



EVALUATING THE INSTITUTIONAL FACTORS AFFECTING E-
GOVERNMENT IMPLEMENTATION

A Thesis Submitted for the Degree of Doctor of Philosophy

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Thesis Summary

This thesis focuses on e-government implementation and related institutional adoption and diffusion factors in Omani public sector organisations. With the advancement of the Internet and supporting Information and Communication Technologies, e-government has emerged as an effective means of delivering government services to citizens. While most early e-government efforts were concentrated on developed countries, in the recent past, it has also become popular in many developing countries. Most notably are the Middle Eastern countries that have continued to invest significantly into e-government initiatives in the last five years. However, compared to the West, the progress of e-government implementation and diffusion has been laggard in the Middle East region. The Sultanate of Oman is one such example, where, although large investments have been made since 2003 to facilitate the implementation of its electronic services, limited progress has been made in terms of realising fully functional e-government.

The aim of this thesis is to examine the institutional factors influencing the development and implementation of e-government in the context of Oman using case study based research. From an institutional perspective economic, political and social as well as technological issues signify the most fundamental pressures that organisations face when initiating e-government implementation led change. Using institutional theory as a conceptual lens, this thesis aims to provide a better understanding of the internal and external pressures that influence the success of e-government projects. This research identified nineteen different factors influencing the progress of the national e-government project, e-Oman, from a public sector organisational perspective. Further, a conceptual model for examining e-government implementation has been developed and evaluated empirically within the context of Oman. By doing so, this research contributes to the body of knowledge by identifying the institutional factors that contributes to the success of e-government implementation and explaining its paradoxes.

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Declarations

This thesis gives an account of the research undertaken by Moaman Al-Busaidy. Some of the material presented here has already been published, is accepted and yet to be published or is under review in the form of the following publications:

Journal Papers *Published/Accepted for Publication*

- [J2] **Al-Busaidy, M.** and Weerakkody, V. (2011) E-government services in Oman: an employee's perspective. *Electronic Government Journal* 8(2/3), Pp. 185-207.
- [J1] **Al-Busaidy, M.** and Weerakkody, V. (2009). "*E-government diffusion in Oman: a public sector employees' perspective*". *Journal of Transforming Government: People, Process and Policy*, 3(4), Pp. 375-393.

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- [C5] Al-Sobhi, F., Weerakkody, V. and **Al-Busaidy, M.** (2010) "The Roles of Intermediaries in the Diffusion and Adoption of E-Government Services" (2010). *AMCIS 2010 Proceedings*. Paper 385.
- [C4] **Al-Busaidy, M.** and Weerakkody, V (2010), The e-government implementation directions in Oman: A preliminary investigation, *Proceedings of the European and Mediterranean Conference on Information Systems*, 12-13 April, Abu Dhabi, UAE.
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- [C2] **Al-Busaidy, M.** and Weerakkody, V. (2009), "An Investigation of e-Government Progress in Oman: A Survey of Public Sector Workers, *Proceedings of the European and Mediterranean Conference on Information Systems*, 13-14 July, The Crowne Plaza, Izmir, Turkey,
- [C1] **Al-Busaidy, M.** and Weerakkody, V. (2008), "Factors influencing e-government implementation progress in Oman: a discussion", *Proceedings of the 2008 European and Mediterranean Conference on Information Systems (EMCIS)*, 25-26 May, Al Bostan Rotana, Dubai, UAE .

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Chapter 1: Introduction to the Research Area

1.1 Overview

Over the last decade, the concept of electronic government has established itself as an effective mechanism for increasing government productivity and efficiency, and as a key enabler of citizen-centric services. In this respect, e-government aims to build a digital state in which public services and information are offered to citizens electronically (Navarrete, 2010; Brooks et al., 2008). Collectively, researchers and practitioners iterated that e-government offers many benefits to citizens. These key benefits include effectively utilising public sector organisations' IT infrastructure, improving process efficiency, reducing their logistical costs and enabling data integration (Janssen and van Veenstra, 2005; Al-Khoury and Bal 2007; United Nations, 2003; Ndou, 2004; Chesi et al., 2005). As a result, the interaction among citizens, non-government organisations (NGOs), private sector and government agencies has become more convenient and cost-effective (Huang et al., 2006; Alston, 2003). Thus, e-government enables citizens and the private sector to gain quick and easy access to the most up-to-date information (Ke and Wei, 2004). Doing so increases citizen participation, provides a needed platform to raise transparency and accountability, and reinforces democratic values (UN, 2010).

