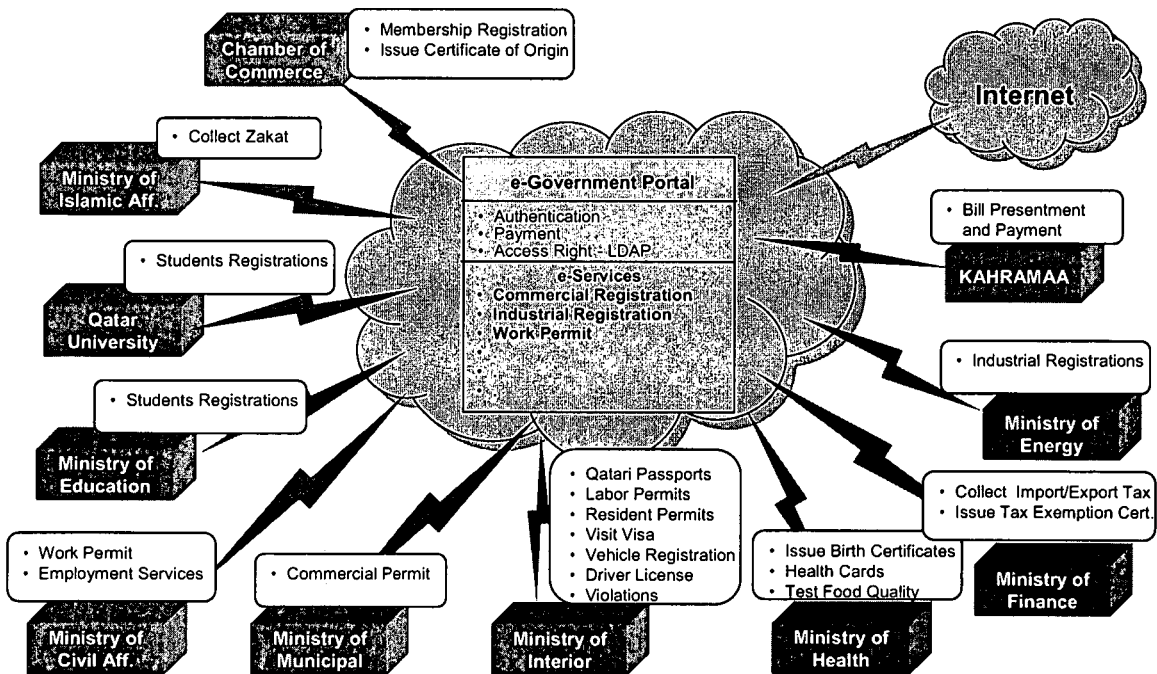
Figure 5.1: The selected 22 service groups and their owners
Source: EGESP

After completing the assessment study, the consulting group started helping the e-government executive committee in preparing the required plans for the next step, such as the project management quality plan, e-service plan, and risk plan. Figure 5.2 shows the implementation plan of the selected 22 service groups.

ID	❶	Task Name	2002 Qtr 3	Qtr 4	2002 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2003 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2004 Qtr 1	Qtr 2	Qtr 3
1	▦	Visit Visa													
2		Traffic Violations													
3		Driver Licenses													
4		Vehicle Registration													
5	▦	Zakat Fund													
6	▦	Qatari Employment													
7	▦	Resident Permits													
8		Resident Permit - Update and Cancellation													
9		Resident Permit - Issuance and Addition													
10	▦	Taxation and Customs													
11	▦	Work Permits													
12	▦	Immigration Department - Labour Permits													
13	▦	Qatari Passports													
14	▦	Commercial Permits - Issue and Renew													
15	▦	Certificate of Origin													
16	▦	Health Cards													
17	▦	Industrial Registration													
18	▦	Birth Certificates													
19	▦	Food Certifrication - Import													
20	▦	Student Registration - Education													
21	▦	Student Registration - University													
22	▦	Kahramaa Payments													

Figure 5.2: Sequencing of the services with their dependencies, as a timeline
Source: EGESP, p. 89

112

Although it is shown in figure 5.2 above that it was proposed that the project would start in the fourth quarter of the year 2001, the formal improvement for the national e-government project implementation came nearly a year after. Specifically, the decree of establishing the e-government steering committee, which is responsible for the implementation of the above services, was issued in 07/10/2002.

Phase III

Phase III represents the implementation of the above 22 service groups. As mentioned above, the implementation of the e-government project was formally launched by virtue of the Emiri decree number 25 on the 7 October 2002. The mission of this project was to "achieve the highest performance transactions electronically, through streamlined business processes and integrated information technology solutions" (EGSV, p. 1). Whereas the vision was:

"Qatar Online Services
Anytime Anywhere
Providing Government Transactions, Information, and Knowledge" (EGSV, p. 5).

By stating this vision, the government aimed to obtain parallel gains evident in speeding its transactions, modernizing its performance system and catching up with developments in the field of information technology, hence opening a wider chance for assuming a prominent position in the world's economic activity (EGSV). In addition, there are two key features that can be understood from the above vision statement, specifically the emphasis on transactions and the drive to provide unlimited access to government services. The e-government strategic vision document gave a clear definition of some key terms included in the vision statement such as Anytime, Anywhere and e-government transactions. Their definitions are as follows:

- *"Anytime means e-government transactions will be available 24 hours a day, 7 days a week, 365 days a year, 24x7x365.*

- *Anywhere means e-government transactions will be provided through multiple internet or IP-based (Internet Protocol) channels such as internet, intranet, kiosks, digital TV, and wireless.*

- *E-Government Transactions refer to a real-time, integrated transaction offered by a single service provider or multiple service providers through the internet channel"* (EGSV, p. 5).

113

The beneficiaries of those government e-transactions are citizens, residents, visitors, the government agencies and the business sector. By providing those e-transactions, each of these beneficiaries will be able to perform their transactions in a short time and with little effort, and obtain the necessary information about the rules and regulations they require.

With regards to the e-government goals, many goals were identified to accomplish the mentioned vision. These goals have been defined for three sets of beneficiaries of e-government, specifically the e-government constituents (i.e. citizens, residents, visitors and businesses), governmental units and employees and the e-government project itself. According to the (EGSVP, slide 6), the specific goals of the strategic vision in relation to constituents are as follows:

- *"Empower constituents through self service, feedback, education and awareness.*
- *Provide equal access to government information and transactions.*
- *Provide simple and personalized access to government information and transactions.*
- *Save constituent time by providing convenient services.*
- *Increase public confidence in the government's capacity to respond effectively to service needs."*

While the goals of the strategic vision in relation to government are:
- *"Position Qatar as a leader in the Gulf region and new global economy.*
- *Streamline Government service delivery.*
- *Increase return on investment (ROI) on IT investments.*
- *Enable cooperation and coordination across ministries.*
- *Provide enhanced information for policy making and decision support.*
- *Create a government rule engine (GRE) for consistent application of the law.*
- *Empower employees through self service, defining roles, training, education, information access and focus.*
- *Enable Ministries to focus on core business"* (EGSVP, slide 7).

Finally, the goals for the e-government organization were defined as follows:
- *"Inject measurement and accountability for service delivery performance.*
- *Create multi-channel government access through the internet, IVR, WAP, Digital TV, Kiosks, etc.*
- *Eliminate redundant data storage and data entry.*
- *Enable Real-Time transactions and information.*

- *Enable STP – "Straight Through Processing" between ministries and service providers.*
- *Provide alternate service delivery channel across the boundaries of ministries and service providers"* (EGSVP, slides 8).

In addition to the implementation of the mentioned services, this phase covers the e-government entity responsibility to create the infrastructure required to implement the selected services and to make them available and ready to be accessed by the government constituents (i.e. citizens, residents, visitors, public sector, and businesses).

When the e-government management approved the above sequencing of the proposed services, they started to raise Requests For Proposals (RFPs) to vendors who were capable of providing the services necessary to develop the proposed e-service applications according to the agreed plans. Successful bidders were placed on a list of vendors eligible to provide e-service application development and the e-government executive committee awarded specific projects to successful vendors.

In addition, they raised another RFP for hardware and software to qualify the capabilities of vendors to supply web development, staging and hosting platforms and installation services. The tender involved all software, hardware and networking components required to meet the e-government system's requirements. Furthermore, another RFP was raised for providing program management services to e-government. The aim of this RFP was to contract with a consulting firm to provide program management services.

The consulting team and the e-government executive committee worked in partnership to select the supplier to develop and deliver the selected 22 service groups. In particular, they assisted the committee with supplier negotiations and carrying out a competitive tender to evaluate potential suppliers. This involved developing a set of evaluation criteria, which would need to be satisfied if the 22 services were to be delivered on time. In addition, the consulting group had developed a disciplined approach to project management which was vital to ensure key milestones were met. Also, they worked with the client to establish these disciplines and assisted in managing all issues that related to the suppliers involved, including

stakeholder government departments, in the delivery of both the infrastructures and the proposed 22 service groups. Eventually, one software development firm was awarded the contract for developing the 22 services. Another supplier was awarded the contracts that related to the hardware and software required to build the e-government infrastructure. The contract for the program management services was awarded to an international consulting firm. Then, the contracted companies started performing their assignments immediately after the awarding processes of the mentioned contracts.

According to the e-government detailed implementation plan, there were two main tasks for the e-government team to carry, specifically establishing the required e-government infrastructures and implementing the selected e-services. Establishing the e-government infrastructures included establishing the e-government centre, installing and testing the platform, building the networking infrastructure (this include physical and logical infrastructures), developing the e-government portal, developing the public key infrastructure (PKI), and developing the payment gateway. Developing the selected e-services includes all activities that related to the development of the 22 service groups and according to the sequencing mentioned above. These issues will be further described and discussed in Chapter 6. however, it is worth mentioning that the progress of the e-government team on the level of their infrastructures is better than their progress on the development track. In other words, although they have already completed the period specified by the Emiri decree (i.e. the 31st March 2005), they have still not implemented half of the agreed services. Figure 5.3 below shows the layout of the main page of the e-government portal whereas Table 5.1 shows the major events that took place in Qatar and which related to this case study.

116
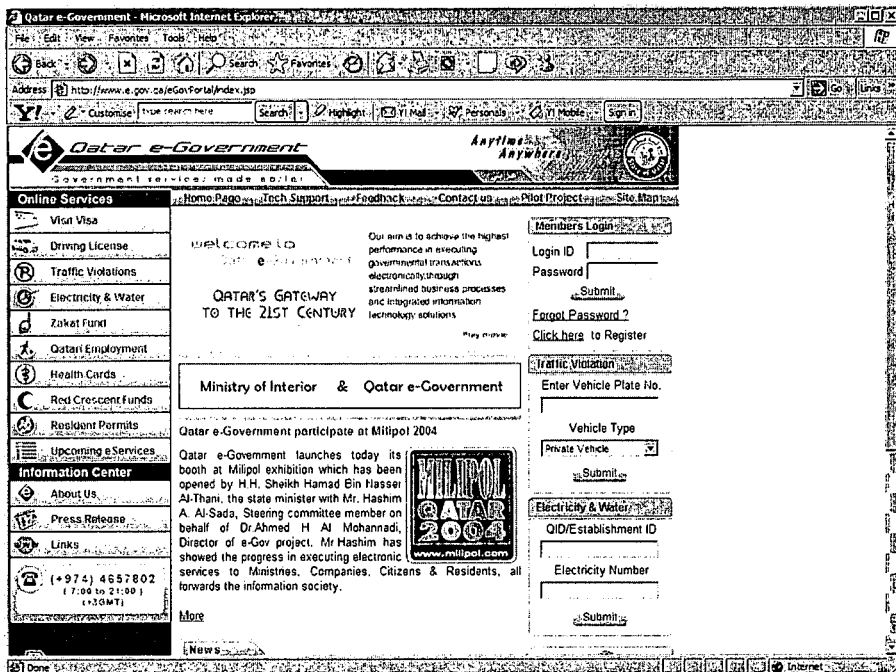
Figure 5.3: Layout of the main page of the e-government portal

Table 5.1: Case study key activities and their respective dates

Date	Key activities/events
1995	The peaceful transfer of power to the Emir, His Highness Sheikh Hamad bin Khalifah AL-Thani.
1997-1999	The presence of the early activities that related to providing web services.
1999-2000	The appearance of shared IT activities amongst the different ministries including the NNI project. These activities were under the supervision of the e-government executive committee that report to the Planning Council.
July/2000	The start of the e-government pilot project. It started under the supervision of the mentioned committee.
03/09/2000	The first use of the RPR service which represented the e-government pilot project.
2001	The consulting team started assessing the pilot project and the readiness of the ministries and public agencies to participate in the real e-government project and to provide transactional services (i.e. the evaluation project).
07/10/2002	The Emiri decree with regard to the establishment of the e-government steering committee. It was the formal date of approving the start of developing an e-government system at the national level. It is worth mentioning that the implementation of the first phase of the real e-government project started in parallel with the presence of the pilot project.
05/04/2003	Visa service was deployed to be used by the e-government users.
June/2003	The end of the e-government pilot project. As it can be noted, it was ended after publishing the Visa service through the portal of the real e-government project.
21/11/2004	The total number of electronic services that were implemented and deployed to be used online was nine e-services.
31/03/2005	The end of the formal period that was specified by the decree mentioned above for the e-government steering committee in order to complete the first phase of the e-government project (i.e. the 22 service groups). By that date there were only ten services that were implemented.
30/04/2005	The end of the data collection process.

117

5.4 Summary

The chapter presented a brief background about the State of Qatar, its geographic location, its political systems, its economic situation and resources, and its populations. The aim was to give the reader an idea about the country where the case study of this research was conducted. The chapter showed that the State of Qatar is a small country located in the Middle East and which is blessed with rich resources. In addition, it shed light on the political systems and showed that the new era and modern history started with the rule of His Highness the Emir, Sheikh Hamad Bin Khalifah Al-Thani. Finally, the chapter briefly described the phases of developing the Qatar e-government system. The focus was on the main activities in each phase and how the e-government project has proceeded from one phase to another. Technologically, the e-government project has made significant progress in delivering some transactional services since the e-government portal was launched in April 2003 and it is likely to evolve over the next few years. However, it is worth mentioning that the e-government project is far behind the planned schedule and did not achieve most of its main objectives. This issue will be discussed further in Chapters 6, 7 and 8.

Chapter 6: Understanding e-government implementation practices

6.1 Introduction

"There are no formulas for determining significance. There are no ways of perfectly replicating the researcher's analytical thought processes. There are no straightforward tests for reliability and validity. In short, there are no absolute rules except to do the very best with your full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study." (Patton 1990, p.372)

This chapter describes and analyses the case study findings regarding the implementation practices of an e-government system at a national level. It aims to understand e-government implementation practices, its development stages and to identify the possible measurements that can be used to differentiate between its different stages of development. The case study was conducted from an interpretive perspective, and was guided by an initial theoretical framework developed from a synthesis of different suggestions found in the IS implementation and e-government literature. Data collection and data analysis processes were accomplished in line with the principles proposed by Klein and Myers (1999). Careful consideration was given not only to the views and behaviours of individuals in the organisation under study, but also to the context in which these individuals operate (i.e. the fundamental principle of the hermeneutic circle, Klein and Myers (1999)).

Data collection and data analysis processes were intertwined; analysis occurred as the data was collected and led to further data collection and analysis. In addition, the data was structured and analysed in relation to the initial framework developed in Chapter 3. The initial framework was very helpful in collecting the case study data, structuring the study findings and in overcoming the danger of being overwhelmed with the collected data. The initial framework was also refined by the collected data.

The analysis process is structured in a way that helps in answering the research questions (i.e. sub-questions) and achieving the objectives. The first sub-question was

119

answered in Chapter 2 (i.e. what is e-government).This chapter aims to answer two additional sub-questions, specifically: how can e- government be implemented at a national level? and how can we differentiate between its development stages? The fourth sub-question (i.e. what are the key issues that might affect e-government implementation at a national level and how could these issues be treated in practice?) will be answered in Chapter 7 and Chapter 8. After that Chapter 6, 7 and 8 will be summarised in Chapter 9 with the aim of answering the main research question (i.e. can we develop an implementation framework that can help and guide e-government implementers at a national level to understand its implementation practices and to identify the key issues that might restrict its implementation?).

This chapter is divided into five sections. Section 6.2 presents a descriptive analysis of the activities that took place in Qatar with regard to the implementation of Qatar e-government. Then, Section 6.3 discusses and predicts the future of the e-government in Qatar in the light of the data collected from the interviewees. After that, an analysis of the mentioned activities in relation to the literature and the initial framework is presented in Section 6.4 and at the same time the stages of that framework are refined by the analysed data (i.e. in terms of development stages). In addition, three categories of the development measurements that can be used to differentiate between the different development stages of building an e-government system at a national level are identified. The measurements were proposed based on the case study findings. Finally, Section 6.5 summarises this chapter.

6.2 E-government implementation

In Chapter 2, e-government was defined broadly as the use of ICTs (mainly the Internet) to deliver online government services from a single point of access (or one-stop government) with the aim of improving the performance of governments' organisations and providing potential benefits to their customers (employees, citizens, public agencies and business partners). This definition was based on certain characteristics mentioned in Chapter 2, Section 2.3. In addition, it was mentioned in Chapter 1 that the term implementation is used, in this study, to refer to implementing an e-government system within its organizational context. Furthermore, it was

mentioned in Chapter 5 (i.e. the case study report) that there is a national e-government project that is taking place in Qatar. The e-government project is managed by a separate entity that reports directly to the highest authority in the country and has its own structure, budget, teams, public partners, private partners, etc. However, this study is concerned with not only studying the e-government project (or entity) but also its context, which involves studying those national activities that led to establishing this e-government organisation and those web activities that are still taking place in the other public organisations. This is because all these activities, whether e-government organisation activities or other public organisations activities that relate to providing online government services, come under the umbrella of the e-government definition mentioned above.

Having said this, the following subsections first shed light on those public activities (preliminary activities) that relate to providing online public services prior to establishing the so-called e-government project in Qatar and those other activities that took place either at the level of the ministries (i.e. individual activities) or those shared activities that led to this national initiative. In so doing, the researcher seeks to describe and analyse the context in which the e-government project emerged and how these activities grew gradually till the establishment of the e-government project. Having covered those preliminary activities mentioned above, the research describes and analyses those activities that took place in the e-government pilot project and those activities that took place following that pilot project up to the end of the data collection process (i.e. 30/04/2005). The following subsection (i.e. 6.2.1) seeks to highlight those initial activities that relate to providing online government services and those other activities that led to the emergence of the e-government project in Qatar.

6.2.1 Preliminary activities

Emergence of online services

As mentioned in Chapter 5, there were some official websites that belong to some ministries and which were managed independently by their respective ministries

before the appearance of the e-government project in Qatar. Some of these websites appeared many years ago, for instance, the MMAA, the MEIA and the MOI developed their websites in 1997, 1999 and 2001, respectively. However, some of those websites only give a limited web presence. For example, some of these websites provided their visitors with static information only, such as publishing general information (e.g. contact information like addresses, phone numbers, emails, office hours, and calendars) about the ministry, its departments, services, officials, etc. Whereas others provided some advanced features such as search engines, downloadable forms, templates, official government publications, newsletters, useful documents and other interactive services. On the other hand, there were some ministries which still did not have a website at the date of completing the data collection process, such as the Ministry of Energy and Industry (MOEI), the Ministry of Finance (MOF), and the Ministry of Justice (MOJ). Table 6.1 lists Qatar ministries and their website links. These website links were accessed in the period of June/2004 to Apri/2005. As can be noted, there are three ministries that did not have websites at the mentioned date.

Table 6.1: Qatar ministries and their websites links (June/2004- Apri/2005)

Ministry name	Its Website link
Ministry of Foreign Affairs (MOFA)	www.mofa.gov.qa
Ministry of Energy and Industry (MOEI)	
Ministry of Interior (MOI)	www.moi.gov.qa
Ministry of Municipal Affairs and Agriculture (MMAA)	www.mmaa.gov.qa
Ministry of Civil Service Affairs and Housing (MCSAH)	www.mcsah.gov.qa
Ministry of Finance (MOF)	
Ministry of Justice (MOJ)	
Ministry of Education (MOE)	www.moe.edu.qa
Ministry of Public Health (MOPH)	www.hmc.org.qa
Ministry of Economy and Commerce (MOEC)	www.mec.gov.qa
Ministry of Endowments and Islamic Affairs (MEIA)	www.awqaf.gov.qa

In addition, the researcher visited the websites of those ministries and other public organisations during the data collection period with the aim exploring the available features and services before conducting the interviews so that the interviewees' answers could be validated by another source of evidence. Table 6.2 shows the main features of those ministries and other public agencies websites that had been visited.

Table 6.2: The main feature of the ministries and some other public agencies websites
(June/2004- Apri/2005)

Ministry / Public Agency	Features/ Characteristics						
	Static Info.	*Downloadable forms/ applications*	*Interactive facilities*	*FAQs facility*	*Search Facility*	*Transactional services*	*Remarks*
MOFA	Yes	No	Yes	No	Yes	No	Bilingual website
MOEI	No	No	No	No	No	No	-
MOI	Yes	Yes	Yes	No	No	No	Inquiries by email + bilingual website
MMAA	Yes	No	Yes	Yes	Yes	No	-
MCSAH	Yes	No	No	Yes	No	No	-
MOF	No	No	No	No	No	No	-
MOJ	No	No	No	No	No	No	-
MOE	Yes	No	No	No	No	No	-
MOPH	Yes	Yes	Yes	No	Yes	No	Voting facility + bilingual website
MOEC	Yes	Yes	No	No	Yes	No	-
MEIA	Yes	No	No	No	Yes	No	Bilingual website
KAHRAMAA	Yes	Yes	Yes	No	Yes	No	Voting facility + bilingual website
Qatar University	Yes	Yes	Yes	Yes	Yes	No	Bilingual website

From Table 6.2, it can be noted that some of these websites have some good features such as frequently asked questions, enquiries, search engines, downloadable forms (applications), templates, official government publications, newsletters, useful documents and other interactive services. Furthermore, it was found that some of those websites act as entry points linking visitors to other branches, ministries, departments and sub-national government sites. Though, as mentioned in Chapter 5, none of these websites enable users to conduct complete secure transactions online such as obtaining visas, passports, birth certificates, driving licences, or work permits (see the transactional services column). In addition, each website has its own domain name (or URL link, see Table 6.1) and can be accessed independently using a specific web address (i.e. there is no single national government website that allows the user to customize a secure one-stop-shop portal that will enable direct access to most government services).

After that, some of the interviewees were asked about the objectives of having a presence on the internet and the type of the services that each ministry was providing. Table 6.3 below shows some interviewees' answers regarding the objectives of having websites and examples of the services that were developed.

Table 6.3: Examples of public websites' objectives and services

	Websites objectives	*Websites Services*
Mr AA	*"Some of the websites here in Qatar started without clear objectives in mind but at a later stage they realised the benefits of having these websites and started developing some good services."*	*"Currently, our website provides good services such as publishing information about the ministry's and the minister's activities, some interactive services like applying for new commercial permit or amending the existing one, applying for some other agricultural services, etc."*
Mr AO	*"Some ministries simply pursuing an image of being modern and aim to look good in front of its visitors who visit its website but there are also some ministries that eager to introduce some good services for its own users."*	*"We introduced many services that related to the Islamic affairs such as Haj services, Haj Contractors service, GIS service, IVR service and others. GIS (Geographical information system) service is a very lovely service as it shows the citizens number of Mosques around their area, the Khateebs' (or speakers') names and Mosques' locations and distance between the Mosques and the citizen house, etc. Haj Contractors' service is also another service that ready and is used by around 30 Haj contractors."*
Mr BR	*"The website of this organisation starts simple but now it provides some good services to its visitors."*	*"We start simple by publishing some static information about the ministry, then providing some inquiries facilities to the website visitors."*
Mr OH2	*"The MOI website start simple since there was not clear objectives at that time. Gradually, we start introducing some services"*	*"We started with statistical information and end with good services. Now you can find some useful inquiry services such as Car traffic violation information, Visa inquiry services and others."*

From Table 6.3 above, it seems that most of the ministries did not have clear objectives at the beginning of the development of their websites but gradually they realised the importance of providing some online services and hence started developing those services. With respect to the stages that their websites passed through to be fully implemented, most of the interviewees confirmed that there was no clear cut distinction between the different development stages of their websites. Normally, they started by publishing some static information and then the site grew and was developed over time.

One of the development team at one of the participating ministries mentioned that his ministry's website started by publishing some information about the ministry but ended up with some advanced services, although their business objectives were not clear enough at the beginning of the development process. In addition, he stated that most of their website services were developed within a short period of time. He said:

> *"The period of moving from one stage to another is very short except those sophisticated services that we provided at a later stage through the e-government website. For example there were only two weeks between publishing the static information and having those interactive services."*

This point of view was confirmed by another interviewee when he explained the difficulty of dividing the development of his organisations' website into specific stages. However, he mentioned that the development of any website might be divided up in terms of services so each service is considered as a separate phase within the whole period of the website development. He said:

> *"The development of any website can take place within a very short time so it is difficult to divide the development of any website into stages but you might talk about it in terms of services. We deal with each service as a subproject under the umbrella of the website development."*

Having realised the importance of developing online public services some ministries started to look after their internal business applications and their infrastructures. An IT manager mentioned that they created a LAN (Local Area Network) that links their business applications to each other within the same ministry and a WAN (Wide Area Network) that links the ministry with another five ministries and they were able to conduct a demonstration of their ability to perform transactional services. He stated:

> *"We were able to link the ministry to most of the other ministries and public agencies. Also, we were thinking in integrating the key business applications in this ministry to the related business applications in the other ministries and public organisations. More than this, we were able to make a real demo to other ministries on a real transactional processes and how those transactions are shared and integrated with other five ministries."*

It can be understood from the above quote that there was no integration between the business applications of the different ministries although it was considered. With respect to the telecommunication infrastructures, there were some ministries and other

125

public organizations that started improving their telecommunication infrastructures by buying fibre connections from Qatar Telecommunication (Q-Tel). For example, the GIS group within the MMAA purchased from Q-Tel dark fibre connections to 16 ministry/agency locations (EGITAR, p. 4).

The researcher asked one of the IT directors of those ministries about how he would describe the coordination and cooperation between his ministry and other ministries regarding the development of their websites or any other shared public services. He said:

> *"There is no communications at all between the ministries regarding the development of the web services or any other e-services. Each ministry has its own interest and is not willing to be affected by others."*

Another IT director said:

> *"Initially, there was not any formal communications between the ministries regarding the development of their web-based services. But at the beginning of the year 2000 we start to communicate with each other and there were many meetings at the level of IT managers in all ministries. However, the objectives of those meetings and communications were not related to the web services. The objectives of those meetings were to discuss the ministries infrastructures and to see the feasibility of linking all ministries together. In addition, there were many discussions with respect of having central database and share government data among government officials with the aim of helping them in taking the right business decisions. These activities were under the umbrella of the Supreme Planning council."*

The above quotes indicate that there was not any kind of cooperation or coordination between those ministries regarding their website development. This remained true until the government officials, specifically the IT directors of some of those ministries, tried for the first time to link their ministries with the government-wide network and to create a central database (i.e. data warehouse). They were trying to link their ministries in order to share their business data amongst themselves. In addition, it can be noted that the concept of e-government did not appear during those activities although they tried to create a government-wide network and to share their data among their departments. Furthermore, it can be observed that the Planning Council was the sponsor of that initiative. Finally, the following points summarise the above discussion:

- The above discussion is related to all those web activities that took place until the 30th April 2005 at the level of the participating ministries. Hence, it is worth noting that although some of these activities started in 1997, they continue in parallel to what the so called e-government project (will be discussed later).

- Most of the ministries have their own websites (i.e. separate domain names) that provide some services to their own visitors.

- Until the specified date above (i.e. 30/04/2005), there were some ministries that still do not have any presence on the web.

- Most of the ministries do not have specific objectives at the beginning of developing their websites. Their websites started simply then grew over. In other words, there were no specific stages of development as their web services were developed within one stage of development, but development can be divided based on the types of services that needed to be developed.

- Services rank from publishing static information to some interactive services

- None of those ministries introduced transactional services through their websites.

- There is no cooperation neither coordination between the ministers with regard to the development of their websites

- Some ministries have good internal business applications that are integrated to some extent with each other and have good infrastructures such as MOI and MMAA.

- Integration between the business applications of different ministries is absent.

- Some ministries and public organisations such as MMAA and Kahramma (a public organisation for electricity and water) started improving their telecommunication infrastructures.

- At a later stage, there were some activities and meetings between the ministries and other public agencies to create a central database that could be shared between them. These activities and meetings were under the supervision of the Planning Council. In addition, these activities became the starting point of thinking about having a network of national information (i.e. NNI project). This point is discussed further in the following subsection.

NNI project

An IT manager of one of the participating ministries in the e-government project mentioned that there was an executive committee that had been formed from different ministries and public agencies under the supervision of the Planning Council to manage the Network of National Information (NNI) project. The objectives of that project were published in ARRAYAH newspaper (28th July 2000). It was mentioned that there were three main objectives of NNI project. Those were: (1) improving the ways that public agencies carry out their business and hence reducing the duplication of effort and redundant databases which would then increase the efficiencies of the employees and save their time; (2) to establish criteria and standards for the electronic infrastructures and business applications required for performing electronic processes; (3) to provide accurate and up-to-date information about the social and economic variables and indicators that help government officials to make correct decisions.

The NNI was divided into four main stages, the preparation stage, the first stage, the second stage, and the third stage. In the preparation phase they planned to conduct some surveys to investigate the national electronic infrastructures as well as to conduct some cost-benefit studies for the intended project with the aim of prioritising the services. In the first stage they were to be engaged in very comprehensive reengineering processes for the government services and establishing the required criteria and studying the required laws for performing the intended electronic processes.

In the second stage they planned to design and develop the electronic infrastructures and the business applications and link all the public ministries and agencies to each other electronically. In the third stage, they were to create a central government database (or data warehouse) that contains different important information from different ministries' databases. The aim of this central database, together with the help of some decision support systems (DSS), was to support the decisions' makers in taking the correct business decisions at the right time. However, the whole idea was changed and developed quickly as a reaction to internal and external events. Internally, there were some formal and informal discussions between some of the

committee members regarding the committee, its responsibilities, and its future. The discussions led to the idea of having an e-government rather than focusing on the mentioned objectives of NNI. One of the e-government steering committee members stated:

"We were asking ourselves why don't we divert the objective of having only central database to a bigger project which is more comprehensive and more efficient than just having central data warehouse. Why don't we start developing electronic services?"

Figure 6.1 below is a snapshot of the ARRAYAH newspaper confirming the above quote. The article was talking about the NNI as an e-government project. In addition, the ARRAYAH reporter had conducted some interviews with the NNI committee members. Some of those members highlighted some obstacles that might face such a national initiative. For example, they mentioned the community resistance, the necessity of developing new legislation that supports the electronic services legally, and the importance of having electronic ID Cards.

Figure 6.1: The ARRAYAH Newspaper, the 28th July 2000

One of the executive committee members mentioned that there was also an announcement from the Dubai government that they intend to implement an e-government. That announcement was the external event which drew the attention of the decision makers in Qatar and encouraged them to think about having a similar project. He stated:

129

"There was an announcement from the Dubai rulers that they intend to develop an electronic government. Indirectly, this announcement has drawn the attention of the decision makers here in Qatar and encouraged them to think about having a similar project in Qatar."

After that, some members of the NNI committee formally proposed the idea of having an e-government pilot project at a national level through the proper channels to the highest authority in the country. A few weeks later, the e-government pilot project was approved by HH the Emir.

"One of the committee members suddenly called me around 1.30 PM and said: Congratulations, the e-government idea has been approved by HH the Emir. [He continued:] HH the Emir gave us two months to develop a pilot project which will prove/disapprove the concept of the e-government." (Mr. DS)

Thus it is clear that the NNI project led to the idea of having an e-government system in Qatar. In summary:

- The NNI project was the first attempt to have national electronic services that were shared amongst all ministries and other public organisations.

- The project stages reflected a good plan for implementing such national project as can be noted, there was a logical shift in the plan from one stage to another.

- There was a committee that composed of many members who were selected from the key public ministries and some other public organisations.

- Although the ARRAYAH newspaper presented this project as an e-government project, the formal activities of having an e-government system started by establishing the e-government pilot project which is discussed in Section 6.2.2. This project was the starting point of thinking in an e-government system. However, the emergence of the e-government pilot project diverted the direction and the attention of the government officials away from completing this NNI project and its stages of development. As a result the NNI remained ideas on papers only.

6.2.2 E-government pilot project

Rationale for the pilot project

As mentioned above, the NNI project, which was proposed in the first quarter of the year 2000, was the starting point of thinking about an e-government system. This meant that the Planning Council put the corner-stone of the national e-government project in Qatar. An IT manager said: *"The planning council has played an important role in the initiation process of the E-government project"*.

The same executive committee that was supervising the NNI project continued in supervising the pilot project and also under the umbrella of the Planning Council. The obvious aim of the pilot project was to prove the concept of e-government. According to (EGDPA, p.3), *"The Pilot Project was performed to prove the feasibility of the e-Government concept"*. However, the project was not planned properly. One of the e-government steering committee members stated:

> *"The e-government pilot project was not planned as required but fortunately we succeed in delivering the project on time. I remember that when we started there was not any service in our plan so we randomly selected the Residence Permit Renewal service to be the pilot project."*

This point of view was confirmed by Mr NB when he mentioned that there was not a clear vision at the beginning of initiating the project:

> *"Initially, I think there was not any clear vision or programme. They do something but they do not know what will happen next."*

In addition, it has been mentioned that there were no business objectives found in the official project documentation. The project team justified the absence of business objectives by the limitation of the time given to complete the project as that short period discouraged a formal development of business goals. *"Instead the single objective of completing the project constituted the sole business goal"* (EGDPA, p. 8). The pilot project was developed within a short period of time (i.e. two months) by one contractor and managed by another one.

> *"The project was contracted, executed and implemented under the strain of a very short imposed deadline. The e-Government Committee had barely two months from conception to completion"* (EGDPA, p. 3).

As mentioned in Chapter 5, the pilot project went live on the 29th Qatar Independence Day, the 3rd of September 2000 and continued till June 2003. It was substituted by the real e-government project. The following points summarise this section:

- The Planning Council continued in supervising the e-government pilot project.

- The concept of the e-government was not clear enough to government officials so the idea of implementing a pilot project was primarily to prove the feasibility of the e-government concept.

- The NNI executive committee continued to supervise and manage all the activities that related to the e-government pilot project. The committee was chaired by the current e-government director who is also the chairman of the steering committee which was established in the 7th October 2002. In other words, the e-government executive committee was substituted by a smaller committee that is called the e-government steering committee.

- There was neither clear vision nor a proper implementation plan for this pilot project.

- The pilot project introduced only one transactional service, the RPR. This service was selected randomly to be implemented as a pilot project.

- The pilot project was implemented and managed by third parties (i.e. contractors) in a very short time.

- It came as a reaction to internal (i.e. Planning Council activities) and external factors (i.e. Dubai e-government) and lasted approximately three years.

Pilot project findings

In the second quarter of the year 2001, the project executive committee contracted an international consulting group to study the pilot project and analysed its strengths and weaknesses. The objective was to evaluate the technical adequacy of the e-government pilot project implementation, learn its lessons and propose recommendations for the improvement of subsequent e-service implementations. The consulting group's review expanded upon the high-level review by focusing on the

methodology, approach, and technology of the implementation. They specifically framed their analysis and evaluation around the concept of critical success factors (CSFs) which were defined by them as *"those activities that must be done correctly in order to increase the probability that a project will be successful. Conversely, if not done correctly, there is a greater risk of failure"* (EGDPA, p. 6). They assessed the pilot project based on the key components of those six CSFs, namely:

1. *Business objectives: business strategy, business requirements (scope and objectives), and user needs;*
2. *Project planning: time reporting, estimation (plans, results and status), resource allocation, work breakdown, PERT and CPM;*
3. *Organization: leadership and project management skills, responsibility, team staffing and experience, skills analysis;*
4. *Communication and reporting: executive management, project management, team and staff communications;*
5. *Process improvement: reengineering of process flow;*
6. *Technology: systems architecture (hardware, system software. design, middleware/integration and security), development environment (systems methodology, standards, OS, language, tools, reporting and output), new technology.*
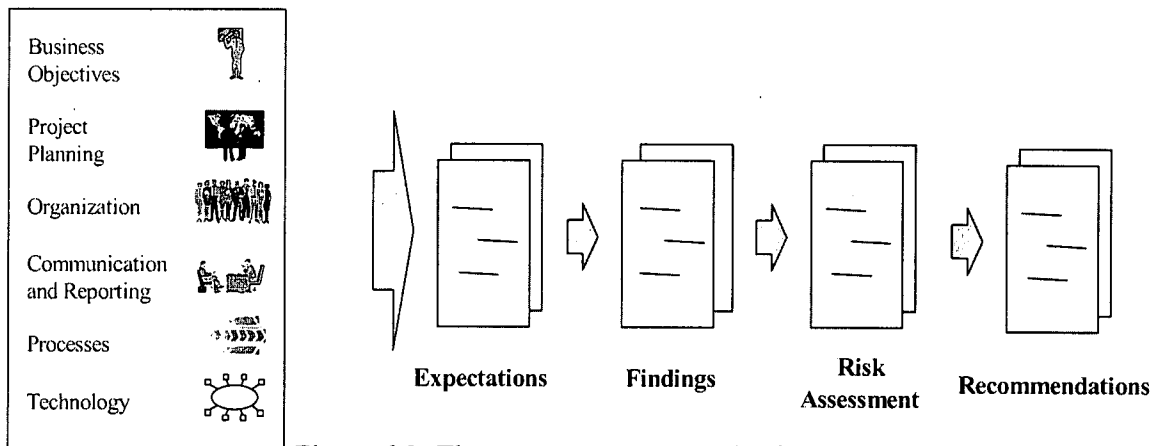
Figure 6.2: The assessment approach of the consulting group
Source: EGDPA, p. 6

Figure 6.2, shows the assessment approach that was used by the consulting group in their study. They reviewed the key elements of six critical success factors and compared them to their findings of best practices expectations. Their conclusions and recommendations were documented and presented to the e-government executive committee. Table 6.4 shows a summary of the pilot project assessment findings and the recommendations for further improvement.

Table 6.4: High-level summary of the pilot project assessment
Source: EGDPA, p.1-2

Findings	Recommendation (if any)
The Pilot Project was a success as a proof of concept; it is delivering the expected results; still there are lessons to be learned	
The Pilot Project, while successful as a proof of concept, is not an adequate model for future e-government application development	New applications should not be developed until the e-government Assessment Project has been completed and its recommendations have been implemented;
The hardware architecture offers too many single points of failure, which could result in a prolonged service outage	E-government personnel should produce an interim plan for dealing with major hardware failures;
The critical success factors are essential stepping-stones of successful software development; Several of the stepping-stones were skipped over in the interest of time, creating risks some of which became reality; ☞ Some Business Objectives processes, especially formally identifying user needs, were skipped; Users are now asking for reports and expanded functionality; The design allows a gap between the cancellation date on the current permit and the effective date of the new permit to occur; ☞ Many steps in a normal software development methodology were skipped or not performed in depth; One example is testing; The application seems to be capable of issuing a Residence Permit Renewal without adequate funds to pay the fee being available; Adequate testing should have prevented this;	Future development should not be undertaken without following a formal development process, approved by the e-government executive committee;
The application architecture includes the use of "Applets", which are neither desirable nor necessary;	Applets should not be employed by e-government; The e-government Residence Permit Renewal system should be modified to be consistent with the User Interface Standards to be recommended in the IT Standards deliverable;
Except for the use of applets, the application architecture is generally adequate; but is not optimum for Qatar's e-government Portal;	The architecture recommended in the IT Architecture deliverable should be implemented;
The network architecture is properly designed but will need considerable expansion to serve the needs of e-government;	The architecture recommended in the IT Architecture deliverable should be implemented;
E-government is dependant on the ministry and agency back office systems which are interfaced to it; They will need to provide high reliability and availability; To do so, they will require budget assistance;	In future e-government development projects, high availability architecture for integrated the ministry/agency applications needs to be assured and the budget support necessary to accomplish it needs to be assured.
The e-government organization is not presently structured to deal with downtime and customer inquiries.	The e-government executive committee should implement a 24x7 operation, based on the recommendations provided in the Organization deliverable, before going live with any future services offered.

134

6.2.3 Government readiness assessment

The same consulting team was given the responsibility of conducting a comprehensive readiness study (immediately after the assessment of the pilot project) with the aim of assessing the readiness of the ministries and government agencies from business and technology perspectives. The objective of the technological assessment was to identify the state of readiness of the 24 ministries and agencies that currently have the readiness to provide the technology and support infrastructure to facilitate electronic enabled services, whereas the objective of the business assessment was to identify the services that were to be combined with IT readiness data and form the basis for the electronic services plan (EGESP). Accordingly, the consulting group started their assessment by sending questionnaires to 24 ministries and public agencies. Each of these ministries was introduced to the consulting group by a letter from the e-government executive committee, and this was followed by a visit by the consulting members to clarify the questionnaires. Table 6.5 shows the areas that were covered by their questionnaires.

Table 6.5: Areas covered by the KPMG questionnaires; Source: EGESP, p.5

IT Questionnaire	Business Questionnaire

• IT Organization Chart
• IT Staff Skills Summary
• IT Infrastructure Database(s)
  - Networking and Communications
  - Hardware Platforms
  - Software Applications
  - Development Tools
• Key Projects and Initiatives
• IT Strategic Plan
• Systems Development Methodology
• IT Standards and Guidelines
• Operational Standards and Procedures
	• List of Services
	• Volume of transactions
	• Total Staff
	• Total Budget
	• Cost per Services
	• Revenues per Transactional Service
	• Customer types served – citizen, resident, business, visitor, or Government
	• Interactions with other Ministries or Service Provider
	• Channels of Interaction – phone, internet, email, fax, mail, or walk-in

Readiness assessment methodology

The consulting team used an overall analysis methodology that involves:

1. *Agreeing on definitions, criteria, weights, priorities, and confirming the methodology with the e-Government Executive Committee for both the IT and Business Assessment process.*
2. *Prioritizing the business services and ranking the services in order by quantitative score.*

3. *Performing a further qualitative analysis to determine a 'short list' of prospective e-Services and reviewing these with the e-Government Executive Committee.*
4. *Developing the final list of e-Services in conjunction with the Executive Committee* (ESP, p.7).

In particular, they used two separate analysis methodologies for analysing data collected by the business and technology questionnaires. For the IT questionnaire they used nine measurement categories and provided an overall readiness score, which was used as input into the electronic services analysis (See Table 6.6). Within each of those nine measurement categories they weighted individual attributes based on IT questionnaire responses and interviews with IT personnel in the ministries with the aim of giving an overall score to each category of the mentioned nine categories. These nine categories scores were used to indicate the IT readiness of each ministry/public agency. Finally, they categorised the participating ministries and public agencies based on the score that they achieved, for instance, each agency's readiness was categorised as high, moderate, or low. *"A 'high' score indicated that the Ministry was in the top 25%; a 'moderate' score was given to Ministries who scored between the 50% and 75% and a 'low' readiness scored below 50%. All of the scores are weighted averages and are based on a maximum score of 100% relative to a benchmark necessary to operate in an e-Government environment"*(EGESP, p. 7). Figure 6.3 shows how the mentioned nine measurements were used.

Ministry	Overall Score	Applications and Database	IT Staffing	Data Comms & Networks	LAN, WAN and IT Standards & Procedures	System Security	Internet Access	Hardware/Op.System Platform	IT Planning	Internet Site
Key ●◉○										
Ministry 1	◉	◉	○	●	●	●	●	◉	●	◉
Ministry 2	◉	◉	○	●	●	◉	●	◉	●	○
Ministry 3	◉	●	●	●	●	●	●	○	●	◉
Ministry 4	◉	◉	○	●	●	●	●	◉	●	◉
Ministry 5	○	◉	◉	○	●	◉	●	○	○	○

● High　◉ Moderate　○ Low

Figure 6.3: Main readiness measurements; Source: SCM2, slide 8

Table 6.6 below lists the categories, their attributes, the weight of the attributes within each category, and the scoring weights.

Table 6.6: IT analysis weighting; Source (EGESP, p.8)

Category Measured and Attributes	Within Category Scoring Weight	Category Scoring Weight
1. Applications and Database		30
Automated integration of applications	40	
Direct Database Interfaces	30	
Database Openness	30	
2. IT Staffing		15
IT Staff Structure	50	
Level of Web training	10	
Technical Help Desk	15	
Customer Service Organization	25	
3. Data Communications and Networks		15
Ministry/Agency LAN	50	
Ministry/Agency WAN	5	
Operate an e-mail server?	5	
Directory Controlled Servers (e.g. LDAP)	40	
4. Other Dimensions		15
Systems Development Methodology	30	
IT Standards and Guidelines	30	
Operational Standards and Procedures	40	
5. Systems Security		10
Physical Security	10	
Network Security	30	
External Network Access Security	20	
Information Integrity Maintained	40	
6. Internet Access		5
Bandwidth and Capacity	100	
7. Hardware/Operating System Platform		5
Number of Server Platforms Represented	100	
8. IT Planning		3
Service Interruption and Disaster Recovery Preparedness	100	
9. Internet Site		2
One or more sites are provided by the Ministry	30	
Site Security	70	
Payment Gateway	0	

In addition, the consulting group used another methodology to analyse the collected data from the business questionnaire. The focus of their analysis was on those transactional services that could be performed by the different ministries and

agencies. They defined the transactional service as a service of which at least a major portion *"could occur as an online in transaction in an e-Government environment. That transaction would be completed without human intervention. This is not to imply that the entire service will occur online initially, but it is the intention to provide the complete service online as soon as is practical"* (EGESP, p. 9). It was assumed that the informational services would be held on the different ministries' websites that might be accessed through the e-government portal. Thus, they did not consider informational services as part of their analysis as they are non-transactional. Figure 6.4 illustrates the overall process which was followed by the consulting group in their analysis.
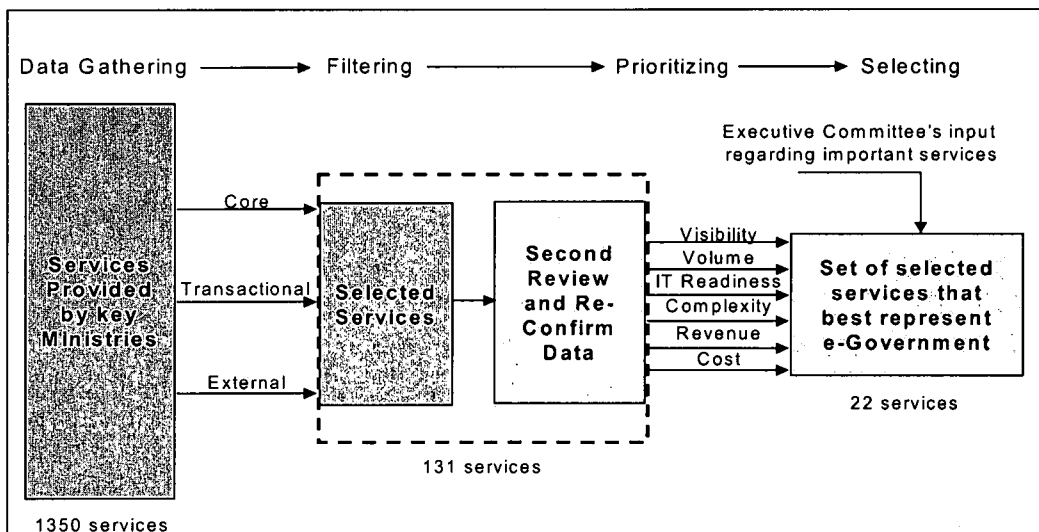
Figure 6.4: Methodology for selecting e-government services; Source: EGESP, p. 9

Figure 6.4 shows that the data collected from the questionnaires gave 1350 services that were ready to be developed. According to EGESP (p.9), the 1350 identified services were first manually filtered to ensure that the services were: (1) *External services provided to the ministry's constituents:* those services that served the citizens, residents, businesses, or visitors of Qatar. In other words, internal and G2G services were excluded; (2) *Core services of the ministry* (i.e. those that were within the mission of each ministry, and serve the ministry's constituents); (3) *Transactional services rather than information-only:* those services that simply presented information were excluded while those that involved interaction with the constituent and the ministry, and resulted in a payment were included.

138

The next step was to eliminate and combine transactions from the different ministries involved in providing the same service. By applying the above criteria to the 1350 services, the number of services was reduced, resulting in a list of 131 services (see Figure 6.4 above). As mentioned in the above criteria, the services that were excluded to reach the 131 selected services were either informational or G2G services. The G2G services are considered as very important services but it was decided that they would be implemented as a separate project at a later stage.

"These G2G services are important and fall under the following shared services: Financial, Human Resources/Payroll, Procurement, Workflow, and E-Mail. The implementation of the above-shared services should be considered as a separate project to be carried out by the e-Government organization, and in parallel with the next phase of this project." (EGESP, p.11)

In addition, the services were re-reviewed and filtered to remove redundant, services that were included as part of other services, and to ensure that all services had met the previous criteria. After that, each ministry/agency was given the opportunity to re-confirm the selected services prior to finalising the prioritised list. After the reconfirmation process, it was time to assign priorities to the filtered services with the aim of highlighting the services that were to be implemented in Phase 1 of the e-government project. As shown above in Figure 6.4, there were some criteria for prioritizing the services which were developed, agreed with the e-government executive committee, and applied to the database. Based on the priority criteria that are explained in Table 6.6 above, a score was obtained for each of the services and they were then ordered and reviewed. Finally, some of the services were combined because there was overlap between them and any service that crossed several ministries was assigned to a service-owner ministry and the duplication was eliminated. The priority list of 131 services was then discussed by the e-government executive committee on June 14th 2001 and agreement was reached on the final list of 22 service groups, consisting of 37 individual services. The group of 22 services (see Figure 5.1) was approved to be developed in Phase 1 of the e-government project (i.e. within the 20-month timeframe). However, as mentioned in Chapter 5, the Emiri decree with regard to the establishment the e-government steering committee gave the committee 30 months to implemented the mentioned services. Table 6.7 lists the final list of 37 individual services and their assessment results.

Table 6.7: List of the agreed 37 individual services and their assessment results (i.e. Core, Transactional, External); Source: BAM

Ministry	Service Name	APR (Application Readiness)	Business Model		Transaction complexity		HI		Score
			G2G	G2B	Simple	Complex	Importance Visibility	Annually	Overall Score
MMAA	New/Renew Commercial permits	✓	✓	✓		✓	✓	10,677	308
MCSAH	Foreign labour work permits	✓	✓			✓	✓	30,000	308
MCSAH	Receive job application forms (from Qataris)	✓	✓	✓	✓			2,000	190
MOI	Renew vehicle registration	✓	✓	✓	✓		✓	140,384	430
MOI	Ownership transfer (title transfer)	✓	✓	✓	✓		✓	52,625	430
MOI	Renew resident permits (pilot project)	✓	✓	✓	✓		✓	181,618	430
MOI	Issue Visit Visa (3 types)	✓	✓	✓	✓		✓	190,148	430
MOI	Traffic violation settlement	✓	✓	✓		✓	✓	32,757	370
MOI	Issue new resident permits	✓	✓	✓		✓	✓	87,732	370
MOI	New Vehicle Registration	✓	✓	✓	✓		✓	20,007	368
MOI	Renew driving license	✓	✓		✓		✓	12,891	368
MOI	Transfer resident permit to new passport	✓	✓	✓	✓		✓	38,277	368
MOI	Sponsorship transfer	✓	✓	✓	✓		✓	11,144	368
MOI	Issue approvals for private citizens, residents, and company sponsors to import manpower	✓	✓			✓	✓	60,000	350
MOI	Cancel resident permit	✓	✓	✓	✓		✓	44,910	348
MOI	Renew learning driving license	✓	✓		✓		✓	1,085	330
MOI	Separate dependent, new resident permit	✓	✓	✓	✓		✓	4,445	330
MOI	Add new-born to resident permit	✓	✓	✓	✓		✓	4,518	330
MOI	Issue visitor re-entry visa	✓	✓		✓		✓	3,472	330
MOI	Issue Qatari passports	✓	✓		✓		✓	40,328	310
MOI	Issue and Renew Qatari Ids	✓	✓		✓		✓	14,054	310
MOI	Renew resident permits restricted to limited periods	✓	✓			✓	✓	10,000	288
MOI	Update resident information	✓	✓	✓		✓	✓	2,259	270
MOI	Issue exit permits (2 types)		✓		✓			750,000	260
MOI	Extend visit visa	✓		✓	✓			24,556	248
MOI	update sponsorship information	✓	✓	✓	✓			24,800	248
MOI	Transfer visit visa to resident	✓	✓		✓			1,728	210
MOPH	Issue health cards and	✓	✓		✓		✓	30,000	368
	Renew health cards	✓	✓		✓		✓	110,000	380
MOPH	Issue certificate for food import	✓	✓			✓		15,000	168
MOPH	Issue birth certificates	✓	✓			✓	✓	11,000	308
FEATM	Export/import duties and fees	✓		✓	✓			250,000	190
MOE	Student registration	✓	✓			✓	✓	7,000	250
MOEI	Industrial License and Industrial Registration		✓	✓	✓			44	140
ME IA	Collect zakat money and donations		✓	✓	✓			40,000	198
KAHRAMAA	Bill presentment and payment	✓	✓	✓	✓		✓	634,021	430
QU	Student registration		✓			✓		20,000	118
COC	Issuing certificates of origin			✓		✓		22,170	158

140

The following points summarise the above section:

- The readiness of 24 ministries and public agencies was assessed by an international consulting group which was contracted to perform the readiness activities. There were two main objective of assessing the readiness of those ministries and public agencies. These objectives were: (1) identifying the state of readiness of the 24 ministries and agencies that were ready to provide the technology and support infrastructure to facilitate electronic enabled services; and (2) identifying the services that were to be combined with IT readiness data and form the basis for the electronic services plan.

- 1350 services were identified but after applying certain criteria (i.e. Core, Transactional, External), the number was reduced to 22 service groups (i.e. 37 individual services). Those services cover only 33% of the individual services from the 131 list that was identified as being ready to be implemented.

- The focus of the assessment process was on the ability of those ministries to perform and technologically support transactional services to their external customers (i.e. citizen and businesses). In addition, those services should represent the core business of each organisation.

- Informational and interaction services were excluded and were assumed to be held on the different ministries' websites that might be accessed through the e-government portal.

- G2G services were also excluded from the assessment with the aim of implementing these services in a separate project at a later stage.

E-services implementation plan

The 22 service groups (i.e. the 37 individual services) were classified into two general categories, simple services and complex services. Simple services are services which involve only one ministry and no more than three departments of the ministry while complex services are those services which involve more than one ministry or involve more than three ministry departments. According to EGESP (p.56) there were certain guidelines for sequencing the services which were discussed and approved by the e-government steering committee. These guidelines are:

o *"First priority is given to simple services and those that are relatively easy to implement in order to minimize risk and to allow the implementation team to gain knowledge.*

o *Second priority is given to Government to Business services. The development of business in Qatar is a strategic priority, and the emphasis on corporate customers fulfills this requirement.*

o *Third priority is given to services that serve the senior Qatari citizens.*

o *Fourth priority is given to all other services, with those having a higher impact on residents being recommended above the rest."*

Table 6.7 above lists the 37 services that were recommended for implementation. It has been estimated that a simple service can be developed and implemented by one team in three months; and a complex service by one team in six months. Each team should consist of one analyst/project manager, two to three developers and one part-time page developer. However, since the services were assumed to be developed by a third party (i.e. bidders) then the bidder might not need these estimates as bidders have their own estimates upon which to base their pricing. In addition, the implementation duration was based on the complexity of the service groups, the number of services in a service group, the readiness of the applications to be linked with an e-government portal, and the priorities as set above by the e-government steering committee. According to (EGESP, p.86), *"one exception to the sequencing rule is in the case of Kahramaa* [Qatar Electricity and Water Corporation]. *As they are in the process of replacing their systems, we have suggested that this process be implemented at the end of the implementation period, rather than sooner, in order to give them more time for their internal systems replacement to occur".* In addition, there were two main tasks that were necessary to be in place before deploying any new transactional service. These are: developing an e-payment gateway and secure authentication system (i.e. developing Security infrastructure such as using PKI, and smart cards). Figure 6.5 shows the sequencing of the implementation of services from Quarter 1 to Quarter 8.
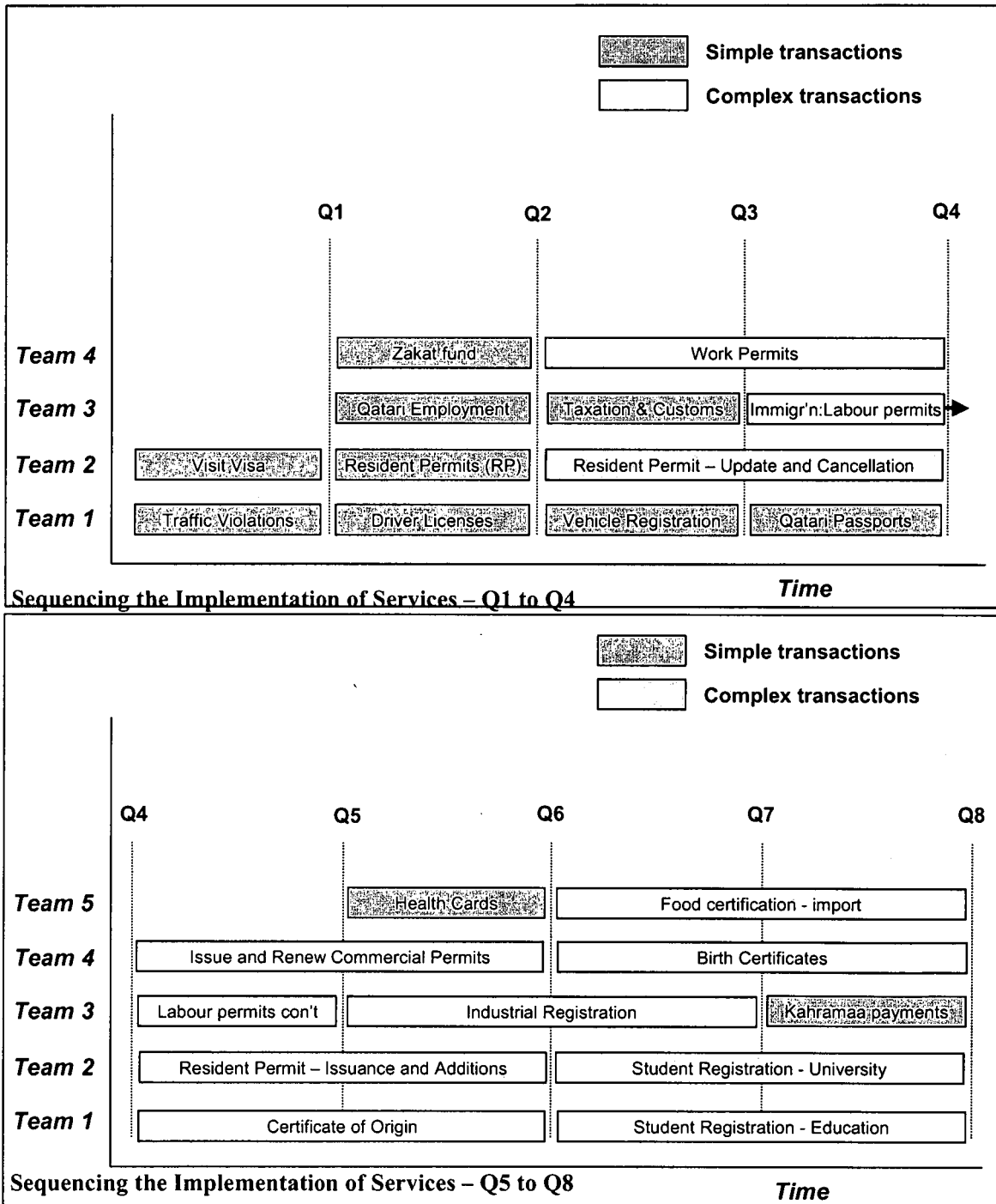
Figure 6.5: Sequencing the Implementation of services – Q1 to Q8;
Source: EGESP, p. 87

The visit visa and the traffic violations processes were selected as the first candidates that would be implemented because these services are both simple and have a high number of annual transactions (see Table 6.7). In addition, it was mentioned that implementing both these services would help in promoting e-government since the impact of their implementation would be more visible than if they were low volume

143

services. Furthermore, traffic violations are a precursor to the driver licences and vehicle registration services as both these involve checks to ensure that all violations have been paid. The following three points summarize the e-services implementation plan:

- The assessment process took place in 2001(i.e. in the presence of the e-government pilot project)

- The e-services were divided into complex and simple services based on their integration degrees. The complex services are those that link (or are shared) between more than three departments in one ministry or those which involve more than one ministry. Whereas, simple services are those that involve no more than three departments within one ministry.

- Priority of implementation was given to those services that: (1) are simple; (2) have a higher number of annual transactions; (3) would help in promoting e-government because of the impact of their implementation would be more visible; and (4) would be a precursor to other services.

- All 37 individual services (i.e. 22 service groups) were planned initially to be implemented within a 20 month timeframe but according to the Emiri decree, the steering committee which was established to implement those services was given 30 months (i.e. from 07/10/2002 to 31/03/2005).

Pre-implementation activities

The e-government steering committee assigned the responsibility of developing some necessary plans and project management documentations to an international consulting company. These tasks involve: helping them in developing the e-government mission, vision and objectives; forming a business model for the e-government organisation and developing its organisation structure; the development of the e-government IT strategy, architecture, development standards, operations standards and policy; the development of the e-government risk plan, communication plan, e-government management quality plan, e-transaction issues and the development of key performance indicators.

6.2.4 Forming an e-government entity

Having assessed ministries/public agencies' readiness from the business and technology perspectives and having selected the services that needed to be implemented in the first phase of the project, it was time to assign a team that would be responsible for managing the implementation of the selected services. The team had to be organised in a way that allows it performs the task as planned (within the specified budget and time) and the organisation of that team must be flexible enough to allow further improvement and capacity for implementing the next phases of this national initiative. Section 6.2.3.3 mentioned that there were some pre-implementation activities and one of those activities was proposing a suitable organisational model and structure for the e-government entity (i.e. the e-government implementation team) which would manage the e-government project nation-wide. The consulting team recommended a public sector corporation as an organization model. In addition, it recommended that it must be owned by the government of the State of Qatar, operated on a commercial basis, focusing on cost efficiency, cost recovery, accountability and transparency, have the flexibility to act quickly and competitively in staffing the operation and executing the detailed stamped plan, and would not be viewed as a political rival of line ministries and would be better positioned to elicit cooperation from ministries and agencies which use the e-government framework. Based on this model, it was recommended that an organisational structure that defined the functional requirements of the organization, independent of whether those functions were performed by direct employees of the organisation or by a consultant or subcontractor, should be implemented. However, the recommended organisational structure was not implemented. This issue is further discussed and analysed in Chapter 7.

As mentioned in Chapter 5, the e-government implementation was formally launched by virtue of the Emiri decree number 25 on the 7 October 2002. The decree announced the formal establishment of what is called 'e-government steering committee'. It stated clearly that the steering committee was an independent authority, had its own budget and belonged to His Highness the Emir's office directly. It named three members of that steering committee one of them was the chairman of the

committee and at the same time the e-government project director. The decree specified the 31st March 2005 as the deadline for the steering committee to complete the project (i.e. the first phase). The next section explains the implementing process of the e-services.

6.2.5 E-services implementation

As mentioned in Chapter 5, the e-government management assigned the task of developing the recommended infrastructures to a third party (i.e. contractor) while the development of the approved services was assigned to another contractor. In addition, the e-government steering committee assigned the management of the daily activities of the project to an international consulting team. The contracted companies started performing their assignments immediately after the awarding processes of the mentioned contracts. With respect to the development of the required infrastructures, Qatar e-government made some progress, particularly the development of the required authentication system and the payment gateway. These two issues are discussed in more detail in Chapter 8. However, their progress on the development of the approved e-services was not satisfactory. This can be understood when the e-service implementation plan is compared with its progress. As mentioned above, they planned to implement 37 individual services (i.e. 22 services group) within 30 months but unfortunately they did not implement even half of the planned services, although they spent more than the specified period.

The contractor of the e-services development started developing the first e-service in the e-service plan which is the VISA visit service. The VISA visit service was developed and completed by the 5th of April 2003. In the third quarter of the same year another four services (i.e. driving license service, traffic violations service, Kahramaa service and ZAKAT fund service) were completed and published on the e-government portal. Another service was completed in the first quarter of the year 2004 which is the Qatari e-employment service. While in the second quarter of the same year another three services were developed and linked to the e-government portal. The three services are: Health Cards service, Red Crescent and the Residence Permit service. Table 6.8 shows the completed services, the date (quarter) in which

146

each service was completed in, and the number of transactions performed by the e-government constituents for each service. This report was extracted from the e-government reporting system on 21st November 2004. With the exception of birth certificate, they did not develop any further services till the 30th April 2005.

Table 6.8: Qatar e-government online service and their usages

	2Q - 03	3Q - 03	4Q - 03	1Q - 04	2Q - 04	3Q - 04	4Q - 04	Total
Visit Visas	125	503	929	2,209	1,636	2,833	734	8,969
Driving License	0	31	23	30	36	43	17	180
Traffic Violations	0	29	40	62	63	39	37	270
Kahramaa Bills	0	328	630	801	716	1,116	612	4,203
Zakat Fund	0	8	23	9	6	8	22	76
Health Cards	0	0	0	0	135	601	404	1,140
Red Crescent	0	0	0	0	20	70	15	105
Residence Permit	0	0	0	0	305	2,746	2,206	5,257
Qatari eEmployment	0	0	0	400	774	484	215	1,873
Total	125	899	1,645	3,511	3,691	7,940	4,262	22,073

From Table 6.8, it can be seen that although the first allocated period was completed there were only nine services that were developed out of the planned 22 service groups. Secondly, none of these services was implemented within the specified period. Thirdly, till the 30th April 2005, the whole project was far behind schedule. Also it is very clear that at this stage the usage of each service is very low and greatly below expectations. Finally, it is very important to note that the e-government team had developed new services that were not planned in the detailed implementation plan, specifically the Qatari e-employment service and the Red Crescent service. One of the steering committee members commented on this by saying:

"We are developing software and business applications which cannot be sometimes finished and completed on time due to many reasons such as the ministries' readiness to provide or develop the planned e-services or due to some cooperation problems."

Another steering committee member said:

"I can summarize the reasons for this in three points: 1- Some of the proposed services were related to some ministries that were not ready enough to develop and maintain the required e-services (e.g. the Economic Ministry); 2- Some of

147

the public organization did not accept the service although it has been developed according to the initial plan; 3- We have engaged in developing some other major issues such as the PKI and the payment gateway although they were not in the initial plan. However, you should not forget that we introduced new services which were not in the initial plan such the Red Crescent fund service. Another important issue is that not all the recommendations of the consultant group are correct; it is theoretical study but when we come to the practice things will go differently. "

The engagement in developing the PKI (i.e. public key infrastructure) and the payment gateway was mentioned as one of the reasons behind the delay in developing all the planned services although these tasks were part of the project infrastructures that were planned to be developed in this phase and before using those transactional services. Furthermore, it is worth noting that although the e-government steering committee contracted vendors to develop the planned transactional services, the backend development was part of each ministry's responsibilities towards the e-government project. Vendors were required to develop the services from the front-end and then link those services to the backend-end through the e-government portal. Moreover, some key organisations were asked to participate in developing the e-government infrastructures. For example, the development of the PKI was assigned to the MOI which was contacted another vendor to build the system. Another example is the payment gateway which was assigned to QNB. QNB also partnered the service with another international third party. A further important point is that although the e-government organisation started implementing the planned transactional e-services, other ministries and public organisations continued in developing their informational and interactive web services.

6.3 E-government future

Based on the e-government definition mentioned above and by reading Section 6.2, the future of the e-government can be explained and expected from reading two main tracks. The first track is the development of the informational and interactive services that have taken and will continue to take place at the level of each ministry and public agency. The second track is the e-government organisation future. It was mentioned clearly in the assessment project activities that each ministry or public agency would be responsible for developing their e-services except the transactional ones. Accessing

their websites can be done through the e-government portal or separately using their own domain names.

By reading the first track, it should be noted that there was some ministries that still did not have their own website at the date of leaving the case study. Therefore, there is no doubt that each ministry (or public agency) will continue developing and improving their web services except those transactional ones which are not part of their responsibilities. However, the ultimate goal is to have one single point of access to all government services regardless of the types of services and their providers. That single point of access will be the e-government portal.

Regarding the future of the e-government project (i.e. as a national initiative), there were many points that could help in predicting that future. For example, as a result of the assessment of the government readiness project there were 1350 services that were found to be ready to be implemented. However, implementing those services would not take place within a short period of time or by a single organisation. Those services might take a significant length of time to be fully implemented and require full cooperation from all the participant ministries and other public organisations. This can be understood from the current progress of the e-government project. For example, the pilot project started in July 2000 and till April/2005 only ten services in total had been implemented.

It was obvious that the e-government team tried to eliminate and filter those services in order to make the job easier. For example, they divided the services into informational-only and transaction services, simple and complex, G2G, G2B and G2C, and so on. This was because they realised the difficulty of the task, the difficulty of the change, and the diversity of interest. It is a national project that required radical change across the whole country. Indeed, it is not easy job.

Therefore, the e-government team strove to implement those services gradually. This was clear from their e-services implementation plan, as they planned to start with implementing those simple services and gradually move on to the complex ones. Regardless of when they will finish the first phase, there are still major tasks which need to be tackled. For example, after completing the first phase of the project (i.e.

149

implementing the 37 services), they will start developing the remaining services. Although there was not a clear plan about how and when they would implement the remaining services, it was mentioned clearly in their documents that some of those services would be developed in a separate stage such as the G2G services. G2G services are more complex than other services due to the level of integration that they require. The e-government portal also requires a complete redesign in terms of its presentation, information architecture and underlining infrastructure in order to provide a robust and flexible framework for the delivery of the e-government services. A senior manager highlighted this issue when he was talking about e-government future. He said:

"The stage will cover the classification of the e-government services based on the e-services providers (ministries). As you can see now (He was explaining the services that listed in the e-government portal main window) *that all services are listed in one column so we plan to classify them and make them more organised and classified. Also we plan to have new channels that will be used to access the e-government services such using mobile phones and other channels. Furthermore, there are a lot of e-services that could be developed. Most importantly we will start to horizontally integrate some services which I think is one of the most challenging issues. There are certain services that are related to two or more ministries and which require a horizontal integration, such as birth certificates."*

As can be noted from the above, there are some major tasks that need to be done such as the horizontal integration and developing other channels to access the e-government services including using mobiles, kiosks, and IVR. These channels were highlighted clearly in the e-government objectives. At the same time they will continue to maintain and improve the developed services and the interfaces of the e-government portal.

Ultimately, the e-government team wished to reach an advanced staged which was the so-called, 'Zero click' strategy. In addition, the ultimate stage should enable the government officials to use GDSS (government decision support systems) which is based on a centralised data warehouse. However, a necessary precursor for this stage is the presence of the information society, as mentioned by one of the steering committee members. He commented on this issue by saying:

"The ultimate stage is the stage when we reach the zero click strategy. What I mean by this strategy is the stage that enables the e-government users to access only a single window and just click once on the required service. After clicking on the required service, the system will do everything for the users. So he does not need to click many times if he wants to perform a single e-service. In addition, the ultimate stage must make the job of the government officials easy. For example, there should be government decision support system (GDSS) based on a rich information base. This stage can only take place once we have an information society and most of the government policies and regulation are implemented by using the regulatory engine"

The same person explained another future strategic goal for the e-government which is the implementation of an electronic government engine (EGRE) to help in shrinking the traditional government and controlling the private sector. This task was clearly mentioned in the e-government objective. The interviewee drew Figure 6.6 below and stated that it represented his vision and understanding of the future of the e-government.
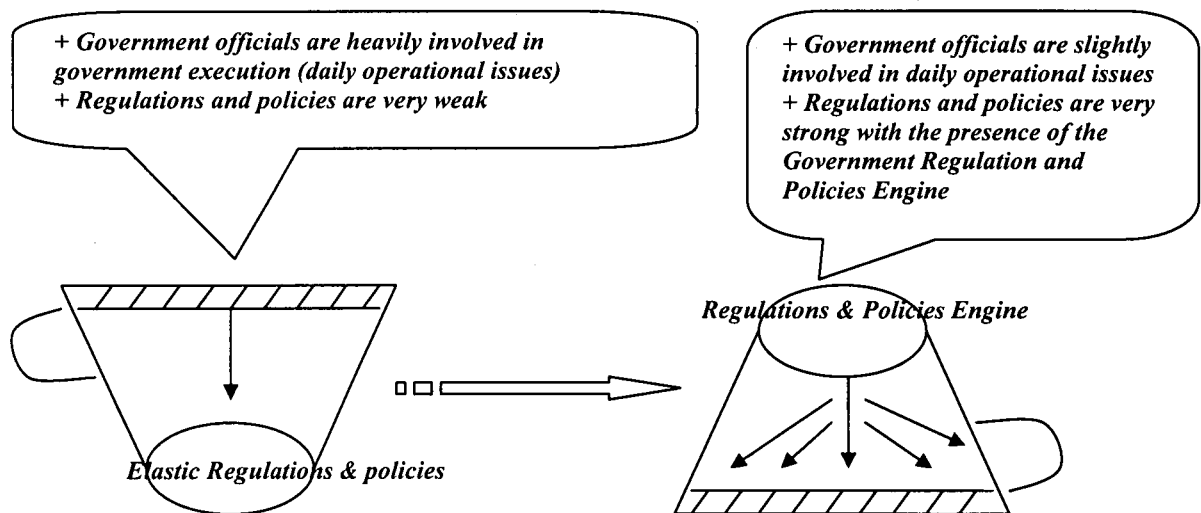
Figure A: Government before e-government implementation

Figure B: Government after e-government implementation

Figure 6.6: One of the key objective of Qatar e-government

He commented on his diagram (Figure 6.6) by saying:

"E-government is a process that shrinks traditional government as its main operational tasks will be gradually passed to the private sectors. But this will not happen till government creates a regulatory engine (or policy and regulatory framework) that controls the private sectors. As shown in this cup diagram {above} the role of e-government is to protect the interests of people

151

and businesses by implementing an electronic government rules engine (EGRE) that controls all government regulations and policies and which will be responsible for proposing and implementing all the required rules. Accordingly, government officials will concentrate on the strategic issues rather than day to day operational tasks. Here in Qatar our objective is to reach that target as well as another important strategy which is the Zero click strategy."

Another senior manager explained something similar to this vision when he was commenting on the future of e-government in Qatar. He described the ultimate stage of the e-government as a "seamless e-government". He said:

"In this type of e-government constituents are not required to do anything from their end. For example, most of the services will be done automatically without paying any efforts from the users' side (i.e. driving licenses will be renewed automatically without any interference from the customers)."

Indeed, this is a very advanced stage that cannot be reached easily specially at a national level. In addition, in light of the current project progress, this type of e-government might take many years to be reached.

6.4 Discussion and analysis

6.4.1 Preliminary phase

Although the term 'e-government' did not appear in Section 6.2.1.1, all activities mentioned in that section can be considered as part of the early activities of an e-government system given the definition of the e-government mentioned in Section 6.2. It was clear that the objectives of having those websites were not clear at the beginning but subsequently government officials realised the benefits of having those services online and started developing their internal business applications and providing better services to their visitors. All those websites started simply and there were no clear differences between the different stages of development. In addition, some of those websites developed quickly and provided different services that ranged from publishing static information to interactive services within a very short period of time.

152

Those web services encouraged government officials, specifically IT professionals, to improve their internal business applications and to share their data amongst all public organisations. Hence, they started communicating and coordinating with each other with the aim of developing a central database. The planning council was the formal authority that was supervising those activities which led to the announcement of the NNI project. From the objectives of the NNI project, it can be understood that government officials realised the importance of increasing the public organisations efficiencies and reducing the cost of their operations by benefiting from the available information and communication technologies (ICTs). Therefore, they started thinking of reducing the duplication of effort and redundant databases, having standards for the electronic infrastructures and business applications required for performing electronic processes and providing accurate and up-to-date information which in turn increases the efficiencies of the employees and saves their time. Moreover, it can be noted, from the NNI objectives, that the focus of the project was on improving the internal business applications and public infrastructures as a first step. Furthermore, it can be understood from the ARRAYAH newspaper interviews with some government officials that they were thinking of introducing some government services electronically to the public and they referred to the NNI project as an e-government project. However, it was not clear what sort of services they intended to provide or how or where they would provide them. Most importantly, this project remained only as a plan on papers due to the emergence of the idea of having an e-government system (i.e. the emergence of e-government pilot project).

By comparing these early activities with what is mentioned in the literature, the researcher found that these activities can be classified in the first stage of the Layne and Lee (2001) and Deloitte Research (2000) models, while they span the first and the second stages of the Howard (2001), McDonach (2002), Moon (2002) and West (2004) models. Table 6.9 shows where such preliminarily phase activities can fit in the evolution models found in the literature.

153

Table 6.9: Placement of the early activities in other models found in the literature

Stage No	Preliminarily phase activities					
	Howard, (2001)	*Layne & Lee (2001)*	*West (2004)*	*Moon (2002)*	*McDonach (2002)*	*Deloitte Research (2000)*
Stage 1	✓	✓	✓	✓	✓	✓
Stage 2	✓		✓	✓	✓	

From Table 6.9 above, it can be noted that the above activities are similar to what was suggested by Layne and Lee (2001) in the 'cataloguing' stage of their proposed model. In addition, although those early activities can span some of the activities mentioned in the second stage of the Deloitte Research (2000) model, they could not span the whole stage as there were no transactional services implemented during those early activities. However, it is clear that those early activities spanned the first and the second stages of Howard (2001), McDonach (2002), Moon (2002) and West (2004) models. This gives a clear indication that the technological criteria suggested by those authors (except Layne and Lee (2001)) to differentiate between the first and the second stages of their models were not applicable in the case under study, at this stage. For the purpose of the next discussions and analyses, these early activities are referred to as the preliminarily phase.

6.4.2 Transforming phase

From Section 6.2.1 and Section 6.2.2, it can be noted that there were parallel, uncoordinated and unplanned activities that related to providing electronic government services. In other words, while most of the ministries and public organisations continued in improving their websites services individually, there were national activities that took place under the planning council supervision. Those national activities started with the planning of the implementation of the NNI project and ended with the implementation of the e-government pilot project which provided for the first time a transactional service at the national level. The implementation of the e-government pilot project was the starting point of thinking about a national e-government system. Thus, this phase can be regarded as a transforming phase although, there were some ministries and other public organisations that still did not introduce any type of online services at that time.

By comparing these activities (i.e. preliminary phase activities and e-government pilot project activities) with those models found in the literature, it can be observed that these activities span the whole stages of the Howard (2001) model. In addition, while they span the first, second and third stages of the Moon (2002) and McDonach (2002) models, they span only the first and the second stages of the Layne and Lee (2001) and Deloitte Research (2000) models. However, this comparison considers only the technological criteria.

For example, although these activities can be mapped into the first and the second stage of the Lyne and Lee (2001) model, they did not cover all the activities mentioned in the second stage of that model. Lyne and Lee (2001) mentioned that the second stage of their model was not only conducting online transactions by citizens, but also participating through online forums that allow citizens to talk directly to government officials or take an active role in public hearings which is not the case in the mentioned early activities or the pilot project. Table 6.10 shows where these preliminarily phase activities as well as the pilot project can fit in the models found in the literature.

Table 6.10: Placement of the preliminarily phase activities and transforming phase activities in other models found in the literature

Stage No	Preliminary phase & transforming phase activities					
	Howard, (2001)	*Layne & Lee (2001)*	*West (2004)*	*Moon (2002)*	*McDonach (2002)*	*Deloitte Research (2000)*
Stage 1	✓	✓	✓	✓	✓	✓
Stage 2	✓	✓	✓	✓	✓	✓
Stage 3	✓			✓	✓	

There are two main lessons that can be learned from the above comparisons and discussions. These lessons are summarised below:

1. Classifying the e-government implementation stages based on the web services characteristics is misleading. In other words, although all types of services (i.e. informational, interactive or transactional services) were provided in the early activities and the pilot project mentioned above, it cannot be said that the e-government in Qatar was in the second or third stage of its

development lifecycle. This is simply because government officials were still testing the feasibility of having an e-government system at a national level.

2. Although government officials were able to implement a pilot project that provided transactional service, there were other ministries that still do not have a presence on the web. That means, should any government seek to implement an e-government system at a national level, it is not necessary for that government to shift gradually from informational services through interactive services to transactional services. Again this confirms that classifying e-government stages based on the type of the services provided is an inadequate measurement.

6.4.3 Readiness assessment and preparation activities phase

Section 6.2.3 explained the government readiness activities that took place under the planning council supervision. The e-government executive committee, with the help of an international consulting group, were the key players in conducted those activities. As mentioned, 24 ministries and public agencies were assessed from the technological and the business perspectives. The focus of the assessment process was on transactional services only. Informational, interactive, and G2G services were excluded. Informational and interactive services were left to be developed by their respective ministries while G2G services were left to be developed in a separate project.

Their assessment findings showed that there were 1350 services that could be developed but by applying their filtration criteria, they ended up with 22 service groups to be implemented in the first phase of the e-government project. From this process it can be understood that the e-government implementation in Qatar will pass through many stages, with the first stage being the implementation of the approved 22 service groups, and the second possibly being the one dealing with G2G services. In other words, it was clear that the development of e-government in Qatar is a long term plan, as can be extracted from the expected future of their e-government. This issue was explained in Section 6.3.

Section 6.2.3.2 showed that the services were been classified into complex and simple services. Priority for implementation was given to those simple services that had a higher number of annual transactions and would help in promoting e-government or those simple services that were precursors of other services. Furthermore, there were pre-implementation activities that took place before the implementation of the approved services. Comparing these activities to what was found in those models mentioned in Table 6.10 above; the researcher noted that none of those models succeeded in highlighting such government readiness activities.

6.4.4 Implementation phase

Section 6.2.5 presented how the selected e-services were planned to be implemented and showed how the e-government team had not succeed in delivering even half of those services within the allocated period of time. This failure gave a clear message to the e-government team in Qatar. The message was that they had not properly sized the problem. They realised that there were many issues that had to be addressed such as widening the participation circle amongst all the ministries and involving as many government officials as possible. In addition, they dad not properly assessed the size of the change that would be caused by such an initiative and hence they underestimated its related organisational factors, such change resistance and power distribution. These issues are further analysed in Chapter 7.

Having summarised the above points, there are other two issues that need to be noted. First, it was clear that nothing had been done to reengineer the services before going ahead to implement them although the NNI project objectives emphasised the importance of such reengineering processes and their benefits. This issue is explained and assessed more in the next chapter. Second, it can be noted that there were certain ministries that were required to develop their electronic transactional services although they still did not have even their own websites, such as the Ministry of Energy and Industry, and the Ministry of Finance.

Comparing these activities to what was found in those models mentioned in Table 6.10 above; it was noted that none of those models succeeded in highlighting such

government readiness activities. This might be justified by the level those models were developed for. In other words, none of those models were proposed for e-government implementation at a national level and hence it would not be expected that they would highlight or mention such national activities. However, they were supposed to highlight such activities even at the level for which they were proposed (i.e. local, state, or federal level).

6.4.5 Determining e-government development stages

Having discussed the national activities that took place in Qatar to implement its e-government system, the researcher seeks to discuss and analyse those activities in relation to the proposed initial framework. However, the concentration of the analysis in this chapter is on classifying those activities into stages of development and identifying key implementation indicators (i.e. development measurements) that help in differentiating between those stages. The proposed initial framework has used some key characteristics to differentiate between the different stages of development (see Table 3.1). However, in light of the above discussion these characteristics seem to be vague and will not help e-government implementers to differentiate between the development stages. Hence, it is very important to find other development measurements that do not depend purely on technology characteristics. The next subsections will discuss this issue further and will suggest alternative measurements.

Key development measurements

Without having clear key development indicators, it is very difficult for e-government implementers to identify the different stages of their e-government development and the development requirements for each stage. At the same time, it is not an easy task to find exact development indicators that classify the development stages in a linear way. Although many scholars suggest the evolutionary perspective of e-government development, the literature showed some debates regarding whether e-government development process should pass in a linear way or curvilinear way (Holden *et al.* 2003; Ho 2002; Moon 2002). The absence of having clear progress measurements could be one of the main reasons for such debate. It was mentioned in Section 6.4.2

that classifying the e-government implementation stages based on the web services characteristics (i.e. informational, interactive or transactional services) is a misleading classification. Hence, the researcher attempted through this section to find clear development measurements (i.e. implementation indicators) that can be used to differentiate between the different stages of e-government development at a national level. These measurements are developed based on this case study's findings (i.e. the activities mentioned above).

By reading carefully through the different activities of the case study, there are some 'measurements' that can be deduced. These measurements are classified into three main categories, specifically milestones category, advanced technology features category and services category. The milestones category has been divided into four main milestones; these are:

1. *Forming an e-government entity:* since the e-government system will be implemented at a national level, then there should be an organisation/authority that will be responsible for developing and managing all the activities related to that e-government system nation-wide (see section 6.2.4).

2. Providing transactional services requires a secure and a convenient payment gateway that enables e-government constituents to pay for those services. Hence, *developing a secure payment gateway* is a must as this will support e-government users to pay for their transactions online and protect them from any unanticipated risks. Al-Sebie *et al.* (2005), suggest allowing e-government customers to perform online financial transactions such as payments of bills and fines to be one of their criteria for reaching e-government transactional stage.

3. *Developing secure authentication system* since e-government will deal with highly sensitive information which must be protected from 'hackers' and internet criminals. Al-Sebie *et al.* (2005, p. 457) consider *"providing a secure connection by enabling customers to complete their transaction with the required government organisation online, safely and with trust in the system"* to be one of their criteria for reaching e-government transactional stage.

4. *Developing an electronic law (e-law)* that supports and protects e-government constituents legally. This includes some necessary strategies for handling

those sensitive issues such as data security and integrity, user authentication, privacy protection and legal liabilities which must be in place before automating any government services (Caffrey, 1998; Wimmer, 2002).

The second main category (i.e. advanced technology features) has been divided into three elements, namely:

1. ***Single sign-on portal***: This feature enables e-government users to sign-on only one time whenever they access the e-government portal to use some services. Thus, there is no need for the e-government users to sign-on for each service independently as long as s/he does not log-out. The case study findings showed that most of the available services on the Qatar e-government portal can be accessed by single sign-on.

2. ***Single point of access (i.e. one stop-shop government):*** Ultimately, all e-government services will be accessed through a single interface. *"One single point of contact for all services would be the ultimate goal"* (Basu, 2004, p. 113). From that interface users can access all the e-government services so there is no need for the e-government users to memorise an unlimited number of website addresses. A single point of access can be used to provide e-government users with services they require and provide the agency with efficient transaction functionality (Akman *et al.* 2005).

3. ***Number of access channels:*** one of the e-government objectives in Qatar was to *"Create multi-channel government access through the internet, IVR, WAP, Digital TV, Kiosks, etc. "* This objective means that e-government will reach an advanced level of technology and hence the researcher used this element as one of the main elements of the advanced technology category.

The third category is the service category which is composed of three main elements. These elements are:

1. ***Number of the developed transactional services of type complex:*** as mentioned in Section 6.2, the transactional services have been classified into two types; simple and complex transactional services. The researcher used the

number of developed transactional services of type complex as a measurement to be used in the classification of the e-government development stages.

2. ***The usage percentage of the developed transactional services:*** since the government has possibly spent millions in developing those services and since one of the key objectives of developing them is to reduce their operational costs in the long term run, it is necessary for them to measure the usage percentage of those transactional services in comparison with the expected totality of transactions for the same services by using all possible means (i.e. other than e-government portal).

For example, according to the implementation plan of the selected 22 service groups, it was anticipated that eleven services would be implemented in the first year and eleven services in the second year. Based on that time frame they expected that the total transactions that would be performed in first year through the e-government portal would be 85226 in comparison with 706291 as the totality transactions for those eleven services in the same year through other traditional means (i.e. manual procedures or internal IS applications). Therefore, they expected that 12 % of those services would be performed through the e-government portal. Table 10.11 shows the expected usage percentage of those 22 service group for the first two years (EGBM). As shown in Table 10.11 they expected that the usage percentage would be doubled approximately (26%) since the number of services would also be doubled. However, this might not be the case because there are other factors that might affect this assumption such as the awareness, the ease of use, and the time.

In other words, it is unlikely that all the e-government users would shift overnight to the internet or other electronic means to carry out their transactions. Therefore, the researcher will use 10% as usage measurement, this is less than their first assumption (i.e. 12%) as a usage percentage, to help him in the differentiation between some stages of the developed framework. The next section shows how the researcher uses this percentage in his classification.

Table 6.11: The expected usage percentage of those 22 service groups for the 1st two years

	Total universe of transactions for 22 services	Total transactions through e-government portal	%
Year 1	706,291	85226	12%
Year 2	2,172,139	568576	26%

3. ***Informational and interactive services.*** This is the third element of the services category. The researcher will also use this element in classifying the different development stages of an e-government system.

Having identified the key implementation indicators (or development measurements), it is time to map these measurements to their respective stages. According to the proposed framework, there are four stages of development for e-government implementation at a national level so the next section will show how these measurements can be mapped the different development stages of the initial framework.

Mapping the key measurements to the development stages

Initial stage

It can be said that most of the countries over the world (if not all of them) are in this stage. There is only one key condition (i.e. measurement) for any e-government system, at a national level, to move from the first to the second stage; that is:

- o Forming an e-government entity (i.e. authority) at a national level that is responsible for managing the e-government implementation and the expected changes. This involves all the required resources such as having an adequate budget and sufficient human resources.

Developing stage

The second stage can start once an e-government entity (or organisation) is formed at a national level. It is necessary for a national e-government entity to be in place to be responsible for the implementation of all those government e-services that need to be

implemented nation-wide. In addition, this entity should be responsible for developing all the necessary technological and business infrastructures. Furthermore, the presence of such an entity is essential to manage the radical change that can be caused by the introduction of such national electronic initiatives. The key conditions for an e-government system at a national level to move from Stage 2 to Stage 3 are:

- An electronic law (e-law) must be in place. This is because e-government implementers will start providing some transactional services in this stage so developing an e-law is essential. Otherwise there will be no sense in using whatever e-services are available online, as e-government users will be exposed to a very high risk. In addition, e-law must protect not only the e-government users, it must protect all e-government stakeholders legally.

- Developed secure authentication system. Another key requirement for using online transactional services is the presence of a highly secure authentication system that protects the e-government users and e-government system from any unauthorised users or hackers.

- Developed secure payment gateway. Transactional services require users to pay online and hence e-government users will not trust the e-government services and will not expose themselves to the risk of paying online unless they feel that there is a highly secure payment gateway.

- Implementing at least 10 % of the total transactional services (i.e. complex transactional services) that are planned to be implemented. This measurement is proposed to force e-government implementers to develop realistic implementation plans and to consider other issues that might hinder those plans such as the organisational and technological issues which will be discussed in Chapters 7 and 8 respectively.

- Achieving at least 10% usage of online transactional services that last at least a year in service. This is a very important measurement as it will draw the attention of the e-government implementers to improve their current services and will enforce the execution of more marketing programmes before they proceed further in their development. In addition, this measurement will force e-government implementers to improve the quality of the provided services. Furthermore, this measurement is necessary to not allow e-government implementers to be technology driven. *"As a consequence of recent software*

and technology focus, many systems development approaches to e-government continue to be rather technology-driven" (Traunmudller and Wimmer 2003, p. 6). There is no sense in having many transactional services online and a very low usage of those services. Achieving these four conditions are essential for any e-government system to move from this stage to the third stage.

Advanced stage

The key measurements in this stage are meant to draw the attention of e-government implementers to a number of important issues. Each of these issue will be discussed after its related measurement immediately. The key measurements for an e-government system at a national level to move from Stage 3 to Stage 4 are:

- All ministries' and government agencies' online services must be accessed through and only through the e-government portal. The e-government portal should be a single sign-on at this stage. This measurement is proposed to encourage e-government implementers in this stage to be more customer-focus. In other words, this measurement will enable the e-government portal to be a one-stop interface that operates on the top of existing systems country-wide and is intended to maximise the convenience and satisfaction of users through service integration. *"In the Internet age, the idea of "one-stop shopping" has resurfaced as an alternative to functional departmentalization."* (Ho 2002, p. 436)

- There must be at least three different channels to access the e-government services, such as Internet, kiosks, service centres, and wireless devices. This measurement is also intended to increase e-government services availability and accessibility and hence maximise the convenience and satisfaction of users but through different channels of access.

- More than 50% usage of online transactional services that last at least a year in service. This measurement was proposed for the same reasons mentioned in the Developing stage 2 above.

- Implementing at least 50 % of the total transactional services that were planned to be implemented in the detailed implementation plan (i.e. complex

164

transactional services). This is also proposed for the same reasons mentioned in the Developing stage.

Open-ended stage

It might be noted that the name of this stage has been changed. Based on this study findings, it was found that this stage is a continuous stage since the number of e-services will grow regardless of the type of those services. In addition, e-government implementers will continue to enhance, update, and maintain the existing services. Furthermore, they will continue to upgrade their infrastructures, specifically the technological ones. Moreover, they will strive to make their e-government security systems up-to-date as security will never be satisfied. Also they will continue to market programmes with the aim of increasing the usage percentage and reaching one of the optimal objectives which is the information society. Thus, it was found that the **'Open-ended Stage'** is better than **"Optimal stage"** because it is not visible, at least till the time of conducting this study, what is the optimal stage. Of course there are no measurements suggested here since this is the last stage in the developed framework.

6.5 Summary

Managing any IT project requires the project to be broken into certain stages and milestones and hence identifying other important issues such as risk factors, success factors, implementation plans, and resources required. Similarly implementing any e-government system requires its implementers to classify the implementation into different stages, identify the requirements of each stage, identify the milestones that need to be implemented in each stage, identify the main measurements that can be used to differentiate between the different stages, and identify the major challenges that might restrict its implementation. The case study findings are analysed in relation to the e-government definition mentioned in Chapter 2, the initial framework developed in Chapter 3 and in relation to the e-government literature. The initial framework is used to structure the analysis and at the same time to be refined by the analysed data in terms of number of development stages, activities that can be carried out in each stage and the key progress indicators (i.e. measurements).

The data analysis started with a description of what had happened in practice in the case study under investigation, in the State of Qatar. This description was based mainly on three sources of evidence. These are: documentation, interviews, and some historical data that had been collected from the local newspapers. Wherever appropriate, the researcher attempted to compare what had happened in practice to what had been mentioned in the literature to show the reader where the gaps occurred. It was hoped that the future of the e-government in Qatar would be made clear to the reader by quoting from the interview data (see Section 6.3). It also helped the researcher to predict the type of activities and the nature of the development that will take place in the future. In addition, attempts were made to develop key conditions (i.e. measurement) that could be used to differentiate between those proposed four stages. Those measurements were classified into three main categories and each category was divided into some certain elements that were extracted from the case study findings.

Indeed, those measurements helped a great deal to make the framework move from stage 1 to stage 4 in a linear way. Furthermore, it was found that all the names of the stages suggested in the initial framework reflect the type of activities in each stage except the final one. The name of the fourth stage has been changed from the 'Optimal Stage' to the 'Open-ended Stage'. The reason for this is the researcher found it difficult, based on the study findings, for any e-government system to reach an optimal stage. In addition, the development of that stage will continue and will grow over time so there is no clear end for this stage. Finally, it is worth mentioning that the framework is represented in its final form in Chapter 9 after analysing other key issues such as organisational and technological issues. These key issues are discussed and analysed in Chapters 7 and 8 respectively.

Chapter 7: Organisational issues

7.1 Introduction

In this chapter and the next one (Chapter 8), the researcher discusses and analyses those significant issues that must be considered and treated carefully during the development of an e-government system at a national level, in the light of the case study findings. Both chapters address one sub-question, which is: what are the key issues that might affect e-government implementation at a national level and how could these issues be treated in practice? These issues were initially divided into three categories, specifically, organisational issues, technological issues and other issues. It was mentioned in Chapter 3 that the 'other issues category' will be further examined by the study findings and accordingly it might be improved or it might become redundant.

The study findings showed that the third category (i.e. other issues group) is redundant since its elements were either moved to the organisational issues or technological issues, or used as a key measurement used to differentiate between some development stages. The main objective of creating the *"other issues category"* was to include all those issues that were found in the literature and which could not be classified initially as organisational issues or technological issues. By analysing and re-examining those factors, it can be noted that, for instance, e-law was used in Chapter 6 as a key measurement that can be used together with other measurements to differentiate between the Developing stage and the Advanced stage. Hence the objective (i.e. including the e-law issue in the study) is achieved. Other issues such as change management and digital divide were also classified as organisational issues after analysing the case study findings. These issues could not be classified initially as organisational issues for two main reasons.

Firstly, the researcher used Doherty and King (1998a, 1998b, 2001 and 2003) studies' classifications and these issues were not included in those studies since they were dealing with the development of normal IS within a single organisation (see Table

167

7.1). Secondly, he was not sure whether these issues will be found or will be supported by the case study findings or not. However, since the study findings suggested the importance of these issues, they were re-examined and were reclassified as organisational issues in the case of implementing an e-government systems at a national level (Sections 7.4 and 7.5 explain these issues in more detail).

With regard to the final issue (i.e. the e-government service usability), the case study findings presented it as a key challenge that need to be considered and treated carefully during the implementation of an e-government system at a national level. It was only the factor that is left in *"the other issues category"*. However, by analysing the reasons behind creating this problem (i.e. the usability problems or issues), it was found that most of them (if not all) are due to technological problems. Therefore, it was classified as technological issue. Having classified the usability as technological issue, the old category (i.e. other issues category) became empty (i.e. redundant) and hence was removed. Chapter 8 (e.g. Section 8.4) explain this issue in depth.

This chapter focuses on the organisational issues only whereas chapter 8 deals with the technological ones. As mentioned in Chapter 3, the classification of the organisational issues in this study was mainly based on the Doherty and King (1998a, 1998b, 2001 and 2003) studies. However, it is worth mentioning that those studies were conducted in relation to the development of information system projects and hence in the case of implementing an e-government system at a national level, the impact of these issues will be more than those that had been identified in the development of an IS in a single public or private organisation. In addition, some of the issues from the Doherty and King (1998a, 1998b, 2001 and 2003) classifications have been excluded and some other new issues have been added to the classifications mentioned. The reasons for these changes are explained in each classification in this chapter independently. Nevertheless, there are clear differences that must be highlighted between both studies before analysing those issues in more details. Table 7.1 shows the key differences between the Doherty and King (1998a, 1998b, 2001 and 2003) studies and this study.

Table 7.1: The key differences between the Doherty and King (2003) study and this study in relation to the use of the term organisational issues

	Doherty and King (1998a, 1998b, 2001and 2003) studies; Normal IS projects development	**This study; E-government implementation at a national level**
Number of the organisations that might be affected by the new system	Only one organisation that will be affected by the new system	Many organisations will be affected by the system (i.e. ministries, public agencies, private sector, the whole society, etc.)
System's users	The employees of the organisation that implemented the system	E-government users include government employees, citizens, residents, visitors, and businesses
Development team	Not involved in the studies	Involved in the study
The organisation of the development team (i.e. e-government entity)	Not involved in the studies	Involved in the study

As shown in Table 7.1, there are four main differences between the mentioned studies. These four differences are the main reasons for adding new issues or deleting other non-related issues from the Doherty and King (2003) classification of the organisational issues. Before starting the analysis of the study findings, it is very important to define the term organisational issues and the term treatment as well. Doherty and King (2003, p. 25) defined the term 'organisational issues' in relation to information systems project development as: *"Those issues which need to be treated during the system development process to ensure that the individual human, wider social and economic impacts of the resultant computer-based information system are likely to be desirable"*. Although this definition was used to define IS implementation issues within one organisation, the researcher used the same definition in the case of an e-government system implementation. The term 'treatment' is also used in this research as suggested by Doherty and King (2003, p. 25); they stated: *"To treat a specific organisational issue, it is necessary to firstly evaluate the likely organisational impact associate with it, and then if necessary take steps to ensure that the resulting impact is likely to be desirable"*.

Organisational issues were classified into four main categories, specifically organisational alignment, organisational contribution, human-centred issues, and change management. Thus, this chapter is divided into six main sections. Section 7.2 analyses the organisational alignment issues and Section 7.3 discusses and analyses

169

the organisational contribution issues. The discussion and the analysis of those human-centred issues are presented in Section 7.4. Section 7.5 highlights and analyses the change management issue. Finally, Section 7.6 summarises this chapter.

7.2 E-government organisational alignment

The term organisational alignment is used to describe *"the degree of alignment between a proposed system and its organisational contexts"* (Doherty and King, 2003, p. 27). The proposed system in this study is the e-government system in Qatar. Therefore, the context of an e-government system at a national level (e.g. Qatar E-government) involves all public/private organisations, ministries, and the whole society in the country that is implementing that e-government system. However, the importance of aligning an e-government system with the participants (i.e. the participating ministries and public agencies) is greater than other issues. Table 7.1 shows that one of the main differences between the contexts of normal IS systems and the context of an e-government system is the number of organisations that will be affected by these systems. Hence, the effect of implementing an e-government system on its context will be greater than the effect of implementation a normal IS system on a single organisation. In other words, the impact of having an e-government system on the 'organisation's structure' (i.e. government structure in the case of developing an e-government system), 'organisational culture' and 'organisational power' will be much greater.

In addition, it is very important to draw attention to the nature of developing an e-government system, particularly at a national level. Developing an e-government system is not like other traditional IS which can be developed and managed by a single department in a single public or private organisation. In the light of the case study findings, e-government is a multi-faceted project (or system) that takes place across many organisations and is managed by an independent entity country-wide. Therefore, the study of the impact of such organisational issues will involve the development team themselves and their organisational structure and hence the study will highlight key organisational issues that might be generated by having (or lacking)

170

such a national e-government entity and its alignment with other government ministries and public agencies, and how these issues are treated in practice.

Doherty and King (2003) divided the organisational alignment into three subcategories: the organisational structure, the organisational culture and the distribution of power. The organisational structure is not considered in this study for three main reasons: first, the case study findings did not show any evidence that the e-government in Qatar affected any organisational structure of the participating agencies; secondly, it is too early to measure such impact as the e-government in Qatar is in its early stages; thirdly, it is impossible to measure or analyse the impact of having an e-government system on the organisational structure of each organisation across the country as this will need a separate study (or maybe studies).

In addition, this study added a new subcategory to this category. The new subcategory is the importance of forming an e-government authority (i.e. entity) and properly aligns that entity with the government structure (or body). Thus this classification (i.e. organisational alignment) is composed of three main categories in this study, specifically forming an e-government entity, organisational culture and distribution of power. These three subcategories are discussed and analysed in the following three sections.

7.2.1 Forming an e-government entity

The case study findings showed that the Qatar e-government is managed by an independent entity which is composed of a development team and a steering committee. That entity had its own separate budget, organisational model and organisational structure. In addition, the steering committee reported directly to His Highness the Emir of the State of Qatar. That entity was responsible for coordinating and managing all the e-government activities at the national level. At the same time, other ministries and public agencies were empowered to continue developing their online services, except those transactional services which were considered as the core part of the e-government team responsibilities nation-wide. However, the findings suggest that forming of such entity is a significant issue and needs careful treatment

should the e-government implementers seek success in both the organisational and technological tracks of their national initiative. This section aims to discuss and analyse those issues that related to the alignment of such an e-government entity with its context (i.e. the government body: ministries and other public agencies).

E-government entity organisational model

As mentioned in Chapter 6, an international consulting group was contracted to help the executive committee members in the preparation for the intended e-government project. One of the tasks that was assigned to them is to help them in establishing an e-government organisation. In particular, the consulting team was instructed to: (i) review international best practices, (ii) recommend an organizational model for the Qatar e-government entity, (iii) develop an organizational structure for the recommended model, and (iv) identify the roles and responsibilities as well as staffing needs within that organization (EGOP, slide 3). Accordingly, the consulting group conducted the required study and identified three alternative organizational models for the Qatar e-government entity. In addition, the consulting group provided examples of each model and identified its strength and weaknesses. Table 7.2 presents a summary of their study results.

Table 7.2: Summary of e-government model alternatives; Source: EGOP

E-government Model	Examples	Strengths	Weaknesses
As a separate department within an existing ministry/agency	1. New Zealand (Ministry of State Services) 2. Texas (Department of Information Resources Management) 3. Singapore (Government Chief Information Office, Infocomm Development Authority)	• More cost effective than a new organization • Can draw on existing ministry's human and capital resources	• Possible bias/conflict of interest • Lower impact and visibility; less willingness by others to cooperate • Less flexibility In terms of staffing, policies, procurement
As a separate ministry at an equal level to other ministries	1. UK (e-Minister reporting to the Prime Minister) 2. Egypt (Ministry of Communication and Information Technology)	• More effective and visible than under an existing ministry • Can initially share resources with other ministries	• Possible shifts in priorities as ministries change leadership • Less flexibility in terms of staffing, policies, procurement, etc. • Less willingness by others to cooperate
As a public sector corporation		• More independent, transparent, accountable and effective • Focus on cost efficiency and cost recovery, without losing sight of overall e-government objectives • More flexibility in terms of staffing, policies, procurement, etc.	• Upfront setup requirements

Based on the consulting group study and advice, the government officials in Qatar selected the third option, shown in Table 7.2 below, which is having an independent e-government entity that is responsible for managing all the e-government activities country-wide. The recommended organization model for the Qatar e-government entity is a public sector corporation that is owned by the government of the State of Qatar. In addition, the organization would operate on a commercial basis, focusing on cost efficiency, cost recovery, accountability and transparency and would have the flexibility to act quickly and competitively in staffing the operation and executing the detailed implementation plan. It was also mentioned in the e-government organization plan that the e-government organization would not be viewed as a political rival of government ministries and would be better positioned to elicit cooperation from ministries and agencies, which use the e-government framework. There were two principles that guided the organization design. These are: (i) the desire to institute a streamlined operation with a flat organizational structure and (ii) the approach of building a management team focused on service, which discourages empire building (EGOP, slide 19).

However, this organisational model was not implemented as recommended above (i.e. as a corporate public organisation). In other words, although e-government officials in Qatar tried to choose a 'best practice' model for their e-government entity, it seems that there were some shortages in their implementation of the chosen model. For example, the recommended 'public sector cooperation' was replaced with an entity that is managed by a steering committee. The steering committee is composed of three members only. One of the steering committee members is the chairmen and at the same time the e-government director.

There is no doubt that making the Qatar e-government a separate entity owned by government and reporting to the highest authority office directly, will provide the e-government with the power needed to make changes in the different ministries and public agencies. However, the case study findings showed that it would have been better if they could widen the participation of the steering committee or replace it with, for instance, a board of directors. Those board members might be a mix of ministers, parliament members, business men, and academics who are characterized by very good interpersonal skills and sufficient power to push the changes through to

174

all the participating organizations. Widening the participation of this board would facilitate most of the difficulties and challenges that might face the e-government implementers such as political challenges, cultural challenges, and resistance to change. Moreover, it is believed that there are two important factors that can affect the performance of such board members; (1) getting the support from the highest authority in the country and (2) the interpersonal skills of the committee (board) members.

Based on the case study findings, it was obvious that the limited number of members of the steering committee and their interpersonal skills affected the organisational performance (or progress) of the e-government initiative in Qatar. For example, one of the IT managers in the participating ministries commented on these issues and said: *"till today I cannot understand the reason behind reducing the number of the committee members to only three members although such a project spans all the ministries and public agencies."* He continued: *"Can you believe that a national e-government project will depend on only three persons?"* From this quote it can be understood that there is a need for a committee or board that involves more people from different sectors across the country. There is no doubt that the current e-government team in Qatar made some progress on the technological track but technology itself cannot guarantee the success. Burn and Robins (2003, p. 34) stated: *"IT playing a supportive but not always commanding role. Balanced consideration of the social, technical, and business value elements should be maintained throughout the project".*

Finally, it is worth mentioning that in the fourth quarter of the year 2004, the State of Qatar established an SCITC that aims to supervise all the ICT related initiatives including the computer illiteracy initiative and the current e-government project. The researcher asked the general secretary of this council about the relationship between this council and the e-government and she said: *"I think the e-government project will continue as a national project. Although, there is a debate (and may be a formal proposal) around the issue of converting the project to an independent agency, I do not think that this will be the case specially after forming this council. Generally, you can say that I am 100% sure that it will not be an independent agency".* She continued: *"Currently we are planning to bring an international consultant to evaluate the e-government progress and its current*

services. Based on the evaluation findings we will develop a suitable e-services plan for the future services". As a matter of fact, the SCITC invited an international consulting group in April 2005 with the aim of evaluating the e-government progress. However, till the 30th April 2005, the situation was still ambiguous with regard to the future of the e-government entity and its steering committee. It was not clear whether it will continue as a project and under the supervision of the SCITC or will be continued as a separate e-government entity.

E-government mission and strategic vision

The Qatar e-government strategy addressed many areas such as the e-government mission, vision, constituents (i.e. users), action plans for e-government, identification of policies necessary to support e-government, e-government objectives, and a methodology for determining government readiness as well as a process for identifying and prioritising e-government services. However, that strategy failed to address some other important aspects such as business processes reengineering issues, organisational readiness, awareness issues nation-wide, involvement issues (i.e. the involvement of the public organisations officials, the involvement of the citizens and the involvement of the private sector) and the assessment of the education system in relation to the e-government aspects. Also the mission was very narrow as it focused only on the technology. It was mentioned that the mission is to: "*achieve the highest performance transactions electronically, through streamlined business processes and integrated information technology solutions*" (EGSV, p. 1). Indeed, it is a narrow mission as it does not cover their e-government objectives and will not achieve the anticipated benefits of having such a national system.

In other words, it is a narrow mission because government might have the highest performance of governed transactions electronically and streamlined business processes and integrating information technology solutions with bad customer service, high costs, and a complicated interface which could deter people from using e-government and lower the people's satisfaction with the government and this might cause unwanted outcomes. A better mission would be to increase e-government stakeholders' satisfaction with the e-government through lowering the cost of government, increasing the speed, security, quality and accuracy of services. These

steps would help the government goal to satisfy the needs of the people through the use of technology.

From their mission it seems that they are seeing the technology as a goal instead of as a tool to reinvent the government services. Hence, it is possible to see through their whole methodology that technology is the driving force between the different stages of implementation. In other words, the stages are described through technology instead of using the technology as a tool to lower costs, increase convenience, remove bureaucracy and increase citizens' satisfaction with the government.

It is believed that there is one main aim for e-government which everything falls under; that is: to use e-government to increase the stakeholders' satisfaction with the government. What does that mean? Stakeholder in this instance is anyone who has to deal with the government such as citizens, non-citizens, businesses in and out of the country and other governments. Satisfaction for the people will occur by lowering the cost of the e-government, removing bureaucracy, and increasing transparency and accountability. This is important for the government because if the people are not satisfied, the e-government system could deliver undesirable results and might even go to the extreme of causing the downfall of the e-government system.

Businesses look for countries that make doing business with them easy, convenient and stable to lower the risk of their investments abroad and, of course, this is an important issue for any government as it wants to be a country that attracts good businesses which therefore provide jobs for its people and help the economy. It is very important in the Gulf Region for countries to have good images and to move a way from the regional stereotypes of the Arab Muslims world. This is important because they are living in a global society where thoughts, ideas, business, culture are interacting at a high pace. Therefore, countries that find themselves isolated from the world are losing the advantages that come with the interaction with other countries. To be clear, the mission is to use e-government as a tool to raise the e-government stakeholders' satisfaction with the government.

It is necessary to emphasise again that technology is just a tool. The danger in using this tool as a mission is by using the tool but not providing the benefits needed to

increase the people's satisfaction. At the same time, government officials should not restrict themselves to the use of the new technology and think that new technology will help them to reach their goals and solve their problems. To prove this point, one can use old technology and provide service centres with good customer service and high speed, and satisfy the customers' needs better without having even an Internet website. How can this happen, the reader might ask. Well, in a country in which over 80% of the people do not use the Internet they will be fully satisfied to go to an all purpose service centre that can have them in and out within five minutes with great customer service using any front end system like visual basic and a back-end relational database such as Oracle or any other technology and they will be fully satisfied. Hence their mission should not be to use the newest technology (or *"the highest performance transactions electronically"*) since using the new technology will not guarantee success. Success will be granted when the system fully satisfies the need of the stakeholders.

On the other hand, by reading their vision carefully, once again they are thinking about technology instead of the people who are using these services. They mentioned that their vision is: *"Qatar Online Services, Anytime Anywhere, Providing Government Transactions, Information, and Knowledge"*. The vision should be, for instance, any stakeholder can fulfil the needs related to the e-government through their home or services centre conveniently at high speed, with high accuracy, security, and outstanding customer service. The issue with using the technology as a goal instead of a tool is that it might not increase the satisfaction of the stakeholder. A country can have online services anytime anywhere with transactions, information and knowledge but with low security, accuracy problems with no call centres to help the people then the stakeholders would lose confidence in the system and would rather use the old system because their needs are still not met. In summary, technology is just an enabler that should be used to meet the stakeholder needs, and the goal is the stakeholders' needs and the vision should ensure stakeholders' satisfaction. The objectives of e-government should then be in line with the mission and vision. Thus, all action plans and initiatives must be tied to the objectives. For example, service centres might be tied to the customers' service and convenience, Infrastructure might be tied to the security and the speed, etc.

E-government strategy alignment

Section 7.2.1.1 showed the necessity of having an e-government entity that maintains, coordinates and manages the e-government activities country-wide while Section 7.2.1.2 highlighted the danger of approaching the technology as mission or vision. This section sheds light on another important issue, which is aligning e-government strategy mentioned above with the overall government strategies, particularly with the government strategies towards the development of an information society. According to the chairman of the steering committee (DMP, slide 3), the State of Qatar's strategy for information technology towards developing an information society focuses on several projects, some of which are shown in Figure 7.1 below:
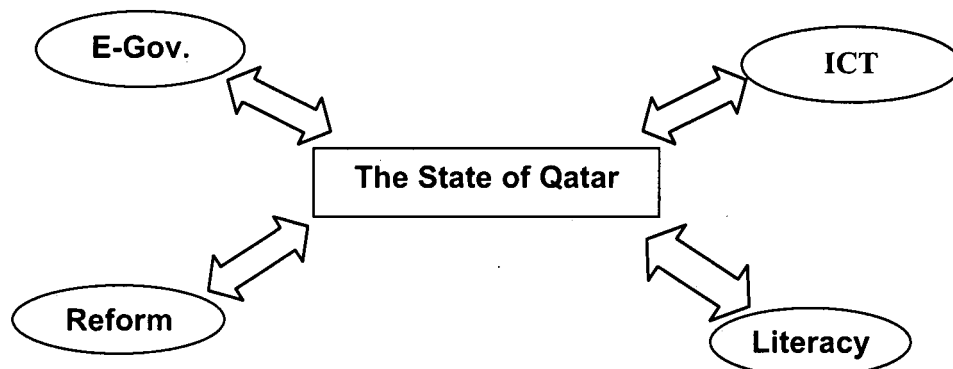

Figure 7.1 The State of Qatar strategy towards the development of information society
Source: DMP, slide 3

As shown above there are four national initiatives that aim to contribute to the development of the intended information society on the long run. It can be observed that e-government is separated from the other important, related, and dependent initiatives. Also the case study findings showed that each initiative is managed by a separate entity and there is no committee or entity that coordinates all these initiatives. For example, the reform initiative is managed by the Planning Council and it deals with government business process reengineering. The Literacy Initiative can be divided into two main parts; the first part is dealing with the education reform initiative, while the second part is dealing with the computer-illiteracy issues across the country. The education reform programme is under the supervision of what is so-called 'Supreme Education Council' whereas computer-illiteracy was initiated by the

179

planning council and was supposed to be managed by the MOE. However, recently this imitative came under the supervision of SCITC.