While public sector transformation efforts are focused towards increasing civil services' accessibility, availability, and quality, e-government literature reported that many complexities and problems arrive when trying to satisfy various citizens' needs, especially in the context of developing countries. Furthermore, the published literatures on implementing e-government initiatives within various developing countries and related project difficulties and issues are still limited. Therefore, it is necessary to examine these various factors through developing a conceptual model that will enhance the understanding of the complexities and implementation challenges in e-government projects.

Within the last decade, various models related to e-government implementation have been published in the literature, but the conceptual rigor as well as the validity of these models are debatable. Moreover, most theoretical models that have been adopted in the context of e-government have been focused investigating citizens' or user perspectives while the organisational (or public agency's) angle has been largely ignored from a theoretical stance. Furthermore, it is argued that most of the models used to study citizens perspectives are adopted from the information systems field and are constructed to satisfy citizens' requirements without realising intra/extra-organisational issues and factors that are effecting public organisations. Therefore, there is a clear gap in the application of theory in the e-government domain as the extant literature has proved that the factors influencing e-government implementation from a citizens' perspective are different from those influencing e-government implementation from the public organisation's perspective.

On the other hand, recent advancements in Information and Communication Technologies (ICTs) have motivated many developing countries to implement electronic government projects. However, the success of these projects has been sparse, due to various organisational (or institutional) factors that influence implementation. While various empirical studies have explored these factors to some length, as argued above, the application of theory to guide these studies has been superficial in most cases. Therefore, by using institution theory, this study investigates the institutional factors that influence electronic services in three public organisations in Oman. From an institutional perspective, economic, political and social as well as technological issues signify the most fundamental pressures faced by public sector organisations when implementing change. Finally, by elucidating and encapsulating various institutional factors influencing e-government implementation, through the use of Institution Theory as a lens, this research will formulate a conceptual model for examining e-government implementation projects in the context of developing countries.

The above topics are summarised in this chapter as follows. The next section and sub-section (1.2 and 1.2.1) determine the background of the research problem and the rationale behind this study. This is followed by an outline of the research aim and objectives in Section (1.3). Section (1.4) gives a brief introduction of the different chapters that will be presented in this thesis.

1.2 Background to the Research Problem

One of the most significant current issues in e-government success is the adoption and diffusion of e-government services (Al-Shafi and Weerakkody, 2011a; Gilbert and Balestrini, 2004; Tung and Rieck, 2005). Such issues strongly rely on the implementation of an infrastructure that facilitates the flow of e-services between e-government stakeholders, government, citizens and business (Moon and Norris, 2005). However, many researchers have identified other common challenges to successful e-government implementation in developing countries. These include, privacy and security (Al-Khouri and Bal, 2007; Lam, 2005; Signore *et al.*, 2005; Bwoma and Huang, 2003), accessibility (Abanumy et al, 2005; Chesi et al., 2005), infrastructure (Al-Khouri and Bal, 2007; Bwoma and Huang, 2003; Chesi et al., 2005), confidentiality of personal data (Al-Khouri and Bal, 2007; Bwoma and Huang, 2003), and IT workforce capability (Akbulut, 2002; Norris, 1999; Bwoma and Huang, 2003; Chesi et al., 2005). Wilford et al. (2004) argue that researchers in the field of e-government consider security and privacy to be one of the key challenges in the implementation of an e-government system. Security issues commonly consist of computer security, privacy and the confidentiality of personal data (Al-Khouri and Bal, 2007; Bwoma and Huang, 2003). Conklin and White (2006) write that information stored in databases and systems remains very valuable. In this case, security and privacy issues should be monitored and continuously reviewed. Underestimating the importance of this factor can result in unauthorized access to sensitive information and a loss of citizens' trust, which might lead to e-government failure. Therefore, building a solid trust environment by providing a high level of data privacy, data integrity and user authorisation will ensure electronic transaction security and online identity authentication (Janssen and Joha, 2011; Al-Khori and Bal, 2007; Conklin and White, 2006).

While previous researchers named these factors as key challenges to the implementation of an e-government system, other researchers (Al-Amoudi and Willmott, 2011; Rowlinson et al., 2009; Schreyögg et al., 2011) argue that organisational changes (institutional factors) are more important when considering e-government implementation. Furthermore, underestimating the importance of these pressures and related factors will lead to slow progress or failure of the implementation of e-government projects (Al-busaidy and Weerakkody, 2009b). The fundamental concept behind the implementation of e-government is the radical change that it will introduce to the way that services are delivered within public sector institutions (Daqing, 2010; Nelson, 2003). Therefore, any changes within formal

structural organisations, such as government units, will mostly impose changes in procedure and corresponding challenges within those same organisations; nevertheless, these changes will lead the organisations to a new, more desirable situation (King et al, 1994).