Separating the e-government project from these important and related initiatives and the lack of an entity that coordinates their related activities will, of course, cause some undesirable results of the project. For example, the reform programme aims mainly to reengineer the business processes of the ministries and other public agencies so it is essential for e-government implementers to make sure that any e-services that need to be implemented should first be approved by the reform team. Otherwise, they might implement e-services that later have to be reengineered and re-implemented and this will then be a waste of money and efforts. They must not isolate their e-government system from the reform programme as they very related to each other. *"The study of business processes, however, is not isolated and has always been related to Information Technology. IT is considered one of the most important enablers of process change"* (Eatock *et al.* 2002, p. 303).

It was predicted by the chairman of the steering committee that having a national e-government system will shrink the traditional government size. He said: *"e-government is a process that shrinks traditional government as its main operational tasks will be gradually passed to the private sectors. But this will not happen till government creates regulatory engine (or policy and regulatory framework) that control the private sectors."* Based on this vision, there must be coordination and a direct link between the e-government project and the reform project but this was not found to be the case in the study findings. A senior manager confirmed that there is no relationship between the e-government project and the reform project when he was answering a question that was related to the reengineering issue of the e-government services; he said: *"There is another project which is sponsored by the planning council and under another project umbrella called the government reform project. But we do not have any input in that project"*

Another senior manager highlighted another but related issue when he was answering a question regarding the delay in implementing some of the planned e-services; he stated: *"we are working in a very dynamic environment since there are many changes taking place in many ministries. For example, one of the most important ministries*

has been divided into three organisations this year". Indeed, there were some changes that took place during the implementation of the Qatar e-government. For example, The MMAA was divided into three public organisations. Another example is the FEATM which has been divided into two ministries, namely the MOF and the MOEC. Furthermore, as mentioned above that Qatar government has recently established a new public organisation that is the SCITC. Also the Supreme Education Council was established during the development of the e-government project.

To summarise this section, e-government is a tool for reinventing the government services and reproducing them in a way that increases the e-government stakeholders' satisfaction. Reinventing the government services means a change that will take place across the government ministries and public agencies and hence needs a holistic view and alignment of strategies. Layne and Lee (2001, p. 135) stated that as: *"e-government becomes more and more prevalent, the public sector organisational structure will change accordingly and it will happen in two aspects: Internally and externally. The focus of change will be on, internally, the system efficiency, and externally the citizens. Internally, the power conflicts over departmental boundaries and control of services will surface as integration progresses. Externally, government processes will be organised for citizens' convenience instead of the convenience of the government"*. This confirms the necessity of aligning and linking the e-government strategy to the overall government strategies, particularly those strategies that are related to ICT, reform, and literacy.

E-government organisational structure

The structure in any organisation plays an important role in defining and distributing responsibilities, and coordinating routine activities between the organisation members, as well as in establishing channels of communication within the organisation and between that organisation and its context. Having discussed the importance of having an e-government entity, it is essential for the e-government implementers to develop the right organisational structure that enables the entity and the development team to perform their duties as required. The e-government team in Qatar had a negative experience with regard to the e-government entity structure but

their experience triggered some important lessons that would be helpful and useful for future improvements. The consulting team advised the e-government official to implement a flat organisational structure that would enable e-government officials to build a management team that focuses on service and discourages empire building. In addition, the consulting team developed detailed documents that explained the number of staff required, the responsibility of each position, the communication and reporting mechanisms between the different groups, etc.

Nevertheless, the e-government steering committee did not follow the recommended organisational structure and implemented a totally different one. In addition, the implemented structure was changed twice after forming the e-government team. More importantly, these changes took place easily and were based on the request of any one of the steering committee members and normally did not involve their e-government senior managers in these changes. One senior manager commented on this issue and said: *"the steering committee does not give us chance to give our opinion in this issue as well as many other issues. From the beginning they did not follow the proposed structure or even work on a similar structure. The current structure has been proposed by one of the steering committee members and he forced all of us to work based on it although it has created many problems for most of the current employees and mainly the managers. As you know the organisational structure is one of the critical issues that affects the employees' attitudes".*

This point was confirmed by another senior manager when he was commenting on the e-government organisational structure. He mentioned that the structure of the e-government was one of the main challenges that faced him during the period of his working with the e-government team; he continued: *"we have discussed this issue with the decision makers but we failed to persuade them with our point of view. It is really a very poor structure. In addition, recently one of the steering committee members has proposed a new structure during this summer which is even worse than the previous one. It is a totally one man show and they did not even give senior managers chance to participate in such a task. [...]. Unfortunately they intend to apply it with immediate effect and it creates ill feeling inside the e-government organisation and I am sure it will not work."*

To clarify the issue further, the researcher asked one of the steering committee members about the reason behind the continuous change in the e-government organisational structure and whether there were any particular criteria that he used in proposing the new structure and his answer was as follows:

> *"There were not specific criteria. I feel that I have good experience in proposing such an organisation model as well as the organisational structure since I have helped many other organisations in such exercise. I do not believe in having a big team and many shining job titles. It was a clear message from me to the e-government team members that there is no need for many posts and more titles. They have to work according to this structure and if anyone feels that his or her post does not suit him or her then the door is open for him or her to leave.[...] Yes, we have invited an international consulting company to propose the e-government model and structure and to do other major tasks but I personally do not trust most of their recommendations."*

As a matter of fact, two of the senior mangers resigned due to these random and unplanned changes and due to some other managerial issues (these issues will be understood from the context of the next section; i.e. organisational culture section) that were caused by some of the steering committee members. One of those managers did not even complete two-thirds of his first year with the e-government team.

To summarise this section, it is essential for the e-government implementers to implement the right organisational structure for their e-government entity and to involve their senior managers in any changes to it as well as to avoid some managerial issues that might create an unhealthy environment for their employees. E-government implementers should be fully aware of all those issues that relate to the structure of the e-government entity and which might cause lots of difficulties for them or even make such a national initiative fail. In addition, those decision makers (such as steering committee members) should be aware of the impact of ignoring their senior managers' opinions with regard to any issues that affect the performance of the e-government entity, as such ignorance might give undesirable results of the project as a whole.

7.2.2 Cultural issues

"One of the key barriers to maximizing the potential offered by e-gov was the need to change individual attitudes and organizational cultures" (Akman *et al.* 2005, p.245)

Generally, the culture in the GCC countries is truly a complex subject having so many theories on how and why it is the way it is. However, to highlight the cultural issues that need careful treatment during the development of an e-government system at a national level, the discussion will focus on five main points, namely dictatorial leadership, appointments based on tribes, business ego, micro management, and the users' culture with regard to the use of electronic services.

The way that most of the public organisations and even semi-public organizations are managed can be described as dictatorial and bureaucratic rather than democratic. With the exception of the ministries, most organizations use a structure consisting of a general manager and departmental managers such as finance manager, IT manager, administration manager, production manager, and operations manager. Above them, there is a board of directors with a chairman of the board. There are also internal and external auditors. The nations in the Gulf Region (i.e. GCC countries) are usually based on tribal systems and modern society came quite rapidly to this area with the discovery of oil. In less than fifty years a society that was quite poor and had lived in the same way as their forefathers for hundreds of years before them was transformed into a modern society with great affluence. Although modernization brought new ideas some of the old cultural tribal systems have stayed.

For example, top positions in some of the public originations are usually given based on the tribal system so someone could be put in a position of being the General Manager of a larger organization without being qualified for the position. This General Manager will be given too many powers in the organization and usually rules like a dictator. The examples mentioned above regarding the organisational structure of the e-government organisation might help in explaining this cultural issue. The General Manager will usually also micro manage everything while not spending any time on the big picture strategic thinking. One of the senior managers in the e-

government project confirmed this point when she said: *"The management style here is micro rather than macro. The steering committee spends most of its time discussing the details of the project which affect its major tasks such as solving the coordination and the cooperation problems with the ministries and public agencies, the customers' problems and feedbacks, the strategic issues, etc."*

Furthermore, the General Manager usually has a tendency to be an ego maniac where any criticism is taken personally and any advice given is a bad idea since it did not originate from him. One of the middle level managers was explaining the obstacles that he has faced frequently during the development of the e-government project, one of those obstacles that he mentioned was how *"To overcome the one-man- show problem"*. Another IT manager from one of the participating ministries in the e-government project was justifying why some public officials hesitate to cooperate with the management of the e-government organisation; he said: *"another important factor that makes ministries hesitate to cooperate with the current e-government management is the way that they announce any new e-service each time. The ministries spend years in developing and improving their systems and once they want to make these services live and available to the public, the e-government director comes and just links their e-services to the e-government portal and hence invites the local newspapers and other media and starts speaking about his efforts regarding that e-service. So in a couple of weeks the whole credit goes to him, which is not fair, is it? So the efforts of my team for many years will simply be passed to the e-government director on a golden dish overnight and without any efforts from his side"*. This quote gives a clear indication about the cultural issues from both sides, the e-government management and the public sector officials.

Also there is a pattern where the decision making is highly centralised in most of the public organisations. A key interviewee from the e-government senior managers described this issue by saying *"Centralisation kills the creativity of the people. When, I joined this organisation I found it difficult to understand the way that people manage their people and activities so one of my friends advised me to buy a book that is called 'The Arab way'. I bought that book and really found it very useful and I also advise you to buy it. When you buy it, it will answer most of your questions. Another good book also is called 'Arabian Sands' but it is not as good as the one that I just*

mentioned." This quote shows how it is very difficult for anybody from the developed countries to cope with and work in the developing countries (i.e. the Gulf Region in particular) due to such cultural issues. This point was confirmed by another senior manager when he said:

> *"Although I am working as program executive manager I cannot sign any financial payments, even QR20 which creates a problem for me. I cannot, for example, reward any one of my employee if s/he has done good job. There is no comparison; for instance, between my financial authority here and my financial authority with my previous employer in the United States (e.g. there was $3000k as a budget under my authority).To summarise this, I can say that centralisation is one of the biggest challenge that face e-government implementers here in Qatar and even government officials in other public agencies/ministries."*

The same manager gave another example of the centralisation; he stated that the lack of the appreciation for the IT initiatives and its dynamic nature due to cultural issues" is one of those major challenges. He continued: *"The nature of IT is dynamic and each certain period of time you need to buy new hardware/software which is sometimes difficult to appreciate. For example, if we bought a server say two years ago and we realised that this server has become old and there is a very critical need to buy a new server with more advanced features/technology, it will be very difficult to convince the management here to buy that server. Simply, they will refuse even if the budget is available for that purpose".* He continued and gave a third example of the cultural issues that he faced; he stated: *"Hesitation in decision making is another major issue here. There is a very big fear of failure among the government officials and even among the e-government project organisation leaderships. Risk taking is avoided here."* A third senior manager in the e-government organisation confirmed the point mentioned above regarding the cultural issues that related to the budget. He mentioned: *"Although we have sufficient budget to upgrade our hardware, the management is not supportive with this regard and they are not willing to pay for such improvement. They consider saving some extra budget and returning it to the government as an achievement".*

With respect to the users' culture, there are some cultural issues that relate to the use of the e-government services. The researcher interviewed some users and investigated their acceptance of the e-services. The research findings showed that there were fears

and resistance to the use of the e-government services due to either trust or a bad experience with the e-government services. Users still do not trust the e-government services, particularly those services that require users to pay online. One of the interviewees said: *"Most of the services that are available on the e-government website require payment online so I cannot trust their website at this stage. In future, I might trust their service but once I have found other people using those services and paying online without problems."* Another interviewee mentioned that *"The security and the payment procedure"* are the main sources of his fear of using the e-government services. A third one mentioned another source, which is his bad experience with the e-government services; he said: *"Honestly, after the problem that I explained to you I will never trust them unless they change the current team. They let me down. They do not have proper customer services and simply I might trap in between different ministries."*

To conclude, the research findings showed that there are many cultural issues that need to be considered and treated carefully during the development of an e-government system at a national level. Again those cultural issues can be found internally (i.e. within the e-government organisation itself) or externally amongst the participating ministries (and/or other public agencies) officials or amongst public users. In recognizing this deficiency, many countries in the Gulf have opened up leadership programmes to teach new leaders the skills needed for modern business, but it is still a big problem. In addition, it is important to overcome all those issues that relate to the trust and the fear of using the e-government services. Those issues might be overcome by, for example, educating the people, and providing some monetary (or no-monetary) incentives. To summarise, government and e-government officials must strive to overcome these cultural issues especially in the early stages of developing an e-government system since treating such issues is a very difficult task or maybe one of the toughest tasks that will face e-government implementers. *"The e-gov challenge of changing culture is the toughest process to handle since it involves people and their attitudes"* (Akman *et al.* 2005, p. 242).

7.2.3 Power distribution

Developing an e-government system at a national level is a cross-country change. As mentioned in Chapter 6, the e-government officials in Qatar aim to shrink the traditional government structure in the long run and pass most of the government services to the private sectors. This aim of course will not take place overnight and will need a gradual shift over the time. This shift will result in distributing the power of some organisations to others, reducing some jobs or redesigning many other jobs in those organisations should e-government officials seek effective reform (or effect change). However, *"effective radical change in the public sector is a massive and complex undertaken"* (Hazlett and Hill 2003, p.446). This is because those members who lose power will of course resist these new changes (or systems). Hence, overcoming this kind of resistance will be very difficult and will require effective change management skills as well as getting buy-in from all involved ministries and public agencies. If this does not take place, it will cause many 'war stories' and conflicts between government officials.

Although the e-government initiative is still in the early stages of its life cycle in Qatar, the study findings showed many 'war stories' that have taken place during the implementation of some of the planned e-services. Some of those 'war stories' resulted in rejecting the developed e-services while others caused unexpected delays in the implementation of those e-services. One of the senior managers of the e-government organisation gave an example of some of those 'war stories'; he said: *"The service of the care registration stopped after many discussions and debates and there was no good reason or justification for that decision."* Another example has been given by another manager; he mentioned that: *"For every single e-service there have been a few battles that we went through in order to make that e-service available online for the e-government users. One of the war stories that happened is that there was an e-service which was developed and ready to be moved to production* [i.e. to be available online]. *Once we came to finalise the e-service and discuss some issues related to that e-service with its owner* [i.e. the public agency that supposed to be the owner of that e-service] *we found it difficult to convince them about that e-service. There were some personal problems which stalemated that e-service. Finally we*

failed to make that e-service available online, although it is already developed and ready to be used."

A third senior manager gave another example; he said: *"The e-government team developed a useful application for student registration. Then, they planned to install that application in the University of Qatar to be used as the main registration system and to be connected to the e-government portal. We went and presented the system to the University officials and they were happy about it and about its functionalities. However, when we started to discuss the implementation issues we found many difficulties and resistance from the University people. Although there were many meetings between the e-government team and the University team we finally failed to persuade them to install and use the system for free! I was really shocked. Each time they created a new story and formed a team to discuss it with us but we did not at any point reach an agreement. In fact, there were not clear reasons for their resistance."*

It is clear that implementing any new e-service will be resisted but for many reasons. One of these reasons might be related to the ignorance of the service owners by not involving them in the development of the services related to their ministry or organisation. Another reason might be related to the awareness level amongst the participating ministries in the e-government project or might be related to managerial issues, cultural issues, political issues, etc. Whatever the reasons, there is no doubt that the impact and the fear of losing power will be greater and more effective particularly in the developing countries. Salman (2004, p.148) mentioned some possible reasons for resisting the change; he said: *"Resistance to change would be acute in restructuring an organisation in the developing countries. Sources of individual resistance would include habit, sense of security, economic factors and fear of the unknown. In addition, resistance would include structural immobility, narrow focus of change, group inertia, threat of expertise, threat to establish power relationship and resource allocation".* From the above discussion it is obvious that the e-government management in Qatar did not consider this issue in their strategic plan and did not treat it as required during the implementation phase.

The following points summarise Section 7.2:

o The organisational alignment issues were found to be one of the main organisational challenges that faced the e-government implementers in Qatar. This factor has been divided into three main issues (i.e. subcategories): (1) Forming an e-government entity that is responsible for managing all e-government activities across the country; (2) Cultural issues; (3) Power distribution issues.

o Forming an e-government entity factor has been further divided into four elements. These are: (1) E-government entity organisational model; (2) E-government mission and strategic vision; (3) E-government strategic alignment; and (4) E-government organisational structure.

o All these issues are very critical and need careful attention from the e-government implementers.

o The Doherty and King (1998a, 1998b, 2001 and 2003) studies were found very useful, although they did not consider the first factor (i.e. Forming an e-government entity). This is because their studies were related to the development of an IS project within single organisations. In addition, they did not consider the development team structure in their studies. On the other hand, this study did not consider the impact of the having an e-government system at a national level on the government structure (i.e. the participating ministries and other public organisations) since the e-government system in Qatar is still in its early stages, and due to the limitation of this study.

7.3 E-government organisational contribution

The literature is plentiful with commentators who highlighted the importance of having an e-government system. The benefits of having such a system are many and were discussed in Chapter 2. There is no doubt that having an e-government system, particularly at a national level, will make a valuable contribution to the performance of the government and its different organisations. In relation to the case study findings, it was predicted that by having an e-government system, the government will reduce the operational costs of its services, will increase its efficiency,

transparency and accountability, and will increase return of investment (ROI) on IT investments (EGSV, p. 6). To look closer at the organisational contribution of having an e-government system, the e-government organisational contribution issues were divided into four subcategories similar to what was suggested by Doherty and King (2001). The names of these subcategories were changed to best suit the study theme (i.e. e-government). These subcategories are described below.

7.3.1 E-government relative advantage to the government

Relative advantage is defined as *"the degree to which an innovation is perceived as being better than the idea it supersedes"* (Roger, 1995). It was clear from Chapters 5 and 6, that government officials in Qatar realised the importance of having an e-government system nation-wide. This can be understood from the e-government objectives in relation to the government itself, citizens and businesses. As mentioned in Section 7.2.1.1, government officials in Qatar agreed that the e-government entity must operate on a commercial basis, focusing on cost efficiency, cost recovery, accountability and transparency. This reflects the awareness of government officials with regard to the advantage that such a system would provide and its effect on improving the way the government provides its services to its constituents. Furthermore, it indicates explicitly that they acknowledged that e-government is the appropriate approach for reforming and reinventing the government services with the aim of reducing the bureaucracy and administrative cost in the provision of public service for both government and consumers, and creating a healthy environment that encourages public staff to be more creative, productive and efficient. The following discussion provides details on the assumptions made for assessing the financial viability of the e-government project in Qatar.

With the help of the consulting group, e-government officials developed an e-government business model that contained the details of the assumptions taken for the revenue estimates, overall project cost and operating expenses for the project. It was mentioned in that model that: *"The revenue from the project* [i.e. e-government] *is expected to be about QR 2.36 million in Year 1 and is expected to go up to about QR 24.27 million in Year 5. The IRR is expected at about 11.54% while the payback*

period is 10 years" (EGBM, p.17). Table 7.3 shows a summary of the expected profit and loss account for Qatar e-government.

Table 7.3: Revenue and profitability summary; Source: EGBM, p. 17

Element	Year 1	Year 3	Year 5
Revenue *(QR million)*	2.36	17.24	24.27
Operating profit *(QR million)*	(11.64)	1.66	8.05
Net profit	(19.99)	(11.20)	2.62
IRR	11.54 %		
Pay-back	10 years		

As shown in Table 7.3, the e-government entity was expected to start making operating profits from Year 3 onwards, when all 22 e-services become operational. *"By Year 5, the entity is making a net profit even after accounting for the depreciation and interest on overdraft"* (EGBM, p.17).

Revenue was also estimated for each service separately by assessing the estimated transaction volume and the estimated transaction fee that the e-government entity would charge for each transaction. Such revenue estimates obtained for all services are brought together to form the total revenue stream for the e-government entity. Based on the e-services assessment mentioned in Chapter 6, it was planned to introduce a total of 22 service groups over the first two years so the first half of those services (i.e. eleven e-services) were planned to be introduced in Year 1, while another eleven were expected to be on stream in Year 2. The starting point for determining the revenue was assessing the volumes of transaction for all the selected services being carried out at the time of starting the project. This number formed the base for projecting increases in future transactions, and for applying the user adoption rates. Table 7.4 shows the available transaction volumes for each service (that were being carried out by the different government ministries and other public agencies at the start of the project through the traditional channels) per quarter and the consolidated transactions that were being carried out for all the selected services. Whereas, Table 7.5 below shows the number of transactions that were expected to be carried out through the e-government site in the first two years. It is worth mentioning that e-government officials assumed a growth rate of 5% per year for two services (i.e. traffic violation and visit visa) for the 2nd year, as they were the ones that would have completed a year of being on the e-government portal. Transaction volumes for

all the other services were also assumed to grow at the same rate (i.e. 5%) from Year

3 onwards.

Table 7.4: Total transactions carried for 22 services through traditional channels; Source: EGBM, p.5

Sl. No.	Name of the e-service	Year 1					Year 2				
		Q1	Q2	Q3	Q4	Total Y1	Q1	Q2	Q3	Q4	Total Y2
1	Traffic violations	8,189	8,189	8,189	8,189	32,756	8,598	8,598	8,598	8,598	34,394
2	Visit visa	54,544	54,544	54,544	54,544	218,176	57,271	57,271	57,271	57,271	229,085
3	Driver licenses		3,223	3,223	3,223	9,669	3,223	3,223	3,223	3,223	12,892
4	Resident permits		47,905	47,905	47,905	143,715	47,905	47,905	47,905	47,905	191,620
5	Qatari employment		500	500	500	1,500	500	500	500	500	2,000
6	Zakat fund		10,000	10,000	10,000	30,000	10,000	10,000	10,000	10,000	40,000
7	Vehicle registration			53,137	53,137	106,274	53,137	53,137	53,137	53,137	212,548
8	Taxations and customs			62,500	62,500	125,000	62,500	62,500	62,500	62,500	250,000
9	Qatari passports				13,596	13,596	13,596	13,596	13,596	13,596	54,384
10	Resident permits-update				17,992	17,992	17,992	17,992	17,992	17,992	71,968
11	Work permit				7,613	7,613	7,613	7,613	7,613	7,613	30,452
12	Immigration permits						15,000	15,000	15,000	15,000	60,000
13	Certificate of origin							5,543	5,543	5,543	16,629
14	Resident permit issue							226,961	226,961	226,961	680,883
15	Commercial permits							2,669	2,669	2,669	8,007
16	Health cards							35,000	35,000	35,000	105,000
17	Industrial registeration									22	-	22
18	Student registration-education									1,750	1,750
19	Student registration-university									5,500	5,500
20	Kahrama payments									158,505	158,505
21	Birth certificates									2,750	2,750
22	Food certification - imports									3,750	3,750
	TOTAL	62,733	124,361	239,998	279,199	706,291	297,336	567,509	567,531	739,764	2,172,139

Table 7.5: The expected total transactions through e-gov portal for Year 1 and 2
Source: EGBM, p. 6

Sl. No.	Name of the e-service	Year 1					Year 2				
		Q1	Q2	Q3	Q4	Total Y1	Q1	Q2	Q3	Q4	Total Y2
1	Traffic violations	667	667	667	667	2,669	1,225	1,225	1,225	1,225	4,901
2	Visit visa	6,791	6,791	6,791	6,791	27,162	15,750	15,750	15,750	15,750	62,999
3	Driver licenses		219	219	219	657	352	352	352	352	1,408
4	Resident permits		6,611	6,611	6,611	19,833	15,018	15,018	15,018	15,018	60,072
5	Qatari employment		40	40	40	120	60	60	60	60	240
6	Zakat fund		710	710	710	2,130	1,080	1,080	1,080	1,080	4,320
7	Vehicle registration			4,596	4,596	9,192	8,290	8,290	8,290	8,290	33,158
8	Taxations and customs			9,375	9,375	18,750	21,875	21,875	21,875	21,875	87,500
9	Qatari passports				1,088	1,088	1,632	1,632	1,632	1,632	6,526
10	Resident permits-update				2,483	2,483	5,641	5,641	5,641	5,641	22,563
11	Work permit				1,142	1,142	2,665	2,665	2,665	2,665	10,658
12	Immigration permits						4,703	4,703	4,703	4,703	18,810
13	Certificate of origin							1,940	1,940	1,940	5,820
14	Resident permit issue							71,153	71,153	71,153	213,458
15	Commercial permits							2,514	2,514	2,514	7,541
16	Health cards							3,220	3,220	3,220	9,660
17	Industrial registeration									4	4	8
18	Student registration-education									161	161
19	Student registration-university									572	572
20	Kahrama payments									16,596	16,596
21	Birth certificates									292	292
22	Food certification - imports									1,313	1,313
	TOTAL	7,458	15,038	29,009	33,722	85,226	78,289	157,115	157,119	176,053	568,576

193

Regarding user adoption rates, it has been mentioned in the e-government business model that "It is unlikely that all transactions for all the services would be carried out through e-Gov entity from the first year itself. The current methods/channels of transactions (like paper, telephone, fax, e-mail, human contact etc.) would still continue to be used even after the introduction of e-Government services. Hence, the shift towards usage of Internet has been estimated to assess the number of transactions that would take place through the e-Government entity" (EGBM, p. 7). The adoption rates for various customer segments (i.e. citizens, residents, and businesses) were assumed to be different depending upon the demographic profile of the country. In other words, citizens have different adoption rates when compared to residents, while businesses have different adoption rates when compared to citizen and residents. Moreover, the adoption rate, according to their business mode, increases over the years as the usage of Internet increases amongst customers (i.e. once they become more familiar with the e-government entity and education and training increase the IT literacy levels in the country). It has been mentioned that *"The usage of various services varies from different customers and is dependent upon the segment the services are targeted at."* (EGBM, p. 8). Table 7.6 below shows the adoption rates assumed for preparing the financial statements of the e-government entity for five years while Table 7.7 shows the adoption rates by customer segment for each e-service.

Table 7.6: Adoption rates by customer segments; Source: EGBM, p. 7

Customer segment	Adoption rates (% of total transactions)				
	Year 1	Year 2	Year 3	Year 4	Year 5
Citizens	8%	12%	20%	25%	30%
Residents	5%	8%	12%	16%	20%
Businesses	15%	35%	40%	45%	50%

Table 7.7: The adoption rates for each e-service split by customer segments; Source: EGBM, p. 8

Sl. No.	Name of the e-service	% split		
		Citizens	Residents	Businesss
1	Traffic violations	55%	30%	15%
2	Visit visa	15%	15%	70%
3	Driver licenses	60%	40%	0%
4	Resident permits	10%	5%	85%
5	Qatari employment	100%		
6	Zakat fund	70%	30%	
7	Vehicle registeration	55%	25%	20%
8	Taxations and customs			100%
9	Qatari passports	100%		
10	Resident permits-update	10%	5%	85%
11	Work permit			100%
12	Immigration permits	10%	5%	85%
13	Certificate of origin			100%
14	Resident permit issue	10%	5%	85%
15	Commercial permits			100%
16	Health cards	30%	70%	
17	Industrial registeration			100%
18	Student registeration-education	30%	70%	
19	Student registeration-university	60%	40%	
20	Kahrama payments	28%	67%	5%
21	Birth certificates	65%	35%	
22	Food certification - imports			100%

With respect to the transaction fees charged by the e-government entity, the consulting team recommended different fees that were largely dependent upon the total fee for the service. Table 7.8 encapsulates the proposed transaction fee assumed for each service. However, the research findings showed that the e-government management did not apply the transaction fees mentioned in that table. They applied a standard fee (QR 5; i.e. around $ 1.36) regardless of the type of service or customer segment. The researcher investigated this issue further and asked one of the e-government steering committee members about Qatar e-government charge of QR 5 (i.e. around $ 1.36) per transaction. One of the steering committee members stated: "*the ultimate goal of this e-government organisation is to be self-funded so we have to keep this. I am sure that after a few years this QR 5 will help us to create profit even if we reduce it to be QR1.5 per transaction we will still continue making profits.*"

Table 7.8: Transaction fee assumptions; Source: EGBM, p. 9

Sl. No.	Name of the e-service	Fees (QR per transaction)		
		Citizens	Residents	Businesss
1	Traffic violations	10	10	10
2	Visit visa	10	10	30
3	Driver licenses	10	10	-
4	Resident permits	10	10	25
5	Qatari employment	5	-	-
6	Zakat fund	-	-	-
7	Vehicle registeration	10	10	25
8	Taxations and customs	-	-	50
9	Qatari passports	5	-	-
10	Resident permits-update	5	5	5
11	Work permit	-	-	25
12	Immigration permits	10	10	10
13	Certificate of origin	-	-	25
14	Resident permit issue	10	10	10
15	Commercial permits	-	-	150
16	Health cards	10	10	-
17	Industrial registration	-	-	50
18	Student registeration-education	5	5	-
19	Student registeration-university	5	5	-
20	Kahrama payments	5	5	10
21	Birth certificates	5	5	-
22	Food certification - imports	-	-	20
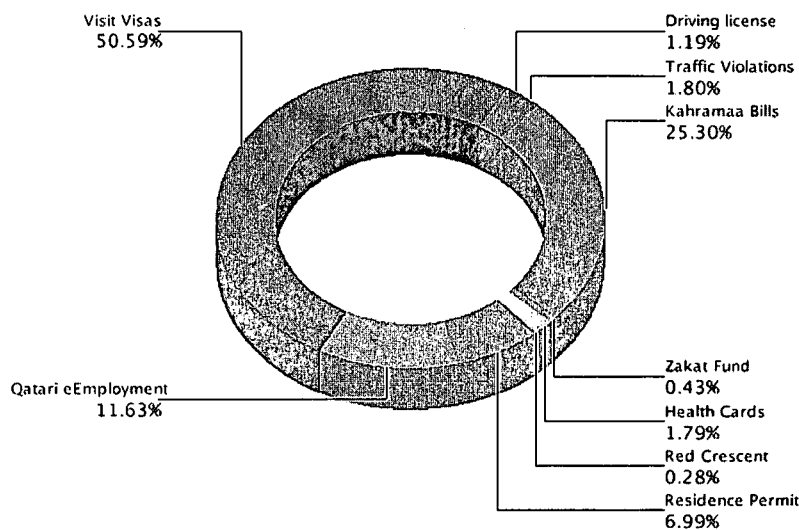
Figure7.2: The usage percentages for each e-service (for Year 1 & 2)

Figure 7.2 above shows the usage percentage for each e-service. This figure was extracted from the e-government portal database directly together with other

196

electronic reports. Table 7.9 represents another electronic report that gives exact figures of the transactions performed during Year 1 and 2.

Table 7.9: Total transactions performed through the e-government portal for Year 1&2

	2003	2004	Total
Visit Visas	1,557	4,212	5,769
Driving License	54	82	136
Traffic Violations	69	136	205
Kahramaa Bills	958	1,927	2,885
Zakat Fund	31	18	49
Health Cards	0	204	204
Red Crescent	0	32	32
Residence Permit	0	797	797
Qatari eEmployment	0	1,326	1,326
Total	2,669	8,734	11,403

By comparing Table 7.9 (i.e. the real transactions performed through the e-government portal) and Table 7.5, the estimated transactions, it can be seen that there is a big difference in the number of transactions performed. As can be noted, the estimated figure for **Year 1 only** was 85226 as a total which is far bigger than the total number of transactions performed through the e-government portal **for two years** (Year 1 and 2), which is 11403 transactions. In addition, by comparing Figure 7.2 with Table 7.7, it can be seen that there is a big difference in the percentage usage (i.e. adoption rates) for any particular service. These differences will definitely affect the expected revenue for the project and hence leave a hug gap between the estimated and real revenue.

To summarize, the case study findings showed that the e-government officials realised the relative advantage of having an e-government system and had conducted a cost-benefit assessment before implementing such a costly national project. However, their cost-benefit study was not accurate enough as was proven by the findings discussed above. One of the senior managers mentioned that *"The nature of such projects is that normally governments invest a big amount of money and its ROI is calculated on a long term basis but people here are looking for a quick ROI which is not applicable*

for such projects ". In addition, those findings highlighted the importance of treating this issue carefully otherwise the project will certainly give undesirable outcomes. Furthermore, it can be noted that the e-government management did not adhere to the project implementation plan as they implemented only ten services out of 22, at the same time it was clear that the consulting team did not propose realistic figures (i.e. cost-benefit study). Moreover, there was another factor that deserves attention as it will affect the net profit of the e-government project. This factor is the ignorance of implementing the recommended transactions fees that were proposed by the consulting team and replacing them with a fixed charge (i.e. QR 5). Finally, it is worth mentioning that there are many intangible benefits associated with IT project which cannot be calculated, but these must still be considered in any cost-benefits exercise (Gupta and Jana, 2003).

7.3.2 Prioritisation of e-government deliverables

This issue represents the ability of an organisation to create an accurate priority system based on its business requirements and to have a strong focus on its organisational needs (Doherty and King, 1998b). Prioritisation of deliverables is particularly essential in the development of an e-government system because government officials are overloaded with thousands of public services that need to be developed and hence they should implement a prioritisation system that is in line with the e-government objectives and their audience's ability to cope with the new changes. The prioritisation system should consider many important issues. These issues include the complexity of the technology, the types of services that need to be developed, the readiness of the services providers to develop and maintain the selected services, their anticipated users' ability to use and cope with the new service, the organisational issues, and the organisational change.

It was mentioned earlier that implementing an e-government system at a national level is a radical change that requires care and attention from the e-government officials, particularly if this system is to be implemented in a developing country. This is due to many issues, some of them were mentioned in the organisational alignment issue discussed above (e.g. the focus of e-government officials on the technology as an

objective not as a tool in their mission) and some of them will be discussed in this section. By revisiting the criteria that were used in prioritising the e-government services in Qatar it can been noted that e-government officials in Qatar gave care and attention to the importance of having a prioritisation system but they did not consider some other significant issues in their criteria that they used in that system.

For example, they excluded all informational and interactive services although some of the public agencies and ministries still did not have a web presence. Such services are supposed to increase the awareness in society of the importance of using the technology (mainly the Internet) in satisfying their needs. In addition, these services will help society in the gradual shift to the information society age. Furthermore, these services and their associated ease of use will encourage e-government users to get to the Internet and to overcome the computer illiteracy while the e-government implementers engage in improving the internal technology infrastructures (i.e. G2G). Most importantly, excluding these services is not in line with some of their objectives in relation to the e-government constituents (e.g. *"Empower constituents through self service, feedback, education and awareness"*; *"Increase public confidence in the government's capacity to respond effectively to service needs"*; *"Save constituent time by providing convenient services"*, etc*). The e-government project jumped to the transactional services, although they knew that the Internet penetration in Qatar is less than 20%. One of the senior managers mentioned that one of the major challenges that they faced as e-government implementers is the Internet penetration. He said: *"Internet penetration is also a major challenge. According to the UN report the percentage of the Internet usage in Qatar is 12% which is quite low."* This low penetration was one of the main direct factors that affected the usage percentage of the current e-government services. Another IT manager of the participating ministries mentioned that the e-government officials neglected some good services that his ministry was able to introduce to its users but because those services are not transactional services they refused to link them to the e-government portal. He stated:

> *"This ministry was one of those ministries that have a solid infrastructure as well as skilled IT staff. However, the e-government management has decided to take only two services although we assured them that we can develop at least six services in the first stage of the e-government project. They simply neglected the remaining services and when I asked the e-government director why. He*

199

said we are looking only for those services that are associated with payment. His answer really shocked me."

To conclude, it is clear that e-government implementers acknowledged the necessity of having a priority system for services that are ready to be implemented but, in fact, they had not treat this issue as required and hence the number of the implemented services and their usage was very disappointing. The usage issues are further discussed in Chapter 8.

7.3.3 Business processes reengineering (BPR)

Business process reengineering issues refer to the impact of a new system on the business processes (Doherty and King, 2001). As mentioned above, e-government aims to reinvent government services and reproduce them electronically in a way that helps in reducing the operational cost of these services, improves their quality and increases their efficiency, and in a way that makes the access to them and their use easy for all the e-government customers. Moreover, it has been mentioned that e-government is a radical change and aims, in the long run, to shrink the traditional government body. Shrinking the government body will result in restructuring some (or possibly most) of its ministries and its public agencies. According to (Moon and Norris 2005, p. 48), *"e-government initiatives are expected to help governments reduce their size, the time demands on their staffs and their operating costs, and to change staff roles, increase none-tax revenues, reengineer business processes and make business processes more efficient"*. However, restructuring organisations is always associated with reengineering activities of their business processes which is a big challenge become of complexity, multi-faceted effects and high promise, but there is a low success rate, even in developed economies (Salman, 2004).

Salman (2004) stated that there are three vectors of BPR, specifically people, process and technology that are *"so interactive and sensitive that if any change occurs in one vector, the effect must be realised on the other two! Managing them cohesively with a view to aligning with cooperate strategy is never easy"*. In Qatar, there is a national reform project under the Planning Council supervision that aims to reengineer the public business processes. In particular, *"This Program aims at developing the*

200

functional and organizational structure and the constitutional organs and means of the services sector" (Emiri decree no. 19/2002, Article 2). Nevertheless, the case study findings, as mentioned above, showed that there is no relationship between these two national projects. One of the e-government senior managers admitted that there should be a strong relationship between the two initiatives (i.e. the e-government project and the reform project); he said: *"there should be a strong cooperation between us regarding this matter [i.e. business process reengineering]. In addition, we sometimes do some reengineering when there is a need to do so"*. Another senior manager mentioned that they experienced some reengineering processes with some of the developed services. He commented: *"there were some reengineering processes in some of the services introduced by the ministry of interior"*.

To conclude this section, it is clear that government officials in the Planning Council realised the importance of reengineering the public services and hence they started a huge project for that purpose. In addition, it can be noted that e-government officials knew the advantages of conducting some reengineering process for some of their services before they started implementing those services and reproducing them electronically. However, the case study findings confirmed that there is a clear limitation in treating this issue at the e-government organisation level. This can be deduced from the lack of cooperation between the Planning Council officials and the e-government implementers with this regard. The lack of such cooperation and coordination between these related projects will lead to a waste of effort and money. Such a problem might not appear at the early stages of the e-government project but they will certainly appear at its next stages of development. *"Most of the advocators of the business process reengineering movement highlight the importance of the role that IT plays in the reengineering process. Many argue that IT should be seen as an enabler of organisational change rather than as a tool to implement business processes"* (Eatock *et al.* 2002, p. 303).

7.3.4 Future need of an e-government system

Having explained the benefits of having an e-government system, it is obvious that any government will need such a system as long as it satisfies its stakeholders' needs.

Government officials in Qatar are aware of such needs and have put long term plan for their e-government system. A senior manager mentioned that there are two main tasks that they intend to carry out in the future:

"1. Revising the way that we use in introducing the e-government services and improve it. 2. Restructuring the e-government organisation and start planning for the next e-services that need to be implemented."

Another senior manager confirmed that they will start their next stage which will cover *"the classification of the e-government services based on the e-services providers (ministries). As you can see now, all services are listed in one column so we plan to classify them and make them more organised and classified. Also we plan to have new channels that will be used to access the e-government services such using mobile phones and other channels. Furthermore, there are lots of e-services that could be developed. Most importantly will start to horizontally integrate some services which I think it is one of the most challengeable issues. There are certain services that are related to two or more ministries and which require a horizontal integration such as birth certificate".* The continuity of the e-government system in Qatar has been also confirmed by the general secretary of the SICTC. This issue was discussed above in section 7.2. Regardless of whether the e-government in Qatar will continue as an independent agency or as project, it is clear that government officials will go ahead with this national initiative and will continue to improve their government e-services. Accordingly, it can be said that this organisational issue was considered in the case of the e-government system in Qatar but again there was uncertainty about the future of the e-government as an independent entity since the deadline of the current steering committee is already over. Section 7.2.1.1 has addressed this issue in more detail.

The following points summarise Section 7.2:

o The e-government organisational contribution factor was found as one of the key issues that needs careful consideration and treatment before and during the development of an e-government system at a national level. It has been divided into four elements, namely e-government relative advantage to the

government, prioritisation of e-government deliverables, business processes reengineering and the future need for an e-government system.

o   The findings showed that the e-government implementers in Qatar realised the importance all these issues but there were some shortages with regard to their treatment in practice.

o   The same categories suggested by Doherty and King (2003) were used but there were some differences in naming those issues. The researcher used some categories that reflected the study theme. As mentioned in the introduction of this chapter, the Doherty and King (1998a, 1998b, 2001 and 2003) studies were dealing with the development of IS projects but, indeed, they were found very helpful in classifying the above issues and in structuring the data analysis process.

7.4 Human-centred issues, both government and users

This category as mentioned by Doherty and King (2001, p.152) *"focuses on individual human issues that can affect the success or otherwise of the system's uptake"*. However, the Doherty and King (2001) study did not consider this issue on certain levels such as the development team level or at a level of users who are not part of the studied organisation. In addition, their study was dealing with these issues at the level of a single organisation. In the case of developing an e-government system at a national level, the focus of these human issues is not only on individuals who work in a single organisation, but also on the e-government organisation, the participating ministries and e-government users (including employees, citizens, residents and businesses). These human-centred issues are classified in this study into four main categories, namely training issues, involvement issues, digital divide and e-government user trust. These four classifications are not exactly the same as the classification of Doherty and King (2001). Table 7.10 presents a comparison between the Doherty and King (1998a, 1998b, 2001 and 2003) studies and this study with regard to those issues that compose the Human-centred issues category.

Table 7.10: Human-centred issues: a comparison between the Doherty and King (1998a, 1998b, 2001 and 2003) studies and this study

Human-cantered issues in the Doherty and King (1998a, 1998b, 2001 and 2003) studies; (i.e. the development of IS projects)	Human-cantered issues in this study (i.e. the development of an e-government system at a national level
Consideration of training requirements at the level of users in single organisation	Consideration of training requirements at all levels (i.e. E-government users, development team and government employees) across all the participating ministries and public agencies
Evaluation of user motivation/needs	Involvement of all the related parties (and maybe some e-government users) in the development of e-government services
Assessment of health & safety/Ergonomic implications	e-government users trust in using the e-government services
	Digital divide that can be created by the presence of the e-government services

As can be noted from Table 7.10 above, this study has excluded the assessment of health and safety issues from the human-centred category. This is because the study findings did not present this factor as an important issue in the case of developing an e-government system at a national level. On the other hand, the study found additional factors that were not covered by the Doherty and King (2001) study. These two factors are: e-government users trust in using the e-government services and digital divide. These issues are further explained and analysed in the following sections.

7.4.1 Training issues

Training issues are discussed and analysed at three levels. First, the researcher will discuss the training issues at the e-government development team level within the e-government organisation. Then, he will shed light on the analysis of these issues at the public employees (i.e. the development teams within the participated ministries and other public organisations) level. Finally, the researcher will discuss and analyse such issues at the e-government users' level. Again the analysis of these issues aims to investigate whether e-government implementers consider the training issues or not and if they considered these issues how they treated them in practice.

At the e-government organisation level the matter is not how to use the developed systems, the matter is what sorts of skills are needed to develop the system itself (i.e. e-government services) and whether or not e-government development teams have those skills. Ensuring that development teams have the necessary skills to develop the new services is essential to successfully operate and to benefit from using these new systems. The e-government literature showed that shortage of IT skills is one of the key obstacles that generates real challenges for the e-government implementers (Ho, 2002; Heeks, 1999; Chen and Gant, 2001; Moon, 2002; Al-Secbie and Irani 2005). In addition, it has been highlighted that e-government implementers might find difficulty in attracting and retaining the right IT talent, especially considering the competition for these workers. Thus, it is essential for e-government to consider this issue and treat it well by at least training the available development team, improving their technical skills and providing sophisticated development tools that enable the team to deliver the expected outcomes.

The researcher has investigated this issue within the e-government organisation and found that most of the e-government services were developed by either a third party (i.e. contractor) or the participating ministries (and public organisations). The e-government development team is responsible for maintaining and supporting all the services that are already online. In addition, some of the e-government development team members participated in developing some of the completed services and particularly those major tasks that have been accomplished such as building the PKI and the payment gateway. To analyse the training issues in detail, the researcher started by interviewing the developers and asking them about the level of training that they had received. One of them said: *"At the beginning of the project they gave us some training courses which were good. But during the last two years we did not have any training at all."* Another developer was angry and complained about the way that management dealt with this important issue; he commented:

> *"Once we joined this project we were promised that they will give us the required training courses to enable us to be more active members of the e-government development team. However, since I joined I have not taken even a single training course. I am trying to teach myself by myself. For example, I am using JSP which I did not have any idea about when I joined this project. Recently when I complained about the training issues I was instructed by one of the decision makers here to stop talking about training courses. He exactly*

205

said: forget and stop asking for training course, you must learn from your colleagues internally."

A third developer described the lack of training the e-government developers as a challengeable issue. He stated: *"there is another problem which I cannot say it is a challenge for e-government implementers because it is not a challenge for the management here but for me it is a very challengeable issue. This issue is the training. As you might know, we are dealing with many technologies here and these technologies are changeable also, so from time to time we need some training courses on the new technologies but unfortunately this is not the case here in the e-government organisation. Yes we have taken some courses in the initial phase of the e-government project but it was a long time ago".* A fourth developer emphasised the importance of training the e-government developers as technology is changing frequently and hence they want to be equipped with the required skills to cope with new technologies. He said:

> *"This type of projects requires dynamic changes in technology since it is technology based project. As you know technology is moving fast and anyone working in such an environment needs to be up to date in terms of knowledge and in terms of how to use the new technologies and the new development tools. So you can consider the continuous changes in the technology is the major challenge that we face as developers."*

At the level of the participating ministries, the researcher found the same problem (i.e. the lack of training the development team). One of the developers at the MOI complained about the lack of the training courses to help them to develop their development skills and hence they depend on expatriates in developing some of their services. He stated: *"we rely on expatriates to develop some certain services because there is a lack of skilled Qataris within the MOI. This is because people here in the IT department are not given the required training. We always depend on ourselves in learning any new software or any new development tools".* An IT manager of another ministry confirmed that they have the same problem but he justifies this by the lack of budget that satisfies their training needs. In addition, he blamed the e-government management with this regard. He commented:

> *"The government has allocated a huge budget for the e-government project but unfortunately the e-government management does not want to help and support us*

with at least one million of the allocated millions for the e-government project. We need money to improve our infrastructure and to build the required e-services. We need money to train our IT staff and prepare them to be ready for such a valuable project. E-government does not mean building an e-government portal which is the easiest part of that concept. E-government covers the development of the required infrastructures, the development of the required e-services and making those e-services are integrated and seamless. Therefore, they have to help us to make these things happen"

Another IT director of the participated ministries highlighted the same problem. He said: *"the e-government team under the responsibility of the e-government director and I think that there is sufficient budget to give them the required training. However, in the ministries the issue is very complicated and it creates a real challenge for us. Each year we put a training plan and the required budget for that plan but unfortunately the decision makers approve a small percentage of the required budget and hence we cannot give our employees the necessary training. This issue is not limited to only one ministry, all the ministries suffer from the insufficient training budget."*

Having discussed the training issues at the e-government organisation and at the participated ministry levels, the researcher will shed the light on the training needs at the e-government users' level. The case study findings indicated that e-government management divided the users into two groups, specifically the public employees who are working in the public organisations and some other semi-government companies; and the external users (i.e. citizens, residents and private companies). The first group was given limited training sessions whereas the second group was left to learn how to use the e-government services through demonstration and some brochures during the formal events or from the limited instructions available online on the e-government website. This issue was confirmed by one of the steering committee members. He said: *"Our focus now is on the companies and public agencies and once we provide the e-government services to those parties we always try to introduce the e-services to them and give them some short training sessions. Regarding the public users (citizens or residents) we did not provide any training courses for them. Sometimes during the exhibitions we provide some demos to the public and some brochures that explain the e-government services and how to use them."* Another member of the e-government steering committee has a different opinion with regard to the training, particularly on

how to use the e-government services. He saw that there was no need to provide training to the public users as most of the e-government services are web-based and easy to use. He said:

> *"All the e-government services are web based and easy to use. In addition, there are clear instructions about how to use certain services. Most importantly, as I told you that our objective is to reach the "one click strategy" which will make the life easier for the users and hence there will not be a need for any training sessions."*

There are many lessons that can be extracted from the above discussion. First, there is a lack of attention and clear underestimation of the importance of the training issues from the e-government management, although they have sufficient budget for the training purposes. In other words, they did not pay much attention to the importance of training their development team, particularly in the light of the diversity and the type of the technologies that their development teams are dealing with. Secondly, it can be observed that the e-government management did not help other participating ministries to overcome the lack of money on their side in order to provide their development teams with the required training. Thirdly, it seems that the lack of training is one of the major obstacles that face e-government implementers at both levels, the e-government organisation and the participating ministries. Fourthly, it is clear that e-government management neglected the importance of making the public aware of how to use the e-government services. Awareness is a big issue in this type of national initiative and is discussed in the next section.

To conclude, the case study findings confirmed that training is one of the important issues the must be considered and treated well at all levels. In addition, the treatment of this issue needs careful attention to the mechanism that can help to train each level. For example, the development team in the e-government organisation requires some training courses that differ from the training which can be provided to the development teams in the participating ministries. Also training the public cannot follow the same type and procedure of training as for the development teams. The public might be trained through awareness programmes, education systems, life demos, etc.

7.4.2 Involvement issues

The involvement issue will be discussed at two main levels, the participating ministries and public agencies (owners of the developed services) level and the e-government users' level. First, the researcher is going to discuss and analyse the involvement issue at the e-government users' level. User involvement is widely accepted in the IS literature as an issue that must be addressed during the system development. *"User involvement can be seen to be a general term describing direct contact with users and covering many approach"* (Kujala 2003, p.1). Many commentators have argued that there is a positive relationship between perceived user involvement and the degree of satisfaction with the implemented system (Hunton *and Beeler.,* 1997; McKeen *et al.,* 1994; Hornby *et al.,* 1992). Accordingly, the effect of this issue will be, without any doubt, greater in the case of developing an e-government system at a national level. This is because the users of the e-government services are not limited to a single organisation, the users are the whole society and even more (i.e. such those users who access some services from other countries).

Although it is impossible to involve all the users of the e-government in the development of all its services, there are many ways in which the risk that might be triggered as a result of ignoring such important issue can be decreased. The e-government team can, for example, develop bulletin boards for the e-government users where every user can post his feedback or suggestions regarding any service. Another way is to allow the users to send their feedback through the e-government portal by using electronic forms or emails. Also the involvement of the user can take place by, for instance, a dedicated hotline (telephone line) for the public opinions and suggestions regarding the e-government services or by publishing an electronic survey. Furthermore, e-government users can be involved by making them at least aware of what is going on. Awareness in this case can occur through different channels such as TV programmes, announcements in local newspapers, seminars, summits or/and through the education system. Awareness can be planned during the initial phase of the e-government by establishing a detailed and effective communication plan.

This communication plan involves how the e-government team will communicate with the participating ministries and public agencies as well as with the public. The importance of such an effective communication plan was highlighted in (EGCP, p. 1); it has been mentioned that:

> *"The true success of any new initiative, especially one as important as the Qatar e-Gov initiative, depends to a great extent on effective and timely communication. It is critical that: political leaders are informed and supportive; citizens and businesses are aware of the initiative and its uses and benefits; government employees are educated and understand its impacts on the way they conduct their jobs; government ministries and agencies are well-informed and committed to full cooperation and coordination; and project teams understand and embrace the initiative and are fully involved and committed to the successful implementation of the program. Effective communication can ensure that complex projects succeed and poor communication can cause simple projects to fail. Effective communication requires knowing your audiences and their needs, understanding your own objectives, tailoring your message accordingly and communicating it in a timely manner using a medium that is easily accessible by your audiences."*

An effective communication plan should identify audiences (who need information), the objective (why information is needed), the message (what information is needed), the medium (how the information will be disseminated), the frequency (when and how often the information is needed), and the communicator (who is responsible for the message). The case study findings showed that there was a very detailed communication plan that was developed by the consulting group but the findings showed also that the e-government management did not execute that plan as required. Figure 7.3 shows how this communication plan could be executed:
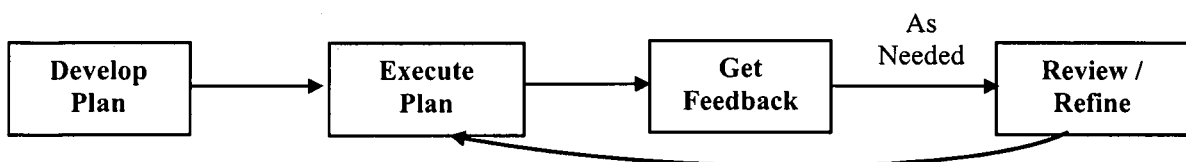
Figure 7.3: Developing and executing the communication plan; Source: EGCP, p. 3

In their communication plan the audiences of the e-government were divided into two groups, internal and external audiences (or constituents). They developed a communication plan for the internal constituents (i.e. the government and the public employees) and another one for the external constituents (i.e. citizens, residents, visitors and businesses). Each communication has its own objectives and detailed

descriptions of how these communication plans can be performed. Table 7.11 below shows the objectives of each of them:

Table 7.11: Objectives of the internal and the external communication plans; Source: EGCP, p. 6, 7 & 9

Internal communications objectives	External communications objective
To inform internal constituents of the e-government initiative; of the initial e-services to be implemented; the impact it will have on their jobs; and of each constituent's role and responsibility to make sure that e-Gov is a success.	Build awareness of e-government by informing constituents of the initiative and services to be implemented
To educate constituents on the project and its components as well as its uses and benefits, and make sure they clearly understand the big picture as well as their specific roles and responsibilities to make that happen	Educate on value and benefits of e-government by highlighting how e-government is transforming the way government serves its constituents -- less bureaucratic and more convenient, efficient, cost-effective, transparent and responsive government.
To build consensus among the various constituents and make sure everybody is in agreement as to what needs to be done and how to get there	Promote use and success of e-government by reaching out to all constituents in a timely manner, informing them of new services, and educating them on the use and benefits of each of the services.
To gain commitment and support and make sure that everybody is on board working towards the same goals and objectives.	
To coordinate implementation and delivery and make sure that all the components fit together and there are no surprises in terms of missing deadlines, overrunning budgets, etc	

The consulting group advised the e-government officials to recruit a communication manager to supervise these communication plans. However, as mentioned earlier the case study findings showed that e-government management did not follow this communication plan and the plan stayed on paper. In addition, they did not recruit the recommended communication manager and the post remains empty till the date of leaving the case study. As a result, the researcher noted that one of the topics mentioned most in the interviews was that of awareness. This issue was highlighted by the e-government director himself as a big challenge. Table 7.12 shows some of the interviewees' comments on the awareness issue regarding the e-government and its services.

Table 7.12: Some of the interviewees' comments on the awareness issue

Interviewees	Interviewees' comments
Mr AO	*We should conduct an awareness campaign which will help us in making the public aware of such changes and the benefits of having online services.*
Mr AS	*Very weak.*
Mr BA	*The public organisations aware that there is an e-government project that taking place and most of them are interested in participating in the project. However, I can say that we are in need of an awareness campaign.*
Mr BR	*Within the MOI, I can say that we are fully aware of the project. However, it is very weak among the public and some other public and private organisations.*
Mr CU	*It is really very weak and needs to be improved. Sometimes my friends here ask where are you working? And when I tell them about the e-government, they always ask me what is e-government? And where is it?*
Mr DR	*Very limited and was not planned properly.*
Mr HA	*It was really a very challenging issue to make others aware of what we are doing. So I feel that the awareness of such project is very critical issue. Moreover, I feel that there should some incentives that motivate people to work and cooperate with us.*
Mr NB	*There was not clear plan for promoting the project. The level of the awareness was very weak. There are no clear programmes for the awareness purposes. The awareness level in general is very weak.*
Mr OH	*We have done lots of activities with the aim making the public organisations aware of the importance of such project. Those activities include conducting many meetings with the concerned public officials, writing official letters, giving some seminars, showing them the Emiri decree that encourages all public agencies to cooperate with us, etc. On the public level, we have attended many conferences here in Doha, many exhibitions, etc. But I feel that we need to do more efforts in order to make the people in Qatar fully aware of such important project.*
Mr UA	*The difficulty of making the public aware of the e-government services and the way that should be followed in selling the e-government to the public. In fact this issue is a key challenge that faced us and we failed to manage it. There were two options for us to make the public aware of the e-government services and benefits specifically to outsource the awareness activities or to be performed by the e-government team themselves. Both methods failed in achieving our objective with this regard.*
Mr UL	*The awareness and the know-how are very important issues that need urgent intervention from the e-government management since the majority of the customers' problems are about the usage of the e-services (i.e. How Can I use service x or y).*
Mrs LA	*To get the people know about us. The awareness activities are very low and need to be improved. Many times when I mention to somebody that I am working in the e-government project they do not know what I am talking about they usually say: e-government?! Where is that?!*

From Table 7.12 it is clear that all those interviewees, including the e-government management agree, that the awareness level is weak and needs immediate action. This issue can justify the remarkably low level of the e-government services' usage. Indeed, this is not surprising as the e-government management did not carry out the communications plans mentioned above.

Another important issue that was observed is the clear ignorance from the e-government team of the users' suggestions and opinions regarding the current e-governments services. One of the users was explaining his feeling about the current services of the e-government and the problems associated with these services. He said: *"Another serious problem with the e-government team is that they ignore our suggestions and our feedback regarding any e-service. They always say: do not give us solutions just explain your problems. So there is no room for our suggestion to improve the e-services. We are the e-government users and they have to listen to our suggestions and opinions."* Another user, who was working in a semi-government organisation, was also explaining some of the problems that he faces usually when he uses a service called 'Qatari employment'. He said: *"this service is useless and wastes our time. Each time we need to publish a new vacancy through this service on the e-government website we spend more than 10 minutes performing a single process and sometimes the service is down for many hours. We complained to the e-government help desk but till today they have not solved the problem. The problem is that they will not listen to you if you want, for example, to give some suggestions or good ideas to enhance the services."*

The second part of the involvement issue is the involvement of the services' owners (i.e. the participating ministries and public agencies). An IT manager of the participating ministries was complaining about the ignorance of their opinions and suggestions with regard to the introduction or the planned e-services. He stated: *"The e-government project is a national project and we are happy and ready to cooperate with such an initiative but unfortunately the e-government management did not give us the chance to participate as we would wish."* Another IT manager mentioned his concern about the e-government management way of selecting and developing the e-services. He said: *"This ministry was one of those ministries that has a solid infrastructure as well as skilled IT staff. However, the e-government management has decided to take only two services although we assured them that we can develop at least six services in the first stage of the e-government project."* Therefore, the ignorance of the users' and e-services owners' involvement from the e-government management might justify some of the 'war stories' mentioned earlier regarding the rejection of some of the development e-services (e.g. the Qatar University story). According to Kujala (2003, p. 11) *"User involvement is clearly useful and it has positive effects on*

both system success and user satisfaction". In addition, user involvement as well as e-service owners can promote their awareness of the e-government benefits and hence introduce the change smoothly and reduce users' resistance towards the new IS.