Drawing from the study done by Aldrich et al. (2002), it can be argued that there is no single list of challenges to e-government implementation. However, e-government initiatives are not easy to implement, as highlighted by many researchers (Weerakkody et al., 2007; Irani et al., 2005). Ndou (2004) suggests that e-government initiatives are complex strategies, with a number of inherent challenges that could impede e-government implementation. Moreover, many researchers such as Howard (2001); Jun and Weare (2010); and Welch et al. (2005) argue that e-government includes a fundamental transformation of the existing government that consists of changes to many elements within public sector organisations, including the structure, process, culture and beliefs of the public sector stakeholders. Therefore, these changes create several challenges within government organisations (Howard, 2001; Hazlett and Hill 2003; Irani et al., 2005). Those resulting from organisational change have been classified by many researchers into four key themes. These themes include economic (North, 1990; Hirsch and Lounsbury, 1996), political (Orren and Stephen, 1994), social (Burke and Donald, 1981; Swidler, 1986) and technological (King et al., 1994; Teo, et al., 2003) pressures that all influence the implementation of organisation change.

1.2.1 Rationale and Motivation of the Research

The focus of this research is primarily on e-government implementation in developing countries, particularly in Oman. While there is very little published (normative) literature on e-government implementation focused on Oman, obtaining information about the Omani e-government efforts is a challenge. The rationale and motivation for undertaking this research are as follows:

1. E-government implementation consists of various stakeholders, including the citizens, private and public sector organisations that contribute towards shaping its success. While most published research about e-government reflects the evaluation of adoption and diffusion from citizens' perspectives, this research discusses e-government implementation from the organisation's perspective. In this respect, this research explores the various institutional challenges facing public sector organisations in their implementation of e-government projects.

2. In the context of developing countries, there is an obvious lack of empirical research on institutional factors involved in the development of e-government implementation and its complexities. Therefore, there is a need to understand issues, opportunities and the challenges of implementing e-government initiatives related to public sector organisations in developing countries.
3. There is a need for a comprehensive approach and the establishment of a theoretical foundation upon which to develop an integrated model of institutional change, and which, at the same time, encompasses much of the contemporary work on e-government. This will offer a far broader and in-depth view of the key internal and external pressures that influence change in public sector organisations. While scholars have studied the implementation of e-government projects from a citizens' perspective using a variety of theories, few studies have explored the organisational aspects with the same theoretical rigour. Therefore, this study will use a theoretical lens to understand the challenges of e-government implementation from an organisational perspective.
4. Institutional theory has been applied, in a basic form, by various scholars such as Kim et al., (2009), Silva and Figueroa (2002), and Welch et al., (2010) to study the implementation of electronic services in the public sector. Nevertheless, to date, no studies have comprehensively attempted to study the variation of developments and achievements in e-government implementation from an institutional theory perspective. Therefore, this study focuses on institutional factors that fold under four key pressures (Economic, Political, Social and Technological), derived from an Institution Theory perspective which influence e-government implementation in public sector organisations. Consequently, with a solid conceptual model built on Institutional Theory, this research aims to enhance the understanding and ability of various organisational issues related to e-government implementation.
5. Various Omani public organisations have carried out different practices in e-government implementation. As a result, Omani experiences and progress in e-government project implementation has been rather asymmetric and unbalanced.

When reviewing real world experiences, the latter has caused problems for countries such as Oman, where e-government efforts have been stagnating and changing in focus for many years due to external involvement and the introduction of online solutions that do not fit with the sociocultural values and beliefs of the country. Therefore, the progress in e-government implementation varies from one Omani public organisation to another. Consequently, this study will attempt to understand various institutional factors that affect and hinder the progress of e-government implementation among Omani public sector organisations. In addition, within this context, the research will attempt to answer: a) why has the progress of e-government been slow in Oman when compared with other countries in the same region, and b) why has the level of e-government implementation varied between comparable public sector organisations in Oman?

6. While previous studies in e-government adopted quantitative approaches in identifying the most salient adoption factors, its related issues, and various frameworks and models for understanding implementation processes (e.g. Carter and Belanger, 2005; Carter and Weerakkody, 2008; Irani et al., 2007; Elliman et al., 2007; Welch et al., 2005; Al-Sebie and Irani, 2005), there is a lack of qualitative research regarding the best way to manage these different factors in the achievement of progress relating to e-government implementation. This is due to the fact that it has to be organised through interviewing various public sector employees involved in e-government implementation, which is not always an easy task.

In order to explore and realise various institutional factors that are crucial to successful e-government implementation in a developing country context, it is necessary to understand the current states of the various Omani public organisations involved in e-government implementation over the last five years. The empirical results in this thesis will describe how e-government initiatives have been undertaken and managed in the Omani setting in three different public organisations. To this end, the author intends to use institutional theory to examine the various internal and external pressures influencing e-government implementing initiatives within Omani public sector organisations. Ultimately, this thesis hopes to explain how different public sector organisations in the same socio-political environment manage these pressures to realise e-government implementation success.

1.3 Research Aim and Objectives

The aim of this study is to investigate the internal and external pressures influencing e-government implementation in developing countries. This research will help to offer a better understanding of the challenges public sector organisations face when implementing change through e-government projects and how these organisations respond to such change. In this respect, this research aims to answer the following question: *“How do comparable public sector organisations respond to the implementation paradoxes caused by various Institutional pressures that influence e-government implementation?”*

In order to realise the above aim and answer the research question, the following objectives will be pursued in the study.

- **Objective 1:** Conduct a comprehensive review of e-government literature to highlight the complexities of e-government implementation and identify the key challenges that influence implementation (Chapter 2).
- **Objective 2:** Use institutional theory to develop a conceptual model for classifying the e-government challenges into Economic, Political, Social and Technological perspectives (Chapter 3).
- **Objective 3:** Using the conceptual model as a frame of reference, conduct empirical research using a qualitative case study based method in a developing country (Oman) to explore the institutional pressures that influence e-government implementation (Chapter 4).
- **Objective 4:** Analyse the data collected to identify and classify the various institutional pressures influencing e-government implementation into Economic, Political, Social and Technological categories, and to examine the impact of these pressures on comparable public sector organisations in Oman (Chapter 5).

- **Objective 5:** Discuss the paradoxes facing the process of e-government implementation in comparable organisations in Oman, and offer recommendations regarding the ways in which these identified institutional pressures can be effectively managed (Chapters 6 and 7).

1.4 Thesis Outline

Many researchers, such as Collinson and Hochev (1997), Delamont, et al. (1997), and Phillips and Pugh (1994) argue that a PhD thesis must follow many stages to identify and observe a novel contribution. In light of the aforementioned studies, this PhD thesis maintains seven stages; i) discussing the research area and outlining the thesis, ii) evaluating the research field (e-government) and discussing various related issues, iii) identifying various complexities of e-government and generating a conceptual model, iv) addressing the most appropriate research methodology that will be suitable for this research, v) clarifying analysis of different data collection processes and increasing empirical knowledge about each used element, vi) relating each element identified within the literature along with the findings, and vii) summarising this research with brief outlines of various contributions and listings of different limitations faced by the researcher. Therefore, this research is structured into seven chapters as follows:

Chapter 1 will start by defining the research problem and showing various motivations for conducting this research. This includes exploring the background literature that highlights the need for investigating public organisations and related issues, which have focused on the use of e-government to overcome their organisational complexity and institutional barriers. In the same chapter, the aim of this study will be outlined.

The literature review of e-government implementation will proceed in Chapter 2. In this chapter, the researcher discusses various issues related to e-government in general. Therefore, this chapter deals with the following topics: (a) emphasising the taxonomy of e-government definitions, related characteristics and suitable definitions for this research, (b) debating of e-government interaction dimensions that has been discussed and classified into four themes, G2C, G2B, G2G, and G2E, (c) highlighting various literature on stages and phases of development of e-government implementation, (d) analysing the literature on the various benefits and challenges of e-government implementation, and explaining the

perspectives upon and mapping various factors influencing e-government implementation, (e) assessing current research conducted in online public domain, (f) summarising the key themes identified in the literature highlighting the research issues and (g) discussing various challenges that can be broadly classified into four main pressures (economic, political, social and technological) influencing e-government implementation and its further elaboration.

Chapter 3 aims to provide a clear model for this research. In this chapter, the researcher will identify a gap in the literature in relation to the lack of a cohesive theoretical model for understanding different organisational pressures related to economic, political, social and technological factors. Therefore, the researcher will make use of Institution Theory as the basis for studying the institutional factors influencing e-government implementation. The use of institution theory in this research is complementary to understanding these pressures. Furthermore, the pressures will be used as a lens to examine various institutional factors related to organisational change and the implementation of the e-government phenomenon. Further, Chapter 3 will discuss the initial literature on various institutional factors based on the Institution Theory context. The development of such a conceptual model for e-government implementation will help to capture the government perspective on enabling electronic services within governmental units. This will allow the researcher to map various complex issues that impact the implementation of e-government and will investigate different factors dealing with the question of why the progress of e-government has lagged in some governmental agencies while a few others have made exemplary progress towards implementing fully integrated and interactive e-government services.