To conclude, it is extremely important for human involvement issues to be considered and treated with careful attention. *"Knowledge of the factors that influence adoption will enable government agencies to develop online services that meet the needs of their business"* (Carter and Belanger 2005, p. 22). There is no excuse for the e-government implementers to ignore the e-government users or the e-services' owners. Their valuable inputs with regard to the improvement of the e-government services would increase user satisfaction. This is a critical issue that must not be neglected should the e-government implementers seek success and smooth implementation.

7.4.3 Digital divide among users

With the promise of the e-government, there will be some differences between the haves and the have-nots and hence this leads to a modern problem which is the so-called digital divide (Basu, 2004). The literature is plentiful with scholars who have identified a growing gap between those who are able to access and use ICTs, and those who cannot. This gap has many dimensions such as those between young and old, between city and country, between rich and poor people and between different ethnic and socioeconomic groups.

> *"Household with higher incomes are more likely to use computers and Internet, while poorer, often minority household are less likely to tie to the digital divide"* (Ho 2002, p. 439)

The case study finings indicated that there was a clear digital divide in Qatar. One of the senior managers at the e-government organisation mentioned the digital divide as one of the challenges that they faced. He said: *"Other examples of common challenges are digital divide, awareness, contractors' problems, management ...".* This digital divide can be deduced also from the low penetration of the Internet. One of the senior managers of the e-government entity mentioned: *"Internet penetration is also a major challenge. According to the UN report the percentage of the Internet usage in Qatar is 12%*

which is quite low". Introducing online government services with this low penetration will of course create a hug gap between those who can access those services and those who cannot.

E-government officials must strive to investigate the reason behind this low percentage of Internet usage. Reasons for this might be due to the cost of providing the Internet services since there is only one Internet service provider in Qatar, the lack of know-how, awareness issues or maybe due to some other reasons such as lack of interest, privacy issues, or security issues. However, there is a strong indication that the reason is mainly the lack of know-how. For example, it has been mentioned in Chapter 5 that 8% of the total population in Qatar are illiterate. *"The 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"* (Silcock, 2001, pp. 94). To conclude, whatever the reasons behind this modern problem (i.e. digital divide), e-government officials must be aware of the gap that might be created by the problem and be careful not to exacerbate that gap, particularly at the early stages of e-government development. Possible ways of treating this gap are, for instance, making the e-government services available and accessible to its users through different access channels, training, education, involvement and reducing the cost of performing those services. Slack and Rowley (2004, p. 369) gave an example of those possible ways that can bridge this gap; they said: *"Kiosks are increasingly being heralded as a technology through which governments, government departments and local authorities or municipalities can engage with citizens. In particular, they have attractions in their potential to bridge the digital divide."*

7.4.4 E-government users trust

One of the biggest deterrents to trust of using online transactional services is the lack of privacy protection. *"A breach of privacy can be as deadly to the trust relationship as any other security breach"* (EGITSR, p.9). E-government users have to know that their information will be kept safe, private and that the transactions they conduct are legal, binding and complete. In addition, they have to ensure that communications and transactions remain confidential. Otherwise, they will not trust any e-services available online. *"Ensuring that e-government initiatives are in step with society's*

expectations in this area [i.e. privacy] is crucial means of building trust. The challenge facing e-government coordinators and implementers is to respect accepted privacy principles while allowing the benefits of the Internet and other technologies flow to citizens" (Basu 2004, p.123).

The research findings showed that there are two main issues that could encourage the potential e-government users in Qatar to avoid using the available e-services. First, there is no e-law that protects their privacy and the confidentiality of their transactions. According to many interviewees, the e-law is drafted but still not yet approved. The chairman of the e-government steering committee confirmed this issue. He said: *"we have also participated in the preparation processes of the e-law and completed it last year. It has been sent for approval but till today we did not get any update.* [Then he suddenly called his secretary and asked her to write a reminder to the concerned authority. He asked her to mention that] *we have many online services and we might face some legal issues in the near future so please speed up the issuing process of the e-law at least before the end of this year, 2004".* As a matter of fact, till the 30th April 2005 the e-law was still not in force.

The second issue that encourages e-government users to avoid the use of the available e-services is what was mentioned clearly on the e-government website. It was mentioned that users must agree that their use of any e-services will be under their own responsibilities. Specifically, it is stated that: *"YOU AGREE THAT YOUR USE OR RELIANCE ON THIS SITE IS AT YOUR SOLE RISK AND THAT YOU ARE SOLELY RESPONSIBLE FOR ANY LOSS OR DAMAGE ARISING FROM SUCH USE".* A third issue is the usability of the e-government services. This issue is discussed in Chapter 8 in more details.

In summary, there are three main issues that can affect the trust of the e-government users in its services. These are: privacy, the absence of an e-law that protect them against any risk and the usability of the available services. It is clear that e-government officials did not treat the privacy of their users as required and failed to protect them legally. Thus, privacy will be one of the main reasons that makes the usage of the e-government services very low and will make the e-government users lose trust in using those services.

The following points summarise Section 7.4:

o Human-centred factor were found as one of the significant issues that need careful consideration and treatment from the e-government implementers in Qatar. The factor was divided into four elements. These are: training issues, user involvement issues, digital divide and user trust.

o The case study results presented the lack of the appreciation to these important factors from the e-government implementers in Qatar, particularly the e-government management and their clear failure in treating these important issues in practice. This might help in justifying the low usage of the available e-government services. This issue will be further assessed in Chapter 8.

o The categories suggested by Doherty and King (2001) were used to guide and structure the analysis but there were some differences. These including adding three new factors, which are the involvement issues, digital divide, and the e-government users trust. In addition, the researcher did not include one of the suggested factors, which is the assessment of health and safety factor. This is because the case study did not show any importance of this factor in the case of developing an e-government system at a national level.

7.5 Change management

The change management spread over all factors in the Doherty and King (1998a, 1998b, 2001, and 2003) studies. However, in this study the study findings presented this issue as one of the most important factors that must be considered and treated carefully during the development of an e-government system. From the above discussions, it is clear that e-government is a tool of change, and hence the most complicated part of implementing an e-government system at a national level is how to manage the change that will be introduced by that system, particularly in the developing countries. Salman (2004, p. 144) mentions that managing the change is a complex task, particularly in the developing countries. Specifically, he said *"many organisations of developing countries would stand flustered in front of a massive change management challenge to enter the information age"*. In addition, one of the steering committee members was listing the challenges that he faced; he said: *"E-government is a drive of change and change across all the society levels which make the task*

of the e-government implementers very complicated." Furthermore, one of the senior managers at the e-government organisation stated: *"Change management is a key challenge that faces e-government implementers here in Qatar. This covers resistance to change, fear of change (e.g. job security), and most importantly cultural issues (e.g. people trust physical and stamped papers than electronic ones).* Therefore, it is essential for e-government implementers to consider this issue as one of the top priority organisational issues that must be considered and carefully treated during the development of the anticipated e-government system. The researcher sees that, in addition to what has been discussed in the above sections, there are two main sources of help for the e-government implementers to overcome the change problems, namely the support of the top authority in the country and a sustained committed and cooperative executive leadership. These two issues are not organisational issues per se but they can be used to overcome the change management related issues. These two ways are discussed below.

Top authority support: the literature on IS highlights the importance of having sponsors for the IT projects from the senior managers in any organisation which seeks to implement these projects. In the traditional IT projects, the sponsor is usually a senior manager who realizes the potential of the information technology in the organization and who can allocate or negotiate organisational resources towards further implementation of the technology (Lucas 1994). However, in the case of the national e-government project, the person who has this kind of authority might be a minister, prime minister or might be even higher. Hence, achieving top levels of authority support is a significant factor in implementing e-government initiatives at a national level. The case study findings showed that the e-government initiative in Qatar came as a conviction of His Highness the Emir, Sheikh Hamad Bin Khalifah Al-Thani, of the State of Qatar. Mr OH mentioned: *"We will not reach this high level of improvement without the support of HH the Emir. As I mentioned earlier, you will not succeed in implementing any e-government project without the support of the highest level of authority. The highest level of authority acts as a sponsorship for the e-government."* In addition, the Emiri decree stated clearly that the e-government steering committee is reported directly to His Highness the Emir and will have an independent budget. This reflects His Highness the Emir's wisdom, insight, vision and his realisation of the great value of the technological age and information society,

and how technology can benefit the e-government constituents and the economy of Qatar.

It can be noted clearly that the researcher did not discuss the financial issues in this chapter as a key issue that needs to be considered and treated carefully. Indeed, financial issues are a very challenging factor in most of the countries world-wide but the case study findings did not show that the e-government implementers in Qatar were suffering from lack of budget. This reflects the unlimited support that e-government implementers received from His Highness the Emir. Whilst there were some complaints from some government officials regarding the financial issues, these complaints came as a result of managerial and cultural issues. These managerial and cultural issues were discussed above in detail. Another important issue that relates to His Highness the Emir's support is the advanced stage that e-government in Qatar has reached, technology-wise. The technological issues are discussed in Chapter 8. To conclude, it is essential for any e-government system to gain the support from the top authority as this support will push such a national project towards success. It is clear and without any doubt that the whole credit of initiating and supporting the e-government initiative must go to His Highness the Emir of the State of Qatar, Sheikh Hamad bin Khalifah Al-Thani.

Sustaining committed and cooperated executive leadership: sustaining committed executive leadership is a fundamental aspect of the success of e-government initiatives (Burn and Robins, 2003; Bonham *et al.*, 2001). The importance of this factor increases, of course, in conducting more complex IT investments that are associated with large scale changes such as implementing an e-government system at a national level. The realization of e-government affects everyone county-wide and hence the role of leaders is of paramount importance for the success of realizing e-government. A senior manager confirmed this opinion by saying: "*It is very important to mention that most challenges that faced us were because of the change. So in my opinion, one the most effective ways of overcoming those challenges related to the change is to have buy-in from the top of the pyramid. People are afraid of taking responsibilities. If you are in a management position, then for god sake you have to take the decision*". Executive leadership in this context involves all government officials who are supposed to be involved in an e-government system nation-wide; from politically elected and

219

appointed executives, legislators and overseers, and IT directors (or managers) of both government ministries and public agencies. Implementing and managing an e-government system at a national level is a complex task that requires; first, a skilled, dedicated, cooperative and committed e-government project manager (or director) and project team; secondly committed and cooperative leadership across ministries and public agencies. However, the case study showed a lack of both.

The main reason for lacking both might be related to what was mentioned in the previous section regarding the communication plans and the awareness issues. The e-government management did not perform the communication plans (i.e. the internal and external plans) that had been suggested by the consulting group. In the internal plan there was a chart that explained how an e-government management could sustain the commitment and support from the pubic officials (see Figure 7.4). As a comment on that chart, there was a clear message for the e-government management but unfortunately they did not listen to that message. The message says: *"The following Chart shows how internal communication objectives change over time. As we move from planning to implementation, we take our internal constituents from the awareness to the commitment stage. First we inform the various teams, we educate them, we build consensus and then we gain commitment and support to be able to implement and deliver successfully."*
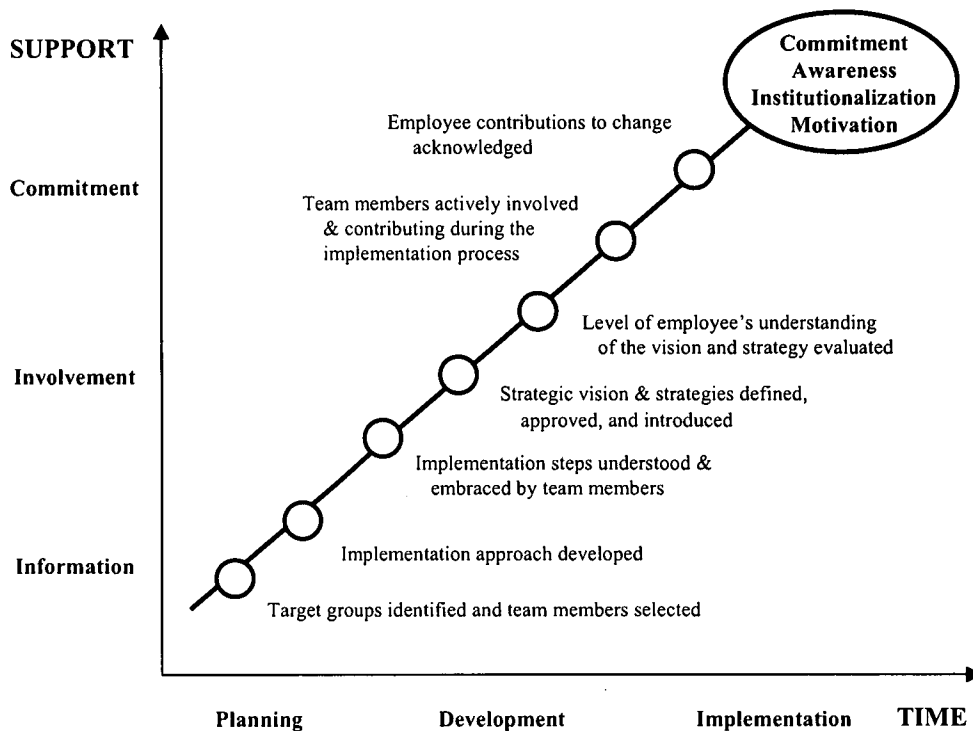
Figure 7.4: Internal communication objectives over the time; Source: EGCP, p. 7

Ignoring such an important strategy will, of course, result in a lack of commitment, cooperation and support from the other end (i.e. government officials of the participating ministries and public agencies). There is no doubt that the participating ministries and most of the other ministries and public agencies are, somehow, aware of this national project. However, the plan mentioned clearly that after making people aware of the project; they have to be taught how to deal with it and what is expected from them. In addition, they have to be involved in the project activities as their involvement will encourage them to be more committed. However, this did not happen except at limited levels (i.e. in a very limited number of ministries). It has been mentioned earlier that one of the IT managers of one the participating ministries raised his concerns about the management style of the e-government project. He said:

"The ministries spend years in developing and improving their systems and once they want to make these services live and available to the public, the e-government director came and just links their e-services to the e-government portal and then invites the local news papers and other media and starts speaking about his efforts regarding that e-service. So in a couple of weeks the whole credit goes to him"

221

As can be understood from the above quote, that e-government director is not involving other government officials in their related formal events. E-government management should be aware of such power distribution, human and cultural issues, as these issues can cause resistance from the participating officials towards the anticipated change. Another example of the managerial issues that might make other government officials reluctant to cooperate is given by one of the interviewees. He said: *"For example, the e-government director always shows the government officials the decree of HH the Emir in order to encourage them to cooperate with him. Even if they show some commitment, they are very slow in their cooperation."* It is always better to make the government officials aware of the potential benefits of such a national project, to educate them, to encourage them, to tell them what is expected from them, and to involve them in the e-government activities rather than enforcing cooperation. Another example of the managerial issues that might make people reluctant to cooperate is what was said by one of the steering committee members who was commenting on the cooperation issue between the e-government organisation and other public agencies; he said: *"It is not a choice for them to cooperate with us it is a must"*; but this does not reflect what the e-government communication plan says and will not work as most of the e-government team members raised the commitment issue as one of the most challenging issues.

A senior manager emphasised that most of the challenges that they face, including the commitment issue, are due to the complexity of managing the change and the lack of change management skills. This is because, as he said, most of the e-government and government officials are afraid of taking responsibility. He said: *"it is very important to mention that most of the challenges that faced us were because of the change"*. This might be because some government officials perceive such change as a potential threat to their power and viability, as discussed earlier in this chapter. Government officials might feel that this change will reduce their authority in their public organisations so it is expected that they might resist or even ignore this kind of initiative, particularly if they are not aware of the potential benefits of that investment. Heeks (1999, pp.33) mentions that *"the public sector has had more than its fair of IT project failures, and of reports questioning the value of benefits, if any, produced by IT-based reforms. In this situation, public sector managers may rationally choose to ignore IT, as they perceive a lack of clear evidence about its positive impact"*. Thus, it

is very important for any e-government management to inform and educate government officials about the potential benefits of such national imitative, in order to gain their commitment and support.

From the above discussions, it is clear that there are important issues regarding the commitment and the cooperation of the government officials towards the e-government project. These issues can be justified differently but the researcher is going to highlight the major causes of such problems in the light of the case study findings. Firstly, there is a lack of proper project management. This can be understood from the underestimation of the e-government management towards some important issues such as awareness, users and participants' involvement, and ignoring some critical project plans, particularly the communication plans. Secondly, it seems that e-government management is lacking change management skills that can help them to sustain the commitment of government officials. This issue is mentioned clearly by one of the senior managers of the e-government organisation itself. Change management requires effective balancing between forces in favour of change over forces of resistance (Burn and Robins, 2003). In addition, e-government management should understand that they are dealing with a radical change and fundamental transformation of government services that require sophisticated managerial skills. Finally, it is worth mentioning that this type of nation-wide change requires fully dedicated and committed management. The case study findings showed that neither steering committee members nor the e-government director are fully dedicated to this national project as each one of them occupied another position (some of them two other positions) in other public agencies.

7.6 Summary

This chapter has discussed four main organisational issues that can affect the success of implementing an e-government system at a national level. These organisational factors are: e-government organisational alignment, e-government organisational contribution, human-centred issues, and change management. Some of these categories have been divided further into some subcategories. For example, organisational alignment has been divided into three classes or (subcategories),

namely forming an e-government entity, cultural issues and power distribution issues. Whereas the e-government organisational contribution factor was divided into four elements, specifically e-government relative advantage, prioritisation of e-government deliverables, business process reengineering and future need for an e-government system. The third main category (i.e. Human-centred issues) is composed of four subcategories which are: training issues, involvement issues, digital divide and privacy. The final main category is the change management issues.

These main categories have been developed in light of the Doherty and King (1998a, 1998b, 2001 and 2003) studies. Although these studies were suggested for IS project development at a single organisation level, they have been found very useful in structuring the analyses of the case study findings with regard to the organisational issues. However, this study has not included one of the main suggested categories, and at the same time it has added an additional main category which was not considered as an organisational issue per se in their studies. The added category is change management while the main category that was suggested by them and was not considered in this study is the transitional issues category. One of the main reasons for not considering that category is because it cannot be tested at the early stages of developing an e-government system as there is no real transition from the old system to the new system.

The case study findings showed that the e-government system is an umbrella that covers the development of many services. Each service is developed independently or might be shared between many other organisations. In addition, there is no real transition from the old system to the new system as they continue using both systems in parallel. Therefore, the transition issues will not appear at the early stages of developing any e-government system but it is necessary to consider them whenever e-government implementers decide to move from the old system (traditional services) to the new system (electronic services). The case study results did not show any real transition that had taken place in Qatar e-government for any of the developed e-services. In addition, there were some subcategories that had been found irrelevant to the case study such as 'health and safety factor' and at the same time the study has added some other subcategories which were not involved in the mentioned studies.

These subcategories are: e-government users involvement, digital divide and e-government users' trust.

To conclude, the chapter showed that there were some issues that were considered by the e-government implementers but they failed to treat them in practice, while there were other issues that were neither considered nor treated carefully during the development of their e-government system. The study findings presented four main categories of organisational issues as critical and very important issues that must be considered and treated carefully should e-government implementers seek success. Treatment of those issues might differ from one stage to another during the e-government implementation (i.e. some of those issues might need the careful attention of e-government implementers during the early stages of an e-government system while the importance of treating the other issues will be spread over all the development stages). Chapter 9 will summarise these organisational issues, their impact on the implementation process and possible ways of overcoming (i.e. treating) such issues.

Chapter 8: Technological issues

8.1 Introduction

It was mentioned earlier that Chapters 7 and 8 address one sub-question, which is: what are the key issues that might affect e-government implementation at a national level and how could these issues be treated in practice? Since Chapter 7 has addressed the organisational issues, this chapter aims to discuss and analyse the case study findings regarding the major technological issues that can restrict or affect e-government implementation at a national. However, it is worth noting that this study does not consider those very 'detailed' (or low level) technical issues which might cause some challenges to the development team such as *'trouble shooting'*, *'maintaining high level of performance'*, *'versus and worms'*, *'vendors' challenges'* or *'setting technical standards'* (Al-Sebie and Irani 2005). These technical issues are common and might be found at every level (i.e. Departments' levels, Ministries' level or national level). This study deals with those key technological issues that affect the implementation of an e-government system at a national level from a broader perspective (i.e. at a higher level).

These technological issues are classified into three main classifications, namely: technology complexity, ICT infrastructure, and e-government services usability. Technology complexity is further divided into three elements: security, integration, and the dynamic change of the technologies involved. Furthermore, security is divided into two main issues, namely developing a secure authentication system and a building secure payment gateway. The classification of these technological issues was based on the literature of IS and e-government as well as on the terms and concepts which emerged from the case study findings. The next section will deal with the issues that relate to the complexity of technologies involved in developing an e-government system at a national level. Then, Section 8.3 will analyse those issues that relate to the ICT infrastructure. After that, the usability of the e-government services and its related issues are presented and discussed in Section 8.4. Finally, Section 8.5 summarises this chapter.

8.2 Technology complexity issues

This section addresses the case study findings in relation to the complexity of the technologies involved in developing an e-government system at a national level. However, it is worth mentioning that the term 'complexity' is not used to refer to the complexity of using an innovation (i.e. new system or service) as suggested by Roger (1995). The term is used, in this study, to refer to the degree to which an innovation is seen by its implementers as being relatively difficult to implement and to cope with. Therefore, it excludes those issues that relate to the complexity of using the e-government services since these issues are discussed and analysed in Section 8.4 (i.e. e-government services usage issues).

The case study findings are analysed in relation to the major components of the e-government IT architecture. The components of certain e-government IT architecture and their complexities can be better understood from the functional architecture of the e-government portal. An e-government portal is an interface that allows the e-government entity and the participating ministries to provide a reliable, available and secure service to its constituents (i.e. users). There are many benefits of developing an e-government portal. These benefits can be understood from the main objectives behind its development in the case study site, which include:

- o *"Integrate with existing government computer applications: which may be running on many very different computer platforms.*
- o *Present information, forms and transactions: in an absolutely consistent manner. Everything must have a consistent look and feel.*
- o *Guide the user (government constituent) through the process: using an intuitive interface, which is easy to understand, easy to use and fast.*
- o *Let the constituent find information quickly: using tools like search engines and catalogs.*
- o *Offer the right transactions and accurate, up-to-date, thorough information: which is easy to understand and use.*
- o *Assure privacy and finality: for transactions conducted on-line. The constituent has to know that his information will be kept safe, private and that the transactions he conducts are legal, binding and complete."* (EGITAR, p. 10)

As can be noted, the above objectives create certain requirements that must be met through a well planned and designed e-government portal. Figure 8.1 shows the framework of the e-government IT architecture in Qatar (i.e. the case study site), and

Figure 8.2 illustrates a broad functional overview of that architecture and shows the layers that represent the primary architectural components that need to be available in the Qatar e-government's IT architecture.
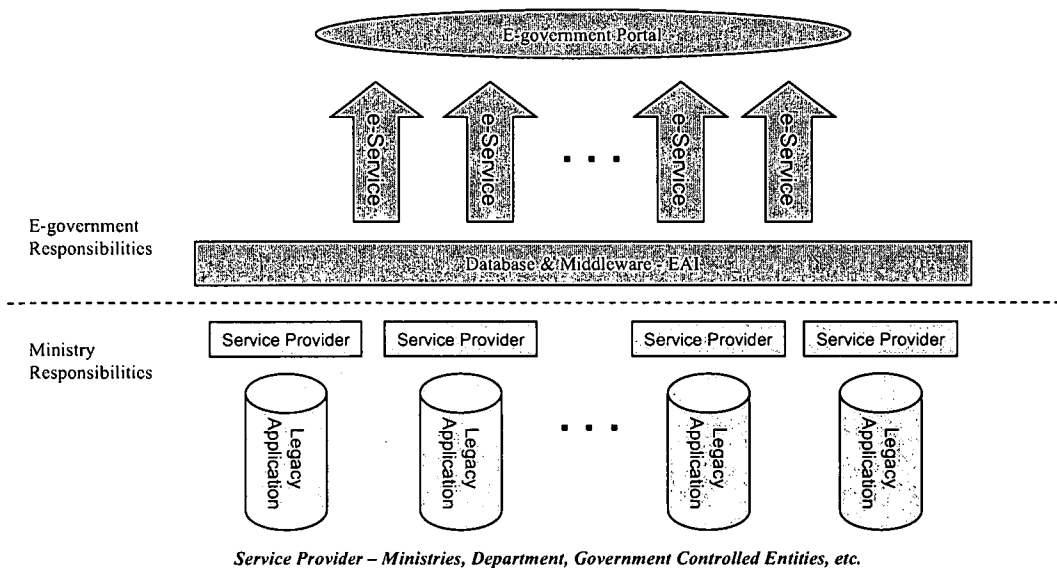
Figure 8.1: Qatar e-government IT architecture framework
Source: EGDSPP, slide 39

To help the reader understand the complexity of the technologies involved in such IT architecture, this section has been divided into three main subsections, specifically security (mainly those issues that related to developing secure authentication system and developing secure payment gateway), integration issues and the dynamic changes of the technologies involved. Each subsection represents a subcategory challenge of the main challenge which is the complexity of the technologies involved. These three subcategories are described and analysed in the following sections.

228
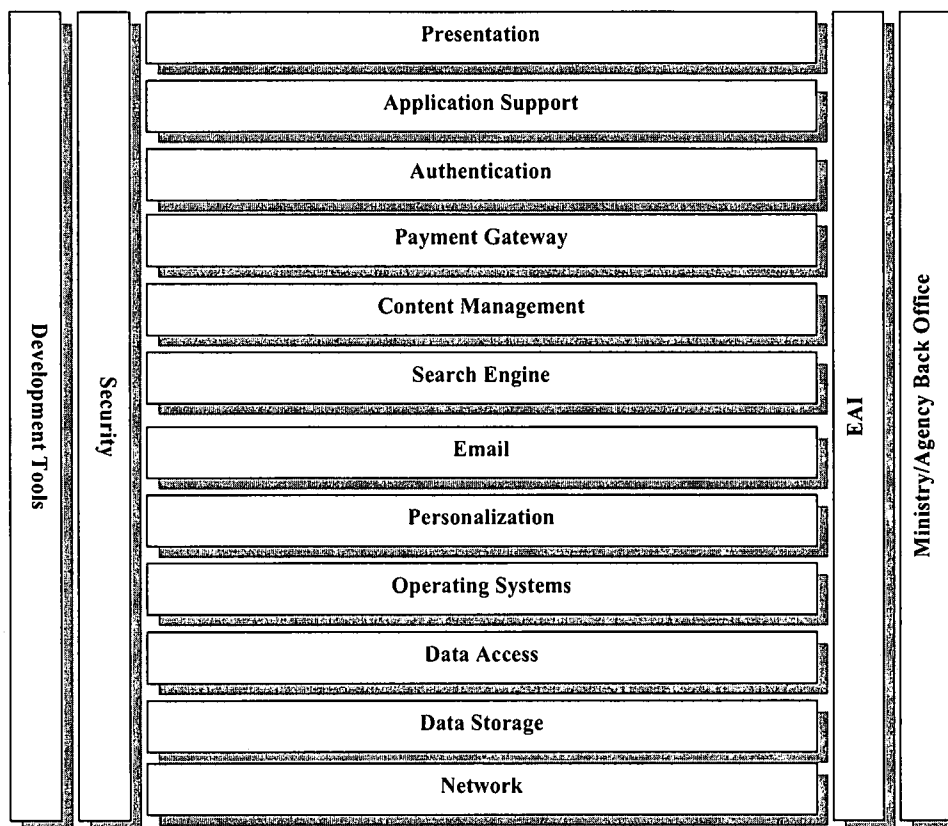
Figure 8.2 E-government IT architecture: functional view
Source: EGITAR, p. 12

8.2.1 Security issues

One of the biggest concerns most e-government executives and managers have about implementing an e-government is security. E-government deals with highly sensitive information which must be protected from 'hackers' and Internet criminals. The Internet abounds with 'hackers' and criminals who steal valuable information, such as credit cards numbers, as well as break into web sites and even intercept and alter the data while in transit. *"Consequently, it is vital that adequate security and control procedures are introduced to ensure that all the information embedded within organisational information systems retains its integrity, confidentiality and availability"* (Doherty and Fulford 2003, p. 106). Having a secure e-government system was given a great deal of attention in Qatar. The e-government officials in Qatar realised that security is a key issue that will encourage/discourage e-government use of the e-government services.

"A single security breach risks endangering e-Government's aims, undermining constituents' confidence in e-Government, and negatively impacting its success" (EGITAR, p. 20).

Therefore, e-government officials in Qatar started, at the beginning of the e-government project, developing a long-term single security infrastructure solution with the aim of mitigating the mentioned risks. They established specific aims for their long-term security infrastructure. Their objectives were as follows:

o   *"Ensure that the right parties access the right data at the right time.*
o   *Replicate or even improve on the mechanisms used to ensure security in the physical paper world.*
o   *Protect the confidentiality of information by replacing envelopes and secure courier with sophisticated methods of data encryption, to ensure that only the intended recipients can read messages.*
o   *Provide assurance of message integrity"* (EGITAR, p. 20).

To achieve the above objectives, the e-government management started implementing two main milestones, namely a secure authentication system and a secure payment gateway. These two main issues are described in the following sections.

Developing secure authentication system

Security functions for any e-government portal are essential and at the same time very complex. Worldwide, many organisations have learned hard lessons about the importance of security as the Web is available to millions of very intelligent people; and, unless proper steps are taken, the Web is not very secure. Although, there are multiple technologies that can address one or more aspects of the security, unfortunately most of these technologies fail to address all of the Internet security aspects. However, there are some solutions that can cover the widest set of security requirements, such as the technology of smart cards and PKI.

The e-government management in Qatar, has selected this technology (PKI and smart cards) for their e-government project. A PKI is *"a comprehensive scalable security solution that provides for the identification and authentication of users and resources on a network. It is a system of digital certificates, certificate authorities, registration*

authorities, certificate management services, and distributed directories used to verify the identity and authority of each party involved in any transaction over the Internet" (EGITAR, p. 20). It supports certain critical features such as privacy assurance (i.e. to ensure that communications and transactions remain confidential), integrity (i.e. to provide the needed assurance that information has not been altered in storage or in transit), authentication (i.e. to verify the identity of communicating parties), non-repudiation (i.e. to prevent reneging on agreements), and a public certificate directory for lookup of certificates and public keys. The PKI technology can be understood by explaining its primary components, specifically the certificate authority and authentication registration authority.

Smart cards are similar to normal identity cards and are typically used to store digital certificates that are issued specifically to individuals. There are two different types of digital certificates: the first can be issued to e-government users' computers whereas the second type can be issued to the users themselves. The advantage of using a smart card is that it can be used from any computer with a means to read it. On the other hand, it requires a reader device which is considered to be its main drawback. Developing a trust relationship between users' access channels and the e-government system is a crucial issue. Figure 8.3 shows the possible channels that can be used to deliver e-government services, such as wireless devices (e.g. mobile, PDAs, and pagers), kiosks, web, and ATMs.
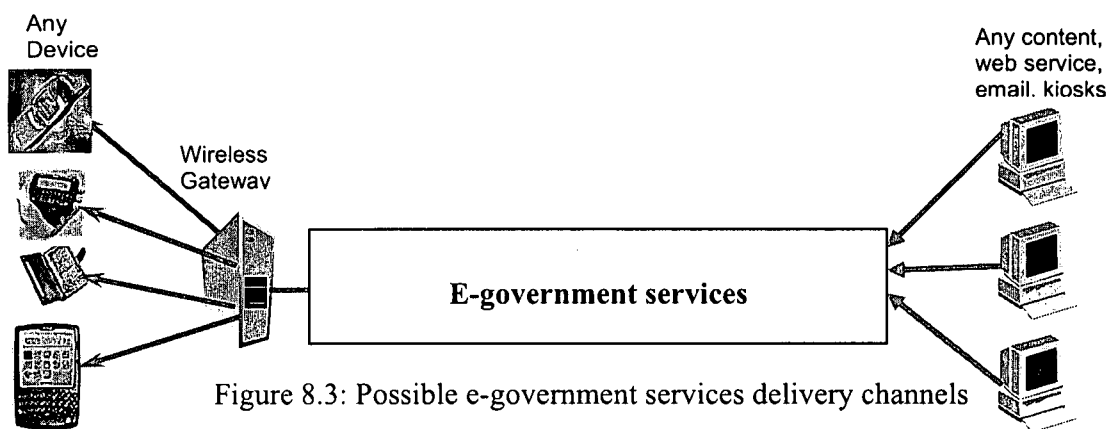
Figure 8.3: Possible e-government services delivery channels

E-government users must be sure that they are dealing with the true e-government system and not an impostor. Likewise the e-government system must know that it is

231

dealing with trusted and certified users. The process of confirming the identity of both parties (i.e. e-government and constituents computers) is so-called authentication.

> *"Authentication is not only required to allow a person to conduct transactions, it needs to provide positive proof that the individual authorized the transaction. That proof is called non-repudiation and it must be extremely secure"* (EGITAR, p. 21-22).

There are a number of technologies that can provide authentication, ranking from requiring a user ID and password to be entered (the simplest form) to the use of what is a so-called *'digital signature'*. *"Digital signatures are current best practices for providing the proof required for non-repudiation. Digital Signatures are used to ensure the identity of a sender. In conjunction with Message Digests, Digital Signatures prevents someone from altering a message and falsely claiming that the sender wrote the altered message. Digital Signatures are a byproduct of public key cryptography. Digital signatures work because, unlike written signatures, they are virtually impossible to forge and because they are issued and verified by reputable third party organizations called certificate authorities"*(EGITAR, p. 22). The certificating authority must be an organization, in which the e-government entity has no ownership interest to serve in that capacity. According to the case study findings, e-government in Qatar entered into agreements with an international Certificate Authority and Smart Card vendor.

Interactions between the certificate authority and its subscribers are typically managed through intermediaries called registration authorities. The registration authority is also responsible for ensuring the e-government portal is a single sign-on. In other words, the constituent can log-on one time and conduct any number of transactions. However, it is worth reconfirming that a registration authority does not itself issue certificates but it can validate and approve or reject certificate applications. According to the case study findings, the MOI had been given the role of Authentication Centre (i.e. Registration authority). Its role with this regard included:

- o *"Authorize production of and inventory Smart Cards*
- o *Validate, approve (or reject) and deliver Smart Cards*
- o *Validate and approve (or reject) enrollments for direct issue certificates (not using Smart Cards)*

232

o *Approve (or reject) requested changes to the certificate attributes, including expiration date, of subscribers*
o *Authorize requests for key-pair or certificate generation and requests for the recovery of backed-up keys*
o *Authorize requests for revocation or suspension of certificates"* (EGITAR, p. 26-27)

The process of the authentication was described by one of the developers. He drew a similar diagram to Figure 8.4 below and then commented on it; saying: *"Ok, let me explain it through this diagram:*
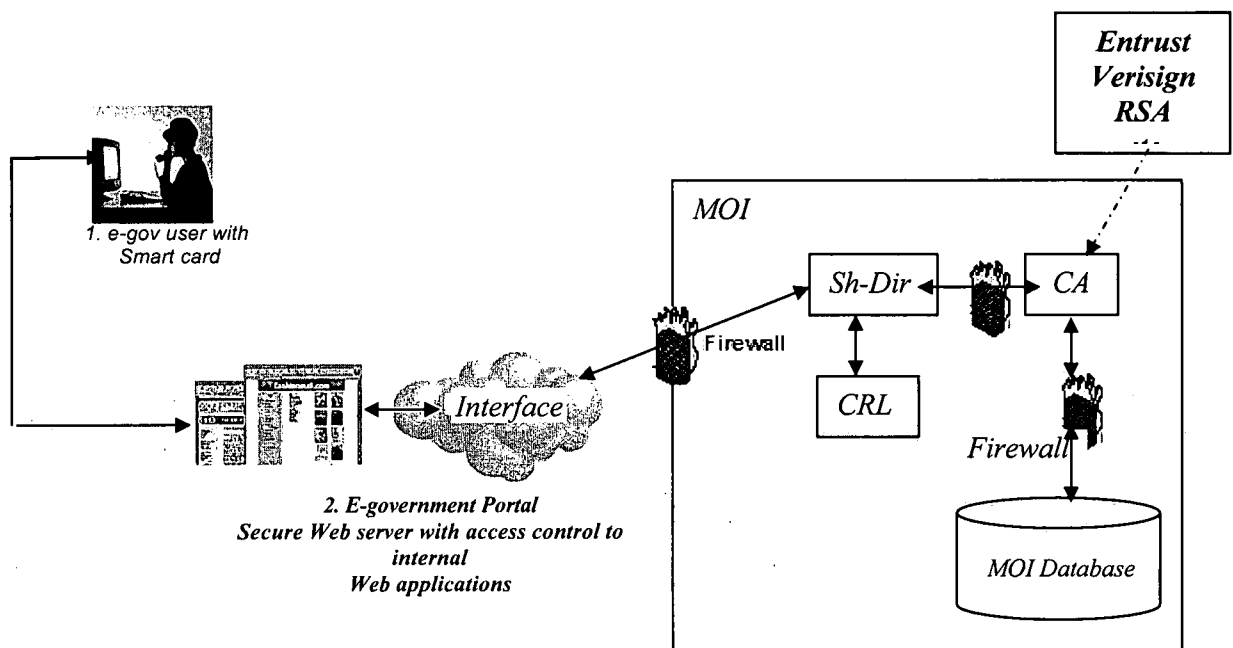
Figure 8.4: Authentication process

"CA is a Certification Authority that is owned by a trusted third party (e.g. Entrust, Verisign, RSA, etc). CA is needed to apply a verified electronic signature to electronic documents (or a smart card to transactions). Those digital signatures or smart cards will be used to send encrypted information between e-government users and the e-government portal. CA allows the information to be sent confidentially and also provide secure authentication, as I mentioned above. In other words, CA is used to ensure that the individual using the e-government portal actually is the person he claims to be. The figure here illustrates the process of using a smart card to prove identity. A smart card system requires that a User ID and Password be accompanied by a smart card in special readers which are separate devices that need to be connected to the e-government users' computers.

Ok so the first step (1) any e-government user who has a certificate stored on his smart card in encrypted form will try to access and perform any e-service through a secured application using a standard web browser (i.e. step 2). Then,

233

in step 3 (i.e. MOI box) many-way handshake for mutual authentication of e-government users and MOI servers so if both pass authentication, then a one time secure session is established between e-government users and MOI servers.

One of the most important checking that takes place is to check whether this user is authorized to use the required e-service or not by comparing his details with the details that stored in the Sh-Dir (i.e. shadow directory). The shadow directory is a view of the original CA database. If the e-government user is allowed to use the required e-service then another check will take place. For example, the MOI applications will check the CRL (certification revoked list) to ensure that the requester is not in the black listed users. Also the access will be controlled by another Server Access Control which grants specific access based on certified identity. "

From the above explanation, it can be understood that the authentication process is maintained by many coordinated and cooperative parties (e.g. e-government, MOI and other third parties) which will increase the security of the e-government portal. In addition, it is worth mentioning that e-government and the participating parties use many securities barriers, such as firewalls. Figure 8.5 shows how such firewalls can be fitted within the e-government physical architecture.
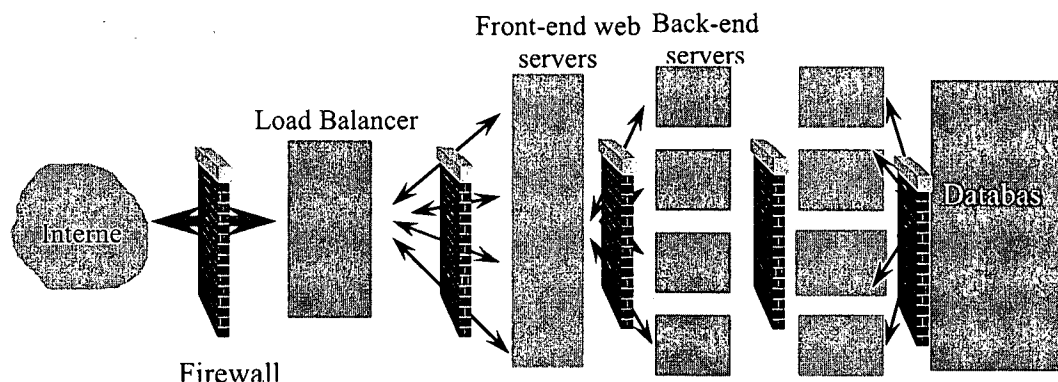
Figure 8.5: The use of the firewalls to provide secure access

To conclude, it can be noted from this section and the next one that security is ranked to be the top priority of the e-government implementers tasks. They realised the importance of such issues at the early stages of their development and hence they were able to achieve an advanced security system which will help them in increasing the e-government users' trust in using its online services. As mentioned above, security issues are divided into two main areas, namely the authentication system and the payment gateway. This section described the e-government team effort with

regard to the authentication system. It is shown that the e-government team adopted smart cards for its users' authentication and established policies for the issuing, distribution and use of PKI and Smart Cards. In addition, the e-government entered into agreements with an international certificate authority and smart card vendor. Furthermore, MOI had been given the responsibility of organizing the Authentication Centre and establishing its policies which were in line with policies of and guidance from the selected Certificate Authority and smart card vendor.

There is no doubt that having such a security infrastructure will help the e-government development team to develop more and more transactional services and will increase the use of the available services over time. However, it is very important for e-government implementers to understand that there must be a continuous maintenance of the developed infrastructure as security is a continuous challenge and no one can guarantee electronic security, particularly the use of the e-government services through the Internet. A senior manager confirmed this by saying: *"Although we feel that we built a secure infrastructure, it is very challenge to stay on the top of security. So I can say that security is a continuous challenge".*

At the level of the steering committee, one of its members confirmed what has been mentioned above and emphasised that security is a major challenge that faces any e-government team. He said: *"Developing security infrastructure and building payment gateway are also major challenges for any e-government implementers. Here in Qatar we are very happy that we overcome these both challenges by building public key infrastructure and smart cards a well as building a secure payment gateway".* Finally, it is worth noting that the case study findings showed that there was a clear delay in issuing the required smart cards due to their costs and the lack of proper support from the MOI side. In addition, till the 30th April 2005, those smart cards could only be issued to those companies which have more than 300 employees. That means, until the mentioned date smart cards were not issued to any individuals such as citizens or residents. This delay in issuing the required smart cards has affected and will affect the usage of the e-government services that cannot by performed without having such smart cards. This issue is discussed in Section 8.4.

Developing secure payment gateway

As mentioned earlier, the focus of the e-government project, in its early phases, was on implementing online transactional services. Providing transactional services requires a secure and convenient means of payment that enables e-government constituents to pay for those services. The payment through Internet sites takes place using so called payment gateways. The case study findings showed that the e-government team in Qatar was able to build an e-government payment gateway which was considered one of their main achievements. As a matter of fact, the development of the payment gateway came as a result of shared efforts between three main parties, namely the e-government development team, QNB and QCB.

The setting up of the payment gateway was completed by QNB while QCB provided the financial settlement network. The role of the e-government team was to provide a single point of authentication, as this is a key objective of the e-government portal architecture. In addition, e-government controls the transaction from start to finish and maintains the integrity of the data. One of the developers mentioned his role with regard to the development of the payment gateway which represents the role of the e-government development team. He said:

> *"My role was related to the development of the interface that located between the e-government portal and the Master Card application which is hosted by a third party entity that is called MIGS. In addition QNB plays an important role with this regard. Its role is about the financial settlement since every 24 hours the QNB receives two files that contains the transactions details, specifically one file from the e-government and the other file came from MIGS. QNB will then compare the two files and finalise the financial settlement."*

Furthermore, the role of e-government involves providing reconciliation reports to ministries/agencies for fees collected while QNB/QCB are responsible also for providing similar information for ministries/agencies to be used for the final reconciliation. To understand how the payment gateway works, it is very important to know what parties are involved in the payment process of any transaction. There are seven participants that are involved in any payment through the mentioned payment gateway. Those participants typically are: e-government constituents (i.e. users), the issuer, e-government itself, the acquirer, the financial settlement network, the credit

card processor, and the payment gateway itself. The roles of these participants are described below.

- o *"Constituent: a citizen, resident, business, government agency or visitor; who also has non-cash means to pay for the service. Non-cash means to pay includes checking accounts, credit cards and electronic wallets.*
- o *Issuer: a financial institution that provides the constituent with the checking account, credit card, wallet account or other non-cash payment method.*
- o *e-Government: the organization collecting the service fee.*
- o *Acquirer: the financial institution, which holds the Government or e-Government account, collects the payment from the issuer and deposits the funds into the Government or e-Government account.*
- o *Financial Settlement Network: processes electronic fund transfers, direct debits and other cash settlement transactions between issuers and the acquirer.*
- o *Credit Card Processor: processes credit card transactions and settles funds due to e-Government.*
- o *Payment Gateway: provides an interface between e-Government and the acquirer's financial settlement network and credit card processors"* (EGITAR, p.29).

Figure 8.6 below illustrates the payment process while the role of each participant is described below.
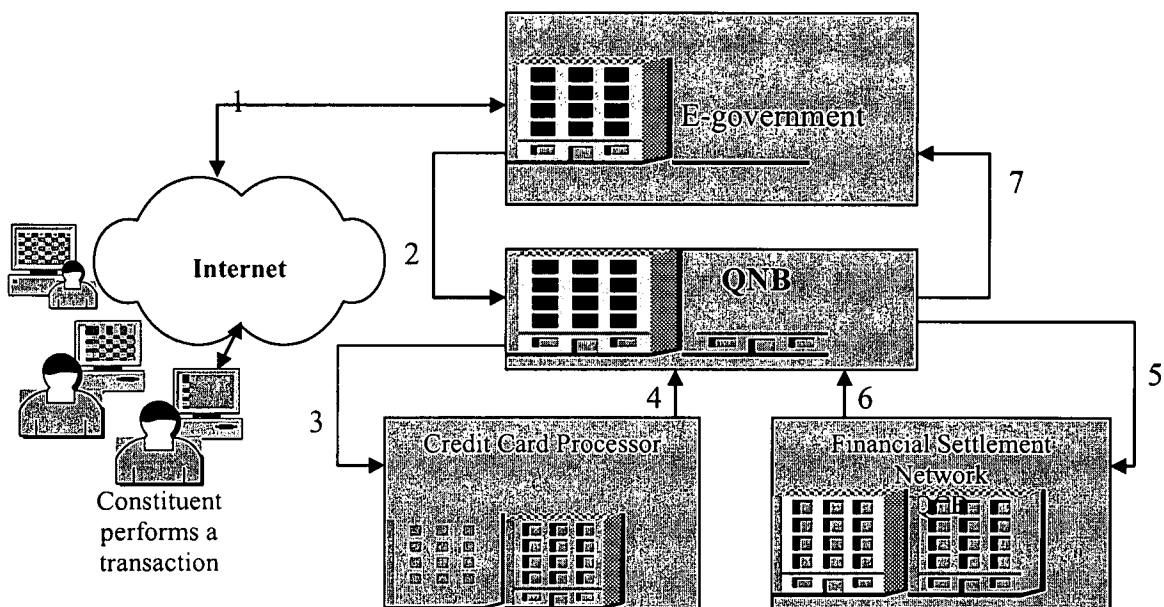
Figure 8.6: Payment gateway operation

1. When prompted, the constituent enters payment instructions
2. The e-government sends a payment request through the payment gateway to the acquirer

3. The acquirer sends a transaction to a credit card processor or Financial Settlement Network, depending on the payment type

4. The processor sends confirmation to the acquirer authorizing or denying payment

5. The settlement network (QCB) performs a real-time bank settlement

6. The settlement network (QCB) sends confirmation of settlement success or failure to the acquirer

7. The acquirer sends confirmation of payment success or failure to the e-government

From the above discussion, it is clear that the e-government team and other parties put a remarkable effort into the payment gateway. It was found that the e-government team, CNB and QCB shared the effort of developing that gateway. Although it was observed that there were some usage problems with the developed gateway (see Section 8.4), to some extent it can be said that e-government implementers achieved the two main tasks successfully, namely the authentication system and the payment gateway. Finally, it is worth mentioning that maintaining such success is a very challenging task and will require continuous effort from all the parties involved. One of the senior managers refused to answer the security questions and justified this by saying: *"I do not want to say that we have developed a very secure system as if I said this, 'hackers' will start challenging us by trying to break the system; and at the same time if I said that our security system is weak, again this will encourage 'hackers' to play with our security system. So the best thing is not to say anything about the security"*. This quote gives a clear indication that security cannot be guaranteed and will continue as a continuous challenge to the e-government implementers. According to Al-Sebie and Irani (2005, p.263) study, there was agreement among their interviewees that *"ensuring the security of confidential data stored in government organisation databases and e-government sites from attack and misuse and, ensuring the privacy of the personal data provided by customers as part of obtaining government services"* are very important and challenging issues. In addition, Seifert and Petersen (2002, p. 205) stated that *"Perhaps one of the most significant challenges for implementing e-government initiatives is computer security"*.

8.2.2 Integration

Integration must occur between e-government applications and multiple applications in multiple ministries and in most cases those integrations must take place in real time. However, the integration of e-government applications with the different back office applications, running in the ministries and other public agencies was found and considered one of the most complicated and challenging issues.

Integration can be divided into two types: horizontal (intra-governmental) integration and vertical (intergovernmental) integration (Lyne and Lee, 2001; Moon, 2002). Both types are very important if governments seek to enhance the efficiency, user friendliness and effectiveness of their e-government services. One of the senior managers illustrated the difference between the horizontal and the vertical integration by drawing Figure 8.7 and by giving an example of a service that needs horizontal integration; he said:

"For example, the construction permit is a service that is shared between different ministries/agencies and which requires some sort of horizontal integration between those ministries and then linking that service to the e-government portal. This diagram shows what I mean by the difference between the vertical and horizontal integration:"
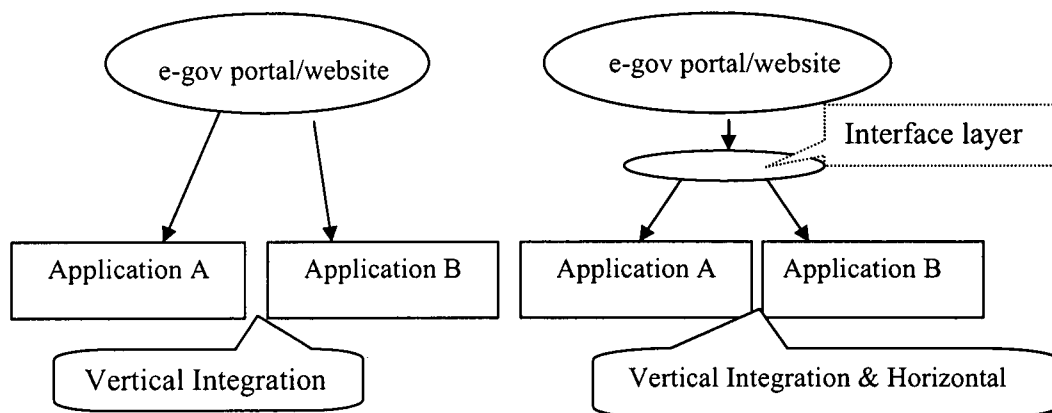
Figure 8.7: Integration types

Another senior manager mentioned how they integrated the e-government applications with the participating ministries/agencies applications vertically and what is the responsibility of each party. He stated: *"The following diagram explains our roles as e-government organisation and the ministries' roles:*
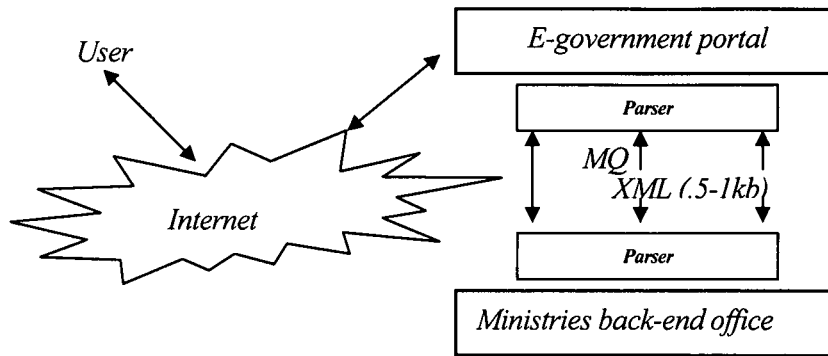
Figure 8.8: Vertical integration mechanism

As you can see through this diagram that all ministries are responsible for building their backend offices (i.e. their IT infrastructure, developing their applications, developing interfaces between their applications and the parser application, etc) while e-government is responsible for developing the integration part from the portal side as well as linking the services to the e-government website and make the service available online. Therefore the parser application works as data filter and identifier which make the integration task easier. In addition, the data is exchanged between the ministries and the e-government portal in a form of xml file with reasonable size (e.g. from .5kb to 1kb). Also MQ (i.e. an IBM product) guarantee the delivery of data at both ends so if any one of them is down the data will not be lost."

According to (EGITAR, p. 41) integration can take place by using two basic approaches, namely *'direct database access'* and *'enterprise application integration'* (EAI). Direct database access enables the e-government applications to access and update the ministry/agency databases directly and hence the e-government applications must provide the business logic and rules necessary to perform transactions. On the other hand, EAI provides an interface between the e-government applications and the back office applications; thus e-government applications will not include business logic and rules as they serve as presentation layers to ministry/agency applications. Figure 8.9 below shows an overview of how the integration can be achieved using EAI in the Qatar e-government:
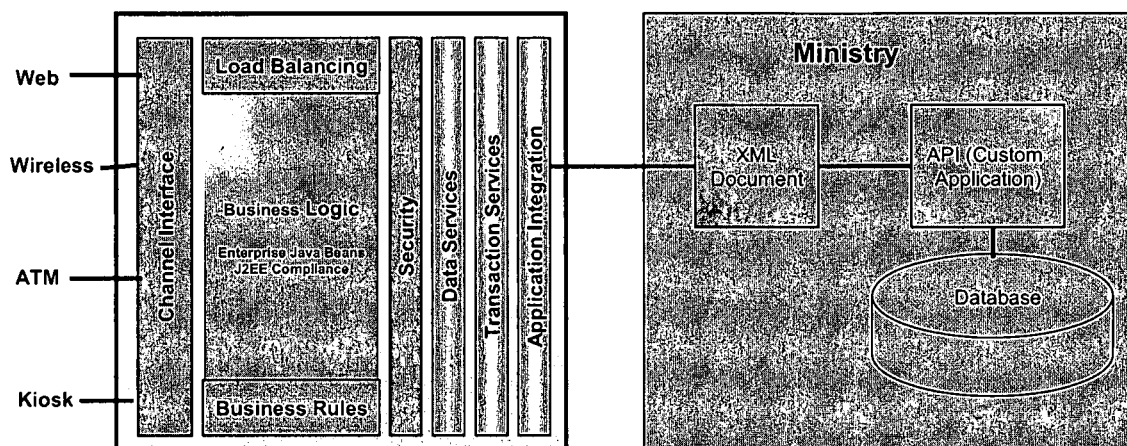
Figure 8.9: EAI architecture; source: EGITA, slide 13

The case study findings showed that the EIA approach is the approach used by the e-government development team in Qatar to integrate their applications with the business applications of the participating ministries/agencies. In addition, this approach is the most well known and popular especially in horizontal integration. Both types of integration have their own advantages and disadvantages as shown in Table 8.1.

Table 8.1: Advantages and disadvantages of the available approaches of integration
Source: (EGITAR, p. 42)

	Benefits	Drawbacks
Direct Database Access	o Simpler interface structure o Potential performance advantages.	o More prone to impact from system changes. o Better suited to simple transactions. o Reduced ministry accountability and control. o Potentially longer implementation times at e-government
EIA	o Least time required to develop new e-government Applications. o No need to include business logic and rules in e-government applications. o Less impact from system changes. o Easier transition for system changes. o Facilitates complex transactions. o Workflow and orchestration. o Ministries retain control over applications and resources. o Ministries retain accountability for their applications.	o More complex implementation requiring APIs to be developed. o Somewhat higher learning curve for APIs and XML. o Potentially longer implementation times at ministry.

Regardless of which approach is used to integrate e-government applications, most of the participants confirmed that integration is one of the biggest challenges that has faced them and will face them in the next stage of their e-government project. One of the e-government developers mentioned that he faced lots of technical problems when he came to integrate vertically some of the e-government applications with some of the MOI applications; he said:

"The key and the main challenge that I faced is the integration with the backend offices of the ministry especially with the MOI systems since they developed their business applications by using COBOL and DB2 as database. The integration was a very complicated task and it has taken place through the channel of MQ serious which is IBM product."

It can be noted from the above quote that it was difficult for the developer to integrate the e-government applications with the MOI applications, although both parties are using DB2 as a database. Thus, it is clear that the situation will be more difficult should the e-government developers seek to integrate their applications with other ministries that do not have DB2 (i.e. those ministries that are using other type of databases such as Oracle). Furthermore, the difficulty will be increased once they come to integrate their applications with other applications that need to be integrated horizontally to provide some complex services such as the construction permit service. One of the steering committee members confirmed this point of view when he said: *"there are some technological challenges especially when you come to implement a service that is shared by many ministries. In this case we will face some challenges such as the integration and hence we postpone these services till all concerned ministries become ready for developing those services and make their applications talk to each other."*

As shown in Figure 8.1, the technologies used in the participating ministries form the back-end office of the e-government portal. At the same time, each ministry has its own databases, operating systems, ERP system, development tools, LAN, etc. The study findings showed that most of the participating ministries do not use the same technologies; hence technical compatibility issues surfaced as well. *"Technical compatibility addresses whether the e-government technology will be compatible with the existing systems installed in the civil agencies"* (Al-Ruzaiqi 2003, p. 59). The findings showed that the e-government team faced many problems related to the

technical compatibility. For example, one of the developers highlighted this issue by saying:

> *"The second challenge also is the operating system that we use here in the e-government which is so-called AIX and again it is an IBM product that based originally on the UNIX operating system. The challenge with this operating system is its incompatibility with many software used by other ministries."*

In addition, it was noted that most of the technologies used and implemented by the e-government entity are IBM products although most of the ministries and public agencies in Qatar do not use those IBM products. Table 8.2 illustrates a brief comparison between some of the participating ministries and public agencies at three levels of technologies, specifically databases, ERP systems and operating systems (OS).