In Chapter 4, the researcher will obtain a suitable research approach, methodology and design method. The researcher will adopt a qualitative research approach to collect the data from the three Omani public organisations. Therefore, the researcher in this chapter will start with a justification of the selected interpretive approach, research methodology, research method and the reason behind the chosen methods. Through face-to-face interviews and multiple inquiries, qualitative data will be gathered to test and validate the conceptual model proposed in Chapter 3.

Chapter 5 will first present background about the sultanate of Oman, national e-government projects in Oman and results of research conducted using the interview approach. These will

be presented to provide a clear idea about the case study in this research and where and how it will be conducted. The first phase of data collection will be conducted with the ITA employees (national e-government organisation members) to demonstrate the challenges that might hinder their efforts to carry out e-government implementation. In phase two, Chapter 5 will investigate the economic, political, social and technological pressures facing the implementation of e-government in three Omani case organisations. The empirical data will ensure confirmation of the importance of the institutional factors that were identified in Chapter 3 from the literature, and will add a number of new factors that will be clarified in the Omani public organisation context.

Based on the literature and findings in Chapter 3 and 5, Chapter 6 will propose a revised conceptual model, which will cover all investigated institutional factors in the context of Omani e-government. This will contribute, confirm and reflect the theoretical and empirical perspectives. In this Chapter, this research seeks to represent, discuss and validate the conceptual model proposed in Chapter 3 for e-government implementation.

Chapter 7 will conclude this study by outlining the most important findings, theoretical and empirical contributions, limitations, recommendations and future research in this thesis. Furthermore, it will clarify the research gap identified in this chapter and will attempt to answer other research questions related to the aim and objectives of this study. Figure 1.1 will illustrate the relationships between research stages and these thesis chapters; brief discussions of each of these chapters are then offered.