Table 8.2: Examples of some of the technologies used by some of the participating ministries/agencies

	E-gov	MMAA	MEIA	Q-Tel	KAHRAMA	MOI
Database	IBM DB2	Oracle 9i	Oracle 8i	Oracle 9i	Oracle 9i	IBM DB2
OS	IBM AIX	UNIX	UNIX	UNIX	UNIX	UNIX/IBM AIX
ERP	-	In-house developed business applications	In-house developed business applications	Oracle ERP	JD Edward	In-house Developed Business applications

By looking at Table 8.2, it can be observed that the only ministry that is using IBM AIX is the MOI while others are using UNIX as their operating system. In addition, it is worth mentioning that there are other ministries and public agencies that use other OS such as Windows and LINUX. In relation to the databases used, it is clear from Table 8.2 that the only ministry that is using IBM DB2 is the MOI whereas others are using Oracle databases. According the research findings, the consulting team strongly recommended the selection of Oracle 9i or at least Oracle 8i for the e-government. They justified their recommendation as follows:

o *"Oracle databases are the most used by e-business.*
o *It is fully compatible, with most databases employed by Qatar Government, and is reasonably compatible with the non-Oracle relational databases*

243

employed by the Government.
o *Oracle databases are supported by the most complete tool set in the database industry"* (EGITAR, p. 36)

However, the e-government management did not choose the Oracle relational database, they selected IBM DB2, as shown in Table 8.2 above. One of the senior managers justified their selection by saying: *"Initially, we bought IBM Websphere and hence we had been recommended to buy IBM DB2 to avoid the integration problems"*. However, their selection raised and will raise, of course, many compatibility and integration problems with those ministries which are using different technologies. Technology wise, this might be considered as a strategic mistake that will cost them a great deal of money and lots of effort in the future. These problems might not appear much at the current stage of the e-government project as most of the implemented services and those that need to be developed in the near future are owned by the MOI which is using similar technologies. In other words, the use of different technologies by different ministries and agencies will certainly cause many compatibility and integration problems and will be one of the main challenges facing the e-government implementers.

To conclude, the potential of having an e-government system cannot be fully achieved, from the technology perspective, unless e-government implementers are able to integrate most of their applications, particularly horizontally across different functional departments/ministries (Lyne and Lee, 2001). However, as discussed above, the integration of heterogeneous databases and resolving conflicting system requirements across different functions and public agencies are major stumbling blocks facing any e-government implementer. In addition, it is worth mentioning that the difficulty of having such an integration is not only from the technical perspective but also from the managerial perspective. Lyne and Lee (2001) mentioned that horizontal integration requires a change in mindset of public agencies chief executives as functional specialization may not be suitable as a governing structure in e-government. One of the developer confirmed this opinion by saying:

"The second challenge is that the e-government is not one entity. It is not like any normal IT project. We are dealing with many public agencies and many ministries as well as dealing with different partners or contractors. Each one of these parties has its own systems, development tools, databases, etc. so you

244

have to agree to deal with these diversities and also you have to know that you are dealing with different mindsets."

In summary, the case study findings showed that integration is a very complicated and challenging issue which faced e-government implementers in Qatar. In addition, most of the participants confirmed that the complexity of the integration issue will increase in the next phase of the e-government project as they start to implement some services of type 'complex'. Therefore, the e-government team, as well as IT teams in the participating ministries/agencies, must be prepared and trained very well, as integration needs a very skilled IT staff. In addition, all the required resources including the most new, available, and appropriate technological development tools that help in making that integration take place smoothly must be in place before starting the implementation. Furthermore, the findings showed that there were many old systems still in use and there were remarkable shortages of some useful development tools such as IBM integrator. Finally, it is worth noting that a clear strategic mistake was made by the e-government management in the selection of IBM technologies, whilst most of the participating parties were and still are using Oracle technologies. This mistake is very costly and needs to be taken into consideration for further improvement should the e-government team seek to speed up the e-government development, and want to save effort and money. *"Technology incompatibility has also been identified as one difficult challenge to IT-intensive projects. Systems that are very different and sometimes very old increases the complexity of IT projects, especially information integration initiatives. Complexity and newness of technology are also constraints that can potentially affect the results of IT projects"* (Gil-Garcia and Pardo 2005, p. 192).

8.2.3 Dynamic changes of technology

This section represents the third subcategory of the technology complexity used in implementing e-government systems which is the dynamic changes of the technologies involved. As mentioned above, the IT architectures of the e-government and the participating ministries/public agencies are collections of different technologies that are linked to each others. These combinations of technologies created many challenges for the e-government implementers such as the technical

245

compatibility, costs, lack of skilled IT staff, and the complexity of maintaining them. In addition, the study findings showed that one of the main challenges that faced the e-government team in Qatar is the dynamic changes of technologies involved in building their e-government system. For example, one of the developers considered the continuous change of technologies to be the major challenge that he faced; he said:

> *"This type of projects requires dynamic changes in technology since it is technology based project. As you know technology are moving fast and anyone working in such environment need to be up to date in terms of knowledge and in terms of how to use the new technologies and the new development tools. So you can consider the continuous change in the technology is a major challenge that we face as developers."*

Furthermore, one of the e-government senior managers mentioned another challenge which is the lack of appreciation from the e-government management of the dynamic change of technology. He said:

> *"The lack of the appreciation for the IT initiatives and its dynamic nature due to cultural issues. The nature of the IT is dynamic and each certain period of time you need to buy new hardware/software which is sometimes difficult to appreciate. For example, if we bought a server before say two years ago and we realised that this server becomes an old and there is a very critical need to buy a new server with more advanced features/technology, it will be very difficult to convince the management here to buy that server. Simply, they will refuse if even if the budget is available for that purpose."*

Moreover, it was observed that there were some ministries that still use old technologies, such as the MOI, and hence this causes some challenges to the help desk people. One of the help desk staff mentioned: *"The MOI still use its olds systems which need to be maintained or redeveloped using the new development tools and technology. They still develop their business applications using COBOL Language."* In addition, the researcher observed that the help desk people of the e-government were using a very basic help desk system that was developed in-house by the helpdesk people themselves. One of the help desk people justified and explained the background of using that weak technology, although they deal with the e-government users country-wide; he stated:

> *"Initially there was not a systematic procedure for the help desk people. Every one was register all the request comes to him manually and then follow the*

246

request till it is answered or solved. As you can see we receive the request through three main means, namely email, telephone calls or through the webmaster so there was not any system that helps us in organising our requests, follow them and reports the required statistic. At a later stage, maybe seven months ago, we have developed our own database that is more organised than the situation before but still have some shortages. So there is a lack of a sophisticated help desk system or CRM package. We are in need for such systems but unfortunately the management did not pay this issue the required attention. We have seen a very nice MS system which is called CRSM but till today there was not any decision taken towards having such system, maybe because of its costs or maybe the management still waiting for more offers but I am not sure exactly the reason for this long delay."

From the above quote, it can be observed that there is not a good help desk system that helps the support people to do their job as required. This is due to the lack of appreciation of the dynamic change of technology and the lack of the appreciation of the help desk job from the e-government management.

Another challenge that can be raised by the dynamic change of the technologies involved in developing an e-government system is the lack of skilled IT staff. One of the steering committee members was listing the challenges that they faced; he said: *"The third challenge is the technology itself as e-government can involve many different systems, software and hardware which require different skills"*. This issue was supported by one of the e-government developers; he stated: *"There were many challenges that faced me during the past three years. The first challenge is assigning me some projects that out of skills and ability. Recently they assigned the task of developing and testing the wireless services to me. Although, we still on the early steps of these services but it takes much time and efforts from me."* He continued: *"we deal with many different technologies which require more efforts and also more training"*.

Another developer said: *"I can say that there are some challenging issues that relate to the design and other that related to the logic of the development. From the design point of view we were suffering from the lack of graphic designers. It was really a big challenge for me because they assigned me this task although I do not have either the required experience or the interest in such task."* At the participating ministries level, one of the developers mentioned another problem. He said: *"we rely on expatriates to develop some certain services because there is a lack of skilled Qataris within MOI"*.

247

To conclude this section, it can be noted that implementing an e-government system is, in fact, an implementation of different technologies that need careful selection amongst the available technologies in the market. In addition, the selected technologies must not be out of date and must be compatible with the back-end office (i.e. the IT infrastructures of the participating ministries, must support the availability of the e-government services and must be scalable). In other words, the *"selected equipment should be neither on the edge of the technology nor out of date. It should be highly reliable and should include the possibility of upgrading and further development"* (Sharifi and Zarie 2004, p. 613).These requirements raise a big challenge for the e-government implementers as achieving these requirements will not be easy and will demand experts (IT skilled staff) who cannot be found and employed easily. *"The lack of relevant technical skills within the project team has been found to be an important factor as well as the shortages of qualified technical personnel"*(Gil-Garcia and Pardo 2005, p. 192).

8.3 ICT infrastructure issues

ICT infrastructure generally is composed of hardware and software that provide secure electronic services to e-government users. In particular, ICT infrastructure includes networks, hardware and operating systems, telecommunication services such as providing high-speed Internet service and leased lines to participating ministries and agencies, and major software components which are composed of web servers, application servers and databases servers. According to (EGITAR, p. 45), the consulting team stated: *"In two cases the importance of the component and clarity of choices caused us to make specific recommendations. In one case, the database server, we specified a specific product, Oracle 9i. In one other case, the application server, we recommended four products: WebLogic, Websphere, iPlanet and Oracle 9i. The database server and application server are the cornerstone software solutions for e-Government. Those recommendations were carefully considered from the perspectives of performance, reliability, support, strength of vendor and ease of use."* Nevertheless, the e-government management did not consider this recommendation with regard to the database server; they selected an IBM product instead. This issue has been highlighted in Section 8.2.2.

Regarding the hardware required to develop a solid infrastructure, the study results gave two different findings. At the e-government entity level the findings did not show any lack of hardware although there was a clear lack of some important software such as IBM integrator. While at the participating ministries/agencies level, the findings showed a clear lack of some important hardware. For example, one of the IT managers was explaining the difficulty of implementing some services, such as the commercial permit service, due to lack of technological readiness; he said: *"Another example is the commercial permit service. This service is shared between four and sometimes five public organisations. Some of these organisations (e.g. civil defence department) do not even have PCs and not familiar with the use of any business applications so how can we make this service live without the help and the cooperation of the other parties. It is also the responsibility of the e-government management to host such coordination and do the needful in order to make our tasks easier as well as the required task of the other ministries."* It can be understood from this quote that there are some ministries/agencies that still do not have even the simplest form of IT infrastructure (i.e. both hardware and software) which hence caused a critical challenge for the IT people in the participating parties. In addition, the quote gave a real example of the lack of coordination between the different ministries (this issue was discussed in chapter 7). Another example of the lack of some important hardware was given by one of the helpdesk operators; he stated:

> *"The department of Traffic at the MOI have only one printer that able to print the licenses cards. So imagine one printer serves the whole country. At any time this printer goes down the work will be stopped till somebody came and fix the printer so all the processes will stay pending till they repair the printer. They promised us to allocate a budget to purchase another printer in the next year budget. So we have to live with this printer's problems till they buy another one next year. Another issue is our request regarding a dummy smart card for the testing purpose. Since long time ago we requested the MOI to provide us with a smart card which we need for testing the e-services on the production machine but till today there is no response."*

With respect to the telecommunication infrastructure, the study findings confirmed that it is one of the major challenges that facing the e-government implementers in Qatar. The telecommunication infrastructure is provided and maintained by Qatar Telecom (Q-Tel). Q-Tel has a long term (16 year) monopoly operating agreement

249

with the government which affects the level of telecommunication facilities countrywide. Thus, Q-Tel had been criticised by many interviewees. For example, one of the steering committee members said: *"We really face a big challenge with regard to the communication infrastructure mainly with Q-Tel. Its manager is not willing to listen to our requirements."* Another steering committee member complained about the same issue and went further; he stated: *"believe me if I am the decision maker I will not allow Q-Tel to be exist"*. Then, he went further than this and said: *"I will not allow any telecommunication company to be existed here in Qatar. Qatar has flat land and there are no mountains or natural barriers that forbid the transfer of the electronic waves. Thus, this will enable Qatar to apply the wireless technology easily. So each organisation, building, citizen will need only a small box to communicate with the whole world and hence the existence of any telecommunication company will be redundant."* At the senior managers' level, one of them mentioned that the *"Lack of solid communication infrastructure"* is a big challenge that faced them. He continued: *"In fact, Q-Tel is a big challenge for us"*.

At the ministry level, one of the IT managers mentioned that one of the challenges that they faced is to have a robust telecommunication infrastructure. He continued and said: *"Do you know that there is no Internet leased line connection in the Shamal city. Even Alkhor city they provided the link couple of weeks ago"*. Moreover, an international consulting group had been contracted to study and assess Q-Tel telecommunication infrastructure, as it is the primary telecommunication for the country and found that:

> *"The general QTel infrastructure is consistent with most major urban areas in the world. Still most telephone infrastructures have weaknesses. The usual architecture is to run trunk distribution lines from central offices (locations where the switching and networking equipment is housed) to "local loops". The local loop is just what it sounds like. It is a loop of wire, which runs around a neighborhood. Individual phone lines to businesses and homes are connected from the local loop to the building. A local loop can be cut in any one location and it will continue to function. Because the signal travels in both directions, around the loop, it will always arrive at its destination, even if the loop has been severed at any one point.*
>
> *The Qtel system implements this architecture. Thus the most vulnerable part of the system is the trunk distribution line, and to a lesser extent, the line from the local loop to the building and in the building being serviced. The risks are:*

- *Accidental damage. The trunk can be severed during excavation. When that occurs, an entire section of the City can be cut-off from the telecommunications infrastructure until the damage can be repaired. Building lines can be likewise damaged.*
- *Forces of nature can damage trunk and building lines alike. The most common problem is water incursion, during heavy storms. Other potential risks include earthquakes and traffic vibration.*
- *Age can cause copper to corrode, thus damaging the trunk lines.*

All digital traffic, passing through the QTel system, is routed through a single Cisco 5500 switch. The digital data switch is a single point of failure. In most modern telecommunication companies, such switches are deployed redundantly. [..] QTel operates a single central office. That makes the central office itself a single point of failure" (EGITAR, p. 6).

With regard to the Internet services, the consulting group commented:

"The Internet Service Provider (ISP) operation has several single points of failure. Qtel's plans for resolving those issues are less clear than the plans for dealing with the single digital switch. We were told that they are aware of the problem and have plans to resolve it, but that the solution is not budgeted. The arrival of QTel's digital marketplace initiative with Commerce One, may force a resolution. However at this time there is no evidence that the ISP problems have any priority in QTel management. The ISP operation is running at an average 54% of capacity, and at 100% during peak periods. That is an unacceptable service level for e-Government. Again, there is no evidence that the ISP problems have any priority in QTel management" (EGITAR, p. 6).

In summary, ICT infrastructure, particularly telecommunication infrastructure was found to be one of the most important aspects that must be treated very well at all levels (i.e. at the e-government entity level as well as at the level of all the participating parties in developing the e-government services). At the participating ministries level, there was a clear lack of good IT infrastructure which will affect the progress of the e-government project in Qatar and will create major challenges for its implementers in the next phases. With regard to the telecommunication infrastructure, the long term (16 year) monopoly contract that was signed with Q-Tel has affected the quality of the telecommunication services in the country, particularly the quality of the Internet services, which is one of the major access channels to the e-government services.

These findings support what was found in the literature regarding the ICT infrastructure in the developing countries. According to Salman (2005, p. 150) *"Most*

251

of the developing countries are intensely suffering from inadequate infrastructure to embark on e-commerce. [..] Many developing countries have trivial access to information and telecommunication technologies (ICT)". The poor quality of the Internet services has affected the accessibility and the availability of the e-government services. The findings reported some accessibility issues that inhibited the use of the available e-services. Those issues are presented in Table 8.3 below.

Table 8.3: Access inhabiting factors

Inhibiting factors	Mr. DR	Mr. OH2	Mr. BR	Mr. AS	Mr. NB
a. Access Internet in cities	YES	YES	NO	YES	YES
b. Access Internet in rural areas	YES	YES	YES	NO	YES
c. Lack of government-wide intranet (central and local level connectivity)	YES	YES	YES	YES	YES
d. Lack of LANs in government offices	NO	NO	NO	YES	NO

As can be noted from the above table, most the interviewees considered the access to the Internet in the cities and in the rural areas as access inhibiting factors. In addition, all the interviewees considered the lack of a government-wide intranet as another access inhibiting factor. Furthermore, one of them saw that lack of LANs in government offices as an access inhibiting factor.

Regarding the availability of the e-government services, it was noted that the e-government portal sometimes goes down, which is contrary to the e-government strategic vision. According to the e-government strategic vision, e-government services *"will be available 24 hours a day, 7 days a week, 365 days a year, 24x7x365".* However, Figure 8.10 presents a screen shot of the e-government website when it was down. This issue was further investigated with the e-government development team. One of them justified this unavailability of the e-government portal by the need to carry out some maintenance tasks during the daytime, specifically he said: *"for a major maintenance task the whole website will be down for a few hours. But for performing any maintenance that related to certain e-services the website will be allowed to go down for a period that does not exceed one hour."*
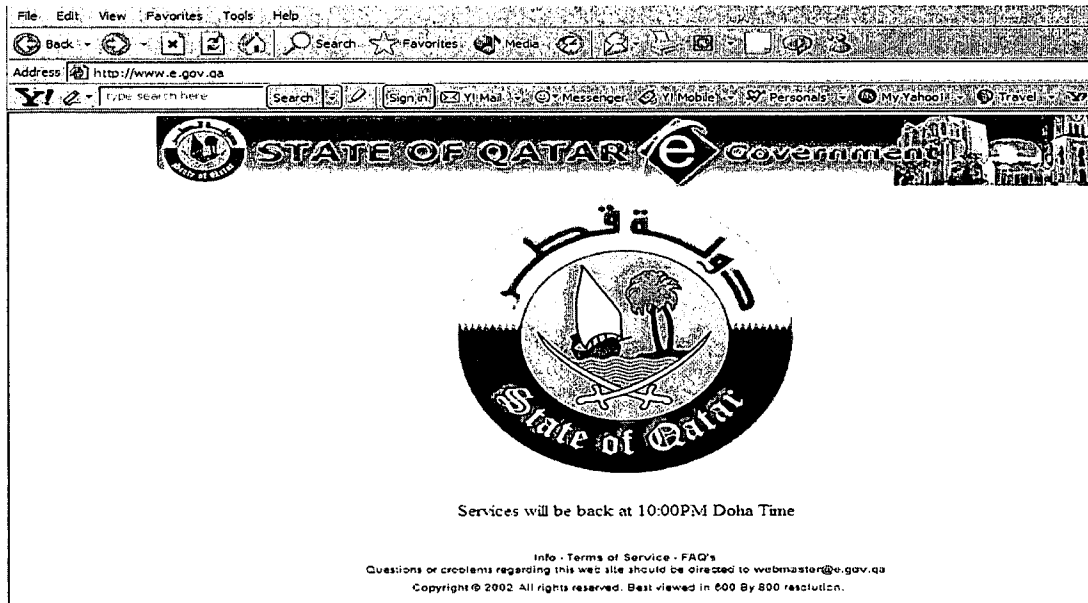
Figure 8.10: E-government website

In addition, one of the e-government users mentioned another problem related to the employment service. His problem was related to the difficulty in accessing the service and the slowness of the e-government portal; he mentioned: *"Here in this organisation we used to employ non-Qatari employees if the concerned department manager approves the applicant's application and then we continue to finish other routine tasks. After the e-government provided the employment service we have been forced by the labour agency to publish the opening first on the e-government portal for at least two weeks. The aim is to give Qatari people chance to see the opening before organisations employ foreign people. Once we start using the service we faced lots of problems. These problems include the accessibility of the e-government website. We failed many times to access the service. Also, the e-government portal is very slow."*

By comparing these access issues and other Infrastructure issues with the literature, it can be noted that similar issues were found in the literature, particularly what was reported by Al-Sebie and Irani (2005, p.263). They found that *"the capability of the infrastructure in terms of handling the range and number of transactions; 'the evolution of the technology (there is always new technology);...;' the back-end servers (communication failures between the internal system and external web server) are considered by most interviewees as very important challenges"*.

253

8.4 E-government services usability issues

This section aims to highlight and analyse those issues that affect the use of the e-government services (i.e. e-government portal usability). As mentioned in Chapter 7, the study findings showed a huge difference between the expected number of transactions that the e-government officials was expecting to be performed by the e-government users and the actual performed transactions. It is believed that having online electronic services is the sort of technological innovation that is supposed to be perceived as being better than the old and bureaucratic way of providing public services. Otherwise, there must be something wrong that needs to be further investigated and addressed. The case study reflected the awareness of some e-government users who had been interviewed in this study of the benefits of having online services. In addition, the Qatar TV conducted a TV interview with the e-government director and during the interview, the TV presented some short and random interviews with the public, the researcher noted that most of the interviewed people were welcoming the e-government initiative and were aware of its benefits. Therefore, there must be other reasons that need to be investigated.

According to the investigation that was conducted during the data collection process, it was found that there were many other reasons that can justify this issue. Some reasons were mentioned directly by the interviewees and some other reasons were observed by the researcher. For example, one business man said:

> *"Honestly, we were happy as business men with this imitative as we thought that it will be like Dubai e-government and will relieve us form standing behind long queues, relieve us from the bureaucracy, relieve us from using physical papers, give us accurate reports about our daily transactions, save our time, and help us in managing our businesses with the government accurately. Unfortunately this is was not the case with the Qatar e-government."*

Another user explained how he was unsure about the term e-government but later on he realised what it means. However, he tried later to avoid using the e-government services due to the weakness of the coordination between the service provider of the driving licence service and the e-government entity which made him lose his application for more than three months. He said:

254

"At the beginning I was not sure about it. The term e-government confused me. I said to myself government is very well known but electronic government; how come? Later, I realised that they mean making government services available online. In fact I was happy to have the government services online. But once I used one of these services I felt that I will not use it again. [Why? The researcher asked.]

They provided a service that is called driving license service. I said to myself let me try to renew my licence online rather than going to the traffic department and standing behind the long queues there. Then I applied online and submitted my application. I wait for a week without any update about my application then I call the e-government people and they said your application is submitted successfully but it might be pending with the traffic department so you should call them and give them the reference that you have if you are in hurry. I called the Traffic Department and they told me that they did not receive my application. I called the e-government back and I informed them about my problem again. They assured me again that it is with the traffic department and you have to go to them again. After that I went to the traffic Department I told them face-to-face and they told me the same story. Now it is almost three months and I do not know how to solve this problem. I intend to go tomorrow and I will ask the e-government people to cancel this electronic request. "

A third user mentioned that there is a lack of many services related to the citizens which makes him avoid visiting the e-government portal; he gave an example: *"Many services that related to the citizens, such as issuing and renewing passports, and others"*. This opinion was supported by another interviewee when he mentioned that there is a lack of some simple but useful information that should be available on the e-government portal; he said: *"Imagine even the simple services are not available.[..]Like useful information about the government such as addresses, contacts, financial reports, any useful statistical information or even weather information."*

Furthermore, the support issue was found to be one of the most mentioned reasons behind the low usage of the e-government services. It was criticised by both, the e-government users and by some of the e-government help desk staff. The help desk people at the e-government entity are the central point that is responsible for supporting all the available e-government services and must react as quickly as possible to any inquiries or complaints which come from the e-government customers. One of the steering committee members explained how the support was divided between the e-government entity and the participating ministries/agencies; he said:

"We agreed that the helpdesk of the e-government services should be managed by the e-government help desk team. In the back end of each ministry there should be a help desk team that helps the central e-government help desk team in following and solving any problems related to that ministry's e-services". However, the case study findings showed that there was not enough coordination and cooperation between the involved parties with regard to the support of the available e-services. One of the help desk people at the e-government entity mentioned that there is a lack of dedicated help desk teams at the level of the participating ministries; he sated:

> *"..the lack of dedicated help desk in the participating ministries. We are suffering from the delay in their response to the users' requests or problems. In other words, forget to call the support people in the MOI, for example, after 9:00 AM as they will be busy with the customers at their end. Moreover, after 12.30 you will never find any one there as their duty start early morning and ends at 1.00PM. All the participating ministries lack the Shift Systems (people who work by the shift systems) that might help in solving those problems that come after 1.00 PM."*

At the level of the users, it has been noted that there were many complaints about the support of the e-government services. For example, the e-government team participated in one of the local exhibitions in Doha. The researcher attended that exhibition with the aim of exploring the reaction of the public towards the e-government and its services. Then, suddenly one of the visitors came and approached the head of the e-government representatives and said:

> *"because of I respect this man –he meant one of the e-government employees- very much, I will try to be patient with you and your project as much as possible."* He continued: *"I was about to write in the local newspapers and I would say the e-government project is the most failed project in Qatar. I have complained many times and raised many help requests to your support team but none of them answered or replied to my complaints. Each time you launch an e-service that it is not yet ready to be rolled out. We suffer from the lack of reports that show us our daily transactions, lack of good instructions, lack of receipts of our payments and many other problems. I am a person who has many companies and I am paying the electricity company around QR 180000 per month so why do you limit me to pay only up to $5000 electronically and pay the remaining out of the payment gateway."* Then, the team leader replied to him *"do not worry things will improve."* The man replied: *"I do not think that things will improve as long as you did do not listen to your customer complaints. Many times I informed the e-government director that we are ready and will be happy to introduce some advice before publishing any e-service but he is not willing to listen to us. Look, I am a person who cannot live without a*

computer and I know that these small issues are very easy to do but I do not know why you leave your services incomplete and make them online."

From the above story, many lessons can be learnt. First, the customer was not happy about the level of the support offered by the e-government support team. Secondly, he was not happy about the payment method as the system did not allow him to pay more than $5000 although he was paying around QR 180000 per month. Thirdly, he criticized the e-government director as the director did not listen to his advice and suggestions. Finally, he had his own concerns about the way that the e-government published its services although those services were not yet ready to be used by the public.

One of the help desk people justified the low level of support offered by the e-government team by passing the blame to the participating ministers but at the same time he admitted that the e-government support team should take part of the blame. He said: *"The back end support is not in place at all, in all the participating ministries. Another issue is related to the e-government project itself. After 9:00 PM you will not find anyone covers the duty so any problem comes between 9:00 PM and 7:00 AM will not be supported immediately as there is no help desk staff available at the e-government building. The limitation of the help desk employees is another issue. We need more people to help us.* Furthermore, he also complained about the ambiguity of the e-government customers support requests; he stated:

> *"The final issue is the ambiguity of the customers' requests. Sometimes they send us unclear emails of unclear description of the problem. For example see this email that came to me from somebody outside the country: he wrote "VISA To Qatar" so we have to analyse even the users requests and predict his inquiry exactly. We have many types of the Visas so I do not know exactly what his problem and regarding which type of the available Visas. "*

Furthermore, the study findings showed that there were many accessibility issues that might justify the low usage of the available e-services. Some of these accessibility issues were discussed above in Section 8.3. In addition to what was mentioned in Section 8.3, it was found that there were some services that cannot be accessed unless the user has a smart card. However, smart cards are not readily available to all e-government users. For example, e-government management gave the priority to those

companies which have at least 300 employees and once the researcher asked one of the steering committee members about the reason behind this procedure, he answered:

"When you look to the populations here you will find the majority of them are non Qataris and most of those people are sponsored by companies so we saw it better to focus on those companies."

It was observed that the process of issuing smart cards is lengthy and needs to be reengineered. In other words, it was noted that any customer (i.e. those companies who have more than 300 employees) which wants to get a smart card must come to the e-government building and apply for this service and unless the request is approved by the e-government director, the customer will not be granted the access. In addition, once the e-government director approves the request, it will be sent to the MOI to issue the required smart card. The customer request might be approved or rejected based on some criteria that are maintained by the MOI. Those criteria include the number of employees in that organization and some other security criteria. This observation came as a result of planned observation that had been conducted by the researcher at the e-government building. The scenario of the observation is described below:

One of the interested companies in the e-government services had sent its messenger to the e-government building to ask about the registration procedure in the e-government services. The messenger was received by the receptionist and sent to one of the help desk employees. Once he came to the help desk he was briefed by one of the help desk staff about the procedure. Then the employee showed the customer how to access the required documentations online and then he printed the documents for the messenger and showed him where to sign and advised him to bring the applications back to the e-government director for the approval purposes. Then the messenger left.

In addition to the above issues, the findings showed many other issues that related to the deployment of the e-government services. It was noted there were some e-government services that had been rolled-out and pushed to production (i.e. to be available online) without proper testing and without making sure whether they satisfied the business requirements or not. It seems that the e-government

management was eager to see some online services as they felt that they were far behind the implementation timetable (i.e. implementation plan). This feeling might have pushed them to implement some services that were not planned (as discussed in Chapter 6) or deploy some services without following the proper development procedures recommended by the consulting team. One of the senior managers gave an example of one of those services that had been deployed although it was not yet fully automated; he said:

"I was not involved in the early stages of this project but I can assure you that there are certain steps that must be followed should any project team seek the success. We are using the concept of STP (i.e. Straight through processing) with the aim of in-lining the e-government services with its vision. I will give you example that explains this concept.

After the implementation of the KAHRAMAA bill payment service, we found that customers pay their bill today but the database is not updated till the next day (i.e. after 24 hours) so we saw it as a must to sit with the KAHRAMAA development team and tell them that this will not work as it does not reflect the e-government vision. Hence, we have conducted three meetings with them and finally we were able to convince them to make the payment online. Consequently, KAHRAMAA worked on solving this problem and now the payment process is live. Customers can pay their bills and the database is updated automatically."

Based on the above quote, it is clear that deploying such a critical service without automating the whole solution will negatively affect the use of the mentioned services. For example, if the customer paid his or her bill on the due date of s/he might experience a disconnection of his or her electricity and water services. The same manager continued explaining the process of developing any e-government services and said:

"We always pass through four stages. The following diagram shows those four stages which are part of what is so-called SLC (service life cycle):

Inception	··▶ *elaboration*	··▶ *construction*	··▶ *transition*
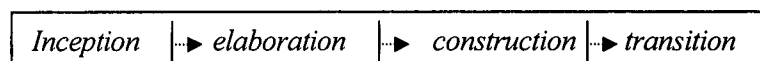
As shown, the first stage is the inception stage where we start to define the service analyse and identify the gaps between the ability of a certain ministry to develop that service and the requirements of the e-government in order to cope with its vision. Then in the elaboration stage we start bridging the identified gaps and improving the service process (i.e. streamline the service) so if we succeed in these tasks we will then move to the next stage. If not then we will ask the concerned ministry to work

259

hard in satisfying the requirements and accordingly we will give them enough time to finish the task. Addressing the gaps means solving 80% of the problem, for instance, looking at the KAHRAMAA example above it is clear that the gap is the updating process. KAHRAMAA was updating their databases 24 hours after the payment process so we asked them to address this problem by making the payment online to cope with the e-government vision. The construction stage is the development stage where both ends (i.e. ministries and e-government team) start developing the service and linking it to the e-government website. Once we complete the development of a certain service we came to the final stage which is the transition stage. In the transition stage, the service become mature and hence will be linked to that e-government portal and will be ready to be accessed online."

From the above quote it can be noted that there is no testing stage which is the most important part of the whole development lifecycle. Based on the consulting team recommendations as well as the researcher's IT experiences, any new application (i.e. system) must be developed in a test environment and once it becomes ready to be used, it must be tested thoroughly by using real scenarios and the result of the testing should be documented. The people who test the developed application must not be the same people who developed it in order to increase the validity of the testing process. However, the study findings did not show any proof of such testing. This issue was confirmed by some e-government users. For example, one of them stated:

"The e-government has provided e-services that are not ready yet to be used by the users. First let me give you an example that relates to the RPR service. In fact, I was very happy when I heard that the e-government has provided the RPR service as I have around 1500 employees and each one of them has RP (residence permit) that needs to be renewed yearly. So we said that is really great as we will not bother about physical papers, photos, manual procedures, queues, etc. But I found the new electronic service is worse than the manual one because I still have to print the applications and stick the photos to each application and attach them to their passports and send them to the Immigration department at MOI. Simply the RPR e-service is wasting our time. Why do I have to take the employees signature since I am paying for them and renewing their RP; of course they will agree; why do I have to stick the photos? Why do they did not provide an attachment button that upload our employees photos? Simply I might make major mistakes by sticking the wrong photo to somebody else's application because I have many employees. I will show you my employees' photos: they all already stored electronically in my laptop and ready to be uploaded but unfortunately I cannot as they did not provide me with the required service."

It can be understood from the above quote that the RPR service is basically a simulation of the traditional service. The only difference is that customers can pay

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online and fill the application electronically (i.e. half solution). In this case, no one will blame those users who do not use such services as they will at least relieve themselves from the Internet security risks. Thus, this is another example of the relative advantage issue. Another user confirmed this point of view and added that the RPR service does not provide some necessary reports that relate to their daily transactions and criticised the services by describing it as it is just a simulation of the manual service; he stated:

> *"I am not using all the services that they provided; I used mainly two services, which are the RPR and Visas services. The quality is very low since they did not provide us with the information that we need about those services. For example, there are no reports that tell us about the balance of our credit cards, nor reports that tell us about the number of transactions that we performed on a daily, weekly or even monthly basis. In addition I feel that we simulate the manual procedure since we still stick the employees' photos on the accepted applications and send them again to the Immigration Department."*

One of the researcher's planned observations, described below, tells a story that supports the above quotes:

A company representative came to the e-government building and started explaining his problem. He said: *"I have 65 RPR applications for some of our employees but we lost the transactions and do not know whether we paid or not. The problem happened during the pilot project (i.e. more than 2 years ago)"*. He continued: *"we are totally confused since we do not have online reports that show us the records of our transactions and the outstanding balance."* He said: *"the problem is that we cannot renew our employees Residence Permit since the MOI is asking us for the payment and our Cashier insisted that he paid the whole amount outstanding."* He continued: *"now we are not sure whether the company Cashier has paid this or not. He is in a bad situation as he might be put in the prison till we investigate and make sure that he did not take the money. He claimed that he paid all the money online but he does not have any proof since your services cannot support him in getting some receipts or at least reports"*. The helpdesk operator replied to him and said: *"yes I agree with you that there are no reports that help customers in monitoring their transactions at the moment and specially in the period of the pilot project but we do not usually interfere in the company's internal procedure but what I can do for you is that I will take all these 65 applications and chase the issue with the MOI. Regarding your employee*

(i.e. the Cashier) I cannot advise you as it is not my business, so please refer to your company regulations". After that, the help desk employee took the applications and asked the customer to come back a few days later.

It is clear from the above quotes and the researcher's observations that there were some e-government services that moved to production although they were not ready to be used online. Thus, it is clear that e-government services' deployment is a critical factor that must be considered and must be given a high attention from the development team. In summary, Section 8.4 showed that the usability of the e-government services is one of the main challenges that faced the e-government implementers in Qatar. The reasons behind that challenge are discussed and can be grouped into four main issues, specifically the deployment of the e-government services, the type of the provided services, the accessibility of the available services and the support issues. Other issues that could justify the usage problems were discussed in Chapter 7 as well as in this Chapter earlier, such as user trust and security. According to Gilbert and Balestrini (2004, p. 286), *"Trust, financial security, information quality (all adoption barriers), time and money (both adoption benefits) were found to predict potential usage"*. In addition, Carter and Belanger (2005, p. 5) confirm the trust issue and mentioned other issues that were covered by this study as well. They stated: *"The findings indicate that perceived ease of use, compatibility and trustworthiness are significant predictors of citizens' intention to use an e-government service"*. Therefore, the e-government implementers should consider these issues and address them carefully in order to increase the usage of their e-government services.

8.5 Summary

This chapter presented the main technological issues that faced e-government implementers in Qatar and were considered to be real challenges. The technological issues were classified into three main categories, specifically; complexity of the technology, ICT infrastructure, and the e-government services usability. In addition, the complexity of the technology involved in developing an e-government system at a national level was discussed and analysed from three different, but related aspects, namely; security, integration and the dynamic changes of the technologies involved. Furthermore, the security issue was classified into two major categories, which are: the development of a robust authentication system and the development of a secure payment gateway. The case study findings showed that each one of the mentioned issues and its subcategory (if any) must be considered as a critical challenge and must be treated carefully before and during the development of an e-government system at a national level. Finally, it is worth mentioning that the findings showed that the e-government team in Qatar had succeeded in developing an advanced security system but they must continue to monitor the issue as it is changing rapidly and no one can guarantee the electronic security.

Chapter 9: A revised framework for e-government implementation

9.1 Introduction

This chapter summarises the outcomes of Chapters 6, 7 and 8 in the form of a framework that deals with e-government implementation at a national level and answers the main research question. The framework is a refined version of the initial e-government implementation framework proposed in Chapter 3. The case study findings showed that e-government is not simply a matter of reproducing the traditional government services and making them available electronically (i.e. through the internet 24 hours a day 7 days a week); it is much more than this shallow view. The implementation of e-government is a lengthy and very complex process that can lead ultimately to a reduction in government bodies. Managing that change process is complex and difficult; imagine yourself looking at a hologram where the hologram will look different from different angles. E-government is just the same, as it can be viewed from different perspectives such as the citizen's perspective, the government's perspective, the business perspective, the public employee's perspective, the resident's perspective, the visitor's perspective, and other countries' perspective. Figure 9.1 shows some examples of possible perspectives on an e-government system.
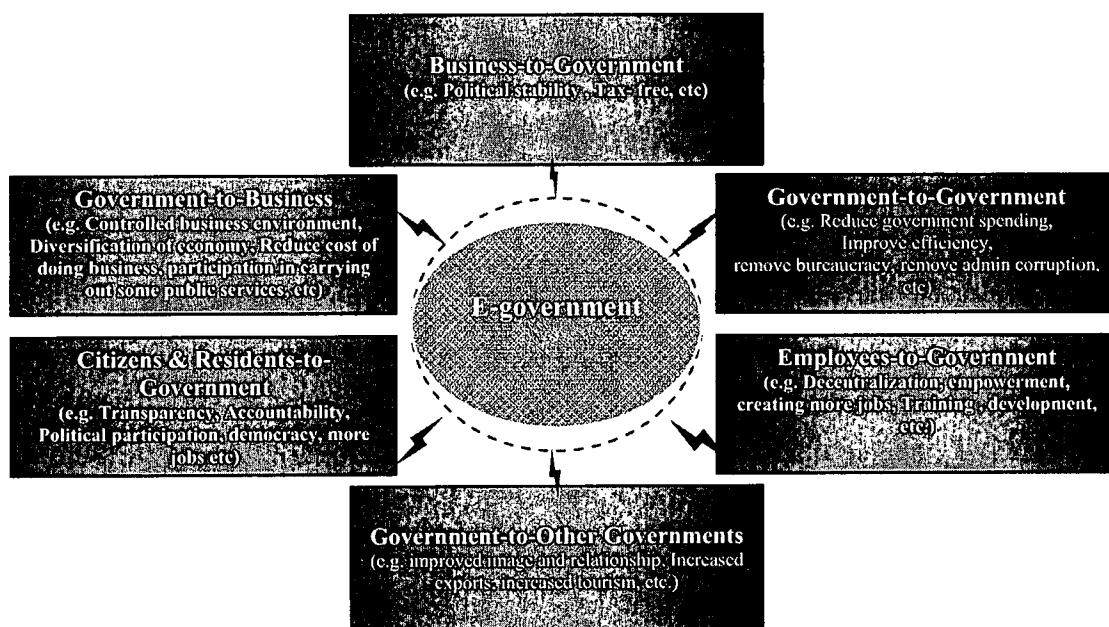
Figure 9.1: Possible perspectives on an e-government system

264

The complexity of managing such radical change is far greater if the change occurs at a national level and particularly if it happens in a developing country. Thus, the framework that has been developed aims to facilitate the complexity of this change and make the implementation process more understandable for the e-government implementers by breaking the implementation process into stages of development and by determining the development measurements that can be used to differentiate between the different stages. In addition, it identifies four main organisational and three key technological issues that need to be considered before the implementation and to be treated carefully in practice (during the implementation process). Figure 9.2 shows a graphical view of the developed framework and the classification of the main issues that can face e-government implementers at a national level.

Furthermore, it overcomes the shortcomings of other models found in the literature as they are technology driven and *"suffer from the negligence of a multidisciplinary approach and a holistic view"* (Traunmudller and Wimmer 2003, p. 6). It enables e-government implementers to widen their vision of having an e-government system by drawing their attention to the different aspects that e-government can be implemented from. The choice of certain aspect then depends on the government's strategic objectives of having an e-government system. For example, if the objectives of implementing an e-government system include restructuring administrative functions and processes, overcoming barriers that affect the coordination and the cooperation within the public administration, removing bureaucracy, monitoring government performance, or building a new model of citizen/state relations, then it can be anticipated that the e-government implementers of such a system look at the e-government system from the G2G and G2C perspectives. E-government implementers may also choose only one aspect or all the mentioned aspects to implement their e-government systems with the aim of utilizing the full advantages of having such e-government systems. Regardless of the aspect that a certain government might choose to implement its e-government system, the development process of that system according to the developed framework will pass through four main stages, as shown in Figure 9.2. Those four stages are Initial Stage, Developing Stage, Advanced Stage and Open-ended Stage.
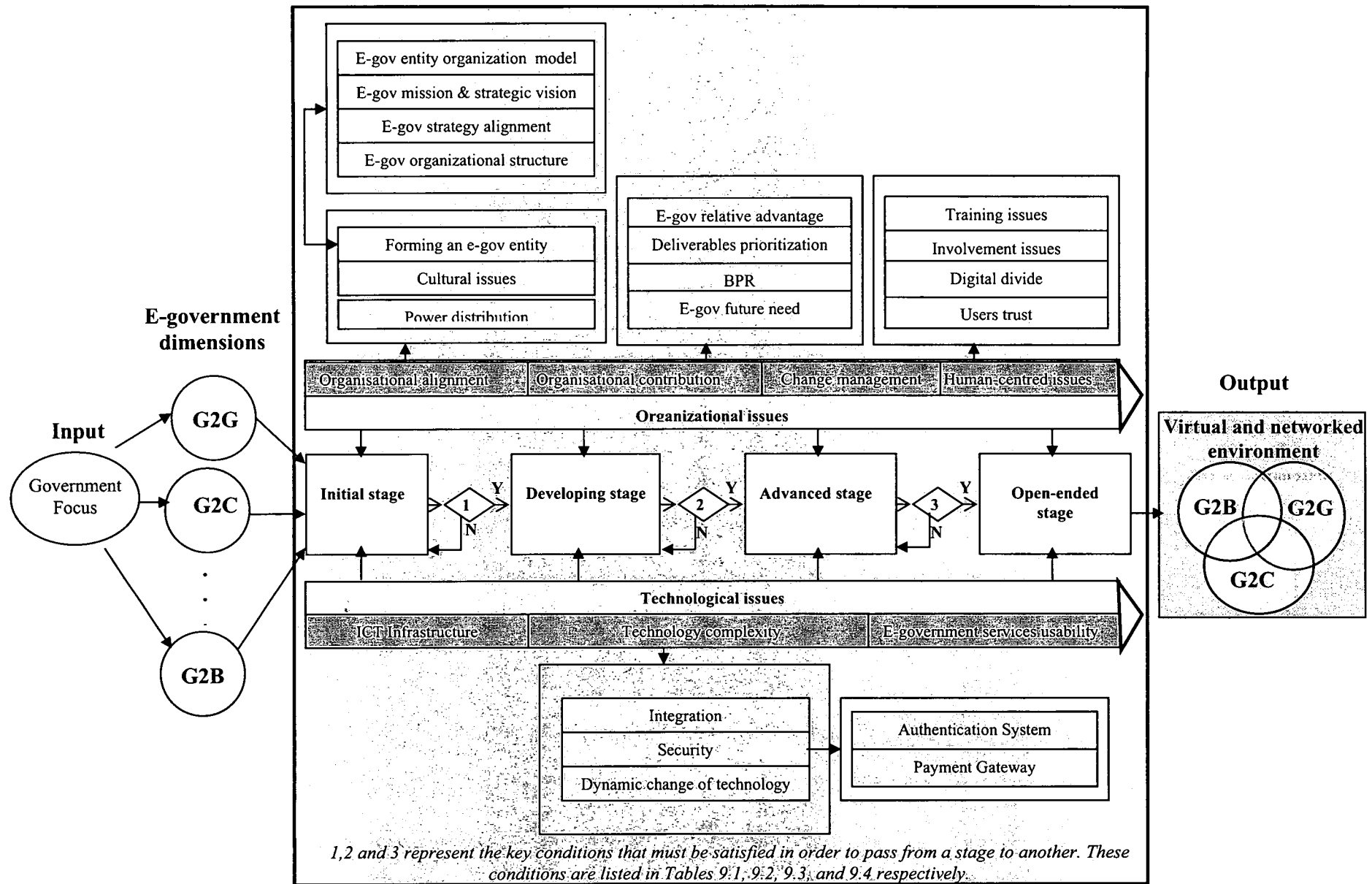
Figure 9.2: A staged framework for e-government implementation at a national level

As can be noted, these stages are surrounded by many organisational and technological issues that might restrict its successful implementation. These issues are summarised in Section 9.3. In addition, in each stage there are specific conditions (i.e. development measurements) that must be satisfied in order to move to the next stage; otherwise, that e-government system will remain in that stage till the conditions are met. Table 9.5 lists those key conditions (i.e. measurements) that must be satisfied should the e-government implementers want to move from one stage to another. When the implemented e-government system reaches the Open-ended Stage, it should then be able to produce the expected results according to its strategic objectives. That means, the implemented e-government system will reach a virtual and networked environment. However, that does not mean that the system will not continue developing over time; on the contrary, it will continue developing according to the future business needs. The stages of the framework and the main organisational and technological issues are discussed and described further in the following sections.

This chapter is divided into four main sections. Section 9.2 presents the four implementation stages of an e-government system, and summaries of their activities, and shows their key characteristics. Then, Section 9.3 sheds light on the major organisational and technological issues (i.e. challenges) that might affect or restrict e-government implementation at a national level. Finally, Section 9.4 summarises the chapter.

9.2 Implementation stages

Chapter 6 explained in detail the main activities of implementing an e-government system at a national level. In addition, it showed what the e-government implementers in Qatar expected the future of their e-government system to be and their strategic vision of having such an e-government system. Based on the case study findings, those activities were discussed and analysed in the light of the IS and the e-government literature and in relation to the initial framework. Then, Chapter 6 mapped those activities to their respective stages of development. This section, therefore, aims to briefly describe those four development stages and their related activities as well as their key characteristics and present them in a brief and refined manner.

267

9.2.1 Initial stage

The Initial Stage is the first stage in the developed framework. It was given this name because governments, at this stage, are still carrying out the early activities that take place at all levels of the ministries and public agencies with regard to the development of web services prior to having a national e-government system. Sections 6.2.1, 6.2.2, 6.2.3 and 6.2.4 presented examples of activities that might take place in this stage. These activities were also discussed and grouped in Sections 6.4.1, 6.4.2, and Section 6.4.3. The following points give a summary of the main features of the Initial Stage:

- Each ministry (or pubic agency) will try to build its own website that provides its visitors with static information about the ministry, its departments, services, or officials. Some ministries and public agencies might be able to provide some services such as interactive services. The study results did not show any transactional services in this stage, although there were some ministries, such as MOI, and MMAA, that had good infrastructures and could handle such services. This is because such transactional services require some major milestones that must be accomplished and be in place prior to the implementation of transactional services. These milestones include building a secure authentication system, a secure payment gateway and developing an e-law that protects the involved parties in such transactional services. At the same time, there might be, for many reasons, some agencies (or ministries) that still do not have their own website in this phase. These reasons might include a lack of the required infrastructures, lack of skilled resources, or lack of interest.

- There might not be clear objectives or clear business strategies at the beginning of this phase as most of the public agencies are just looking after their images in front of visitors. In addition, there might not be any kind of coordination or cooperation between the different agencies with regard to the development of their Web services. However, at a later stage of this phase, government agencies might start thinking about developing some electronic services and sharing the benefit of introducing those services with other public agencies. For example, there was a committee that was formed to develop a central database (or data warehouse) with the aim of helping government officials to have quick access to

268

the data and to share the public data. This will enable them to increase the speed of the decision making and making the correct business decisions.

- The idea of having national IT projects will start appearing once government officials start thinking of developing some shared electronic services and once they realise the benefits and the importance of providing such electronic services. These services might then take place under the umbrella of some national initiatives such as the NNI project and the pilot e-government project in Qatar. This type of thinking will encourage government officials to discuss and to brainstorm such ideas until they become visible. After that, they might propose such innovative ideas in the form of national IT projects (e.g. having an e-government system) and pass them to a higher authority to obtain their approval for the implementation of those national innovative IT projects. The higher authority depends on the political systems in the country that wishes to implement such an e-government system. For example, in Qatar the decision to start the e-government pilot project was taken by the highest authority in the country.

- Having approved the idea (or the proposal) of developing an e-government system at a national level, government officials will start conducting a comprehensive readiness study under the supervision of a certain public organisation, such as the Planning Council in Qatar, with the aim of assessing the readiness of their ministries, government agencies, and their society's readiness to use and accept such electronic services. Table 6.5 listed the criteria used by the government officials in Qatar. These criteria might differ from one country to another based on each country's strategies and objectives of having an e-government system.

- After conducting the mentioned readiness exercises, government officials will have a clear indication of the readiness of their ministries and public agencies from the technology, the business and the organisational readiness perspectives. In addition, they will have a clear idea about their society's readiness to use the e-services that are going to be implemented. Having achieved this, government officials will have a detailed list of the services that cover all the type of services (i.e. informational services, interactive services, simple and complex transactional services). This list might then be filtered by certain filtration techniques with the aim of classifying them and deleting any redundancies. After

that, a priority list will be created for all services selected to be implemented after certain criteria have been applied. Figure 6.4 showed the criteria that were used by the government officials in Qatar to create the priority list of the selected services. Again, these criteria might vary from one country to another depending on the e-government dimensions under focus (i.e. G2G, G2B or G2C). For example, the focus of the government officials in Qatar was on the G2B and G2C.

- Another important exercise that must be started in this stage is conducting a BPR (i.e. business process reengineering) exercise for those services that were selected and prioritised for the implementation purpose. It is worth noting that there was a gap between the e-government project team and the team that was responsible for the BPR in Qatar.

- Developing the e-government mission, vision, and objective as well as a detailed implementation plan are other examples of the activities that must take place in this stage. The implementation plan might be phased to be performed on a long-term plan (e.g. five year plan, ten year plan, etc.).

- Forming an e-government entity that is responsible for managing the e-government activities nationwide is essential for this Initial Stage. Chapter 7 presented the issue of forming an e-government entity as one of the main organisational alignment issues that must be considered and treated carefully during the first stage of developing an e-government system at a national level.

- Forming an e-government entity is the condition that must be met in order to move to the next stage (i.e. Developing Stage).

The key characteristics of this stage are summarised in Table 9.1 below:

Table 9.1: Summary of the Initial Stage characteristics

Stage	Stage Characteristics				Key conditions to move to the next stage
	Possible Goals	Information Systems	Type of e-services	Possible Key progress indicators	
Initial Stage	The possible (but not exclusive)goals at this stage: • Studying, analyzing, reengineering, and prioritizing government services that need to be reproduced electronically. • Assessing ministries' and government agencies' readiness to support their services electronically • Establishing a strategic plan for e-government under government strategic plan; • Having a clear mission, vision, and objectives of e-government implementation at a national level; • Assessing government readiness for the electronic shift from the technology and the business perspectives. • Developing an e-government quality management plan, e-services detailed plan, e-services implementation plan, risk management plan, ICT strategy, IT architecture, IT development standards, IT operations standards and policies, performance measurements, etc. • Forming an e-government entity based on a clear business model and suitable organizational structure; • Equipping the e-government entity with the required resources. • Developing an electronic law	Initially, stand-alone, Islands of different business applications within each ministry and across the country Towards the end of this stage, government ministries and other public agencies will cooperate in integrating their systems vertically to some extent. Some ministries and other public agencies might have limited horizontal integration at this stage between their different departments.	Informational, interactive and transactional services are possible in this stage. However, transactional services will be very limited and might be implemented for the purpose of testing governments' infrastructures. On the other hand, there might some ministries or other public agencies that still do not even have a presence on the web and hence still do not provide any services.	✓ Having a clear e-government mission, strategic vision, and objectives developed and documented. ✓ Having a detailed national e-government quality management plan, e-services detailed plan, e-services implementation plan, risk management plan, ICT strategy, IT architecture, IT development standards, IT operations standards and policies, and performance measurements. ✓ Having a list of all transactional services that need to be implemented at least in the next five years, including their types (i.e. simple or complex services) and the expected transactions volume for each service on yearly basis. ✓ Having a detailed implementation plan ✓ Having a detailed communication plan ✓ Having an e-law in place	Having an e-government entity that will be responsible for implementing an e-government system and managing the change country-wide

9.2.2 Developing stage

As shown in Figure 9.2, the Developing Stage is the second stage in the developed framework. It covers all the activities mentioned in Sections 5.3.2.1 and 6.2.5. In other words, it is the stage where real transactional service implementation takes place under an e-government entity supervision. The Developing Stage was given this name since governments, in this stage, are still trying to develop the primary infrastructures required for implementing their e-government system. In this stage, most of the needed technological and business infrastructures will start taking place country-wide and under one strategic vision. Therefore, it is expected that e-government implementers will face many organisational and technological challenges and will be overloaded with many tasks. Consequently, unless e-government implementers prepare carefully for this stage and have a clear vision, clear objectives, and clear implementation plan, it is argued that they will stay in this stage for a long time (i.e. possibly for many years).

With regard to the main activities that can occur in this stage, it is assumed that e-government implementers will make sure that all the key progress indicators mentioned in Table 9.1 are achieved but in the case when some of those progress activities were not achieved in the first stage, then they must be carried out in this stage. In addition, all the necessary infrastructures that are required for implementing transactional services, specifically of a simple type, should be developed in this stage. This includes technological, institutional, human, and legal infrastructures. Furthermore, there are some key organisational and technological activities that must take place in this stage. For example, although forming an e-government entity is one of the organisational alignment issues that is achieved in the Initial Stage, there might be certain issues which still need to be reconsidered at the Developing stage, such as refining the selected organisational model of the e-government entity, reassessing the e-government strategy in relation to the whole government ICT strategy, and reorganising the entity organisational structure in relation to other organisational change that might take place in other ministries and public agencies. Moreover, e-government implementers should start developing their marketing and other outreach programmes with the aim of increasing the awareness of the e-government benefits

and the available services. Such programmes are necessary since they involve e-government users in the e-government business and hence make them feel that they are part of this national initiative. Also e-government officials should make sure that they have qualified development teams at the level of the e-government entity and the level of the participating ministries and other public organisations. This includes training the existing development staff and providing them with the required development tools. Another important issue is building a network of ICT learning centres across the country with the aim of bridging the digital divide gap that might be created by the presence of the e-government services.

Regarding the primary technological activities that might take place in this stage, there are many major milestones which must be accomplished such as developing the e-government portal, developing a secure payment gateway, developing a secure authentication system, and developing many simple transactional services as well as some transactional services of a complex type. Other non-technological milestones include developing services centres, improving the post system and developing an e-law. Table 9.2 lists the possible objectives, type of information systems, type of e-services that might be provided in this stage, progress indicators of the stage and the key conditions that must be satisfied in order to move to the Advanced Stage.

As can be understood from Table 9.2, the first three of the key conditions that must be achieved are major milestones that must be achieved in this stage. With regard to the type of services that will be provided in this stage, it is possible to implement all types of services (i.e. informational services, interactive services and transactional services). However, the number of complex transactional services will be limited at this stage since governments still need to pay more attention to the horizontal integration activities. In other words, governments might reach an acceptable level of vertical integration but at the same time they are still far away from having an acceptable level of horizontal integration (these integration issues or concepts were discussed in Section 8.2.2).

Table 9.2: Summary of the Developing Stage characteristics

Stage	Stage Characteristics				
	Possible Goals	Information Systems	Type of services	Possible evolution indicators	Key conditions to move to the next stage
Developing Stage	The possible goals at this stage include (but are not limited to): • Achieving all key progress indicators in Stage 1, if not achieved in that stage. • Improving all important infrastructures such as institutional, human, legal and technological infrastructures. • Developing the e-government portal • Developing a secure payment gateway • Developing a secure authentication system (e.g. Public Key infrastructure (PKI), smart card, etc) • Developing some real time services of a complex type • Developing marketing and outreach programs • Establishing service centres • Improving the post infrastructure	Ministries and public organizations will continue improving their systems' integration vertically (i.e. linking the developed e-services to the e-government portal). Towards the end of this stage they might achieve good progress to some extent with regard to the horizontal integration but internally (i.e. within the ministries/public agencies themselves) for example implementing ERP systems.	Informational, interactive, many simple transactional services and some complex transactional services	• Working and seamless e-government portal • More informational and interactive services at the level of the ministries and public agencies • More simple transactional and some complex services available on the e-government portal • Improved e-services detailed and long-term plan • Execution of marketing plan • Establishing some service centres across the country • Having an acceptable post system	⊸ E-law must be in place. ⊸ Having a developed secure authentication system. ⊸ Having a developed secure payment gateway ⊸ Implementing at least 10 % of the total transactional services that are planned to be implemented in the detailed implementation plan. ⊸ Achieving at least 10% usage of online transactional service that last at least a year in service

9.2.3 Advanced stage

The Advanced Stage is the third stage in the developed framework (see Figure 9.2). It starts once all those five conditions, mentioned in the Developing Stage, are met. It is given this name (i.e. "Advanced Stage") because at this stage governments will endeavour to develop advanced services and will reach an advanced stage in terms of the number of the implemented services and the type of technologies used to achieve such advanced level. It is the stage where the radical organisational change starts and where the organisational challenges will be a major source of threat for the e-government implementers due to the advanced level of the organisational and technological integration amongst the different departments within the different ministries. It is the stage where the focus will be more on the G2G perspective and on improving the internal business applications at all levels. This G2G focus does not aim only to provide G2G services but aims to improve the internal business applications that provide more advanced services to the e-government users.