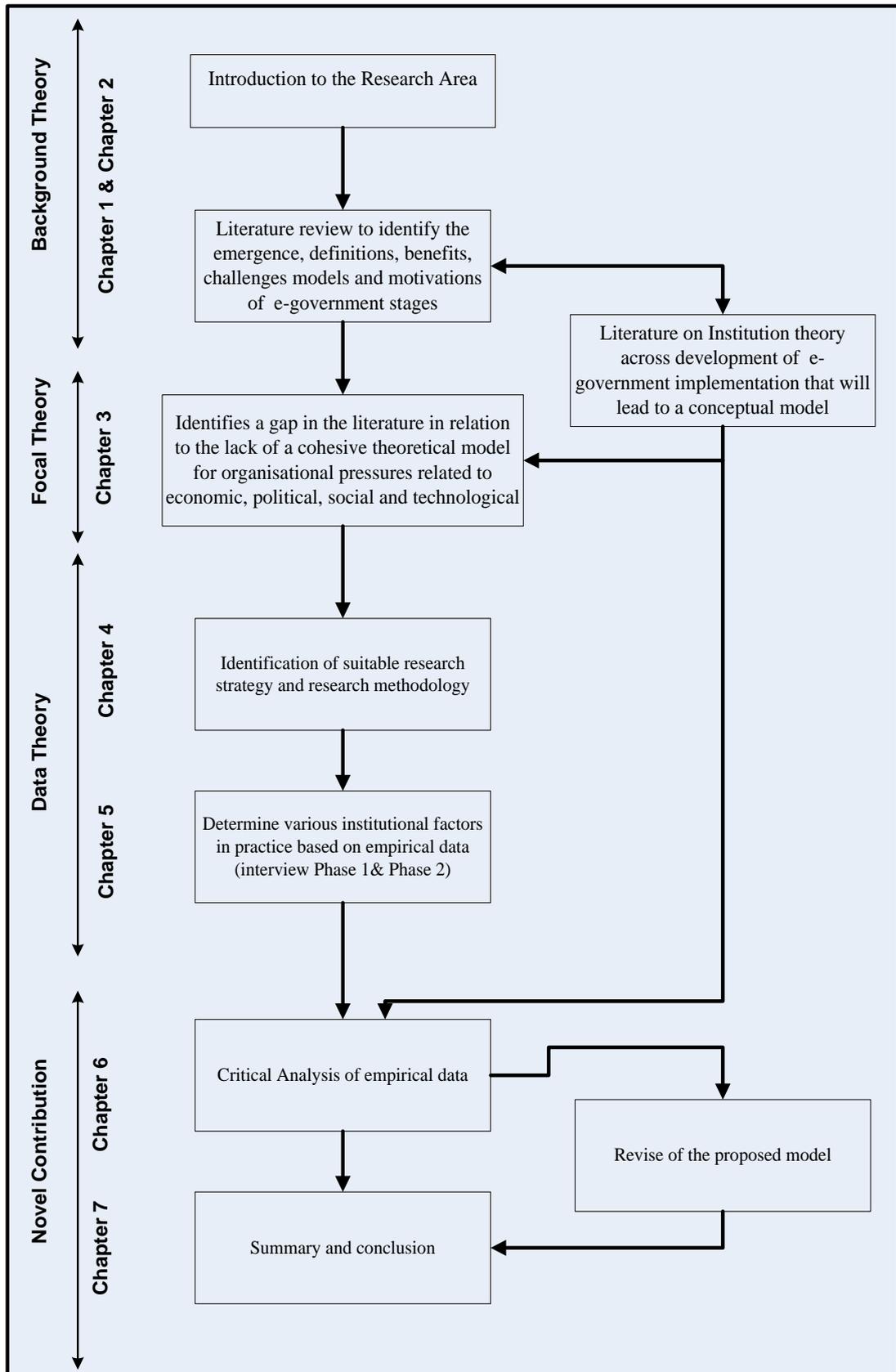


Figure 1.1 Illustrates the Research Outline

Chapter 2: Literature Review - Critical Analysis of the Research Area

2.1 Summary

This chapter aims to present a critical review of e-government implementation. The chapter will start by giving a brief background of e-government and the reasons behind the emergence of the concept in Section 2.2. The following section within this chapter will define e-government and its characteristics. Thereafter, this section will discuss the e-government definitions with regard to its dimensions. In Section 2.4, the researcher assesses the literature on the stages of development of e-government implementation and therefore, highlights several phases such as infrastructure, integration, and transformation. Sections 2.5 and 2.6 begin by analysing the literature of various benefits and challenges of e-government implementation, and explain the perspectives and current research conducted online in the public domain. Thereafter, these sections analyse current research conducted on the literature of e-government implementation in order to map various factors that are influencing e-government implementation. Lastly, the chapter summarises the key themes identified in the literature, highlighting the research issues in Section 2.7.

2.2 Emergence of e-Government

Today, the world has entered an advanced stage in the digital age in order to take advantage of the available tools and techniques in the field of Information and Communication Technology (ICT) and the Internet. Digital readiness has become the fundamental criterion by which to measure the degree of progress of nations in the twentieth century (Al-Shafi and Weerakkody, 2009). These developments have brought about a revolution in the concepts and methods of the services implemented by governments. The development of ICT and the emergence of the Internet have caused many governments to work on the implementation of electronic sites,

especially those made available on the internet (Ho, 2002). Moreover, along with the implementation and expansion of electronic government services, researchers (such as Atkinson and Ulevich, 2000; Aichholzer and Schmutzer, 2000; Akomode et al., 2002; Aldrich et al., 2002; Allen et al., 2001) began to refer to these electronic public services as "e-government". The whole world has responded to these new methods, and emerging e-government programmes have become the main provider of public services among the World Wide Web (WWW).

E-government is one of the ideas that governments around the world have embraced in order to improve the services they provide to citizens, as well as compete globally with other regions and countries using the principles of e-business and competitive advantages in global dimensions (Themistocleous et al., 2005). In addition, e-government is a multidisciplinary area, because the scope of e-government is very wide and interrelated with other areas. It is a very complex concept which involves many aspects, including economic, political, social and technological aspects (Akesson et al., 2008). Thus, e-government begets development, brings with it economic progress and market maturity, and provides a global scale to people to interact with its idea (Eyob, 2004; Barclay and Duggan, 2008). As with any other phenomenon, e-government brings with it the challenges of growth, of efficiency, of productivity, of endurance in the continuously evolving economic system, and most of all, of maintaining individual and collective identity in an increasingly homogenous environment (Yeung and Ready, 1995).

2.3 Dimensions and Characteristics of e-Government

In many researches, e-government has been defined and conceptualised in different ways that are dependent on the scope of each research in normative literature. The definition of the term "electronic government" is still ambiguous, thus there is no specific definition for the "e-government" concept among the researchers and practitioners (Riley, 2001; Criado and Ramilo, 2003). However, there are several definitions which have been provided by many researchers, depending on the scope of each study (Criado and Ramilo, 2003; Al-Sobhi et al., 2010).