In addition, it is the stage where the need for BPR exercises will increase with the aim of removing bureaucracy and focusing on other strategic issues such as reducing the cost of running government business and increasing the accountability and the transparency, as well as creating partnerships with the private sector. However, *"Putting organisational integration into practice calls for integrated business process structures."* (Traunmudller and Wimmer 2003, p. 5). In other words, this stage requires e-government implementers to integrate their business processes in a way that allows them to be more focused on the two sides of government activity, namely the customers' view and administrations' view (Traunmudller and Wimmer 2003).

With regard to the activities that will take place in this stage, all the key progress indicators mentioned in Table 9.2 which were not achieved in the previous stage must be carried out in this stage. As mentioned above, in this stage all ministries and public agencies will start improving their systems integrations internally within their departments and externally with the other government organisations. In other words, this stage requires a high level of integration vertically and horizontally; technologically and organisationally as e-government implementers aim to increase

the number of implemented complex transactional services. This type of integration requires some advanced business applications. For example, each ministry and public agency will concentrate on improving its systems integrations horizontally by developing ERP systems or buying ready-made packages that are available on the market, such as Oracle ERP, SAP, People Soft, or JD Edwards ERP. In addition, it will start developing some Application Interface Programs (APIs) that allow vertical and horizontal integration with other ministries and public agencies as well as with the e-government portal. Having such integration will allow e-government systems to provide more complex transactional services and at the same time eliminate redundancy and duplication of effort. In addition, implementing ERP systems will allow ministries to standardise their applications and development tools as well as development methodologies.

At the organisational level, some ministries may merge some departments together as a result of extensive reengineering exercises for their business processes, which also will result in developing some intelligent business applications or in moving some of these departments to other ministries or public agencies. Towards the end of this stage, government organisations must achieve an advanced integration progress in their systems horizontally and vertically, which will allow them to start building some sophisticated applications, such as governmental decision support systems (GDSS), paperless applications (i.e. automating their internal business processes), and a simple government rule engine that controls some services that relate to the private sector. In addition, e-government services at this stage must be accessed through other channels (i.e. other than the internet) such as kiosks and service centres. Another important managerial task is the continuous execution of the outreach and marketing programmes with the aim of increasing the awareness level and the usage percentage of the e-government services.

With regard to the type of the services that will be introduced in this stage, it is possible for all types of services (e.g. informational services, interactive services and transactional services) to be developed in this stage. However, the focus will be more on the complex transactional services; hence their number will increase in this stage. In addition, all e-government services will be accessed through one single interface

(i.e. seamless e-government portal). In other words, none of the government agencies will have their own services on a separate domain name (i.e. separate URL). The objective is to have a one-stop government and not to divert the attention of e-government users or confuse them with many internet websites. E-government users should perform their services through the e-government portal without knowing who the service provider or owner is (i.e. regardless of which ministry looks after that service). Finally, it is worth mentioning that achieving such an advanced level of technology (i.e. that support providing new transactional services of type complex, developing new access channels for e-government services, making the e-government portal one stop-shop for all government services) will require robust ICT infrastructure at all levels across the country. However, building such an infrastructure is not an easy task and will be very costly, for instance, it will require a very solid telecommunication infrastructure, reliable networks at the levels of all the involved parties, up-to-date hardware and operating systems, very advanced web servers, application servers and database servers, and so on. Therefore, e-government implementers must prepare themselves for such challenging issues and must treat them with careful attention. These challenges will be further discussed in Section 9.3.2. Table 9.3 presented the possible objectives, type of information systems, type of e-services that might be provided in this stage, progress indicators of the stage and the key conditions that must be satisfied in order to move to the Open-ended Stage.

Table 9.3: Summary of the Advanced Stage characteristics

Stage	Stage Characteristics				
	Possible Goals	Information Systems	Type of services	Possible evolution indicators	Key conditions to move to the next stage
Advanced Stage	The possible goals at this stage include (but are not limited to): • Achieving all key progress indicators in Stage 2, if not achieved in that stage. • Focusing on networked organizational structure at the level of the participating parties rather than bureaucratic structure. • Improving the horizontal integration between the different departments within the participated ministries (i.e. implementing ministry-wide ERP among the participated ministries and government agencies) • Improving the e-government portal to become a one-stop government shop (i.e. all ministries' websites must be accessed through the e-government portal) • Continuing the execution of the marketing plan. • Establishing more service centres • Having a government simple rule engine that controls the government business processes. • Having an advanced post system	Ministries/public agencies will continue improving the vertical and horizontal integrations of their internal systems. Towards the end of this stage they must achieve advanced integration progress in their systems horizontally and across the ministries/public agencies by more implementation of ERP systems. For example, at this stage there might be some ministries or some government agencies that share the same ERP system.	Informational, interactive, simple transactional services and more complex transactional services	• More transactional services of a complex type are available online and working seamlessly through the e-government portal. • More implemented Ministry-wide ERP systems within the participated ministries and government agencies • Implemented simple government rule engine that control some of the government business processes. • Having a very advanced Post systems and Post services	⊣ All ministries' and government agencies' online services must be accessed through and only through the e-government portal. The e-government portal should be a single sign-on at this stage. ⊣ There must be at least three different means to access the e-government services (such as Internet, kiosks, and service centres) ⊣ More than 50% usage of online transactional services that last at least a year in service ⊣ Implementing at least 50 % of the total transactional services that planned to be implemented in the detailed implementation plan.

9.2.4 Open-ended stage

The Open-ended Stage is the last stage in the developed framework (see Figure 9.2) and it starts once those four conditions, mentioned in the Advanced Stage, are achieved. It is very difficult for any e-government system to reach this stage since its focus will be on having a networked organisational structure country-wide rather than a bureaucratic structure as well as having an array of cross-jurisdictional, cross functional and public-private networked virtual organisations. A bureaucratic model will no longer exist and will be replaced by a new model that emphasizes teamwork, multidirectional networking, direct communication between parties, and a fast feedback loop (Ho 2002). Achieving such objectives will require a strong commitment from the political side and will require e-government implementers to focus more on having systems that are highly integrated horizontally. Reaching this type of integration will lead to the development of very sophisticated intelligent systems and virtual environment that will help government officials to focus on the strategic issues rather than being heavily involved in the daily routines. In addition, it will help them to reach the main goal of developing an e-government system, which was mentioned in Section 7.2.1.2 (i.e. one main aim for e-government, which everything falls under; is: to use e-government to increase the stakeholders' satisfaction with the government).

Achieving customer satisfaction will require e-government implementers to go beyond the automation of government services and make them available online. They will have to use technology as an enabler for them to reinvent government, to rethink fundamental new ways of working, and most importantly to serve their customers better. Hence, they will have to understand their business information needs, have a clear vision of what they want to reach and to leverage the new technologies. This stage, therefore, requires concerted and creative effort. In addition, it calls for leadership from policy makers, government officials, employees' empowerment and teamwork, interagency cooperation, partnerships with the private sectors and support of the citizens. Furthermore, it requires careful treatment of the organisational and technological issues since these issues will continue to challenge e-government implementers in this stage due to the radical changes that will take place in the

government body. These technological and organisational issues and their impact on the implementation process are described in Section 9.3.

The Open-ended Stage is given this name because it is a continuous stage and there is no end to it. In other words, e-government implementers, in this stage, will continue enhancing, updating, and maintaining the existing services as well as implementing other new services, hence the number of the introduced services will grow over time. In addition, they will continue upgrading and improving their infrastructures, particularly the technological ones as well as some physical infrastructures such as service centres and postal means (the post office must play a major role in this stage and the previous ones to deliver all the completed services correspondences, such as passports or IDs renewal correspondences, to the e-government users).

With regard to the type of services that will be provided in this stage, all the types of services can take place and will reach a very advanced level of maturity since some of them will be executed without any human intervention. For example, the renewal process of the citizens IDs or passports will be automated so there will be no need for any human intervention at all. In other words, once somebody's ID or passport expires it will be renewed for him/her automatically and will be sent to him through the post even if this person did not ask for this. Any payment will be also deducted from his/her account, which is already defined in the e-government business applications. One of the e-government steering committee members highlighted a strategic vision, which is the Zero-click strategy. The above example can explain this vision. In addition, this stage will require a continuous execution of more marketing and outreach programmes with the aim of increasing the usage percentage as well as reaching one of the optimal objectives, which is creating an information society. Furthermore, e-government implementers will develop some advanced business intelligence tools that enable them to control most of their business rules. For example, one of the e-government strategic objectives in Qatar is to develop a government rule engine that aims to control all the government rules country-wide. In addition, e-government implementers in this stage might start developing some systems that can be operated across the country such as developing government-wide supply chain management system, and a government-wide ERP system. However,

280

these types of tasks (or systems) will require e-government implementers to conduct intensive horizontal integration exercises at all the levels of the participating ministries and public agencies. However, as mentioned earlier, horizontal integration is one of the most complicated issues in developing an e-government system at a national level. Moreover, the inter-agency linkages and the cooperation of all the participating parties are a pre-requisite for delivering such a level of integration. Reaching such a level of automation might encourage governments to privatise some of their public services and hence will lead to a shrinkage of their traditional size. The key characteristics of this stage are shown in Table 9.4, whereas Table 9.5 shows how the developed measurements (i.e. key conditions) can be mapped to the different development stages of the developed framework.

Table 9.4: Summary of the Open-ended Stage characteristics

Stage	Stage Characteristics				Key conditions to move to the next stage
	Possible Goals	Information Systems	Type of services	Possible evolution indicators	
Open ended Stage	The possible goals at this stage include (but are not limited to): • Achieving all key progress indicators in Stage 3, if not achieved in that stage. • Continued focus on networked organizational structure rather than bureaucratic structure. • Having an array of cross-jurisdictional, cross-functional and public-private networked virtual organizations (i.e. networked communication) • Developing an advanced government rule engine that controls the government business processes. • Having a government-wide ERP system (i.e. having advanced horizontal integration between the different ministries and public agencies). • Continuing in the execution of the marketing plan. • Continuing in improving and maintaining the developed e-services and implementing new ones. • Having a transparent and accountable government and shrinking its traditional size • Having a public-private networked virtual environment	Ministries/public agencies will continue improving their systems' integration across the country (i.e. achieving highly integrated systems vertically and horizontally).	All types of services Some services will be performed automatically without any human intervention (i.e. Non-click services)	• Government-wide ERP system • Government-wide supply chain management system • Public-private networked virtual organizations • Having an advanced government rule engine • Having sophisticated services that are performed automatically without any human intervention • Government-wide decision support systems • Shrinking in traditional government size • Some government service will be performed by the private sector	N/A

Table 9.5: Mapping the development measurements to the different development stages of an e-government system at a national level

Measurements		Initial stage	Developing stage	Advanced stage	Open ended stage
Milestones	*E-government entity*	Formed and in place			
	E-law	In planning	In place		
	Secure payment gateway	In planning	In place		
	Secure authentication system	In planning	In place		
Technology	*Single sign-on*	In planning	Developing	In place	
	Single point of access (one stop-shop)	In planning	Developing	In place	
	Access channels	In planning	Developing	At least three access channels must be in place	
Services	*Number of developed transactional services of type **complex***	Pilot	10% of total transactional services that need to be developed must be in place	50% of total transactional services that need to be developed must be in place	Continuous increase in the implemented transactional services of both types simple and complex
	% usage of all transactional services available on the e-government portal and which last at least one year	Pilot	10 %	50 %	Continuous increase in the usage of implemented transactional services
	Informational and interaction services	Developing at all the ministries' and public organizations' levels and can be accessed independently using different domain names (i.e. Different website addresses; i.e. different URLs)	Developing at all the ministries' and public organizations' levels and can be accessed independently using different domain names (i.e. Different website addresses; i.e. different or URLs)	Developing at all the ministries and public organization levels **but** can be accessed only through the e-government portal	Continuous increase in the implemented informational and interactive services

9.3 Key implementation issues

This section summarises Chapters 7 and 8, which deal with those organisational and technological issues that were found to be the main challenges for the e-government implementers in Qatar, and aims to link these issues with the refined version of the developed framework. These challenges (issues) were found to be common for all the development stages but their impact may vary from one stage to another. Wherever appropriated, the researcher will highlight the impact of these issues on the different stages by giving some examples from the case study findings and will suggest some possible ways that might help in treating them in practice. It is worth noting that, generally, the findings showed a greater impact of the organisational issues on the e-government implementation process than the technological issues. These organisational and technological issues are described below.

9.3.1 Organisational issues

Figure 9.3 illustrates the main categories of the identified organisational issues and their subcategories. These categories, their subcategories and their impact on the e-government implementation are described in the following sections.
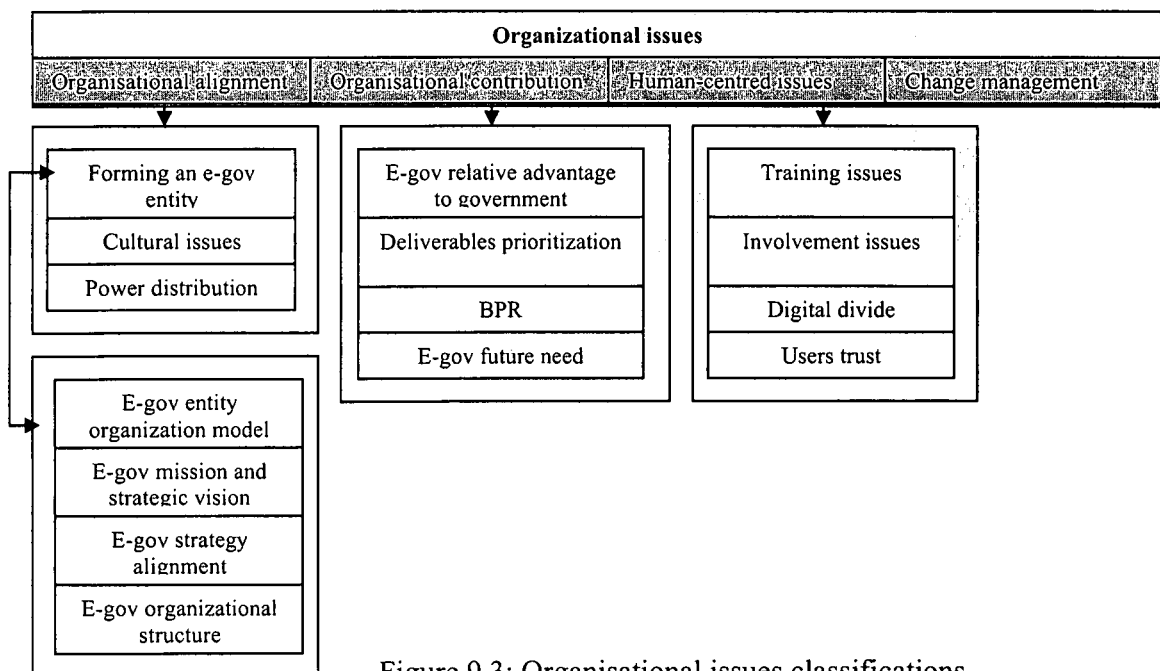
Figure 9.3: Organisational issues classifications

Organisational alignment issues

As shown in Figure 9.4 above, there are three organisational alignment issues that were identified and which need to be considered and treated carefully before and during the e-government implementation. These issues are discussed below.

Forming an e-government entity

Chapter 6 (Section 7.2.1) presented the issues of forming an e-government entity as one of the main organisational alignment issues that must be considered and treated carefully during the first stage of developing an e-government system at a national level. Based on the study findings, it can be argued that one of the most important success factors for developing an e-government system at a national level is the building of an accountable and effective e-government organization that manages its own budget and which is empowered with decision-making authority. Having such an organization will enable e-government implementers to have enough flexibility to act quickly in staffing the operation and conducting the procurements necessary to achieve the e-government goals and objectives. In addition, it will enable them to focus on the strategic objectives of having an e-government system such as cost efficiency, cost recovery, accountability and transparency. However, forming an e-government entity is an intricate matter so a great deal of attention must be given to it. Some possible ways to help the e-government implementers in treating (or overcoming) any challenges that might be faced during such exercise are listed below:

- Before establishing the national e-government authority, it is recommended that e-government implementers review international best practices so they can choose the correct organisational model for their e-government organisation. Once they agree on a specific organizational model then they should develop an organizational structure for the recommended model. After that, they should identify the roles and responsibilities as well as staffing needs within that organization. The findings showed that the e-government implementers in Qatar failed to select the right organisational model as well as the right organisational

285

structure for their e-government entity and hence they faced many organisational challenges (as discussed in Chapter 7).

- Another important factor is the formation of the board of directors that manages and oversees the e-government entity. This board should be formed by the highest authority in the country and might be chaired by the first or the second top decision-maker at the country level or by the prime minister depending on the political system in the country that intends to implement such a national transition. Chairing the board by one of the highest authorities will help a great deal in pushing the change down to all the participating parities. In addition, the board members should be chosen from government officials who represent wider government interests, supplemented by external representatives in order to provide links with business and the community. At the same time the board should not be too big, so that it can effectively bring together the key ministries and public agencies with e-business and e-government responsibilities. That means, the number of board members should be sufficient to be able to facilitate integration in government service delivery as well as to promote full community participation in the information society and economy. Moreover, having sufficient board members will help in promoting collaboration and cooperation across and between levels of government as the case study findings proved that one key source of resistance to change is the limited number of the steering committee members in the Qatar e-government. For example, the findings showed that most of the implemented services are owned by the MOI. This is because one of the steering committee members is the IT director of the IT department in the MOI (This issue was discussed in more detail in Chapter 7).

- The e-government mission and vision should not consider technology as a goal, but rather as a tool to reinvent the government services. The danger in viewing the technology as a mission or vision is that the technology itself does not provide the benefits needed to increase the e-government stakeholders' satisfaction. At the same time, e-government officials should not restrict themselves to the use of the new technology and think that new technology will help them to reach their goals and solve their problems. Success will be achieved when the system fully satisfies the need of the stakeholders.

- The importance of aligning e-government strategy with the overall government strategies, particularly the national ICT strategy. Although the Qatar e-

government strategy addressed many areas, it failed to address some other important aspects such as business processes reengineering issues, organisational readiness, awareness issues nation-wide, involvement issues (i.e. the involvement of the public organisations officials, the involvement of the citizens and the involvement of the private sector) and the assessment of the education system in relation to the e-government aspects.

- Finally, the e-government director is expected to be well-versed in e-government issues, have the ability to promote e-government issues and provide political coordination of activities on e-government. S/he would work with a network of government officials in the participating ministries and public agencies with lead responsibilities for e-government policy delivery. The role of the e-government director should involve political leadership and coordination of the range of activities in ministries, in particular providing a single point of contact with industry and the media on e-government issues. S/he should also work closely with e-government departments' managers to ensure the full and successful execution of the e-government services and s/he will be directly involved in the resolution of significant issues/risks that may potentially impact on the scheduled services' delivery time. It is very important to draw the attention of the reader to the importance of having a fully dedicated and committed e-government director. The case study findings presented the negative consequences of appointing a person who is not fully dedicated to the mentioned job. Furthermore, a macro management style is a key characteristic of a successful director of such an organisation. The e-government director also needs to be buttressed by effective managerial and administrative arrangements in driving forward the government's modernising objectives.

Cultural issues

Cultural issues were discussed in detail Section 7.2.2. The research findings showed that there were many cultural issues that need to be considered and with a high level of attention from the e-government implementers during the development of an e-government system. These cultural issues were found amongst the e-government entity team members, the participating ministries (and other public agencies) officials and amongst public users. These cultural issues include dictatorial leadership,

appointments based on tribes, business ego, micro management, centralisation of decision, and the users' culture with regard to the use of electronic services (i.e. issues that relate to the trust and the fear of using the e-government services). Therefore, it is vital to consider such cultural issues and to treat them carefully especially at the early stages of developing an e-government system since the treatment of such issues is a very difficult task and possibly even one of the toughest tasks that will face e-government implementers. Those issues might be overcome by, for example, educating the people, providing some monetary (or no-monetary) incentives, and performing informative communication plans. *"Success in utilizing e-government demands close consideration of the cultural background of the society and its social aspects. Understanding social and cultural barriers that determine the society's readiness for accepting changes in systems among such issues"* (Sharifi and Zarei 2004, p. 614).

Power distribution

Section 7.2.3 showed that the e-government officials had not considered this crucial factor and accordingly they were faced by many "war stories" during the deployment of some of the developed services. For example, they failed to persuade the Qatar University officials to allow the student registration service, which had been developed by the e-government team to go live even though it had been developed and was ready to be deployed. Although one of the steering committee members expected that e-government ultimately will shrink the traditional government structure, there was not any evidence that informed their readiness to face the challenges that might be caused by such radical changes. Such a shift will result in redistributing the power of some organisations to others, reducing some jobs or redesigning many other jobs in those organisations should e-government officials seek effective reform (or effect change). Thus those members who lose power will of course resist these changes. Hence, e-government implementers must properly plan this change and prepare themselves to overcome any kind of resistance which might be caused. This includes developing a very careful treatment plan, effective change management skills and getting buy-in from all involved ministries and public agencies. Otherwise, many 'war stories' and conflicts between government officials will take place which may cause a complete failure of the whole imitative.

Organisational contribution issues

Figure 9.3 above, lists four organisational contribution issues. These four issues were found as fundamental factors that might restrict the e-government implementation at a national level (see Section 7.3). Thus, they must be taken into consideration and treated at a very high level of attention. These issues are summarised below.

E-government relative advantage to the government

As discussed in Section 7.3.1, there is no doubt that the e-government officials in Qatar realised the relative advantage of having an e-government system at a national level. This can be understood from the cost-benefit assessment that they conducted before the implementation process. However, their cost-benefit study was not accurate enough and their estimated figures were not realistic as was proven by the findings discussed in Section 7.3.1. In addition, they did not adhere to the project implementation plan as they implemented only ten services out of 22, some of these ten services were not planned to be implemented at the beginning of the project. Furthermore, they ignored the recommended transaction fees that were proposed by the consulting team and replaced them with a fixed charge (i.e. QR 5) which affected the expected net profit. Another important issue was that they implemented some services that were not ready to be deployed, which then affected the usage of the e-government services and consequently affected the net profit of the project as a whole.

Therefore, it is clear that this factor was not treated as required by the e-government implementers in Qatar. The possible ways of treating this issue are as follows: (1) conducting a realistic cost-benefit analysis. In other words, the number of services that can be implemented and can be used as a basis in their expected revenue and profit must depend on many other factors, such as the readiness of the services providers, their ability to develop and maintain those services within the specified implementation plan, and the readiness of users to use the services that will be developed. In addition, there are many other intangible benefits that must be considered during any calculations; (2) developing a realistic implementation plan and

executing it according to the book; and (3) avoiding the deployment of any services that are still not ready to be used online.

Prioritisation of e-government deliverables

It was clear from the case study findings that, although the e-government implementers in Qatar acknowledged the necessity of having a priority system for their services that were ready to be implemented, they had not treated this issue carefully and hence the number of implemented services and their usage was very disappointing (see Section 7.3.2). Creating an accurate priority system based on the government's business requirements and which has a strong focus on its organisational needs is essential. This is because e-government officials will be overloaded with thousands of public services that need to be developed and hence they should implement a prioritisation system that is in line with the e-government objectives and their audience's ability to cope with the new changes. As mentioned in Section 7.3.2, the prioritisation system should consider many important issues. These issues include the complexity of the technology, the types of services that need to be developed, the readiness (organisational and technological readiness) of the service providers to develop and maintain the selected services, their anticipated users' ability to use and cope with the new service, the organisational issues, business process readiness (i.e. BPR issues), and the organisational change. Based on the study results, the e-government implementers in Qatar had not considered most of these issues and hence they faced many difficulties during the implementation process. As a result, some of the services that were planned to be implemented were not and some unplanned services were implemented.

BPR

As mentioned in Chapter 7, Section 7.3.3, the government officials in the Planning Council realised the importance of reengineering the public services and started a huge project for that purpose. However, the findings confirmed that although e-government officials knew about that project and its advantages before starting to implement their e-services, there was not any link between the two projects, although they are closely related. In other words, there was a clear lack of coordination

between the Planning Council officials and the e-government implementers with this regard. The lack of such cooperation and coordination between these related projects will lead to a waste of effort and money. Such issues might not be realised at the early stages of the e-government project but they will certainly be experienced at its next stages of development. It is vitally important to assess the government business processes and reengineer those processes whenever appropriate before going further in the development of the e-government services. The BPR exercise must cover business, organizational and cultural concerns. In addition, it requires committed leadership, as well as involvement and support from all levels in government. BPR is a life time journey for each service that needs to be developed, hence there should be an process view that cuts across functional hierarchies to reach e-government customers. However, these BPR exercises will be very challenging as they will transfer functional boundaries to cross-functional and integrated processes. In addition, it will require sharing systems to support end-to-end processes. Hence, the BPR is a very important issue that must be considered and treated carefully, particularly at the early stages of developing the e-government services.

Future need for an e-government system

The research findings showed that e-government is a reform and strategic tool that must continue as long as it satisfies its stakeholders' needs. However, although the continuity of the e-government system in Qatar was confirmed by the e-government officials and the general secretary of the SICTC, there was not a clear plan that considers the future of the e-government entity (this issue was discussed in section 7.2.1.1). For example, the Emiri Decree specified the 30th March 2005 as a deadline for the e-government steering committee to carry out the first phase of the e-government project (i.e. to implement the planned 22 service groups) but up to that date they had implemented only ten services. Thus, there was not a clear plan of how and when the remaining services would be implemented. In addition, according to the e-service plan there were some services that were left to be developed in a later phase such as those G2G services but the plan did not specify any date for their intended implementation or who would carry out the implementation process. Therefore, it is obvious that the e-government implementers in Qatar realised the importance of the continuation of the e-government system but it is also clear that there was uncertainty

about the future of the e-government as an independent entity (see Section 7.2.1.1). As discussed above, the presence of such an entity is necessary to prevent future deterioration of the e-government services and to ensure preventive maintenance, continuous assessment of the performance of the implemented services, as well as to ensure a continuous process of improvement.

Human-centred issues

As can be noted from Figure 9.3, there are four elements that make up this factor, which are: training issues, involvement issues, users' trust and digital divide. Three of these issues (i.e. trainings issues, involvement issues, and users trust) might not have a high impact during the Initial Stage as the e-government services that will be provided during that stage are relatively few, simple (e.g. informational and interaction services), and do not require highly sensitive informational from the users. Whereas, the fourth factor (i.e. digital divide) needs to be considered during the assessment process. In the next stages of the development, the impact of the trainings issues, involvement issues, and trust issues will increase as e-government implementers will start introducing some transactional services, then it is vital for them to take care of these issues and give them the right attention and consideration.

Considering these factors is not sufficient, they must be treated with high level of attention. The case study findings showed that some these issues were considered during the development of the e-government in Qatar but unfortunately they were not treated as required. Consequently, their impact was obvious on the numbers of the implemented services and their usage. These human-centred issues were discussed in detail in Section 7.4 and will be briefly summarised in the following sections.

Training issues

Training issues were discussed and analysed at three levels, specifically at: the e-government team level; the participating ministries and other public organisations level; and the e-government users level (see Section 7.4.1). The case study findings confirmed that training was one of the important issues which was considered but was not treated well at all levels. The treatment of this issue needs careful attention to the

mechanism for training that is needed for each level. For example, the development team in the e-government organisation requires some training courses that differ from the training which is to be provided to the development teams in the participating ministries. Also training the e-government users cannot follow the same type and procedure of training the development teams. E-government users might have training through, for instance, awareness programmes, education systems, and online demos. The ignorance of such important issues will certainly affect both, the development of the e-government services and their usage. Both issues were found in the case study.

Involvement issues

Section 7.4.2 discussed and analysed the involvement issues at two levels, the services owners' (i.e. the participating ministries and other public agencies) level and the e-government users' level. The research results showed that the e-government implementers in Qatar had not considered either of these issues or treated them carefully and consequently they experienced a great deal of resistance, many deployment "war stores" and a very disappointed usage rate of the implemented services. The involvement of the concerned parties is crucial to avoid change resistance and power distribution issues that might be created by this radical change.

With regard to the involvement of the e-government users, there is no doubt that it is impossible to involve all the users in the development of all the e-government services but there are many ways in which the risk that might be caused by ignoring such an important issue can be decreased. These ways include: (a) the development of online bulletin boards for the e-government users where every user can post his feedback or suggestions regarding any service; (b) allowing users to send their feedback through the e-government portal by using electronic forms or emails; (c) proving a dedicated hotline (telephone line) for public opinions, complaints and suggestions regarding the e-government services or by publishing an electronic survey; (d) making e-government users aware of what is going on through different channels such as TV programmes, announcements in local newspapers, seminars, summits or/and through the education system; and (e) developing and implementing a detailed and effective communication plan, particularly during the Initial Stage of the e-government.

Digital divide

The digital divide was found to be one of the important issues that affected the e-government services usage in Qatar (see Section 7.4.3). Issues such as the cost of providing the internet services, the lack of know-how, and the awareness issues were found as possible reasons for this modern gap amongst the e-government users. In addition, it was very clear that the e-government implementers in Qatar had not paid any attention to this gap or the ways of bridging it and hence their service usage was highly affected. Regardless of the reasons behind this modern problem, e-government officials must take this issue into consideration and must treat it carefully and not exacerbate it, particularly at the early stages of e-government development.

E-government users trust

The establishment of a good authentication system and good payment gateway was not enough to persuade the e-government users in Qatar to use the implemented services. As mentioned in Section 7.4.4, there were some issues that could be behind the avoidance of using the available e-services, such as the lack of an e-law that protects their privacy and the confidentiality of their transactions, and the clear warning that was mentioned on the e-government website which emphasised that the use and security of the e-government services is the responsibility of the e-government users (See Section 7.4.4). The usability of the available services was found to be another important reason for the avoidance of the e-government services (see Section 8.4). These three issues leave no doubt that users will be suspicious of e-government services and will look for reasons to not use or trust the available e-services.

Therefore, it is obvious that the e-government officials in Qatar had not treated the privacy of their users as required and failed to protect them legally. In addition, they had not ensured the readiness of their services before deploying those services to be used online. It is essential for e-government implementers to realise the factors that might help in encouraging the e-government users to use the implemented services, which include: (1) developing an e-law that protects all the e-government stakeholders against any risks that they may face as a resulting of using the e-government services;

(2) avoiding publishing any unnecessary information that might make the e-government users fear using those services; and (3) assuring the readiness of the e-government services before deploying them and assuring their usability after the deployment.

Change management issues

This factor was found as one of the organisational issues that affected the e-government implementation in Qatar and it is expected to continue in challenging the e-government implementation in the next stages of development. The shift to e-government seems to require a new mindset in government, society, and public administration; the latter becoming the interface between customer and services and no longer between citizen and state. Hence, cooperative interaction between citizens, business and public administration is crucial for successful implementation. This suggests the necessity to combine e-government initiatives by organisational redesign by institutions and state agencies. In other words, the shift to e-government is a change of government in a twofold manner: (1) the transformation of the business of government (i.e. improving service quality and delivery, reducing cost and renewing administrative process); and (2) the transformation of government itself (i.e. re-examining the function of democratic practices and processes) (Navarra and Cornford 2003). As mentioned in Section 7.5, such transformations require strong change management skills, top authority support, and committed and cooperative executive leadership (see Section 7.5). The case study findings showed that the e-government implementers in Qatar had the full support of the top authority in the country but there was a clear lack of the right change management skills and a lack of committed, cooperative and dedicated officials at both, the e-government level and the participating ministries level. In addition, there was a lack of proper project management as can be understood from the underestimation of the e-government management of some important issues such as awareness, users' and participants' involvement, and ignoring some critical project plans, particularly the communication plans.

9.3.2 Technological issues

This section summarises Chapter 8 that deals with the technological issues that might affect e-government implementation. Figure 9.5 gives a graphical view of those issues. All these issues can spread over all the development stages of an e-government system but on average, these technological issues do not require the same level of treatment as required with regard to the organisational issues, particularly in the Initial Stage. The impact of these technological issues will increase gradually from the Initiation Stage to the Advanced Stage and it is expected that it will decrease in the Open-ended Stage, particularly those issues that relate to the ICT infrastructure and e-government services usability. These technological issues, their impact on the implementation process of an e-government system, and the possible ways of overcoming the challenges that might be caused by these issues are described briefly in the following sections.
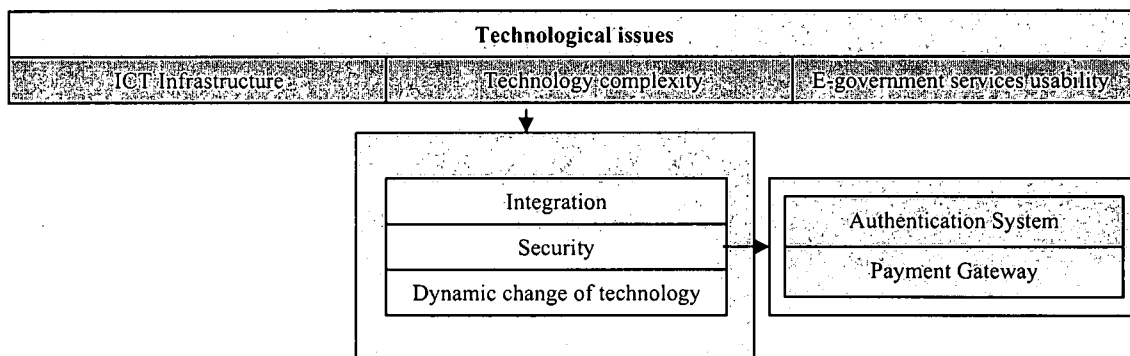
Figure 9.5: Technological issues classifications

Technology complexity issues

The impact of the technology complexity issues was found to be less than the impact of the organisational issues, particularly at the Initial Stage. As mentioned in Section 9.2.1.1, it is expected that most of the services that will be provided during this stage are easy services (i.e. informational and interactive services) and do not require sophisticated technologies. Towards the end of this stage there will be some shared IT projects at a national level with the aim of increasing the efficiency, sharing the government data and speeding up the process of decision making, but these activities

will not reach the level of introducing transactional services. In the Developing Stage and the Advanced Stage, the technology complexity issues' influences will increase and may reach the same impact level as the organisational issues. The reason for this is that there are some challenging technological milestones that must take place in these stages. Failure to accomplish these milestones and treat them carefully will lead to a failure of the whole e-government initiative. In the Open-ended Stage, it is expected that the impact level of the technology complexity will decrease as most of the required infrastructure is expected to be in place and it is assumed that the involved parties will have had sufficient experiences to enable them to overcome most of the technological challenges. As discussed in Section 8.2, the technological complexity is classified into three main technological issues, specifically integration, security and dynamic technology changes. These factors and their impact on the implementation process are described briefly below.

Integration

This factor was discussed in more detail in Section 8.2.2. The effect of the integration issues will not be a big challenge in the Initial Stage as the ultimate level of integration that might be needed in this stage may not exceed the vertical integration. However, the impact of this factor will increase gradually in the next stages of development, particular the Developing and the Advanced stages. The Developing Stage will use the vertical integration more than the horizontal one as most of the transactional services that can be provided in this stage are of a simple type. Towards the end of this stage, the necessity of having horizontal integration will appear and consequently the impact of the integration issue will create many challenges for the e-government implementers. This is because they will start developing some transactional services of a complex type. In the Advance Stage, the number of developed services of a complex type will increase. As mentioned earlier, this type of service requires e-government implementers to pay more attention to horizontal integration at the level of the participating ministries and public agencies. Horizontal integration is one of the most complicated issues in developing an e-government system at all levels and particularly at a national level. Each ministry (or public agency) will try to horizontally integrate its business applications by developing some sophisticated business applications such as ERP systems or supply chain management

systems. These ERP systems are very difficult to develop in-house. In addition, even if that ministry decides to buy ready-made packages, it will face many challenges when it comes to adapting these ERP systems according to its business processes. Furthermore, implementing and maintaining such a system is very costly and cannot be afforded by many organisations. Thus, there is no doubt that the integration factor will be one of the key challenges that will face e-government implementers at this stage and certainly it will require a great deal of attention and careful treatment at all levels. In the Open-ended Stage, although the number of the complex services that needs highly horizontal integration will increase, the e-government development team will have a great deal of experience in this stage to overcome most of the integration problems and hence the impact of this factor will be less than its impact in the Advanced Stage. Finally, it is worth mentioning that there are some possible ways of treating this issue. These involve ensuring the compatibility of the bought technologies with the existing technologies, giving extensive and proper training to the different developments teams at all levels and buying the latest development tools that can help developers to accomplish their tasks smoothly.

Security

"While the internet provides opportunities for business to increase their customer base, reduce transactions cost, and sell their products globally, security implications impede the business." (Koskosas and Paul 2004, p. 341). Security issues were explained in section 8.2.1. Again the impact of this technological issue will vary between the different stages of e-government development. For example, in the Initial Stage, security issues will not be a big issue since most of the public organisations will use their business applications internally and their web services will not request their users to publish any sensitive information (i.e. credit cards numbers, personal information, etc). Thus, introducing the basic level of security (i.e. username and password) will be enough to make their application and services fairly secure. However, towards the end of this stage and early in the next stage, e-government implementers are expected to start preparing for a very high level security system which will be essential for the next stages. It was mentioned above that there are some key conditions that must be achieved in this stage in order to move to the Advanced Stage; these conditions include developing a secure authentication system and

building an electronic payment gateway. Therefore, these two major milestones must be developed in the Developing stage since the absence of them will not enable e-government implementers to implement any transactional services. However, achieving these two milestones is not an easy task (see Section 8.5). Accordingly, security issues must take the highest level of treatment as e-government implementers will start developing the transactional services in this stage which then requires e-government users to pay for their transactions online.

In the Advanced stage, it is assumed that e-government implementers have developed the required security infrastructure and hence the impact of this issue will be less in this stage. Nevertheless, this does not mean that there are no security challenges in this stage; on the contrary the challenges will continue but their level will be less than their effect in the Developing stage. For example, providing new access channels to the e-government services in this stage will cause new security challenges since the authentication system will need to be updated to allow e-government users to use the new channels and hence new securities threats will start appearing. This is applicable also for the e-government payment gateway. It will need to be updated to allow e-government users to pay for their transactional through the new channels. The payment through different channels will create many securities challenges for the e-government implementers such as maintaining the integrity of the transferred data. Therefore, there is no doubt that security issues will be one of the main technological challenges that will face e-government officials in this stage but it is also assumed that e-government implementers will have taken all these issues into consideration during the development of the security infrastructure in the Developing Stage. The same concept will be applicable for the Open-ended Stage. In this stage, more services, systems, and access channels will be developed and hence more challenges will face the e-government implementers but again, the impact of those challenges will be less than the impact of the previous challenges mentioned in the Developing Stage. The possible methods of treating such security issues include: building a very secure authentication system, developing a highly secure payment gateway, and continuous preventive maintenance for the built infrastructures. The case study findings showed that the e-government implementers had achieved these issues to some extent.

Dynamic change of technology

The dynamic change of technology is a continuous challenge spread over all the development stages. This issue was discussed in more detail in Section 8.2.3. In each part of the development stages, there will be additional technologies that will be introduced with the aim of enhancing the performance of the e-government and introducing some advanced features. These new features and others will increase the complexity of managing the involved technologies and hence will need very careful treatment from the e-government implementers. The possible ways of treating this issue include, for instance, giving the development team at all levels frequent training courses that help them to absorb those new technologies and by buying those technologies which are compatible with their existing technologies. However, the case study findings showed the e-government implementers in Qatar did not follow either of these ways or any other ways to overcome the impact of this issue.

ICT infrastructure

The impact of this factor is similar to the impact of the technology complexity factor at the Initial Stage. It spans all the development stages, but its influence on the Development and Advanced stages is more critical. In the Open-ended Stage, it is assumed that e-government will be in a better situation and will have the major parts of their infrastructure in place and hence it is expected that the effect of this factor will be less at this stage, although they might still need to improve, enhance, and maintain the existing infrastructure. Having a robust ICT infrastructure is an objective for each ministry and each public organisation, especially before introducing those transactional services. As mentioned in Section 8.4, any ICT infrastructure is composed of three main parts, specifically the network, hardware and operating systems; telecommunication facilities that involve high-speed Internet services and leased lines to participating ministries and agencies; and major software components which includes web servers, application servers and database servers. The findings showed that there was a clear impact of the telecommunication infrastructure in Qatar on the performance and the usage of the implemented services. In addition, there was a lack of some necessary hardware at the level of the participating ministries.

300

Furthermore, there was a clear need for some necessary development and support tools for the development teams. Moreover, the availability of the e-government services was not in line with the vision of the Qatar e-government. Thus, it is critical for e-government implementers to make sure that they have a capable ICT infrastructure that ensures the availability of the e-government services and must give this issue a high level of attention, in particular at the early stages of development.

E-government services usability issues

It was clear from the case study findings that the usage of the available services on the Qatar e-government portal was very low. The reasons for this issue were analysed and discussed in Section 8.4. Similarly to the above technological issues, the impact of this factor will not be a big issue at the Initial Stage because the services that will be introduced during this stage are simple web services (i.e. informational and interactive services) and hence will be easy to use. In addition, the number of users at this stage will be quite low as e-government is still in its Initial Stage and the awareness level of the provided services is expected to be low. In contrast, the impact of this factor will be clear in the Developing Stage since the number of implemented transactional services is expected to increase. In the Advanced stage, this issue will also remain a big challenge for e-government implementers for the same reasons mentioned in the previous stage (i.e. the increment in number of the implemented services, particularly transactional services of a complex type). As mentioned above, one of the key conditions that must be achieved in this stage is that for services that have been available online for one year or more, 50% or more of the transactions should be carried out online and less than 50% should still be carried out in the traditional ways. Indeed, this will not be an easy target unless e-government implementers treat this factor with care and a very high level of attention. In contrast to the above technological issues, it is expected that the e-government usability factor will continue to be one of the most challenging issues in the Open-ended Stage as well. The advanced level that e-government system is expected to reach and the huge number of services that will be provided in this stage will cause unavoidable and permanent challenges for the e-government implementers.

As mentioned above, the main goal of having an e-government system must be the stakeholders' satisfaction. However, achieving stakeholders' satisfaction is a very difficult target. Yet, e-government implementers must strive to reach this target as much as they can. Providing seamless services and making them available 24 hour a day, 7 days a week, 365 days a year through the different access channels is one of the factors that can help e-government implementers to achieve their goal. Another important factor is the continuous efforts with regard to marketing e-government services and promoting many outreach programmes. In addition, training the public employees and involving them in the development of their related services is another important issue. E-government implementers must be more customer-focused and must work hard in providing high quality services and avoid deploying any poor services (i.e. readiness of e-government services factor). Finally, it is also important to ensure the accessibility of the implemented services and to provide the highest level of support to the e-government users.

9.4 Summary

This chapter summarised the previous three chapters (i.e. Chapters 6, 7 and 8) and presented the case study findings in the form of a framework that has been developed for the e-government implementation at a national level. The developed framework is composed of four linear stages and treats e-government as a radical change. In addition, it considers two main dimensions of that change, namely the technological and the organizational dimensions. Dividing e-government implementation into stages of development is very important for e-government implementers to enable them to understand the nature of the e-government evolution and to properly estimate the size of the work/activities that needs to be carried out. The research findings proved that splitting the framework into four stages is reasonable and covers the whole transition process. Furthermore, the framework has succeeded in finding an operational classification for e-government implementation stages, which will be useful for the e-government implementers to enable them to understand, plan and perform the gradual shift of government services, to anticipate the challenges and risks that might face them, and to assess their e-governments progress. It provides a logical movement and a gradual shift for e-government development at a national level and best suits those

countries that have one level or central government. It can be used as a tool to determine the road ahead for implementing an e-government system at a national level and to identify the key practices, processes, possible goals, progress indicators and key conditions required to move from one stage to another. In addition, it provides e-government implementers with guidance on how to gain control their processes for developing and maintaining e-government services and how to evolve toward a culture of excellence in providing and managing an e-government system at a national level. The developed framework is, in fact, a refined version of the initial framework that was developed based on a synthesis of different suggestions found in the literature of IS implementation and e-government literature (see Chapter 3). It was also presented and discussed (as a published paper) in an academic conference before conducting the field study (i.e. the case study).

Chapter 10: Conclusions and implications

10.1 Introduction

Chapter 9 summarised and presented the major contributions of this study in the form of a framework that deals with e-government implementation at a national level. This chapter starts by presenting the key study findings along with an evaluation of the research findings. Section 10.2 presents a summarised exploration of the methodological and theoretical implications of the research. An evaluation of the research findings in light of Klein and Myers (1999) is also presented in that section. Then, Section 10.3 summarises the research implications for practice. The possible limitations and future extensions, areas for further research, learning experiences and the concluding remarks are summarised in Sections 10.4, 10.5, 10.6 and 10.7 respectively.

10.2 Implications for research

The implications of this study for current and continuing research efforts with regard to e-government implementation at a national level are divided into methodological and theoretical issues. Methodological issues are those that relate to the implications of the research design for future empirical efforts. Whereas, those issues that surround theory are concerned with the specific implications of the study's findings for existing theory that relates to e-government implementation aspects.

10.2.1 Methodological issues

This study highlighted the benefits of using interpretive case study strategy. The contribution of this study that relate to methodological issues are summarised below.

The use of an initial framework: the developed framework is, in fact, a refined version of the initial framework that was developed based on a synthesis of different

suggestions found in the literature of IS implementation and e-government literature (see Chapter 3). The initial framework was also presented and discussed (as a published paper) in an academic conference before conducting the field study (i.e. the case study) with the aim of incorporating other researchers' comments and suggestions (if any). Huberman and Miles (1994) emphasised the importance of developing a theoretical framework that can be used to explain the main issues to be studied. In addition, Walsham (1995b, p. 76), stated that "the motivation for the use of theory in the earlier stages of interpretive cases studies which takes account of previous knowledge and which creates a sensible theoretical basis to inform the topics and approach of the early empirical work". Since this study followed an interpretive research approach, the researcher developed an initial framework which was found very useful in structuring the data collection and the data analysis processes. This framework was tested and refined by the collected data and presented as a main contribution of this study to the field of knowledge.

Triangulation: in addition to the use of the initial framework mentioned above, semi-structured interviews, direct observations, and documentation were used as primary source of evidence in the case study field. This combination of methodologies is often referred to as triangulation (Patton 1990; Cunningham 1997). The major advantage of using triangulation rests on the premise that the weaknesses in each of the single data collection methods will be compensated by the counter-balancing strengths of another (Jick 1979). In addition, triangulation is very useful in reducing the chances of errors and misinterpretations (Duchon and Kaplan 1988; Stake 1994).

The use of interpretive case study strategy and lessons learned: The research method chosen for this research project has been of a qualitative nature. The use of interpretive case study was found very useful in providing a holistic picture and in-depth understanding of implementing an e-government system at a national level. Having said this, the researcher would like to share his experiences with this regard and the lessons learned from using this strategy with those who are interested in further research in this study area or IS are in general.

First, collecting the case study data from many sources of evidence allowed triangulation and adherence to Klein and Myers' (1999) principle of suspicion. The

data of this study was collected from three primary sources, namely interviews, documents, and direct planned and unplanned observation. In addition, there were other secondary sources of evidence that were used in this study such as local newspapers articles and invited workshops. This allowed the researcher to identify inconsistencies and arrive at deeper insights. Secondly, the researcher was able to limit bias by making multiple entry points into the case study site so he penetrated the case study site from the top (e.g. e-government steering committee members and IT Directors) and from the bottom (e.g. junior employees such as developers and some e-government users).

Thirdly, this kind of research is intense and makes enormous demands on the researcher. In other words, dealing with different public organisations, meeting new people every day, convincing those people to give some of their time, and conducting personal face-to-face interviews was hard work. Fourthly, typing interviews notes drained the researcher of time and energy. He typed interview notes himself, which consumed much of his time so finding someone else to do this job might be helpful as researchers are always in need to focus on developing insights, writing their insights and feeding them back to research participants or refining them in future interviews. The typed notes were also prepared to be moved to NVivo software, which was used in this study. As mentioned in Chapter 4, there were two objectives of using the software; firstly, to increase the reliability of this study; secondly, to get the help of the available technology in analysing mass qualitative data (Bazeley and Richards, 2000). NVivo encouraged an exploratory approach to analysis and helped in managing and synthesising the researcher's ideas. Although NVivo did not support the researcher by giving automatic analysis of the data, it did help in the interpretations and structuring the study findings. Finally, the researcher would like to share his experience with other interested researchers with regard to the use of Klein and Myers' (1999) principles in evaluating this study and how he evaluated his research in light of such principles. However, it is worth mentioning that these principles are not a set of guidelines, they are rather a set of principles derived from the philosophical base of previous interpretive research (Klein and Myers 1999) and thus the researcher has found it worthwhile to evaluate his research against philosophical principles that most other interpretive studies follow. Table 10.1 shows how this research was evaluated in light of the Klein and Myers' principles.

Table 10.1: The research evaluation in light of Klein and Myers' (1999) principles

Klein and Myers (1999, p.73) Principles	This research
1. The Fundamental Principle of the Hermeneutic Circle: *"This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles."*	An initial theoretical framework was developed based on the researcher's understanding of the concerned literature. That initial framework developed as a result of many versions that were developed throughout the extensive process of reviewing the literature which aimed to look at the different 'parts' that lead to the 'whole' picture (Klein and Myers 1999). That framework helped a great deal in understanding e-government implementation practices through its implementers' practices in a hermeneutic context. The data collection and data analyses processes gave careful consideration not only to the views and behaviours of e-government implementers in the organisation under the study but also to the context in which these implementers operate. In other words, the analysis constantly related e-government implementation practices with its context. The circle was completed when the final version of the framework was written up after analysing the case study findings.
2. The Principle of Contextualization: *"Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged."*	The historical context of the case study and its embedded units of analysis was investigated. Sustained over time observation processes, formal, informal meetings, official documents, local newspapers articles made it possible for the researcher to contextualise the implementation process of e-government at a national level. In addition, the researcher can be said to have had an advantage because he had contacts with some of his colleagues in the research site from the beginning of the e-government project in the research site.
3. The Principle of Interaction Between the Researchers and the Subjects: *"Requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants."*	In this study, the emphasis was placed on interviews because it is the most common data collection technique in interpretive case study research (Walsham, 1995b), hence the researcher had the chance to interact with the interviewees during face-to-face interviews and direct observations. The researcher was able to conduct some of the interview sessions out of the interviewees' offices and to create a social interaction between the researcher and participants with the aim of ascertaining the facts (Klein and Myers 1999). At the same time, he was aware of the effect of his presence on the investigated field. For example, during the interviews he was careful not to influence the respondent by his reactions to responses given. In addition, the researcher sent the minutes of his meetings to his interviewees to double check their answers to the interview questions. Furthermore, the

307

	researcher gave his interviewees the freedom to delete/update their answers if they wished to.
4. The Principle of Abstraction and Generalization: *"Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action".*	Case study data analysis process was conducted in relation to the initial framework that was developed based on a synthesis of different suggestions found in the literature of IS implementation and e-government literature. In other words, the researcher in this study attempted to link the perceptions interviewees have had with actual theoretical general concepts in the literature of IS and e-government. Gradually, this led to a refined framework for e-government implementation at a national level.
5. The Principle of Dialogical Reasoning: *"Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision."*	The researcher engaged regularly in the comparison of the case findings with his initial framework, and conducted follow-up interviews to explore the relationship between interviewed data, the framework and the reality. The research strategy and the researcher has to the best of his knowledge attempted to be cautious about contradictory issues concerning the research results and the researcher's existing, underlying assumptions.
6. The Principle of Multiple Interpretations: *"Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it."*	The researcher sought multiple perspectives from participants with different backgrounds, levels of experience, and from different managerial levels. He has exposed these different perspectives with the aim of achieving a better understanding of the problem situation and improving the analytical process.
7. The Principle of Suspicion: *"Requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants."*	In this study the researcher has used multiple data collections methods (e.g. semi-structured interviews, direct observations and official documents). By using these different sources of evidence, the researcher has validated many aspects of the collected data, and was aware of such possible biases in the narratives collected from the interviewees.

10.2.2 Theoretical issues

The focus of this study is on e-government implementation at a national level. In particular, this study has focused on addressing these sub-questions: (1) What is e-government? (2) How can e-government be implemented at a national level? (3) How can we differentiate between its development stages? (4) What are the key implementation issues that might affect e-government implementation at a national

level and how could these issues be treated in practice? The findings of this study presented potential implications for e-government implementation at a national level. The most important of these are briefed below:

E-government concept: Chapter 2 showed that there is no specific, agreed or clear definition for e-government among scholars and practitioners of public administration and its definition is still an arguable, suggestive, illusory and confusing term (Seifert and Petersen, 2002; Holden et *al.*, 2003; Jain, 2002). The e-government concept, in this study, was discussed from two different perspectives the broad and the narrow one and accordingly, the study proposed an e-government definition based on the major characteristics of e-government that derived from the taxonomy of its definitions, as motioned in Section 2.2. Defining e-government was necessary as it is the first step in understanding its implementation.

E-government implementation practices: the second step was to review the e-government and IS implementation perspectives with the aim of assessing these perspectives, and discusses their ability to inform e-government implementation. The perspectives that were reviewed are:

o The e-government evolution perspectives (Howard, 2001; Layne and Lee, 2001; West 2004; Moon 2002; McDonach 2002; and Deloitte Research 2000; cited in Silcock, 2001); and

o IS implementation perspectives which include:

1. Contextual perspectives (Walsham 1997; Zmud and Cox 1979; Lucas 1994; Leavitt 1964; Markus 1983; Keen 1981; Kling 1978; Robey and Newman 1996; Markus and Robey 1988; Joshi 1991; and Levine and Rossmoore 1993; Pliskin *et al.* 1993; and Cooper 1994); and

2. Process perspectives (Zaltman *et al.* 1973; Swanson 1987; Rogers 1995; Kwon and Zmud 1987; Nolan 1973,1979; King and Kraemer, 1984; and Robey and Newman, 1996)

o IS implementation issues. These issues are summarised later in this section.

After that, an initial framework was developed based on a synthesis of different suggestions found in the literature mentioned above. The initial framework was used in structuring the data collection and the data analysis processes besides other data

collections methods. The collected data was discussed and analysed in Chapters 6, 7, and 8. Chapter 6 addressed the sub-questions 2 and 3 mentioned above which relate to understanding e-government implementation practices at a national level by giving a detailed descriptive analyses of a real case study findings. In other words, it gave the first empirical attempt to understand and inform e-government implementation activities at a national level by offering a detailed interpretation of what was happened in the case study site. The case study findings confirmed the evolutionary perspective of e-government implementation. In addition, the findings showed the importance of classifying the implementation process into different stages, identifying the requirements of each stage, identifying the milestones that need to be carried out in each stage, identifying the main measurements that can be used to differentiate between the different stages of development and identifying the major challenges that might restrict its implementation.

Linear development stages: the development of some measurements (i.e. key conditions) that derived from the case study findings and which can be used to differentiate between the different development stages of e-government implementation at a national level is one of the major contributions of this study to the e-government literature. Chapter 6 showed how these development measurements can be categorised and developed. In addition, they were summarised and mapped to the different stages of e-government development in Table 9.5. The e-government literature showed some debates regarding whether the e-government development process should pass in a linear way or curvilinear way (Holden *et al.* 2003; Ho 2002; Moon 2002). The reasons for these arguments were the lack of clear measurements that can be used to differentiate between the development stages and possibly the lack of a clear vision about the future of e-government and what it should look like in its ultimate stage. By using the developed measurements and the developed framework, it can be claimed that the development stages of an e-government system must pass in a linear way. Having said this, the findings also confirmed the evolutionary nature of developing an e-government system at a national level.

Key implementation issues: Chapters 7 and 8 addressed the fourth sub-question, mentioned above. The issues that were found to be real challenges for the e-government implementers and might restrict its implementation at a national level

were classified into two main categories, namely organisational and technological issues. Initially, there was a third classification, which was called 'Other issues'. This category contained those issues that could not be easily classified initially either as organisational or technological issues but they were found to be key challenges in the e-government literature. Therefore, the 'Other issues' category was proposed with the aim of holding those issues temporarily until they could be examined in the case study site. This category become redundant based on the study findings because its elements were classified as organisational (e.g. change management and digital divide) or technological issues (e.g. usage issues), or used as a key progress measurement (e.g. e-law).

Organisational issues impact on the implementation process of an e-government system at a national level: in the light of the Doherty and King (1998a, 1998b, 2001 and 2003) studies, this study presented similar categories for those key organisational issues that were found to affect e-government implementation at a national level. In addition, this classification was further supported with what was found in the IS and e-government literature (e.g. Markus and Robey 1983; Hornby *et al.* 1992; Lacus 1975; Clegg *et al.* 1997; Pliskin *et al.* 1993; Mullins 1996; Stebbins *et al.* 1994; and Raymond *et al.* 1995; Ho 2002; Layne and Lee 2001; Sathe, 1987; Romm *et al.*, 1991; Flowers, 1996; Burn and Robins, 2003; Lenk and Traunmuller, 2000). These categories are: e-government organisational alignment, e-government organisational contribution, human-centred issues, and change management. In addition, some of these categories were divided further into subcategories (see Chapter 7). Although Doherty and King's (1998a, 1998b, 2001 and 2003) findings were suggested for IS project development at a single organisation level, they have been found very useful in structuring the data collection and the data analysis processes and they were used in categorising the organisational issues that were found to be real challenges to the e-government implementers. In other words, this study provided refined organisational issues categories that included the key organisational issues which can affect (or restrict) e-government implementation at a national level. These refined categories include some new organisational issues (e.g. change management) which were considered implicitly in the Doherty and King (1998a, 1998b, 2001 and 2003) studies and exclude some other issues (e.g. the transitional issues) which were not supported by the case study findings. With respect to the consideration and treatment of these

organisational issues, the case study findings showed that there were some issues which were considered by the e-government implementers but they were not treated carefully in practice, while there were other issues that were not either considered or treated during the development of the e-government system at the case study site.

Technological issues impact on the implementation process of an e-government system at a national level: the study findings supported what was found in the e-government literature with regard to the importance of considering and treating those key technological issues before and during the e-government implementation process. E-government literature demonstrates that the experience of e-government initiatives has been chaotic and unmanageable due to a number of technological challenges in public sector organizations (Layne and Lee 2001; Moon 2002). In particular, there were some technological areas that were described as real challenges for e-government implementers. These issues include: ICTs infrastructure (e.g. Strejcek and Theil 2002; Layne and Lee 2001; Dillon *et al.* 2002; Bonham *et al.* 2001); System integration (e.g. Layne and Lee 2001; Moon 2002; Traunmuler and Wimmer 2003); Security issues (e.g. McDonagh 2002; Chen and Gant 2002; Layne and Lee 2001; Bonham *et al.* 2001; Silcock 2001); and accessibility and availability (e.g. Deakins and Dillon 2002; Seifert and Petersen 2002; Silcock 2001). These technological issues were investigated in the case study site and based on the case study findings, they were classified together with other challenges that emerged from the case study and presented in Chapter 8. In other words, this study contributed to the general knowledge of the technological issues that surrounding e-government implementation by proposing three main technological categories. These categories were described and discussed in Chapter 8.

Theoretical framework: Chapter 9 summarised Chapters 6, 7 and 8 and presented the case study findings in the form of a framework that has been developed for the e-government implementation at a national level. In other words, Chapter 9 has answered the main research question by presenting a revised framework that is composed of four linear stages and which treats e-government as a radical change. In addition, it considers the two main dimensions of that change, namely the technological and the organizational dimensions (discussed above). It is argued that this is the first empirical attempt that conceptualises the e-government implementation

at a national level and provides a logical movement and a gradual shift for e-government development at a national level so it can best suit those countries that have one level or central government.

10.3 Implications for practice

Benbasat and Zmud (1999) emphasised the importance of presenting the research outcomes in a form that allows researchers to relate their IS studies to the practical contexts where IT-related usage and management behaviours unfold. The framework that is presented as the major outcome of this study aimed to find an operational classification for e-government implementation stages, which will be useful to the e-government implementers to understand, plan and perform the gradual shift of government services, to anticipate the challenges and risks that might face them, and to assess their e-governments progress. E-government is a relatively new theme and most countries over the world are encountering its implementation at all levels (i.e. local, state, feral or national level), so this framework is proposed for those countries with one government level and which aim to implement their e-government systems at national levels. The developed framework also aims to help e-government implementers at a national level, to understand the different development stages of an e-government system and their possible activities, to identify the measurements (i.e. key conditions) that can be used to differentiate between the development stages, and to recognise the key implementation issues that might affect or restrict the implementation process of their e-government system as well as how these issues could be treated in practice.

10.4 Limitations and future research

As with any research that deals with a new technology, this research carries some limitations. Firstly, e-government implementation at a national level is a lengthy process that can take years to achieve its stakeholders' satisfaction but this study had to be completed within the timeframe given to complete a PhD study. Consequently, the researcher was constrained by the time factor. Further research could spend more

time at the case study site and collect more information as well as involve more public organisations in the study, which could also validate the developed framework.

Secondly, this study was only concerned with one case study and hence it is hard to establish whether the developed framework is applicable in other e-government implementation, in other countries (although this was checked with the extensive literature review conducted on IS and e-government implementation in literature cross linked with e-government implementation practices found for this case study). However, statistical generalisation is out of the scope of this study. A potential avenue of future research would be to test this framework with other implementations that took place in a similar situation (i.e. those countries which have one government level and implement their e-government system at a national level).

Finally, the last two stages of the developed framework (i.e. the Advanced and Open-ended stages) were built based on the participants' vision and prediction of the future of their e-government system as well as some implementation plans. It was hard to validate these two stages as e-government implementation at the case study site was in its second stage (according to the developed framework). In addition, the objective of this study was to build theory rather than building and testing theory. A later study might find another case that can be used to test and validate these two stages.

10.5 Areas for further research

E-government is a relatively new topic and there are many areas that still need to be studied. Future studies should expand our understanding of e-government beyond the scope of the present research. However, there are some areas that relate to this research which need to be investigated further. In addition to what was suggested above (Section 10.4), there are some other suggested directions for further studies. These include:

- o Investigating the best practices for developing an e-government entity that is responsible for managing the e-government implementation country-wide;
- o Exploring factors affecting the usage of the e-government service; and

314

o   Examining the impact of implementing an e-government on governments' structures.

10.6 Learning experiences

At the outset the researcher came as an experienced computer scientist and software engineer but with little knowledge of the social sciences. Throughout the last three years the researcher has had the opportunity to share knowledge and ideas and learn from the experiences of a number of people within the Business School, at Loughborough University, particularly within the information system research group. In particular, the researcher has been exposed to range of ideas, aspects and techniques from the social sciences and now views the world in a much less mechanistic way. He learned how to be more focused on the topic under the study, how to search, collect, and analyse literature that related to the study theme and how to discuss, argue and agree with them on certain aspects. In addition, he learned the philosophical assumptions that might underpin this research and then selected the suitable research strategy and the empirical techniques that need to be applied. Furthermore, a number of lessons were learnt from the use of the interpretive case study approach. These lessons were presented in Section 10.2.1 above. Moreover, the use of NVivo software in the data analysis process was one of the important skills that the researcher achieved throughout this study. Finally, it is worth mentioning this study gave the researcher the chance to interact with many students who came from different countries and who have multi-cultural backgrounds and hence share knowledge and exchange ideas with them.

10.7 Concluding remarks

This research was intended to build a theory (i.e. a framework for e-government implementation at a national level) that provides both theoretical and practical insights into the implementation of an e-government system at a national level. The implementation of e-government is a lengthy and very complex process that can lead ultimately to a reduction in government bodies. Although there were many scholars who have tried to understand the e-government phenomenon, there were clear

differences in the focus and perspectives, and there was no agreement between scholars on a specified approach to e-government systems, nor has there been agreement on the number of stages required for developing an e-government system. In addition, all the previous studies were technology driven, did not consider other important factors that can restrict its implementation and did not provide clear development measurements that can be used to differentiate between the stages of development. Furthermore, there was a lack of studies that inform e-government implementation at a national level. This study intended to bridge this gap.

A framework that combined evidence from literature with the findings of the interpretive case study was developed to narrow the gap between e-government implementation in theory and practice. The developed framework can provide a logical movement and gradual shift for e-government development at a national level and best suites those countries that have one level or central government. It can be used as a tool to determine the road ahead for implementing an e-government system at a national level and to identify the key practices, processes, possible goals, progress indicators and key conditions to move from one stage to another. To the best of the researcher's knowledge, no study to date has focused on e-government implementation at a national level and hence this study can be considered as one of the pioneer studies in this area of e-government. It can also be claimed that this study has made a novel contribution to the area of e-government and has expanded the boundaries of knowledge, especially for governments that are seeking to implement e-governments at a national level. From a theoretical perspective, this framework is intended to provide a foundation for further research in the e-government implementation area.

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Appendix I: Interview Guide and Fact Sheets

Part 1: Interview Guide

Instructions:

1. Give an overview of the study and its aim
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. Explain the nature of confidentiality and the use of the quotes.
5. Explain 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
7. Take any questions regarding the nature of the interview

1 Interviewee demographics

> **Title**..
> **Name** . . . .
> **Position** . . . .
> **Organization** . . . .
> **Postal Code/City** . . . .
> **Phone/E-mail** . . . .
> **Date of interview**..
> **Venue**..
> **Duration (hours)**..

a) Education and training
b) Age
d) Career:
      1) Number of years with organisation
      2) Previous positions (in organisation, elsewhere)
e) What is your experience level with IT in general?
f) How would you describe your role in respect of the e-government project?

2 Implementation process

> Aim: 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)?
d) What prompted the implementation process? Please tick the correct answer:

	As a conviction of one person	Who was it? Position in which Organisation (or ministry):
	As a reaction to internal events	Which events?
	As a reaction to external events	Which events?
	As the result of formal planning	Specify
	Other	Specify

c) What is the government vision, strategy, plan, programme to address 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 summarize the implementation process to date? (Key events, episodes)

f) How many stages/phases are required to fully implement the e-government in Qatar?

g) How would you differentiate between each stage and the next one? (i.e. are there any key criteria that help e-government implementers to understand each stage and to differentiate between those different stages)

h) What are the key challenges that faced e-government implementers in each phase (or stage)?

3 E-government strategy

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. National ICT Strategy)?

c) How was the strategy developed? (e.g. centrally or through participatory process, stakeholders involved)

d) What are the key goals of the e-government strategy?

e) How would this strategy prioritises e-government goals? For example is prioritisation based on (multiple choice possible):

		Yes	No	Don't Know
1.	Critical importance of the motivating factors and pressure point(s)	O	O	O
2.	Economic / financial concerns	O	O	O
3.	Feasibility of specific applications	O	O	O
4.	Pressure from or expected response of the target group	O	O	O
5.	Pressure from or expected response of an external group (e.g. private sector vendors or donors)	O	O	O
6.	Other? Specify			

f) Who (if any) is the recognized champion of e-government development in the country (name, position)?

g) If no e-government strategy exists, are there e-government champions within specific government ministries and departments? (*If yes, please name the three most active.*)

4 Institutional e-government coordination

a) Is there an authoritative central coordination unit/institution/commission that stimulates and coordinates the e-government development process?

b) How many members are part of the e-government development team?

Less than 20 O   Between 20 and 50 O   Between 50 and 100 O   More than 100 O

c) Is e-government development the responsibility of each public organisation/ministry or is it a responsibility of a central e-government organisation?

d) Do ministries (or public organisations) have their own IT units that relate to the e-government project organisation?

e) Would you please provide name of an institution (if any) responsible for the following aspects of e-government implementation:

2

1. Technical maintenance and development of government's   -------------------------
   presence on line?
2. Content management system?   -------------------------
3. Customer relationship management?   -------------------------
4. Data security?   -------------------------

5 E-government evaluation and monitoring

a) If there is provision for monitoring and evaluation of e-government progress, how often does it take place?

Every 3 months	Every 6 months	Once a year	Other:..	Only as response to contingencies
O	O	O	O	O

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? If yes, how often and please describe the mechanism.

6 Commitment and support of executive leaderships and top authority level

a) How would you describe the support and commitment of the government officials towards the e-government project?
b) How would you describe the support and commitment of the top authority level towards ethe - government project?

7 User relations
a) How would you describe the communication strategy with the public?
b) Is there any written strategy documentation with this regard?
c) Does the communication strategy cover the following points

		Yes	No	Don't Know
1.	Quality of services	O	O	O
2.	Quantity of services	O	O	O
3.	Types of services	O	O	O
4.	Location of access to services	O	O	O
5.	Cost associated with service	O	O	O
6.	Incentives for use of e-government	O	O	O
7.	Other (please specify):	O	O	O

d) Does the government have metrics about usage of e-government services? Specify

8 Organisational and knowledge management issues

a) Have data standards (e.g. for application forms, software packages, computer interfaces, language, and data format) been considered or put in place?
b) Does a public sector knowledge management strategy exist? If yes, please briefly describe its main objectives, methods for implementation and coordinating body.
c) Can you explain the collaboration between e-government organisation and other public organisations in the solution of problems and service delivering?
d) Have there been experiences of reengineering business process in the public administration in

3

areas to make them more "citizen-centred"? If no, Why?

e) If yes, can you provide me with examples and rate their success with metrics (e.g. reduction in time, steps or cost required to complete desired transaction or red tape procedure).

9 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 e-government in Qatar? If yes, is it a continuous challenge (i.e. does it span all the project stages)?

10 Legal / Regulatory framework

a) Is privacy of information protected in e-government organisation legislation?

b) Has the government taken any steps to put in place consumer protection for e-commerce transactions?

c) Have clear rules been established permitting the use of cryptography, and policy set concerning key recovery in order to ensure security of data and transactions?

d) Are there regulations that ensure the security and privacy of the e-government users?

e) Is there are any regulation and legislation in place or being developed related to e-government in the following areas:

	No	Drafted	Before Parliament	In Place	Don't Know
1. Legality of government online publications	O	O	O	O	O
2. e-filing	O	O	O	O	O
3. Digital authorizations	O	O	O	O	O
4. e-signatures	O	O	O	O	O
5. Cyber crime	O	O	O	O	O
6. Data standards	O	O	O	O	O
7. Data protection	O	O	O	O	O
8. Intellectual property rights	O	O	O	O	O
9. Copyrights	O	O	O	O	O
10. Import of ICT goods and services	O	O	O	O	O
11. Other (specify):	O	O	O	O	O

f) How would you describe the prevailing legislative process? (e.g. very slow and inefficient, very fast and efficient)

g) Is there an independent body to oversee regulatory compliance on ICT or e-government related issues? If yes, would you provide me with the name of the body, its director and contact information?

11 Change and change management

Change management refers to both structural adjustments in government to facilitate change as well as the human response/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 adoption? 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. electronic services that available online on the e-government portal) amongst public organisations? Specify.

d) Discuss any "war stories" regarding use of the e-government portal (or government wide intranet) (e.g. unintentional use, use of the portal in power struggles)

e) Is there anything in this category that we have not discussed yet?

12 Human Issues

12.1 Awareness level

a) How was the e-government project promoted (e.g. advertising campaigns, promotional material or initiatives)?

b) Describe the extent to which organisational members in the related public organisations were informed about the e-government initiative:

	Start	Present	Future
All the related public organisations informed (specify)			
Only certain public units, organisations (or ministries) informed (specify)			
Only heads of public units, organisations (or ministries) informed (specify)			
Only certain individuals informed (specify)			
No one informed			

c) Describe the present awareness of the e-government services amongst public organisations and the public in general.

d) Are there any awareness programmes of the benefits of e-government at the country level (i.e. amongst policy makers, senior managers, middle managers, other civil servants, citizens and business partners?

12.2 Training

a) Are there training facilities for the civil service? If yes, please describe the scope of training available (e.g. ICT literacy, e-government applications, change management)

b) If no, is training provided by universities, or other type of organisations?

c) Who is the target audience?

	Yes	No	Don't Know
1. Policy Makers	O	O	O
2. Managers	O	O	O
3. Middle Managers	O	O	O
4. Other civil servants	O	O	O
5. Citizens/ business partners	O	O	O
6. other (specify)	O	O	O

d) Please indicate how many civil servants undergone training in ICT.

Less 25% O   25% – 35% O   35% - 50% O   50% - 65% O   More than 65% O

e) Are there plans to expand training programs as e-government develops?

No   O   Yes   O   If yes, can you please describe and provide the relevant documentation?

12.3 Technical resources and use

Would you consider the following as factors that would inhibit the development of the e-government in Qatar?

Inhibiting factors	Yes	No	Don't Know
Access			
1. Access Internet in cities	O	O	O
2. Access Internet in rural areas	O	O	O
3. Lack of government-wide intranet (central and local level connectivity)	O	O	O
4. Lack of LANs in government offices	O	O	O
Infrastructure			
5. Inefficient technology legacy system in place (e.g. phone, fax, computers, databases, existing networks)	O	O	O
6. Internet access providers	O	O	O
7. Unreliable Internet connections	O	O	O
8. Adequate bandwidth (speed of connections)	O	O	O
9. Adequate computing and processing speed	O	O	O
10. Reliable power supply	O	O	O
11. Adequate Network Security	O	O	O
Cost			
12. Cost of equipment	O	O	O
13. Cost of telecommunications within country	O	O	O
14. Cost of international telecommunications	O	O	O
15. Cost of Internet services	O	O	O
Technical Support			
16. Availability of technical support for design	O	O	O
17. Availability of technical support for implementation	O	O	O
18. Availability of technical support for operations	O	O	O
19. Other (please specify):	O	O	O

13 Technical development

a) Would you please let me know if the following partnerships with industry have been developed?

	Yes	No	Don't know
1. Technical consultants	O	O	O
2. Computers and networking equipment	O	O	O
3. Telecommunications	O	O	O
4. Database management and hosting	O	O	O
5. Servers	O	O	O
6. Security, firewalls, intrusion detection	O	O	O
7. Software	O	O	O

8. Other (specify) ○ ○ ○

b) Are there standards for database and application development? If yes, would you please describe the responsible agency and provide me with relevant documentation?

c) Is there any ICT infrastructure development plans? If yes, do they comprise:

	Yes	No	Don't know
Universal access to Internet	○	○	○
Backbone network development	○	○	○
Wireless technology	○	○	○
Broadband technology	○	○	○
Open Standards	○	○	○
Other (please specify):	○	○	○

d) Is there an on-going programme to track and identify quality and reliability issues with the ICT supporting e-government services?

e) Is there an on-going programme to track usage trends in citizens' usage of e-government services and to ensure that adequate ICT infrastructure exists to support future projected usage trends?

14 Technical support

a) Is the local industry of information and communication technologies strong enough and reliable?

b) Are any of the below areas of Qatar e-government programme being outsourced?

	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 (please specify):	○	○	○

c) Is internal ICT technical support easily available?

d) For the technologies supported by the internal government technical departments, please select the option that best describe the degree to which the internal government technical support organisation has the technical skills to ensure the technology is running in an optimal and efficient manner

1. Extremely well qualified to address even the most complex issues   ○
2. Well qualified to handle most routine issues   ○
3. Basically qualified to operate, but little problem solving ability   ○
4. Insufficiently qualified   ○
5. Don't know   ○

e) How would you describe external technical support

   1   Scarcely available and/or of low quality   O

   2   Is widely available and of high quality compared to the most advanced countries   O

f) Can you please mark the description that best characterizes the provision of government services online?

   1. No services online   O
   2. Only information available on line   O
   3. One way interaction possible   O
   4. Two-way interaction possible   O
   5. Complete transaction possible within single agency   O
   6. Complete transaction across multiple agencies   O

15 Technical easiness

a) Does the government have set standards for the "look and feel" of portals and key web sites with respect to the following:

	Yes	No	Don't Know
1. Interface	O	O	O
2. User feedback	O	O	O
3. Usage metrics	O	O	O
4. Indexing of Information	O	O	O
5. Other? (Please include)	O	O	O

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 budget)

16 Digital divide

a) What is the percentage of illiterate adults in the country?
b) What is the percentage of ICT illiterate adults in the country?
c) Are there standard curricula in ICT?
d) Are there curricula in ICT focused on business needs?
e) Is there infrastructure for ICT literacy training in:

	Yes	No	Don't Know
1. Primary and secondary schools	O	O	O
2. Vocational or technical	O	O	O
3. University	O	O	O
4. Private	O	O	O
5. Online Learning	O	O	O
6. Libraries	O	O	O
7. Telecenters	O	O	O
8. Other (please specify):	O	O	O

f) Is there a portal or website that contains information about the country's ICT educational curricula and study programmes? If yes, please provide the url:
http://_____
h) Are people encouraged to build their skills in ICT? If yes, please describe:

17 Role players

a) Who are the main role players involved with the e-government project? Specify.

Name	*Location/Position*	*Role*	*Start*	*Present*	*Future*

18. Additional questions related to the participating ministries and other public agencies

a) When did you start developing this organisation website?
b) What were the objectives of developing websites for this ministry and other ministries in your opinion?
c) How many stages/phases are required to fully implement the website and its e-services in your organisation?
d) How would you differentiate between each stage and the next one? (i.e. are there any key criteria that help the development team to understand each stage and to differentiate between those different stages)
e) What are the key challenges that face you during the development this organisation website?
f) What are the future plans for the website of this organisation?
g) What are the key challenges that might face you in the next stages of developing this ministry website?
h) What is the relationship between the website of this organisation and the e-government portal/website?
i) How would you describe the cooperation between your organisation and other ministries as well as the e-government project team in relation to the development of the e-services?
j) If you are the e-government director, what would you have done differently?
k) How would you describe the role of the SCTC in respect to the e-government project?
l) In the presence of the SCTC what will be the future of the e-government project?
m) As you know that there are around 1350 services that need to be developed, do you think that the e-government will continue based on their previous plan and develop those proposed services or there will be another plan?

19 e-government users

19.1 Start

a) How did you come to know about the e-government project (i.e. services)?
b) How did you first learn to use the online services on the e-government website/portal?

	On your own
	In a training course
	Personal instruction from another user
	Other (specify)

c) When did you start using the e-government services? _____
d) What was your first impression of the e-government imitative/project?

19.2 Present situation

> Ask user to demonstrate his/her use of the e-government services (i.e. e-government website/portal). Describe observation

a) Describe the e-government services at present (e.g. quality and nature of information, public services, usefulness, percent of up-to-date information)

b) How would you define the e-government success at this phase of the e-government project?

c) Do you think that the e-government has been successful to date? Specify.

d) What do you use the e-government website/portal for at present? (What are the most useful aspects?)

e) How often do you visit/use the e-government website/portal at present?

f) Describe any content and functionality that you have created (or participate in its development) the e-government portal.

g) How do you cope with the constant change/developments on the e-government website/portal?

h) To what extent is the information you retrieve via the e-government website/portal available through other sources?

i) What do you see as the main benefits you get from the e-government website/portal (personally, your working unit)?

j) What are the main weaknesses of the e-government website/portal?

k) What are your main concerns (fears) regarding the e-government services?

l) Did the e-government portal allow you to know more about other public organisations and their business? Explain.

m) Do you feel that you have gained/lost power or influence as a result of the e-government services? Explain.

n) What do you feel should be on the e-government portal that is presently omitted?

o) What information/services do you feel are appropriate for the e-government website/portal and what are not?

p) What is your overall satisfaction level with the e-government services?

19.3 Future

a) Do you expect your usage of the e-government services will:

	Increase	Explain
	Stay about the same	Explain
	Decrease	Explain

b) What is your vision for e-government services in the future?

c) Is there anything else that we have not covered on this issue?

20 Closing questions

a)   Are there any specific areas that you would like to see included/excluded in this research instrument?

b) What would you have done differently?

c) What do you think is the most interesting part of your story to others?

Part 2: Fact Sheets

1 Fact sheet: Organisational context

> *Source: E-government project organisation's documentations (e.g. internal regulations, strategic plans, implementation plan. brochures. etc.) and discussions with the key people in the organisation.*

Date:

1.1 Organisation Task

a) The main task of the organisation
b) The organisation vision, mission, and strategy
c) Organisational business environment (Key stakeholders, number of suppliers, financial trends, market share (if any), opportunities, threats, key events and episodes in the organisation's history, etc.)
d) Employees (number of employees, their general experience level with computers, percentage of people with PC's in the Organisation, percentage of people with network access (i.e. e-government network))

1.2 Organisational structure

> *The researcher should obtain the organizational chart of the organisation*

a) Describe the geographical locations of the organisations
b) Discuss the organisation role and responsibility (e.g. any related members in the e-government steering committee)

2 Fact Sheet: The e-government website/portal technology

> *Aim: get facts about the e-government portal itself. Sources: implementers, inspection, demonstrations of e-government; e-government documentations; observations*

2.1 E-government portal infrastructure

> *Obtain the network architecture ("map" of LANs, WANs, backbone), governmental intranets, extranets, etc.*

a) What is the network capacity and performance (e.g. performance problems, bottlenecks)?
b) How many government agencies are connected to the e-government portal?
c) What is the number and type of portal servers used (e.g. NT, UNIX, proxy servers)?
d) How is the portal protected from unauthorized users? (What is the number and type of firewalls (hardware, software)?
e) How are firewalls used (single, multiple does - each unit have their own firewall) (Depict the firewall structure)
f) What is the number and type of individual workstations that linked to the portal?
g) Other computing platforms that form part of the portal

2.1.2 Software

> *Obtain facts about specific software systems, packages, languages, protocols, etc. (i.e. what is being used). NB: The application of these (i.e. how it is applied on the portal) is covered elsewhere (see section 2.2).*

a) Communication protocols ....
b) Electronic messaging infrastructure.......................................
c) Server software...
d) Software used for search engines...
e) Web authoring tools ....
f) Browser software...
g) Push technology...
h) Databases, query tools, data warehouses, web-enabled applications
i) Portal development software
j) Discuss other software that is used on the wide government intranet (or e-government portal)

2.2 E-government applications

> *Aim: determine how e-government is applied and how sophisticated the e-government is. Determine what the technology is used for and what sort of web-based applications are implemented. Assess the use of multimedia (e.g. audio, video clips) and other internet technologies on portal. Most importantly determine the number and type of electronic services that are implemented.*

2.2.1 Information sharing
2.2.2 Communication and collaboration
2.2.3 Employee transactions
2.2.4 Business computing applications and online electronic services
2.2.5 Any other features related to the e-government portal development

> *Obtain any standards/documentation regarding the development of the e-government portal*

a) Does the e-government portal have a specific name?
b) Describe features for locating information (e.g. search engines, index pages)
c) Discuss any other portal features (e.g. novel uses of the technology)

2.3 Usage statistics

a) How is e-government portal usage monitored?
b) Obtain historical trends that pertain to the use of the portal over time (e.g. trends in number of hits on main/popular home page(s), number of web pages, growth in number of web servers, portal users, number of browsers installed, volume of portal network traffic)

2.4 E-government portal security

> *Aim: determine how the e-government portal access is controlled*

a) Who has access to the e-government portal? (Organisational policy in this regard)
b) Do other parties (e.g. suppliers) have access to the portal ("Extranet")?
c) What information is officially excluded from the portal?
d) How is security (privacy of information handled) (e.g. firewalls, password protection)

e) What parts of the portal is password protected? Who has/doesn't have access?
f) What information is protected and from whom? What are the reasons for this?
g) Is information on the portal only protected from outsiders or also insiders?

2.5 Other

Describe any other relevant aspect of the technology (e.g. technology adaptations or extensions in the e-government organisation)

Appendix II: Samples of Interview Notes

Part 1: Steering committee level

Interviewee demographics

Title:	Mr.
Name:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Position:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Organization:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Postal Code/City:	Doha
Phone/E-mail:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Date of interview:	09-12-2004
Venue:	His office
Duration (hours):	50 minutes

a) Education: *Bachelor in Electronic Engineering*
b) Age: 46
d) Career:
   1) *Number of years with the e-government organisation: 4 years*
   2) *Previous positions (in organisation, elsewhere)*
15 years working experience with [XXXX] two of them were in the telecommunication department and the rest in the IT department. Currently, I am the director of information system department at the [XXXX] and at the same time I am a member of the e-government steering committee.

c) How would you describe your role in respect of the e-government project?
I am a member of the e-government steering committee.

d) What is the strategic vision of the Qatar e-government?
To have a seamless e-government that provides transactional services.

e) How many stages/phases are required to fully implement the e-government system in Qatar?
I think that the approach we used in the e-government project was the best approach. As far as I know this is the approach that even used by many other countries. So there are three main stages, namely the pilot phase, the assessment phase and the implementation process of the e-government services.

f) How would you differentiate between each stage and the next one?
There are certain objectives of each stage so once those objectives are achieved then we have to move to the next phase of the project.

g) What is the ultimate stage of the Qatar e-government?
Ultimately, e-government project should be a public agency that belongs to the Ministry Council or to the highest level of authority in the country. It should not be belong to any ministry otherwise it will fail. This agency will continue in implementing the government services and should be self-funded. So it is growing over time in terms of the provided services.

h) It has been noted that the e-government organizational structure has neither followed the proposed one by the consulting group nor has it been stable as it has been changed twice since the start of the e-government project, Can you please tell me what is the reason behind the instability of the e-government organizational structure?

1

We left this issue to the e-government director and he should answer this question.

i) Do not you think that there should be a dedicated e-government director?
I agree with you with this regard. Yeas there should be a dedicated director.

j) It has been also noted that you, as e-government implementers, did not follow the e-service plan that has been put in place during the evaluation phase of the pilot project, can you explain the reasons behind this please?
I can summarize the reasons for this in three points: 1- Some of the proposed services were related to some ministries that were not ready enough to develop and maintain the required e-services (e.g. the economic ministry); 2- Some of the public organization did not accept the service although it has been developed according to the initial plan; 3- We have engaged in developing some other major issues such as the PKI and the payment gateway although they were not in the initial plan. However, you should do not forget that we introduced new services which were not in the initial plan such the Red Crescent fund service. Another important issue is that not all the recommendations of the consultant group are correct; it is theoretical study but when we come to the practice things will go differently.

k) What are the key challenges that face e-government implementers here, in your opinion?
There are four main challenges:
1. *The lack of skilled IT resources, specially Qataris*
2. *The technology readiness of the ministries*
3. *The difficulty of making the public aware of the e-government services and the way that should be followed in selling the e-government to the public.*
4. *The lack of enough training budget and the difficulty to convince the government official to approve the required budget.*

l) What about the technological challenges?
Yes there are some technological challenges especially when you come to implement a service that is shared by many ministries. In this case we will face some challenges such as the integration and hence we postpone these services till all concerned ministries become ready for developing those services and make their applications talk to each other.

m) What about the help desk employees in the back end?
We agreed that the helpdesk of the e-government services should be managed by the e-government help desk team. In the back end of each ministry there should be a help desk team that help the central e-government help desk team in following and solving any problems related to that ministry's e-services.

n) IS the helpdesk team available 24 hours?
No, for example in this ministry the help desk team is available till 8.00 PM only.

o) Is the development of the e-government services the responsibility of each ministry? Or a responsibility of a central e-government organisation?
All the services are developed by a third party company (i.e. contractor). After they develop any service they will continue responsible for maintaining those services for six months and then they will hand them over to the e-government team. The e-government team will be then responsible for maintaining, supporting and improving the services. The ministries are also responsible for developing and supporting their back end services.

p) Is there a provision for monitoring and evaluation of e-government progress? If yes, how often does it take place?

2

We have discussed this issue many times in our weekly meetings and we agreed that we have to invite an independent consultant to conduct the required study. Also we have a weekly meeting that supervise the whole project activities and there are some reports that we usually depend on them for updating the high level authority with the project progress.

q) How would you describe the support and commitment of the government officials towards the e-government project?
Some and some.

r) How would you describe the support and commitment of the top authority level towards e-government project?
Very committed and very supportive.

s) Does the government have metrics about usage of e-government services?
No but we use the reports that came to us from time to time in analysing the usage of the e-government.

t) Would you consider financial issues as a key challenge in developing the e-government in Qatar? If yes, is it a continuous challenge (i.e. how it span all the project stages)?
At the level of the e-government project, no. but at the ministries level yes it is.

u) It has been noted that e-government charges 5 QR per transaction that performed through its portal from the e-service owner (or ministries), do you not think that this way will affect the cooperation between the participating ministries and the e-government organisation?
Yes but ultimately this project will be agency that needs money to survive. In addition, we are not taking this from the customers we are taking it from the ministries.

v) But the fees of all the services are not the same in all ministries. For example, the fees required for the health card is QR 50 while it is QR1000 for the service of Residence Permits. Do you not think that this will cause ill feeling among those ministries which do not taking high fees?
Yes this is true. Basically, there were two options whether to deduct a percentage of the services fees or to deduct a fixed amount so the decision was the later option.

Legal / Regulatory framework

a) Is privacy of information protected in e-government organisation legislation?
My knowledge is limited in the legal issue so I am not sure about this.

b) Has the government taken any steps to put in place consumer protection for e-commerce transactions?
As far as I know the e-law is under study which will take care of all legal issues.

Awareness level
a) Describe the present awareness of the e-government services amongst public organisations and the public in general.

In fact this issue is a key challenge that faced us and we fail to mange it. There were two options for us to make the public aware of the e-government services and benefits, specifically to outsource the awareness activities or to be performed by the e-government team themselves. Both methods failed in achieving our objective with this regard.

Training

a) Are there training facilities for the civil service?
No.

If no, why?
Our objective is to make the services easy to use and to provide some instructions that guide the users to perform the required service. Any one who knows how to use the internet will be able to use the e-government services without any problem.

b) What about the training that relates to the e-government team and your organisation team?
The e-government team under the responsibility of the e-government director and I think that there is enough budget to give them the required training. However, in the ministries the issue is very complicated and it creates a real challenge for us. Each year we put a training plan and the required budget for that plan but unfortunately the decision makers approve a little percentage of the required budget and hence we cannot give our employee the necessary training. This issue is not limited to only one ministry, all the ministries suffer from the lack of enough training budget.

c) It has been noted that the priority of the e-government services is given to the companies, what is the reason behind this?
Yes this is true. Not only this but we gave the priority to only those companies which have more than 300 employees. When you look to the populations here you will find the majority of them are non Qataris and most of those people are sponsored by companies so we saw it better to focus on those companies.

d) Does that mean that any company that has less than 300 employees will not be allowed to use the e-government services?
Till now we did not receive any request from such companies but we prefer to move gradually from the big companies to the small one.

Closing questions
a)   Are there any specific areas that you would like to see included/excluded in this research instrument?
No thanks.

Part 2: Senior manager level

1 Interviewee demographics

Title:	Mr.
Name:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Position:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Organization:	E-government Project Organization
Postal Code/City:	Doha
Phone/E-mail:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Date of interview:	25 & 27 /07/2004 (reviewed by the interviewee in the 2nd August 2004)
Venue	His office
Duration (hours)	2 + 2.5 hours

a) Education and training

BSc in Computer Science
MBA (in progress)
b) Age: 34
c) Career:
      1) Number of years with organisation: *1.5*
      2) Previous positions (in organisation, elsewhere): *Senior Project Manager*

d) What is your experience level with IT in general?

15 years. 11 of which as a project manager for many projects. The total budget of the last one was $ 80 million (in Pfizer Pharmaceuticals in the USA).

Deleted: *years as senior*
Deleted: *Company*

e) How would you describe your role in respect of the e-government project?

I am working as program executive manager and I am reporting directly to the e-government project director. I am responsible for all aspects of Business and IT including but not limited to IT/Business Development, Operations, and Support.

Deleted: *There are many project mangers who are working under my supervision.*

2 Implementation process

a) What prompted the implementation process? Please tick the correct answer:

> *Well, when I joined the e-government project, I have asked the same question and I have been answered by many different answers. However, I think the answer might be the first and the one before the last answer but for sure not the two in the middle.*

✓	As a conviction of one person	Who was it? Position in which Organisation (or ministry):
	As a reaction to internal events	Which events?
	As a reaction to external events	Which events?
✓	As the result of formal planning	Specify
	Other	Specify

b) To what extent was the e-government implementation planned?

◉	Systematically planned and controlled
2	Systematic in some cases
3	Ad hoc, evolved over time

c) How would you summarize the implementation process to date? (Key events, episodes)

- *The pilot project*
- *The evaluation study*
- *Phase 1 of the implementation that started in july/2002*

d) How many stages/phases are required to fully implement the e-government in Qatar?

I would say 4 stages. These are:
1)   The foundations stage where e-government have its presence on the web. During this phase the government will be engaged in setting-up the backend offices as well as the infrastructures. In addition, all government agencies will prepare for this project and share the data among each other. The idea of developing pilot project is applicable during this stage as governments will try to prove the concept of the e-government. Pilot project is a needed task and good way to convince the public. This phase requires lots of efforts and a longer time than the following phases.
2) One way communication phase: through this phase e-government will start to establish one way of communication with public. In addition, it will update its website frequently and will have an interactive website that provides some services to the public.
3) Transactional phase. At this stage e-government will provide its customers with e-services that a associated with some financial transactions (or payment online).
4) Integrated services stage. Where e-government is able to integrate most of its systems horizontally not only vertically. For example, the construction permit is a service that is shared between different ministries/agencies and which requires some sort of horizontal integration between those ministries and then linking that service to the e-government portal. This diagram shows what I mean by the difference between the vertical and horizontal integration:

2
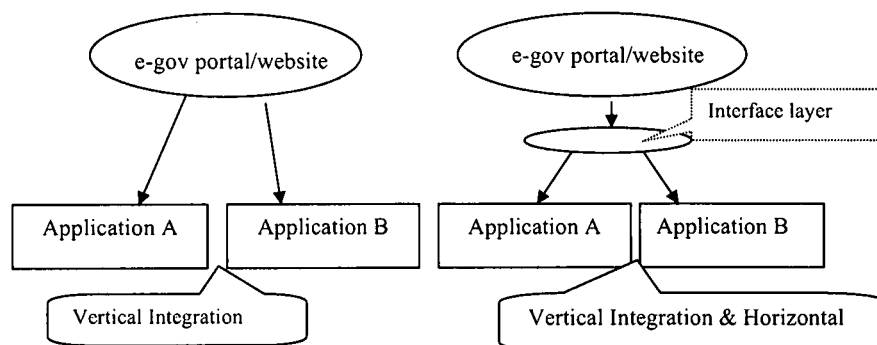
e) How would you differentiate between each stage and the next one? (i.e. is there any key criteria that help e-government implementers to understand each stage and to differentiate between those different stages)

Yes there is a certain key criterion that helps in understanding each stage. For example, having presence in the web prove the first stage while the second stage requires frequent update of the e-government website. The clear cut sign for the stage three is when you be able to pay online then you reach the third stage. The key criterion for the fourth stage is when have one action and you get multiple services. For example, when ask for birth certificate service and take the necessary action, you get automatically the Residence Permit (RP) service that associated with the ID number for the new baby.

f) What are the key challenges that face you during the development and the implementation phases of the e-government in Qatar?

There were some challenges that really faced us but each of which can be overcome differently. Internally we faced some internal regulations that can stop (or delay) our work such the paperwork processes. For example, if I want to send a letter to a third party (i.e. any public agency) then I have to write a physical letter/paper, signed it, stamped it and then send it through fax or post so the whole process will take around 15 minutes while in the United State of America you can communicate even formally through emails and can finish the job within 5 minutes. Another challenge that related to the internal regulation is the financial authority. Although I am working as program executive manager I cannot sign any financial payments, even QR20 which creates a problem for me. I cannot, for example, reward any one of my employee if s/he has done good job. There is no comparison; for instance, between my financial authority here and my financial authority with my previous employer in the United States (e.g. there was $3000k as a budget under my authority).To summarise this, I can say that centralisation is one of the biggest challenge that face e-government implementers here in Qatar and even government officials in other public agencies/ministries.

On the other hand, there are many challenges that face us generally in the different phases of e-government implementation process. I can summarise them as follows:

1. *Change management is a key challenge that faces e-government implementers here in Qatar. This cover resistance of change, fear of change (e.g. job security), and most importantly cultural issues (e.g. people trust physical and stamped papers than electronic ones).*
2. *The lack of focus among the e-government implementers (i.e. being business focus or technology focus). I feel that it would be better to outsource any development as the technology can do what ever we want in terms of e-services. If the focus of the e-government implementers is focused on the business side we will get more opportunity to speed up the development process and will focus on solving those challengeable issues that come from the business side as well as relieving ourselves from the development headaches and the operational activities.*
3. *The lack of dedicated IT unit in the government agencies/ministries that coordinate with the e-government development team.*
4. *The lack of dedicated and committed leadership is another key challenge.*
5. *Internet penetration is also a major challenge. According to the UN report the percentage of the internet usage in Qatar is 12% which is quite low.*
6. *The high expectations of ROI from the government officials and even from some of the e-government project key mangers here. The nature of such projects is that normally governments invest big amount of money and its ROI is calculated on a long run basis but the people here is*

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	Deleted: *really very disappointed*
	Formatted: Font: 11 pt, Highlight

3

looking to a quick ROI which is not applicable for such projects.

7. *The focus of the e-government project management is on the transactional services which may affect the long term support from the e-government stakeholders.*

8. *The lack of the appreciation for the IT initiatives and its dynamic nature due to cultural issues. The nature of the IT is dynamic and each certain period of time you need to buy new hardware/software which is sometimes difficult to appreciate. For example, if we bought a server before say two years ago and we realised that this server becomes an old and there is a very critical need to buy a new server with more advanced features/technology, it will be very difficult to convince the management here to buy that server. Simply, they will refuse if even if the budget is available for that purpose.*

9. *Hesitation in the decision making is another major issue here. There is a very big fear of failure among the government officials and even among the e-government project organisation leaderships. Risk taking is avoided here.*

10. *Lack of appreciation of human resources. There is no drive from the management to invest into the people here, the development team, because most of them are expatriates. Another reason for this is because that the focus of most the people here is to improve their skills and once they gain the experience they will start to look for better opportunities.*

11. *Gaining continuous cooperation from the public agencies/organisations is another big issue.*

g) What are do you think the key challenges that face e-government implementers in general?

Each country has its own challenges although there are common challenges such as what I have mentioned above. Other examples of common challenges are digital divide, awareness, contractors' problems, management and to do, and most importantly the marketing issues which I think it is the number one challenge worldwide.

h) What are the plans for the e-government in future?

The plan is to start the fourth stage (i.e. the integration part) of the e-government development process. The stage will cover the classification of the e-government services based on the e-services providers (ministries). As you can see now that all services are listed in one column so we plan to classify them and make them more organised and classified. Also we plan to have new channels that will be used to access the e-government services such using mobile phones and other channels. Furthermore, there are lots of works (e-services) that could be done (developed). Most importantly will start to horizontally integrate some services which I think it is one of the most challengeable issues. There are certain services that are related to two or more ministries and which require a horizontal integration such as birth certificate.

i) What are the key challenges that might face you in the next stages of e-government implementation?

Gaining a continuous cooperation from the public agencies/ministries and the integration issue (i.e. Horizontal integration).

j) What makes e-government implementation differ than any other IT projects?

The nature of challenges (or new issues) that e-government implementers face, as discussed above. In addition, the number of the agencies that we deal with are more in the case of the e-government project and which will have their influence on the project as whole (e.g. the delay in delivering e-services). But generally each project will have its own nature and unique characteristics.

4

k) Who (if any) is the recognized champion of e-government development in the country (name, position)?

Dr. Ahmed, the e-government director. But the sponsorship is HH the Emir.

3 Institutional e-government coordination

a) Other than E-government project organisation, is there an authoritative central coordination unit/institution/commission that stimulates and coordinates the e-government development process? No

b) Is e-government development the responsibility of each public organisation/ministry or is it the responsibility of a central e-government organisation? Both

c) Do ministries (or public organisations) have their own IT units that relate to the e-government project organisation?

There are certain people who are working as focal points from the IT and business departments but they are not dedicated for the e-government project.

4 E-government evaluation and monitoring

a) Is there a provision for monitoring and evaluation of e-government progress? If yes, how often does it take place?

> *Yes, HH the Emir decree mentioned clearly that there should a progress report every three month. The report normally includes the progress issues and any further clarification/suggestions. In addition, the state auditor play another auditing role but on yearly basis.*

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? If yes, how often and please describe the mechanism.

There is no changes to the strategy. The plans do get altered and fine tuned as the needs arise through a change process that is implemented and monitored internally.

> **Deleted:** *Nothing formal but informal yes.*

c) Does the government have metrics about usage of e-government services? Specify

Yes. Real time reports from the e-government servers (an actual transactions). As you can see in this screen: these are the types of reports that we can look at them at any time. I will send you a copy of this diagrams/reports later on.

5 Commitment and support of executive leaderships and top authority level

a) How would you describe the support and commitment of the government officials towards the e-government project?

Although I do not have direct interaction with them, yes I can see that there is a positive sign.

b) How would you describe the support and commitment of the top authority level towards the e-government project?

Yes they are very committed.

6 Organisational and knowledge management issues

a) Does a public sector knowledge management strategy exist? If yes, please briefly describe its main objectives, methods for implementation and coordinating body.

No, not that I know of.

Deleted: *not yet.*

b) Can you explain the collaboration between the e-government organisation and other public organisations in the solution of problems and service delivery?

Some public organisations are cooperative and very helpful but there are others which do not have the sense importance and/or urgency and we do really have cooperation and communication problems with them. However and as expected, with time, this group is getting smaller and smaller.

Deleted: *important*

c) Have there been experiences of reengineering business processes in the public administration to make them more "citizen-centred"?

Excellent question. There is another project which is sponsored by the planning council and under another project umbrella that called government reform project. But we do not have any input in that project. When that project starts, There should be a strong cooperation between us regarding this matter. In addition, we sometimes do some reengineering when there is a need to do so to be able to deliver an electronic service.

Deleted: *although it is supposed to be*

Deleted: *kind of*

Deleted: *the e-government implementers and the planning council*

Deleted: *for some of the services that we introduce electronically but not that much.*

d) If yes, can you provide me with examples and rates of success with metrics (e.g. reduction in time, steps or cost required to complete desired transaction or red tape procedure).

Well, like what we have done in the e-service that related to the driving licence service and Qatari employment service.

7 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?

Yes, it is.

b) Would you consider financial issues as a key challenge in developing the e-government in Qatar? If yes, is it a continuous challenge (i.e. span all the project stages)? No

8 Legal / Regulatory framework

a) Is privacy of information protected in e-government organisation legislation?

Yes it is. It is the e-government project organisation to protect the information of its users. But there is now e-law that states this. In addition, the e-government project organisation does not maintain any details regarding its users as all information comes from the ministry of interior and also stored there. E-government does not keep any information in its servers; we have only

6

the log files of the transactions as transactions not as information of the people who performed those transactions. However, there is not e-law that control such issues.

b) Has the government taken any steps to put in place consumer protection for e-commerce transactions?

As I understood, e-law is already drafted but still not in place. That e-law will cover all e-transactions.

c) Have clear rules been established permitting the use of cryptography and set policy concerning key recovery in order to ensure security of data and transactions?

Yes, because of using secure technologies of the internet.

d) Are there regulations that ensure the security and privacy of the e-government users?

Yes.

e) Is there are any regulation and legislation in place or being developed related to e-government in the following areas:

		No	Drafted	Before Parliamen	In Place	Don't Know
a.	Legality of government online publications	O	◉	O	O	O
b.	e-filing	O	◉	O	O	O
c.	Digital authorizations	O	O	O	◉	O
d.	e-signatures	O	O	O	◉	O
e.	Cyber crime	O	◉	O	O	O
f.	Data standards	◉	O	O	O	O
g.	Data protection	O	O	O	◉	O
h.	Intellectual property rights	O	O	O	O	◉
i.	Copyrights	O	O	O	O	◉
j.	Import of ICT goods and services	◉	O	O	O	O
k.	Other (specify):	O	O	O	O	O

f) How would you describe the prevailing legislative process? (e.g. very slow and inefficient, very fast and efficient).

I can say it is very slow.

g) Is there an independent body to oversee regulatory compliance on ICT or e-government related issues? If yes, would you provide me with the name of the body, its director and contact

7

information?
I don't know.

h) Would you agree that the lack of legislative framework is a key challenge that faces e-government implementers? Explain.
I think it is a big issue and I can say yes, practically it is a key challenge.

9 Change and change management

a) Would you describe change management as a skill that should be found as a part of e-government adoption? If yes, explain?

Yes, but not exist formal.

b) Would you consider change management as a key challenge that face the e-government implementers in Qatar? If yes, is it a continuous challenge (i.e. span all the project stages)?
Yes it is. It will continue as long as it is needed.

c) Discuss any "war stories" regarding the development/delivery of any e-government services among public organisations/ministries?
For every single e-service there were a few battles that we went through in order to make that e-service available online for the e-government users. One of the war stories that happened is that there was an e-service which has been developed and ready to be moved to production(i.e. to be available online). Once we came to finalise the e-service and discuss some issues related to that e-service with its owner (i.e. the public agency that supposed to be the owner of that e-service) we found a difficulty to convince them with that e-service. There were some personal problems which stalemate that e-service. Finally we fail to make that e-service available online although it is already developed and ready to be used.

10 Awareness level

a) How was the e-government project promoted (e.g. advertising campaigns, promotional material or initiatives)?
Very limited and was not planned properly.

b) Describe the extent to which organisational members in the related public organisations were informed about the e-government initiative:

	Start	Present	Future
All the related public organisations informed (specify)			
Only certain public units, organisations (or ministries) informed (specify)			
Only heads of public units, organisations (or ministries) informed (specify)			
Only certain individuals informed (specify)			
No one informed			

I was not here at that time and I am not aware how was that happened.

c) Describe the present awareness of the e-government services amongst public organisations and the public in general.

Less than satisfactory.

8

d) Are there any awareness programmes of the benefits of e-government at the country level (i.e. amongst policy makers, senior managers, middle managers, other civil servants, citizens and business partners?

There is currently a marketing plan that was recently implemented and the execution should start shortly. — | **Deleted:** *Not really.* |

11 Training

a) Are there training facilities for the civil service? If yes, please describe the scope of training available (e.g. ICT literacy, e-government applications, change management)

b) If no, is training provided by universities, or other type of organisations?

c) Who is the target audience?

	Yes	No	Don't Know	
a. Policy Makers	O	O	O	The training on e-government services is out of scope
b. Managers	O	O	O	
c. Middle Managers	O	O	O	
d. Other civil servants	O	O	O	
e. Citizens/ business partners	O	O	O	
e. other (specify)	O	O	O	

12 Technical resources and use

Would you consider the following as factors that would inhibit the development of the e-government in Qatar?

Inhibiting factors	Yes	No	Don't Know
Access			
a. Access Internet in cities	◉	O	O
b. Access Internet in rural areas	◉	O	O
c. Lack of government-wide intranet (central and local level connectivity)	◉	O	O
d. Lack of LANs in government offices	O	O	◉

9

Infrastructure

e.	Inefficient technology legacy system in place (e.g. phone, fax, computers, databases, existing networks)	O	◉	O
f.	Internet access providers	◉	O	O
g.	Unreliable Internet connections	O	◉	O
h.	Adequate bandwidth (speed of connections)	◉	O	O
i.	Adequate computing and processing speed	O	◉	O
j.	Reliable power supply	O	◉	O
k.	Adequate Network Security	**(Confidential)**	O	O

Cost

l.	Cost of equipment	◉	O	O
m.	Cost of telecommunications within country	O	◉	O
n.	Cost of international telecommunications	O	◉	O
o.	Cost of Internet services	◉	O	O

Technical Support

p.	Availability of technical support for design	O	◉	O
q.	Availability of technical support for implementation	O	◉	O
r.	Availability of technical support for operations	O	◉	O
s.	Other (please specify):	O	O	O
t.	Other (please specify):	O	O	O

13 Technical development

a) Would you please let me know if the following partnerships with industry have been developed?

	Yes	No	Don't know
a. Technical consultants	◉	O	O
b. Computers and networking equipment	◉	O	O
c. Telecommunications	◉	O	O
d. Database management and hosting	◉	O	O
e. Servers	◉	O	O
f. Security, firewalls, intrusion detection	◉	O	O
g. Software	◉	O	O
h. Other (specify)			

b) Are there standards for database and application development? If yes, would you please describe the responsible agency and provide me with relevant documentation?

There are standards for communications and application interface between the agencies. However, each agency is free to develop it is own internal standards as long as it can support the communication and interface standards.

c) Is there any ICT infrastructure development plans? If yes, do they comprise:

	Yes	No	Don't know
Universal access to Internet	O	O	⊙
Backbone network development	O	O	⊙
Wireless technology	O	O	⊙
Broadband technology	O	O	⊙
Open Standards	O	O	⊙
Other (please specify):	O	O	⊙

d) Is there an on-going programme to track and identify quality and reliability issues with the ICT supporting e-government services?

e) Is there an on-going programme to track trends in citizens' usage of e-government services and to ensure that adequate ICT infrastructure exists to support future projected usage trends?·

14 Technical support

a) Is the local industry of information and communication technologies strong enough and. reliable?

There is a significant room for improvement.. — -- **Deleted:** *Could be better*

b) Are any of the below areas of the Qatar e-government programme being outsourced?

	Yes	No	Don't know
a. Network architecture and online service delivery development	⊙	O	O
b. Website development	O	⊙	O
c. Human resources training	⊙	O	O
d. Ongoing operations and technical support=> *(first-level internal then escalate)*	O	⊙	O

11

e. Transactions and collections (Partial)   ○ ◉ ○

f. Other (please specify):   ○ ○ ○

c) Is internal ICT technical support easily available? Yes.

d) For the technologies supported by the internal government technical departments, please select the option that best describes the degree to which the internal government technical support organisation has the technical skills to ensure the technology is running in an optimal and efficient manner

    a. Extremely well qualified to address even the most complex issues   ○

    b. Well qualified to handle most routine issues   ◉

    c. Basically qualified to operate, but little problem solving ability   ○

    d. Insufficiently qualified   ○

    e. Don't know   ○

e) How would you describe 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   ○

    In between.

f) Can you please mark the description that best characterizes the provision of government services online?

    a. No services online   ○

    b. Only information available on line   ○

    c. One way interaction possible   ○

    d. Two-way interaction possible   O

    e. Complete transaction possible within single agency   ◉

    f. Complete transaction across multiple agencies   ○

15 Technical easiness

a) Does the e-government project organisation have set standards for the "look and feel" of portals and key web sites with respect to the following:

		Yes	No	Don't Know
a.	Interface	◉	○	○
b.	User feedback	◉	○	○
c.	Usage metrics	◉	○	○
d.	Indexing of Information	◉	○	○
e.	Other? (Please include)	○	○	○
f.	Other? (Please include)	○	○	○

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 budget)

Highest priority with same resource constraints.

c) Is there anything in this category that we have not discussed yet?

16 Role players

a)   Who are the main role players involved with the e-government project? Specify.

Name	Location/Position	Role	Start	Present	Future
e-government steering committee members					

17 Closing questions

a) Are there any specific areas that you would like to see included/excluded in this research instrument?

I would include some success stories and exclude the security issues.

b) What would you have done differently as the executive manager?

I came into the project after it started and the strategy was set, as a result, all that I had control over was to manage the execution of it (as per my title). So I can't talk very much about changing the strategy. Furthermore, just about all the points below were recommended to my management

13

but were turned down, so I would have done them:

1) Engage the ministries to develop "e-forms" for services that will not be implemented electronically in the near future. Meaning, execute Phase II of e-Government in addition to Phase III which we are doing.

2) Concentrate our work from the beginning with the ministries that wanted to work with us and not try to force the ones who did not want to work with us. In time, the ones who didn't want to work would have turned around (like what is happening now). It just would have saved us much time.

3) Market the project AGGRESSIVELY, even provide co-promotions with organizations like QTEL and QPOST. Maybe sponsor high speed internet in key locations and even give it away to winners of promotions.

4) Concentrate first on "simple" services that have high transaction volume so that we can show value to the project very quickly. These type of services tend to be low or no payment, so it is against the current direction.

5) Outsource all of my technical activities and only concentrate on the business of building services and business re-engineering.

c) What do you think is the most interesting part of your story to others?

This is the most satisfying job I've ever had. It is so good to know that I'm making life easier. It is always great to see a person using it for the first time and very quickly feeling a GREAT difference in how the government deals with him and appreciates him. As soon as you're done, they start asking "Khalaas?"...."Khalaas?"...."That's it?". That is the best thing to hear. I heard it from very simple people and I heard it from ministers. If the project continues in the right direction, it can do SO much for the country.

14

Part 3: Participating Ministries; senior manger level
Interviewee Demographics

Title	Mr.
Name	XXXXXXXXXXXXXXXX
Position	XXXXXXXXXXXXXXXX
Organization . .	XXXXXXXXXXXXXXXX
Phone/E-mail	XXXXXXXXXXXXXXXX
Date of interview	23/11/2004
Venue	His office
Duration (hours)	2.5 hours

a) Education and training: Bachelor in accounting + Technology Diploma in Computer science

b) Age: 37

c) **Career:**

> *1) Number of years with this organisation: 8 years*
>
> *2) Previous positions (in organization, elsewhere):*
>
> *19 years in the [xxxx], 2 of them in the IT department.*

d) What is your experience level with computers in general and the Internet?

The last 12 years of my experience was in the IT and its related issues.

e) How would you describe your role in respect of this ministry?

I am the [XXXX]. In this ministry, we have to main IT section, namely the networking and operation section and the information system section. The information system section is mainly responsible for maintaining the current ministry applications and developing any new applications. In addition, it is responsible for developing any web based application.

f) When did you start developing this organisation website?
In April/1999.

g) What were the objectives of developing websites for this ministry and other ministries in you opinion?

Some ministries simply pursuing an image of being modern and aim to look good in front of its visitors who visit its website but there are also some ministries that eager to introduce some good services for its own users. Here for example, we introduced many services that related to the Islamic affairs such as Haj services, Haj Contractors' service, GIS service, IVR service and others. GIS (Geographical information system) service is a very lovely service as it shows the citizens number of Mosques around their area, the Khateebs' (or speakers') names and Mosques' locations and distance between the Mosques and the citizen house, etc. Haj Contractors' service is also another service that ready and is used by around 30 Haj contractors.

h) What is the relationship between the website of this organisation and the e-government portal/website?

There is no relation at all.

i) How would you describe the cooperation between your organisation and other ministries as well as the e-government project team in relation to the development of the e-services?

There is no communications at all between the ministries regarding the development of the web services or any other e-services. Each ministry has its own interest and is not willing to be affected by others. Regarding the cooperation this ministry and the e-government I can say that there is no problem at all to cooperate with the e-government entity from our side. The e-government project is a national project and we happy and ready to cooperate with such initiative but unfortunately the e-government management did not gave us chance to participate as we were wish. The e-government management did not include us neither on the management level nor letting us develop our own services and linking them to our website. On the contrary, we found them as a major obstacle that stands in front of linking our ready e-services to the ministry's website. Currently, I cannot publish any good e-service to the public as this will contradict the vision of the e-government project which is having a single point of access. At the same time the e-government management are not willing to cooperate with us. Always they gave us unacceptable justifications, simply they always saying that we have a schedule and priority and we are working according to that schedule. So they enforce us indirectly to stop the internal development. I feel that their understanding of the e-government vision is not clear.

j) Can you explain this issue further please?

OK, let me just give you a brief about our history with the e-government management. As you might aware that they have conducted a study regarding the readiness of the ministries form the technology perspective such the readiness of the infrastructures of the participated ministries and other public agencies. The study was, in fact, done by a contracted consulting company. This ministry was one of those ministries that have a solid infrastructure as well as skilled IT staff. However, the e-government management has decided to take only two services although we assured them that we can develop at least six services in the first stage of the e-government project. They simply neglected the remaining services and when I asked the e-government director why. He said we are looking only for those services that are associated with payment. His answer really shocked me. After that, I had lengthy discussions and I had many tries to convince him with some other important services which will play an important role in creating the awareness among the public and make them understand its benefits. However, I failed to convince them. Another important thing is that they only link one of the selected two services although they already beyond the time allocated for the first phase of the project.

k) If you were the e-government director, what would you have done differently?