Essentially, e-government is a tool that supports governments to utilise the best features of ICT to transform traditional work practices of government by processing and communicating data (Lambrinouidakis et al., 2003; Turban et al., 2002). However, transforming government work to a fully integrated IT system is not easy to build (Al-Sobhi et al., 2010). The need to re-engineer the whole work process is an initial step that should be occurring at all levels of management, from operational level to top level of management, and from a single department to the whole enterprise, surrounded by the relationships with external organisations in the same environment (Gortmaker et al., 2004; Scholl, 2002). The focus of these definitions varies according to the use and the needs of ICT, particularly dependence on the method of providing more efficient and effective government services and to e-enable the online services (Weerakkody and Dhillon, 2008; Irani et al., 2006).

Various researchers have offered different definitions to explain the concept of e-government (e.g. the European Union, 2004; Heeks, 2003a; Heeks, 2003b; Seifert and Petersen, 2002; Jain, 2002). These definitions differ according to varying e-government foci, and are usually centred on technology, business, citizen, government, process, or a functional perspective (Weerakkody and Dhillon, 2008; Irani et al., 2006; Seifert and Petersen, 2002). Further, researchers such as Irani et al. (2006) have suggested that the definitions of e-government could be fabricated according to the stakeholders of e-government. Others suggested that the definition of e-government is a very confusing expression, and it is dependent on the environmental practices of e-government (Riley, 2001; Moon, 2002; Bekkers, 2003). To this end, many researchers have categorised the definitions of e-government to six different areas, including citizen, business, government, process, technological and functional (Seifert and Petersen, 2002; Holden et al., 2003; Jain, 2002).

Based on different researchers' perspectives, the term e-government can be defined as a primary mechanism used by governments to provide public services and information to citizens, businesses, employees and other governmental agencies by using information and communication technologies (ICT) (Brown and Brudney, 2001; Weerakkody and Dhillon, 2008; Irani et al., 2006). However there are many different definitions of e-government in the literature that refer to each of these categorisations. The following Tables (2.1 to 2.9) illustrate different classifications of e-government,

from both broad and narrow perspectives. Most researchers have classified the relationships in e-government into government to government (G2G), government to business (G2B), and government to citizen (G2C) (Bwoma and Huang, 2003; Stoltzfus, 2004; Ndou, 2004; Chesi et al., 2005). Bwoma and Huang (2003) and Al-Busaidy and Weerakkody (2008) noted one more type of relationship, G2E, which explains the relation between the government and their employees. The G2E relationship is particularly relevant for this research as it investigates the factors influencing e-government as seen by the employees from a service provider's perspective. The following subsections will offer various definitions of e-government implementation according to e-government dimensions.

2.3.1 G2C Dimension

The first e-government dimension is government to citizen (G2C). G2C initiatives are prime plans to facilitate citizen interaction with government and to deliver the best service solution by electronic methods (Zhi and Zhenhua, 2009). This includes every single service provided by government, starting from viewing of the information and ending by paying for the services and utilities citizens need (Ramlah et al., 2010). At this stage, government mainly look forward to maintaining the latest solution, which will maximise the citizens' benefits through implementing e-government. However, this will require simplifying of technical solutions, being less time-consuming, and reducing spending costs at all e-government implementation stages (Warkentin et al., 2002; Ko et al., 2005). Table 2.1 summarised the recent literature and key contributions that are made in the G2C dimension.

References	Key Factors	Methodology	Contribution to e-government Field
Zhi and Zhenhua, 2009	Acceptance, Satisfaction, Cost and Efficiency	Quantitative research method (Survey-questionnaire, TAM)	The G2C model forms good practices to enhance and rapidly develop the e-government application by utilising the citizens' needs; G2C is necessary to ensure safety and reliability for e-government by perfecting the supervision mechanism that provides the required services for the public; E-government improves public enthusiasm for participation in policies and increases publicity and scalability.
Han, 2010	Transparency,	Technology	In the G2C model, e-government deploys

	Independence, Impartiality, Effectiveness, Fairness, Integrity, Accessibility, Flexibility, and Affordability	analysis (Design a Framework)	technology in order to offer dispute resolution mechanisms for its citizens; this helps decide which service is better to implement; Through Online Dispute Resolution (ODR) technology, e-government (as the G2C model) can resolve many complexities online, such as tax disputes or citizen complaints with respect to telecommunications service providers.
Ko et al., 2005	Accessibility and Efficiency	Qualitative Research (Interviews, focus group)	The G2C model encourages citizens to share knowledge. Evaluated as a valuable asset, this knowledge needs to be properly managed and utilized for further decisions; Establishment of the G2C model of e-government implementation will force public agencies to develop enhanced plans and guidelines; G2C acts as an enterprise data model, which attains a better environment for communication with citizens and participates with leaders and government officials.
Ramlah, et al., 2010	Communication and transaction	Quantitative research method (Survey-questionnaire , TAM)	G2C provides an easier way to communicate with citizens through the utilisation of ICT; G2C educates and influences citizens' intentions towards using various public e-services. It also decreases the digital divide.
Warkentin, et al., 2002	Trust	None	G2C plays an important role in encouraging the public to trust e-government services; G2C considers citizen trust as the key influencer towards an e-government usage increase.