First of all we have to understand that the public is not yet ready for such transfer and such change. In addition, we have to understand that we are surrounded by cultural, political, customs and traditional issues. So it will not be easy for us to sell the e-government concept to the public. In addition, the in-between ministries' systems (or business applications) are not yet ready yet to make the services available on line. In my opinion the e-government should pass through the following steps:

1. *Internal readiness: Internal readiness means the readiness of each single ministry and the readiness of all ministry and public agencies for accepting the concept of the e-government. For example, each ministry should work on its own*

system and make them integrated and able to talk to each other as well as preparing its employee to work on this direction. So it is simply like anyone who prepares his children in the morning and make them ready for the bus. The bus in this case is the e-government. But before we wait for the bus, all the ministries and public agencies should work together to integrate all the related applications and build the internal technology infrastructures. These infrastructures include the communication infrastructure, internal business applications, networking, etc. Once we have this ready then we will be able to think about providing e-services through the e-government portal in terms of technology but we should know also that there are other obstacles that will not allow this to take place even if we are ready from the technology perspective. Those obstacles are the organisational, political, cultural and educational issues.

2. Once we become ready from the technological perspective then we have to think about the services that should be available through the e-government portal. We should provide them gradually and we should start with those simple service.

3. After the development of the selected e-services we should conduct an awareness campaign which will help us in making the public aware of such changes and the benefits of having online services.

4. Before rolling out any e-service there should be enough training and education to the users of that service.

5. Finally, there should be some incentives and some encouragements programs that attract the public to use the e-government services. For example, reducing the government services fees to be cheaper when performing these services through the e-government portal.

Closing question

Is there anything you want to mention or talk about?

Yes, please. I feel that the e-government management does not understand clearly the vision o having an e-government system. In addition, they should be more open and more cooperative with us and other ministries. Furthermore, other ministries should coordinate and cooperate with each other. We should not blame each other, we should be open to each other and we should be more honest for the sake of having real and seamless e-government.

Part 4: Developer level

Interviewee demographics

Title	Mr
Name	XXXXXXXXXXXXXXXXXXXX
Position	Application developer/Web Master (acting)
Organization . .	E-government organization
Phone/E-mail	XXXXXXXXXXXXXXXXXXXX
Date of interview	21/11/2004
Venue	E-government small conference room
Duration (hours)	35 minutes

a) *Education and training*: Bachelor of Computer Engineering

b) *Age*: 29

c) **Career:**

    1) Number of years with organization: 3 + years

    2) Previous positions (in organization, elsewhere):

    I was working in an IT environment in India since 1999. In the mid of the year 2001 I moved to this e-government project.

d) What is your experience level with computers in general and the Internet?

I have now around 5 years experiences in an IT environment.

e) How would you describe your role in respect of the e-government project?

I am working as an application developer, e-services designer and recently as a web master (acting). However, my role is more focused on the design issues of the e-services and the dynamic content of the e-government portal.

f) What are the key challenges that face you during the development and the implementation of the e-government services?

I can say that there are some challenging issues that relate to the design and other that related to the logic of the development. From the design point of view we were suffering from the lack of graphic designers. It was really a big challenge for me because they assigned me this task although I do have either the required experience or the interest in such task. However, the graphic designer has been employed recently. From the logic point of view, I have faced a very challengeable task which making the access to the e-government services single sign-on. That means once you access to perform any service then there is no need to enter your username and password another time. One access is only required. This was in the mid of 2003. Also maintaining a dynamic website is another challenge. For example, making the content of the portal up to date in terms of news, events and so on.

g) Why do you not have a content management tool which will make the job easier for you?

First, I do not have the authority to buy such sophisticated tool. Second, even if we have such tool it will enforce us to change the whole design of the portal. I wish we have such

tool from the beginning.

h) Since you are acting as a website master, would you tell me about the allowed downtime for the e-government portal please?

Well, for a major maintenance task the whole website will be down for a few hours. But for performing any maintenance that related to certain e-services the website will be allowed to go down for a period that does not exceed one hour.

i) How many times is the e-government portal allowed to go down per month?

Again there is no definite answer, sometimes two or three times per a month and sometimes one per two or three months.

j) Is there any policy that controls this issue?

As far as I know there is no such policy.

Closing question
Is there anything you want to mention or talk about?

No thanks.

Part 5: Helpdesk operator level

Interviewee Demographics

Title	Mr
Name	XXXXXXXXXXXXXX
Position	Assistant Help Desk
Organization ..	E-government organization
Phone/E-mail	XXXXXXXXX
Date of interview	21/11/2004
Venue	His office
Duration (hours)	45 minutes

a) ***Education and training****: Diploma in Information System*
b) ***Age****: 40*

c) **Career:**

    *1) **Number of years with organization***: *1 year*

    *2) **Previous positions (in organization, elsewhere):***

    I have worked for more than 9 years in the [XXXXX].

d) What is your experience level with computers in general and the Internet?

[XX] Information Systems is my area of specialisation in my Diploma.

e) How would you describe your role in respect of the e-government project?

I am working as assistance help desk so as you can see I am receiving all complains or inquires regarding any service of the e-government services. There are tow types of requests that I am dealing with, specifically the internal requests and the external requests. The most painful complains or inquires are those which come from outside the country (i.e. the external ones). In addition, most of those inquiries are regarding the service of issuing VISAS. Generally, most of the help requests are related to those services which were developed and maintained by the Ministry of Interior (MOI).

f) What are the main reasons for such inquires or complaints in your opinion?

Good question. There are three main reasons which are as follows:

1. *The MOI still use its olds systems which need to be maintained or redeveloped using the new development tools and technology. They still develop their business applications using COBOL Language.*
2. *MOI IT support people do not respond to us on the required time that allocated for each service. Therefore, once the users feel that there is a delay in any response then they start sending help request as well as calling to chase the matter up with us directly.*
3. *The third and the main reason is the Security department as each VISA request, for instance, should be approved manually by that department which extend the response time.*
4. *The new payment gateway is also one of the main sources of the received help request. Payment gateway processes should be faster than the current situation.*

g) What are the key challenges that face you whilst performing your assignment?

There are many things. I might forget to mention all of them since I am busy as you can see. But I will try to summarise them as follows:

1. *Initially there was not a systematic procedure for the help desk people. Every one was register all the request comes to him manually and then follow the request till it is answered or solved. As you can see we receive the request through three main means, namely email, telephone calls or through the webmaster so there was not any system that helps us in organising our requests, follow them and reports the required statistic. At a later stage, may be seven months ago, we have developed our own database that is more organised than the situation before but still have some shortages. So there is a lack of a sophisticated help desk system or CRM package. We are in need for such systems but unfortunately the management did not pay this issue the required attention. We have seen a very nice MS system which is called CRSM but till today there was not any decision taken toward having such system, maybe because of its costs or maybe the management still waiting for more offers but I am not sure exactly the reason for this long delay.*

2. *The lack of dedicated help desk in the participative ministries. We are suffering from the delay in their response to the users' requests or problems. For example, forget to call the support people in the MOI after 9:00AM as they will be busy with the customers at their end. Moreover, after 12.30 AM you will never find any one their as their duty start early morning and ends at 1.00PM.*

3. *All the participative ministries lack the Shift Systems (i.e. people who work by the shift systems) that might help in solving those problems that come after 1.00 PM. The helpdesk in the ministries is useless.*

4. *Lack of the necessary Hardware. For example, the department of Traffic at the MOI have only one printer that able to print the licenses cards. So Imagine one printer serves the whole country. At any time this printer goes down the work will be stopped till somebody came and fix the printer so all the processes will stay pending till they repair the printer. They promised us to allocate a budget to purchase another printer in the next year budget. So we have to live with this printer's problems till they buy another one next year. Another issue is our request regarding a dummy smart card for the testing purpose. Since long time ago we requested the MOI to provide us with a smart card which we need for testing the e-services on the production machine but till today there is no response.*

5. *The back end support is not in place in all the participative ministries.*

6. *Another issue that related to the e-government project itself. After 9:00 PM you there is no one cover the duty so any problem comes between 9:00 and 7:00 there is no help desk staff available in the e-government itself.*

7. *The limitation of the help desk employees. We need more people to help us.*

8. *The final issue is the ambiguity of the customers' requests. Sometimes they send us unclear emails of unclear description of the problem. For example see this email that came to me from somebody outside the country: he wrote "VISA To Qatar" so we have to analyse even the users requests and predict his inquiry exactly. We have many types of the Visas so I do not know exactly what his problem and regarding which type of the available Visas.*

h) Would you please let me know the ultimate down-time that is allowed for the e-government?

According to the e-government strategy all the e-government services should be available online all the day (i.e. 24 hours a day, 7 days a week, 365 days a year) but unfortunately this is not the case here. For example, I remember that the e-government

services were out of service for 1.5 day due to some maintenance issues from the MOI side. Most surprisingly, the MOI did not even told us in advance about this maintenance problem. There were updating their database without our knowledge which affected the image and reputation among the e-government customer. Furthermore, internally we usually spend around an hour or a bit more to back up the e-government databases or to do some other maintenance tasks such as upgrading our systems.

i) In the case that any ministry fails to response to you at the required time, what do recommend the users to do?

We usually try to explain to them the situation in a way that make them appreciate the size of the complexity of any online services but not all of them always appreciate the reasons. Some of the users are very clever and understand the technology better than us and hence it is very difficult for us to persuade them with any reasons.

Closing question

Is there anything you want to mention or talk about?

Yes, the awareness and the know-how are very important issues that need urgent intervention from the e-government management since the majority of the customers' problems are about the usage of the e-services (i.e. How Can I use service x or y).

Part 6: User level

Interviewee Demographics

Title	Mr
Name	XXXXXXXXXXXXXXX
Position	Head of recruitment
Organization	XXXXXXX
Phone/E-mail	XXXXXXX
Date of interview	10/03/2005
Venue	HIS OFFICE
Duration (hours)	55 Minutes

a) Education and training BSc
b) Age 30
d) Career:

1) Number of years with organisation 6
2) Previous positions (in organisation, elsewhere)

e) What is your experience level with IT in general?
I can say I am a good user

f) How did you come to know about the e-government project (i.e. services)?
Through some of my friends.

g) How did you first learn to use the online services on the e-government website/portal?

x	On your own
	In a training course
	Personal instruction from another user
	Other (specify)

h) When did you start using the e-government services? 2004

i) What was your first impression of the e-government imitative/project?
I feel that they provide good services but I think the road is still very long in front of them.

Present situation
a) Describe the e-government services at present (e.g. quality and nature of information, public services, usefulness, percent of up-to-date information)
They did not provide sufficient information about the government and its different ministries, all their services are transactional. Regarding the quality, I think there is a big question mark.

b) How would you define the e-government success at this phase of the e-government project?
I think that they started good with their pilot project but after that I heard lots of complains about their services. So you can see they need to pay more effort and more attention to the quality of their services.

c) Do you think that the e-government has been successful to date? Specify.
I am not sure but what I am sure about is that there are many problems related to the availability and accessibility of the provided. Also I think that 99.9 percent of the citizens still do not know about the available services and even what does e-government mean.

d) What do you use the e-government website/portal for at present? (What are the most useful aspects?)

I never used e-government services for my own purposes or benefits, I am working as head of recruitment and I used the employment service here in this organisation.

e) How often do you visit/use the e-government website/portal at present?

From time to time. Once I need it for my work with my employer.

f) To what extent is the information you retrieve via the e-government website/portal available through other sources?

As far as I know all the electronic services that available on the e-government website are not available elsewhere. All those service are transactional services but of course we can get the same services through the traditional ways.

g)What do you see as the main benefits you get from the e-government website/portal (personally, your working unit)?

As I said, I used it for the employer purposes.

h)What are the main weaknesses of the e-government website/portal?

I can say its speed and services quality.

j) What are your main concerns regarding the e-government services?

Most of the services that available on the e-government website require payment online so I cannot trust their website at this stage. In future, I might trust their service but once I have found other people using those services and paying online without problems..

k)Did the e-government portal allow you to know more about other public organizations and their business? Explain. *No.*

l) What do you feel should be on the e-government portal that is presently omitted?

Maybe the informational services.

m) What information/services do you feel is appropriate for the e-government website/portal and what is not?

No idea.

n) What is your overall satisfaction level with the e-government services?

<u>Future</u>

A) Do you expect your usage of the e-government services will:

X	Increase	Explain
	Stay about the same	Explain
	Decrease	Explain

b) What is your vision for the e-government services in the future?

Seamless services.

c) Is there anything else that we have not covered on this issue?

Yes. I forget to mention a problem that face use when we use the employment services. Do you want me to tell you about it?

Yes please?

Here in this organisation we used to employ non-Qatari employees if the concerned department manager approves the applicant's application and then we continue to finish other routine tasks. After the e-government provided the employment service we have been forced by the labour agency to publish the opening first on the e-government portal for at least two weeks. The aim is to give Qatari people chance to see the opening before organisations employ foreign people. Once we start using the service we faced lots of problems. These problems include the accessibility of the e-government website. We failed many times to access the service. Also, the e-government portal is very slow.

Appendix III: Samples of the Collected Documentations

Part 1: some samples of the collected documents.

e-Government

TOPICS

- MISSION
- GOALS
- CRITICAL SUCCESS FACTORS
- PROJECT STAGES
- PUBLIC KEY INFRASTRUCTURE PROJECT (PKI)

VISION OF THE LEADER

HH the Emir, **Sheikh Hamad Bin Khalifa Al-Thani**, of Qatar, with his wisdom, insight and vision as a leader, with 21st Century challenges has realised the great value of the technological age and how it can benefit the citizens and the economy of Qatar.

To realise his vision, the Emir has determined that Qatar becomes the information technology (IT) leader in the region.

To enable the Emir to turn his vision into reality and achieve his goals of making Qatar the IT leader in the region, the Emir issued a Decree on 7 October 2002, for the establishment of the e-Government Project Steering Committee.

VISION

The e-Government Committee has commissioned to architect, guide and help implement a government wide initiative providing e-Government services to citizens and businesses in an effort:

"To achieve the highest performance in executing governmental transactions electronically, through streamlined business processes and integrated information technology solutions."

The strategic vision developed for the e-Government initiative is:

- **Qatar Online Services**
- **Anytime Anywhere**
- **Providing Government Transactions, Information, and Knowledge**

The scope of the e-Government framework involves setting up a:

- **Single government-wide portal**
- **Single electronic payment gateway**
- **Single public-key infrastructure security**

GOALS

Goals have been defined for three sets of beneficiaries:

- **Constituents**
  The external constituents of the Qatar e-Government Project are : **Citizens - Residents - Visitors - Businesses.**

- **Governmental units and employees**
  The specific goals of the strategic vision in relation to government are as follows:
  - **Position Qatar as a leader in the Gulf region and the new digital economy.**
  - **Streamline Government service delivery.**
  - **Increase return on investment (ROI) on IT .**
  - **Enable cooperation and coordination across ministries.**
  - **Enable Ministries to focus on core business.**

- **The e-Government Project**
  The goals for the e-Government project are as follows:
  - **Inject measurement and accountability for service delivery performance.**
  - **Create multi-channel government access through the internet, IVR, WAP, Digital TV, Kiosks, etc.**
  - **Enable Real-Time transactions and information.**
  - **Enable STP 'Straight Through Processing' between ministries and service providers.**
  - **Provide an alternate service delivery channel across the boundaries of ministries and service providers.**

CRITICAL SUCCESS FACTORS

Based upon the analysis of strengths, weaknesses, opportunities and threats, six critical success factors have been identified.

- Sustained Political Leadership
- Support and Cooperation of Ministries
- Building the Necessary Infrastructure
- Effective Communications
- Providing Qatar's Human & Financial Resources
- The Effective Project Management

PROJECT STAGES

The Project itself is divided into three (3) stages:

1. Pilot Project (Resident permit renewal service)

HH The Emir gave the green light on the first half of 2000, to commence work on the Pilot Project being the first stage. The

foundation for a flexible, scalable and robust e-service platform for the Government of Qatar, by providing the first most required public service by companies and citizens. This service is the Resident Permit Renewal (RPR) provided by Department of Immigration and Passports of the Ministry of Interior. The new electronic channel of the (RPR) has enabled the Qatar Government to provide some selected corporate and national organizations the facility to renew the resident permit for staff electronically through an Extranet.

HH Sheikh Jassem Bin hamad Al-Thani announced the launch at the 29th Qatar Independance day - 3rd September 2000.

The three main parties of this Project are:

1. Ministry of Interior: Service provider.
2. Qatar National Bank: Payment Gateway for this service.
3. Qatar Central Bank: Current host of the e-Government Pilot Project Systems.

2. Evaluation of Ministries and Government agencies

Once the Project was decreed, an international consultancy firm was contracted to establish a plan of study of all ministries and their services and their requirements whilst, consideration was also given to the private sector and their needs and requirements.

All ministries were studied to assess their ability to commence electronic transactions. The study concluded that 1,350 services were provided by those ministries. Of these 1,350 services 20 were assessed as being able to be placed on-line over a 24 month period.

3. Execution of evaluation of results.

The e-Government Project is charged to create the infrastructure required to deliver 20 Government services on line to be available for access by the citizens of Qatar, both the public and private sectors and the world community at large.

PUBLIC KEY INFRASTRUCTURE (PKI) PROJECT

In pursuit for providing a high level security when providing an e-Service, the Qatar e-Government Project has initiated the Public Key Infrastructure (PKI) project. PKI allows users to use a secured and internationally trusted mechanism, such as Smart Cards and/or Public/Private keys, when conducting transactions

Emir urges 'serious will for reform' in the region

FIFTH FORUM ON DEMOCRACY OPENS

By Arvind Nair

THE countdown to the birth of a democratic era has already begun but it needs thinkers and experts to continue and promote the process, HH the Emir Sheikh Hamad bin Khalifa al-Thani said yesterday.

HH the Emir was addressing the fifth Doha Forum on Democracy and Free Trade at Ritz-Carlton.

The opening ceremony was also attended by HE the First Deputy Prime Minister and Foreign Minister, speaker of the Advisory Council, Arab League Secretary-General Amr Moussa, sheikhs, ministers, former crown prince of Jordan Prince Talal, ambassadors and senior state officials.

HH the Emir recalled that a year ago he had indicated that the slow pace of democratisation was not due to the frustration on account of the Palestinian problem. Now, the Palestinians themselves are resorting to democratic methods.

He noted that "the quest for reform and peace in the region can go side by side without contradiction or clash", HH the Emir said.

The move towards democracy and free economy could never be achieved unless it is matched by a "serious will for reform that is aware of its importance and is not content with introducing partial amendments to avert criticism".

"Such process should meet the requirements of political and economic progress by accepting different opinions and adopt a constitutional framework that reflects the popular will and recognise the right to participation through suitable regulatory framework".

While transition to democracy and the market economy has gained some momentum in the region, it has not achieved the desired pace because the political progress and economic liberation are hindered by problems.

During the past year, Qatar faced some of these challenges and was confronted with problems. The country tried to overcome these problems "so that the reform experience [in our] country could reach its desired end".

While the economic march is continuing, the country's legal system is watchful against any transgressions that are in conflict with the country's traditions or other violations.

"It is not permissible at any time, nor at this time when our economy is heading to prove transcendency, regionally as well as internationally, to turn a blind eye to any deviations or violations resulting from ignorance or committed unintentionally in curbing either project."

HH the Emir noted that the country was trying to build integrated culture for change by improving the education institutions and finalising basic legislation.

To Page

HH the Emir Sheikh Hamad bin Khalifa al-Thani with HE the First Deputy Prime Minister and Foreign Minister Sheikh Hamad bin Jassim bin Jabor al-Thani, Prince Talal and Amr Moussa.

PICTURE: J H

A section of the audience at the Doha Sheraton yesterday during the lecture delivered by First Deputy Premier and Foreign Minister HE Sheikh Hamad bin Jassim bin Jabor al-Thani. The lecture was held as part of the ongoing Fourth Doha Cultural Festival.

Qatar elections next year, says deputy premier

From page 1

Regarding Qatar's ties with the US, he said the relations with the most powerful nation of the world are based on mutual interest.

Asked about Qatar's trade relations with Israel, he replied: "Yes, we have a trade representative, and that was never a secret, as we are transparent with our people."

"All the meetings (with the Israelis) were public, and we have nothing to hide, as we are realistic, away from the old slogans calling to throw the Jews to the sea."

Talking about the status of women, he said they have achieved a lot of positions recently, but he is against the quota system giving guaranteed number of seats in the parliament for women.

About 50 Qatari women were qualified to work in the Foreign Ministry, and some of them are occupying positions in the UN committees, he pointed out.

The First Deputy Prime Minister admitted that the Gulf Co-operation Council didn't achieve the ambitions of its citizens in comparison to the European Union.

"How come that our natural gas reached the US before Kuwait," he wondered.

Earlier, in his lecture, HH Sheikh Hamad bin Jassim bin Jabor al-Thani dwelled on Qatar's vision for the future and the path the country has chosen for advancement and progress.

"Qatar is witnessing a number of significant and accelerated changes nowadays and these are carried out in response to the aspirations and concepts of HH the Emir Sheikh Hamad bin Khalifa al-Thani," he observed.

These changes can be further enhanced by the optimal utilisation of the national capacities that are geared towards ensuring a better future.

In order to realise these aspirations and concepts, the sense of belonging to the homeland should be reinforced and instilled in citizens by consolidating the pillars of their active and effective participation in the country's affairs, he maintained.

The building of democracy, continued efforts for comprehensive economic development, growth in education and health sectors and social development were also elaborated in the lecture.

HE Sheikh Hamad bin Jassim also applauded the creative role played by HH Sheikha Mozah Nasser al-Misnad, wife of HH the Emir, for the welfare of the family and social development.
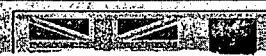
System to verify smart cards soon

By Pratap John

QATAR'S e-government project will establish a system to authenticate the identity of smart card users, project director, Dr Ahmed Hamad al-Mohannadi has said.

A device to insert smart card into the computer will be introduced shortly under the supervision of the Ministry of Interior (MoI), he said. The computer can verify the authenticity and information encrypted in the smart card.

Dr Mohannadi said the e-government project would be able to take off in the next few months, if the ongoing pace of activities is maintained.

The introduction of Public Key Infrastructure (PKI) and smart cards would be done simultaneously, he told Gulf Times on Thursday.

PKI, he said, is a system that enables the e-government to establish a network that provides key government services electronically to nationals and expatriates.

"The entire credit must go to HH the Emir Sheikh Hamad bin Khalifa al-Thani, who is the inspiration behind the project," Dr Mohannadi said.

Residence permit and health card renewal and traffic department services are among the 22 government services that have been planned for delivery through a single-window facility using computers.

Once e-government is in place, Qataris and expatriates can avoid queuing up before the immigration, public health or traffic counters to get their jobs done. "At the click of a computer key,

one will be guided through simple processes that facilitate residence permit/health card/driving licence renewal or issue of passports for Qataris," the e-government director said.

Dr Mohannadi said the e-government committee is working with the Geographic Information Systems (GIS) of the Ministry of Municipal Affairs and Agriculture to properly identify each and every household in Qatar. This is very important to streamline door delivery of articles or documents.

"The very purpose of e-government project will be defeated if people have to queue up before the government offices again to collect their processed certificates or documents," he said.

"Our idea is to deliver them at one's doorstep. Since Qatar is small and has a very advanced infrastructure, it can easily achieve that," he said.

Dr Mohannadi said a law that regularises e-government activities and electronic transactions is likely to be promulgated in due course. "We are currently working on that," he said. The law will also address the issue of dealing with digital signatures, he said.

In an earlier interview with *Gulf Times*, Dr Mohannadi said the ministries, institutions and banks that have been linked to the project were busy organising themselves and building up the database. Besides the e-government department and the Ministry of Interior, the Ministry of Municipal Affairs and Agriculture, Qatar Central Bank, Qtel and General Postal Corporation are key players in the historic project.

5286   19/4/05

Online visas for tourists

Staff Reporter

QATAR has started issuing tourists visas online, thus becoming the first government in the world to have successfully launched such a scheme.

Under the futuristic scheme, nationals from 33 countries can now apply and receive tourist visas online anywhere in the world, sources at the e-government project confirmed to *Gulf Times* yesterday.

The countries whose nationals are eligible to receive such visas are the US, Britain, France, Italy, Germany, Canada, Australia, New Zealand, Belgium, Japan, Luxembourg, Switzerland, Austria, Holland, Sweden, Norway, Portugal, Denmark, Greece, Ireland, Finland, Spain, Monaco, Iceland, Vatican City, Andorra, San Marino, Liechtenstein, Brunei, Singapore, Malaysia, South Korea and Hong Kong.

The move is part of the government's e-government initiative launched to achieve the highest performance in executing governmental transactions electronically, through streamlined business processes and integrated information technology solutions, the sources pointed out.

In due course, some 22 government services, including residence permit and health card renewal and traffic department services, will be delivered through a single-window facility using computers, e-government project director Dr Ahmed Hamad al-Mohannadi has said.

The state partnered with an international consulting firm to draw upon international best practices and through leadership to craft a strategic vision for transforming Qatar into an e-government leader, the sources have said.

The strategic vision developed for the e-government initiative is: Qatar Online services, anytime, anywhere, and providing government transactions, information and knowledge, the sources said.

The e-government pilot project was aimed at building a foundation for a flexible, scalable and robust e-service platform for the government, the project sources said.

The three main parties to the project are the Ministry of Interior as the service provider: the Qatar National Bank, which is the payment gateway for the service; and the Qatar Central Bank, which is the current host of the e-government pilot system.

The new residence permit renewal (RPR) channel enables the government to provide some select corporate and national organisations the facility to renew staff residence permits electronically through an Extranet.

More than 35,000 residence permit renewal transactions have been successfully processed through the pilot system so far, the project sources revealed yesterday.

The online tourist visa can be obtained by visiting https://www.e.gov.qa.

Once the e-government is fully in place, Qataris and expatriates can avoid queuing up before the immigration, public health or traffic counters to get their work done, the sources pointed out.

"Customers will be guided through simple processes that facilitate residence permit/health card/driving licence renewal or issue of passport for Qataris," Dr Mohannadi had been quoted as saying.

1271

15/5/2003

4/11

E-govt visa service is a year old

Staff Reporter

E-GOVERNMENT Qatar celebrated the first anniversary of "visa issuance" by granting the 3,566th visa electronically yesterday. Twelve months ago e-government launched an electronic visa service to assist tourists, residents and businesses.

The Qatar government launched the e-government initiative to harness the latest technology and to position Qatar as a leader in the IT field, a spokesman said.

Dr Ahmed al Mohanadi, Director of the project said his organisation had every reason to celebrate as "we have reached an important milestone on March 17 this year.

"Since starting the e-visa service 12 months ago, we have registered tremendous growth in our customer base. The feedback has been encouraging and augurs well for the future. The service is fast and efficient and that is what our customers demand."

Other services provided by e-government include driving license renewal, traffic violation fine payments, electricity and water payments, Zakat Fund and Qatar e-employment. He added that e-government was now in a position to develop other major electronic services.

1314   (18/3 /2004)

A report about the electricity shutdown which took place in the 2nd December 2004

As requested by you I am sending the required number ▮▮▮▮▮▮▮▮

Best Regards,

▮▮▮▮▮▮▮▮
Head of Recruitment

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Subject e-govermnt web site

Firstly we would like to thank you for solving our problem in creating user name & password but we are still having the problem while clicking all the icons in your web site(www.e.gov.qa). We tried many times to enter in to the Qatari Employment and other icons in your web site but we cannot proceed further as the computer hangs up all the time. Please note that we have no technical problem in our server/connection which we checked with our IT team.

We would appreciated if you could please help us to solve the problem

Regards,

▮▮▮▮▮▮▮▮
Head of Recruitment

Part 2: some samples of the collected electronic reports

eGov Annual Transactions

Visit Visa Annual Transactions
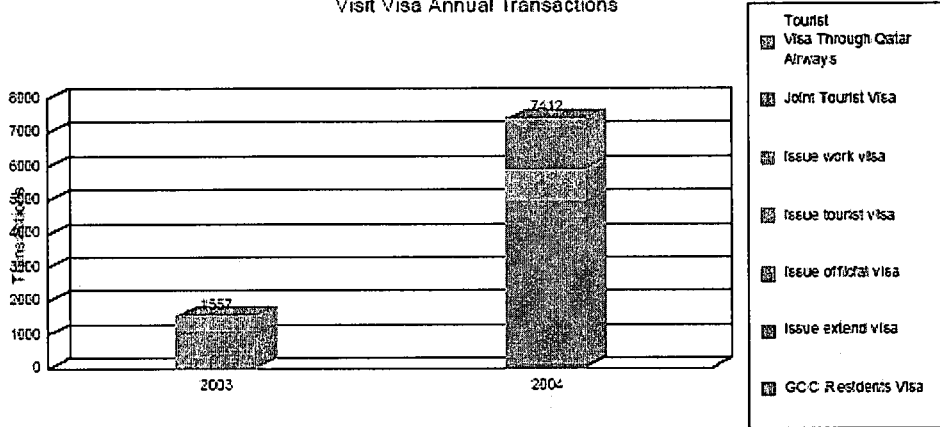
	2003	2004	Total
GCC Residents	20	142	162
issue extend visa	10	0	10
Issue official visa	1,068	4,388	5,456
Issue tourist visa	385	456	841
Issue work visa	4	937	941
Joint Tourist Visa	9	1,274	1,283
Tourist	61	215	276
Total	1,557	7,412	8,969

Overall Annual Transactions
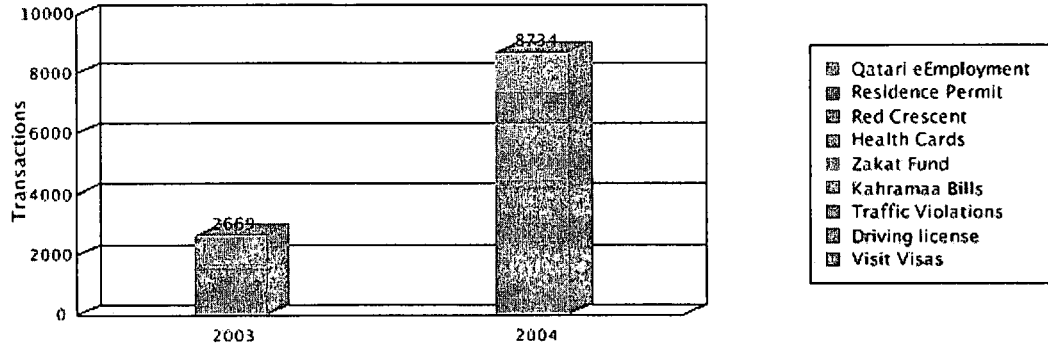
	2Q-03	3Q-03	4Q-03	1Q-04	2Q-04	3Q-04	Total
Visit Visas	125	503	929	2,209	1,636	367	5,769
Driving License	0	31	23	30	36	16	136
Traffic Violations	0	29	40	62	63	11	205
Kahramaa Bills	0	328	630	801	716	410	2,885
Zakat Fund	0	8	23	9	6	3	49
Health Cards	0	0	0	0	135	69	204
Red Crescent	0	0	0	0	20	12	32
Residence Permit	0	0	0	0	299	498	797
Qatari eEmployment	0	0	0	400	774	152	1,326
Total	125	899	1,645	3,511	3,685	1,538	11,403

Roling 12 month Transactions
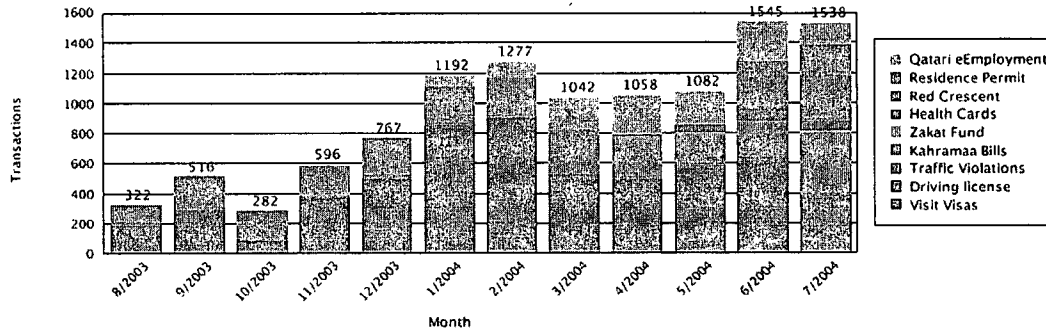
Resident Permit - Rolling 12 month Transactions
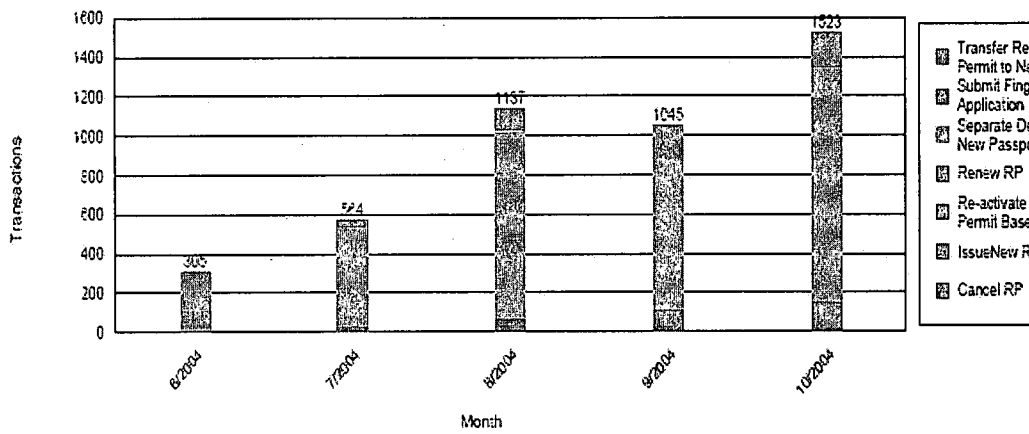
	6/2004	7/2004	8/2004	9/2004	10/2004	Total
Cancel RP	6	3	12	29	17	67
IssueNew RP	6	27	57	89	136	315
Re-activate Resident Permit Based on Visa	0	0	1	0	0	1
Renew RP	293	507	956	768	1,197	3,721
Separate Dependent to New Passport	0	0	1	1	0	2
Submit Fingerprint Application	0	0	0	0	7	7
Transfer Resident Permit to New Passport	0	27	110	158	166	461
Total	305	564	1,137	1,045	1,523	4,574

Week Day Distribution – All Transactions
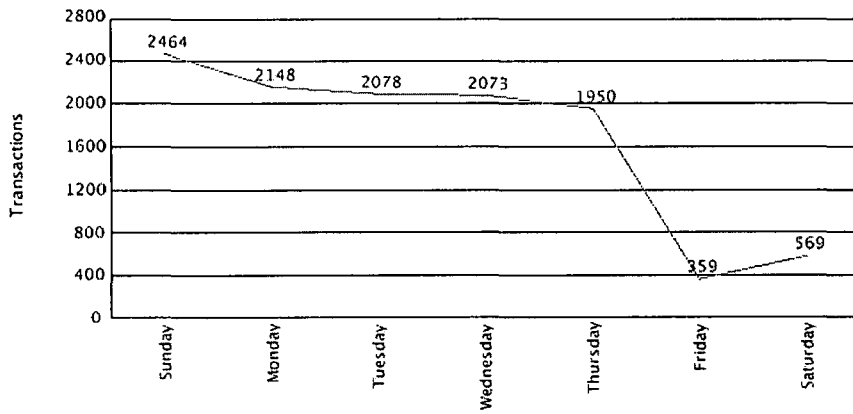
eGov Annual Transactions

Bill Payment Annual Transactions

Kahramaa - Bill Presentment and Payment
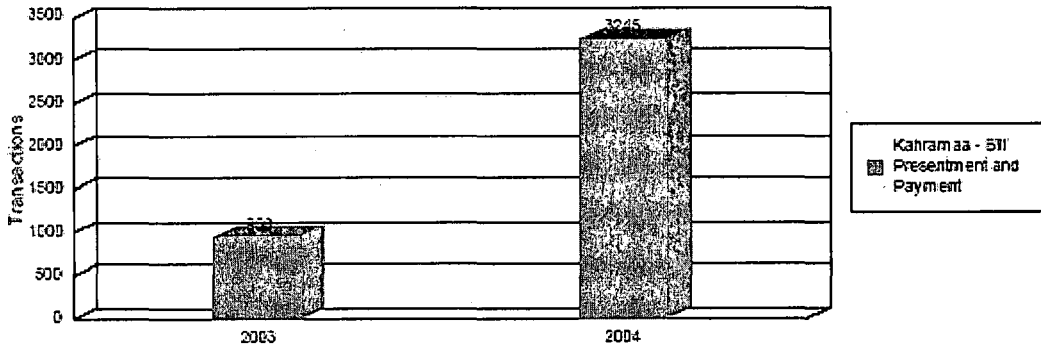
	2003	2004	Total
Kahramaa - Bill	958	3,245	4,203

Appendix IV: Samples of the Direct Observations

This appendix gives two different samples of the researcher's observations

Objective

During some of the researcher's visits, he explained his desire to some members of the development and support teams to visit them from time to time and conduct some observation sessions. The researcher told them that the aim was just to gain an understanding of some events taking place inside the e-government building and during some other events that were taking place in some other places such as exhibitions, invited workshops, etc. His request was welcomed and he started to conduct his observation sessions. However, before conducting any observation session, the researcher called or visited the e-government team and informed them in advance about the date and time for any intended observation. On the other hand, there were some observations that took place accidentally (i.e. unplanned observations). The researcher uses the term 'unplanned observations' to refer to those observations. In this appendix, two examples (planned and unplanned observations) of those observations will be given.

Observation1
Type: Planned observation
Date: 22/11/2004
The topic: Dealing with customer requests
Observation events:

Based on the researcher's request, a key e-government helpdesk operator gave his permission to be visited with the aim of conducting an observation session in the area that he was working in. The aim of the observation was to understand how the e-government support team deals with the e-government support request. The researcher attended early morning and sat very close to that helpdesk operator. After a while the operator received a call from one of the e-government customers. The operator used the following steps in dealing with the received request:

   1. Answering customer's call

2. Registering the customer contact number on a pop-up menu on his screen with the aim of registering some information.

3. Asking about the customer's problem

4. Taking the ID of the customer and telling him or her that he will comeback to him or her later.

5. After that the helpdesk operator took the issue to the concerned people in the related ministry.

6. One of the received calls was related to one of the services that was introduced by the Ministry of the Interior (MOI).

7. The helpdesk operator took the problem to the support people in the MOI by calling them through his telephone.

8. He tried many times to call but nobody answered the phone.

9. After about one hour one person answered the phone and asked the e-government helpdesk operator to pass the MOI contact number to the customer.

Observation 2: Electricity problem

Type: unplanned observation

Date: 2/12/2004

Events:

During one of the meetings that I conducted with one of the e-government helpdesk operators, there was a shutdown in the electricity of the e-government building. The electricity was disconnected due to a failure in one of the Gas Turbines in the main electricity station. It was good chance for the researcher to test the disaster recovery plan and how the e-government responds to such failure. It was noted that there was not any contingency plan and the employees were not aware of what to do in such a situation. The e-government portal was checked by one the e-government employees through his laptop and he used a dialup connection. However, it was observed that the e-government portal was down as well. This problem continued for around 2.5 hours.

Appendix V: Issues Related To Chapter 4

This appendix contains some issues that related to Chapter 4 (i.e. Research methodology chapter)

Action research

Action research is a practical, problem-solving approach to research that is carried out over long periods of time. It has been described as an iterative process that combines practitioners with researchers, theory with practice together and within a cycle of activity that includes problem diagnosis, action intervention and reflective learning (Myers *et al.*, 1999). It might be seen as *"a subset of the case study"* (Galliers, 1992, p. 157). Action research is useful for projects that require specific knowledge for a specific problem within a specific situation and is often used as part of a problem solving strategy along-side research (Silverman, 1993). The fact that the action researcher is directly involved in a real-world planned organization change is a major strength of the approach. At the same time, it is also a potential weakness as the researcher's presence in the action research might affect the situation being researched. Traditionally it has been used within organizational development or educational research rather than within an IS domain (Myers, 1997). However, it has been criticised due to the lack of a methodology governing the interaction with the host company and the failure to specify clear objectives (Baskerville and Woodharper, 1996). Given that, it made little sense to select this methodology for this study. In addition, the researcher was not involved in the implementation process of the e-government system in Qatar, and would not be able to be part of or to be heavily involved with the development team and interact with them.

Ethnography

Ethnographic research is the research method of anthropology. The emphasis is on studying the discipline of social and cultural anthropology where researchers are required to spend a significant amount of time in the field of the study. In other words, it is the direct description of a culture where ethnographers immerse themselves in the lives of the people they study and seek to place the phenomena studied in their social and cultural context (Silverman, 2000; Atkinson and Hammersley, 1998; Creswell, 1998; Agar, 1986; Schwandt, 1997). This approach is now no longer restricted to anthropological studies and is used within other fields including the IS domain (Myers, 1997). The researcher found that the ethnographic approach is not particularly suitable for the area under study as it does not concentrate mainly on the culture of specific individual or groups.

Grounded theory

This methodology was developed by Barney Glaser and Anselm Strauss in the 60's and it is defined as *"an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data"* (Martin and Turner, 1986, p. 141). Grounded theory aims to develop theory that is grounded in analysing the collected data (Strauss and Corbin 1990). It can be used as a data analysis technique since

researchers start with an area of interest, collect the data and allow relevant ideas to develop. There are some differences between grounded theory and the other qualitative methods such as its specific approach to theory development, specifically a precise step-by-step procedure that is associated with it. In addition, grounded theory offers a more detailed approach for data analysis than any of the other qualitative methods. Critics of this method claim that grounded theory fails to acknowledge implicit theories and is clearer about theme generation than the tests itself (Silverman, 1993). In addition, there is an essential requirement for successful use of the grounded theory, which is the need for a high level of theoretical sensitivity on the part of the researcher. This approach is avoided in favour of a simplified and more practical (as opposed to theoretical) methodology. In comparison, case study research is used for a broader spectrum of purposes, namely descriptive, exploratory, and explanatory (Yin 1994), which make it the proper methodology for this research. The following section will explain case study methodology in more detail.

Using NVivo in the data analysis

NVivo software was used in this study. There were two main objectives of using the software; firstly, to increase the reliability of this study; secondly, to get the help of the available technology in analysing mass qualitative data. With NVivo *"it is possible to manage, access and analyse qualitative data and to keep a perspective on all of the data, without losing its richness or the closeness to data that is critical for qualitative research"* (Bazeley and Richards 2000, p.1). In addition, it encourages an exploratory approach to analysis and helps to manage and synthesise the researcher's ideas (Gibbs, 2002). NVivo does fit well with this research's objectives and the approach to data analysis as it provides a powerful way to carry out sophisticated data coding. NVivo did not support the researcher by giving automatic analysis of the data but it did help in the interpretations and structuring the study findings. In other words, it helped the researcher in organising and reorganising the data according to the interpretations. The following sections explain the data analysis process in more detail.

Data preparation

The interview notes, observations notes and other field notes were transferred into electronic format and stored in the researcher's computer as MS Word documents in the early stages of the study. However, before the start of the primary data analysis process and before moving the data to the NVivo software, the data had to be prepared for the analysis technically. Thus, the researcher prepared the documents in the MS word processor as it is has a much wider range of facilities for editing than NVivo. For example, NVivo requires the files to be in rich text format in order to make sure that no information is lost so the researcher converted the documents from word document format into rich text file format. In addition, each document was divided into sections by use of heading styles (e.g. Heading 1, Heading 2, etc.) with the aim of using these sections in performing automatic coding in case the researcher wished to do. Furthermore, during the preparation process all the pictures and tables had to be removed

because NVivo only accepts text. The tables in the text can be converted automatically to text during the process but they lose their format. Thus, the researcher converted those tables that needed to be coded into text format. However, it is worth mentioning that all the meaningful information related to pictures and tables was described in the text so the loss of information was minimal. In addition, it was possible technically to link any information from pictures, tables, etc, to the documents or nodes in the NVivo software if it was necessary for the analysis. Furthermore, NVivo has some additional features such as linking the project to external documents that cannot be imported for some reasons such as being handwritten diary, large size documents or presentation documents. Although, the researcher benefited much from using NVivo software, there were some drawbacks of using it. For example, it did not accept normal word processor documents and it consumed the researcher's time preparing those large size documents and those which contain many tables or figures for analysis. Figure 1 illustrates the NVivo document explorer that shows some of the transferred the files.

Figure 1: Examples of the transferred the files into NVivo document explorer

Coding and interpretation

Having imported the documents to NVivo, the analysis continued by reading, coding and analysing the imported documents. The researcher started reading through all the documents to gain more understanding about the collected data. In addition, he used other MS office programs (i.e. MS word, MS Excel, MS PowerPoint and MS Project) to explore other documents that were not imported to NVivo so that he was in a good position to compare and contrast the content of the different documents using different programs. In addition, he continued to compare the data with the initial framework.

As mentioned in Chapter 3, the initial framework aims to understand the nature of the e-government development (i.e. stages that required to fully implementing an e-government at a national level) and the key organisational and technological issues that might affect its implementation. Hence, it focuses on two main angles, the development stages and the key issues that surrounding its implementation process and might affect its progress. Therefore, the initial framework helped the researcher in dividing the analysis into two

3

main categories. NVivo uses the term nodes to refer to specific codes that related to certain classifications of the data, specifically:

"A node in NVivo is a way of bringing together ideas, thoughts, and definitions about your data, along with selected passages of text. Passages of text from one or more documents are connected to a node because they are examples of the idea or concept it represents. This process is called coding the text at a node. This brings together passages of text that are about the same thing or indicate similar ideas, concepts, actions, descriptions and so on" (Gibbs 2002, p.31)

Those two main categories of the data were represented by two separate nodes of a tree node type (i.e. each node represents one angle of the research). It is worth mentioning that NVivo has three types of nodes, namely, free nodes, tree nodes and case nodes. The free nodes are those nodes that are simple, do not have children nodes and do not belong to other nodes while tree nodes are organised into a hierarchy (i.e. node browser like the file and folder hierarchy in Windows explorer) (Gibbs 2002). *"Case nodes are used for organising coding about cases"* (Gibbs 2002, p.31). The researcher used both free and tree nodes in this study. As mentioned above, the researcher created two main nodes of type tree nodes that represent the two main angles of this study. Figure 2 shows the two main nodes that were created under the main project node (i.e. 'E-government Implementation' node).
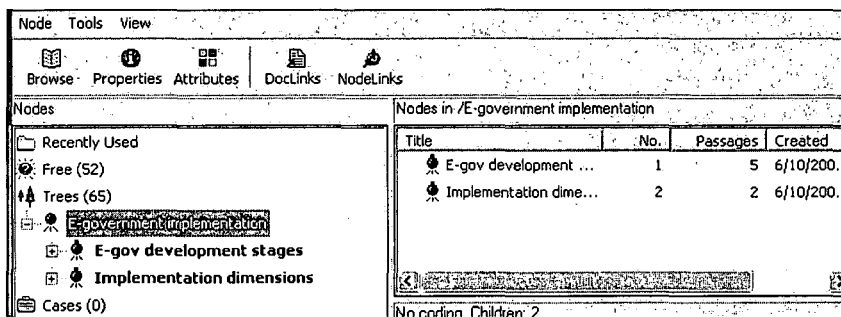
Figure 1: The major classifications of the colleted data

As shown in Figure 2 above, there are two main nodes under the research project node, namely the 'E-gov development stages' node and the 'implementation dimensions' node. The analysis of each node (i.e. each angle of the research) took place separately. The researcher started first with the node that represents the stages required to develop an e-government at a national level. At the beginning of analysing the data that related to this issue the researcher did not try to classify the e-government activities based on the initial framework stages. This is because he did not want to be confused by the issue of how many stages were required to fully implement an e-government at a national level and which types of activities belong to each stage or how we can differentiate between the different stages. The researcher aimed to understand the development of the e-government in terms of activities regardless of the number of stages, then at a later stage he will be in a better position that will enable him to classify the activities into larger categories that can represent the stages of the development. Therefore, the research

started by developing free nodes that represent different activities of the e-government implementation. Figure 3 shows those free nodes that were created with the aim of gathering codes that related to each activity. It also shows the number of passages that were coded at each node and the creation date of each node as well as the modification date.

Figure 3: The use of free nodes facility

The researcher coded all text, passages or section that related to certain issue or topic to its respective node. For example, in Figure 3 above, there is a free node that is called 'e-gov vision'. By exploring that node using its browser, all the text coded at that node will be displayed as shown in Figure 4 below:

Figure 4: The use of node explorer facility

From Figure 4 above, it can be noted that Mr. NB talked about the e-government vision in two paragraphs that came from two different sections whereas Mr. OH mentioned the e-government vision in three different passages in three different sections of his interview. This type of coding helped the researcher considerably, so if he wanted to analyse a certain issue then it was easy for him to go to the node that represents the issue regardless of the angle (or perspective) that he was analysing the issue from. In other words, the researcher might visit the node many times with the aim of analysing its

content from different perspectives. In addition, the researcher used another technique of coding by using the searching facility in the NVivo program so that the researcher can type a key word in the 'Search tool' and then search for the occurrence of that key word in the created nodes. The result of the search is stored as a separate node so the researcher can go back and visit the node many times. For example, if the researcher wanted to search for a specific issue, say the word 'awareness', with the aim of exploring this issue further then he can do this within seconds. Figure 5 below (i.e. the left side of the Figure) shows the result of this search. The search result shows all the people who talked about this issue, how many times they mentioned the issue and in which sections of their interviews. Moreover, the researcher can access the related interview note by highlighting the word 'awareness' and then click the right button of the mouse and finally choosing the option 'Brows/Edit/Code document'. The result will appear in the search node browser as shown in the right side of the Figure below:
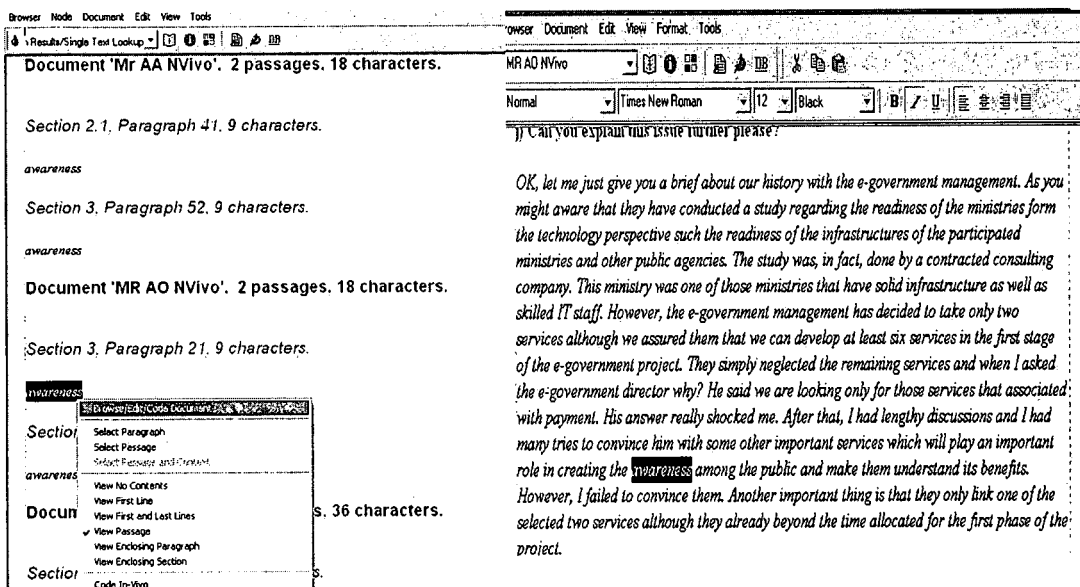

Figure 5: The use of the search facility

Indeed, NVivo provides a wide range of facilities for searching text and node. These facilities supported the researcher and reduced the time needed to go through all the documents should he want to investigate certain topic. After analysing the free nodes that related to the development activities of the e-government in Qatar, the research strove to find a way to classify those free nodes and link them to wider categories. Initially, it was not very clear how they fitted in the main node (i.e. e-gov development stages node) and what the relations were between them. However, as the data analysis developed, the relationships between the codes became easier to see and the researcher started grouping them using tree codes.

As an initial solution, the researcher tried to simulate the initial framework in terms of the number of stages required to fully implement an e-government at a national level. The reason was to find an initial division that might help the researcher to classify the

development of activities under certain development stages and then, the classification might be tested later by further analysis. Accordingly, all the nodes were mapped to their suitable categories (i.e. development stages). In other words, the main node that represents the development stages of the e-government at a national level was divided into four main children nodes, namely the initial node, the developing node, the advanced node and the optimal node. Each node represents a development stage and became a parent of many children nodes that represent the development activities that took place (or might take place in future) in each development stage. Figure 6 shows the 'e-gov development stages' node and its four children. Each child is a parent of other children that represent the development activities that belong to that stage of development.

Having classified the implementation of e-government into four stages (categories), the researcher started comparing these categories to what had been found in the literature. The key issue of the comparison was not only 'how many stages' were required for this type of development, the key issue was 'how to differentiate' between these development stages or what sorts of criteria or development indicators were required to help the researcher to differentiate between those development stages. Thus, the researcher started comparing these classifications with the e-government literature and refining the research finings. In addition, he was always sharing the findings with his supervisor who was critically analysing and discussing the study findings with the aim of further refining them and drawing the attention of the researcher to any unclear points.
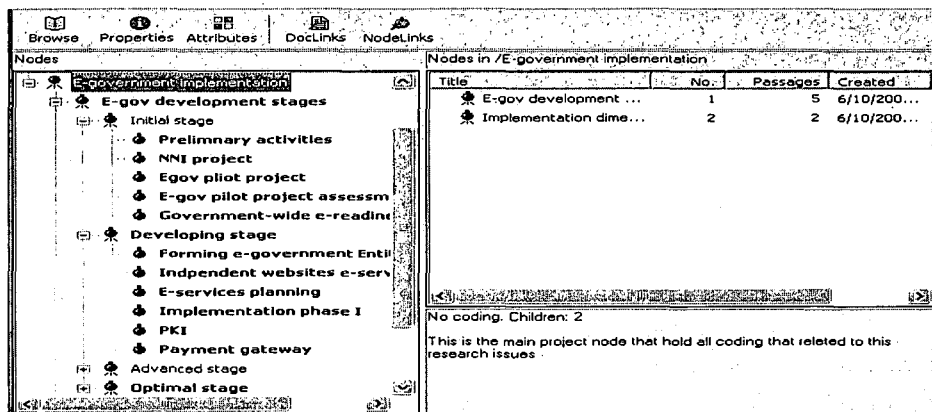

Figure 6: The use of tree nodes in classifying the development stages

After many iterations of analysing the data, the researcher found that four stages of development are necessary for this type of development and fit the nature of implementing an e-government at a national level. Furthermore, he was able to identify the key development indicators that help e-government implementers to differentiate between those four stages. To summarise the above explanation, every time the researcher wanted to analyse a certain issue related to the development stages of the e-government, he performed the following steps:
1. Read all codes that related to that issue thoroughly and carefully.
2. Compare those codes that come from different interviewees' notes with each other.

3. Compare all codes with what had been found from the other sources of evidence such observation notes, official documents, brochures, local newspapers articles and other fieldwork notes.
4. Compare the findings with what had been found in the literature through the initial framework that had been developed in Chapter 3.
5. Critically analyse the issue
6. Discuss the issue with the researcher's supervisor
7. Communicate the result of the analysis with the reader through a written piece of work .
8. Finalise and refine the analysed topic in the initial framework and presented it in its final shape.

Having completed the analysis of the first part of the research (i.e. the activities that related to the development stages of the e-government implementing and assigning them to their respective stages as well as determining the development indicators of each stage), the researcher started developing and organising the required nodes for the second part of the research. As an initial analysis step, the researcher created tree nodes exactly similar to the classifications that he had developed in the initial framework mentioned in Chapter 3. Figure 7 demonstrates the nodes that were created based on the initial framework classifications. As shown, there are two main categories, namely organisational issues and technological issues. Each category was divided into many classifications and each class was divided into many subclasses. For example, there are four classes under the organisational issues category (e.g. organisational alignment, organisational contribution, human-centred issues and change management) and there are three subclasses under the class 'organisation alignment', specifically organisational structure, organisational culture and power distribution.

Figure 7: The use of tree nodes in classifying the key organisational and technological issues

Then, the researcher started reading again through all the documents and coding text, passages and sometimes sections at their respective nodes by using the NVivo coder. In addition to the use of NVivo coder, the researcher used other types of coding such the use of 'Speed coding' which is a very helpful coding function as it became a one-second job after the researcher had had some experience using NVivo. Speed coding allowed him to change the order of codes, names, types, and descriptions. During the coding process, there were some new patterns that emerged from the data hence the researcher created temporary free nodes for them with the aim of classifying them later under the main tree of the key issues classifications. After discussing those new issues with the researcher's

8

supervisor and sometimes his colleagues, the researcher was able to put them under the right classification and sometimes he created new classes for those patterns that emerged from the data. In summary, during the analysis of this part of the case study, the researcher performed the following steps:

1. Categorising the organisational and technological key issues that might affect e-government implementation into two main categories.
2. Classifying each category into many classes and each class into many subclasses. Each category, class, or subclass is represented by NVivo node.
3. Reading all documents again thoroughly and carefully.
4. Coding all text, passages or sections at their respective nodes.
5. Comparing those codes that come from different interviewees' notes with each other.
6. Comparing all codes with what had been found from the other sources of evidence such as official documents, brochures, observation notes and local newspapers articles.
7. Comparing the findings mentioned above with what had been found in the literature through the initial framework that had been developed in Chapter 3.
8. Critically analysing the issue and discussing it with his supervisor
9. Communicating the result of the analysis with the reader through a written piece of work
10. Finalising and refining the analysed topic in the initial framework and presented it in its final shape.