Table 2.1 Recent literature on G2C dimension of e-government

In the latest e-government solution, G2C starts to become the way that all public sector services are provided from one single point, mainly called the “e-government portal” or “one-stop shop” (Weerakody et al., 2005). This is the stage where government agencies integrate all their services together and provide citizens with services at one single click. Definitions related to the G2C dimension of e-government are illustrated in Table 2.2.

Definition of e-government	Characteristics	Reference
<i>The use of information technologies to deliver government information and services and involve citizens in the</i>	Focus on real-time processes and decision making to increase the	Carbo and Williams, 2003

<i>democratic process and real-time government decision making in a much more convenient customer oriented, cost-effective and potentially different and better manner</i>	citizens' usage.	
<i>The delivery of government services online provides the opportunity to increase citizens' access to government, reduce government bureaucracy, increase citizen participation in democracy, and enhance agency responsiveness to citizen's needs</i>	Focus on the use of information technology to provide information access to citizens.	Gant and Gant, (2002)
<i>Government that makes full use of the potential of technology to help put its citizens at the centre of everything it does, and which makes its citizens its purpose</i>	Focus on putting the citizens and their desires at the centre.	Waller <i>et al.</i> , (2001)
<i>E-government as seamless service delivery to citizens or governments' efforts to provide citizens with the information and services they need by using a range of technological solutions</i>	Focus on providing seamless services to citizens.	Burn and Robins, (2003)
<i>Utilising the internet and the World Wide Web for delivering government information and services to citizens.</i>	Focus on the internet for delivering services to citizens.	UNDPEPA/ASPA, (2002)
<i>Electronic government, or (e-government), is the process of transacting business between the public and government through the use of automated systems and the internet network, more commonly referred to as the World Wide Web</i>	Focus on the process of transaction between citizens and government through the internet.	Legislative Analyst's Office, (2001)

Table 2.2 Definitions focusing on the G2C dimension

2.3.2 G2B Dimension

The government to business (G2B) dimension consists of the relationship between government and the private sector. G2B transactions include various services and information exchange between public sector and various types of business and enterprise companies (Dong et al., 2010). While the potential concern of the private sector is to reduce the operational cost and enlarge their financial benefits, the e-government system ensures reducing of a physical presence by improving electronic services and decreasing human practices (Liu and Tan, 2008). The services provided by e-government in both G2C and G2B dimensions are the same, but the only

difference is the complexity of electronic transactions among e-government implementation (Sambasivan et al., 2010; Dong et al., 2010). Table 2.3 summarised the recent literature and key contributions that are made in the G2B dimension.

References	Key Factors	Methodology	Contribution to e-government Field
Awan, 2007	Usability, Security, Online and Communications	Quantitative research method (survey approach)	G2B assessed e-government services needs and online commercial transactions; G2B obtained information via the internet such as regulations, codes, and/or laws. It also downloaded business forms; G2B is required to address the concerns of businesses regarding convenience and efficiency of the private sector.
Dong, et al., 2010	Enterprises' Intention, Convenience, Efficiency, Cost save, Comprehensive information and Accuracy	Quantitative approach (questionnaire survey)	The G2B model will improve if the presented information is clear enough and easy to understand; The on-line transaction function through the G2B model will provide frequent interaction between government employees and enterprises; The G2B model has positive effects on behaviour of e-government business users.
KM World, 2008	Email service and Security	None	Using the email service, G2B is considered as the first tool that works as new search-powered information access to business applications.
Liu and Tan, 2008	Collaboration and Procedure Redesign	Descriptive analysis (Design a Framework)	The G2B model handles the improvement of supply chain management (SCM) and customer relationship management (CRM) for businesses. It also enhances tax control for the government; G2B has been deployed in recent e-customs control procedures within e-government implementation by redesigning the work procedures and applying the latest IT solutions.
Sambasivan, et al., 2010	Trust and Web design quality	Quantitative research (self-administered questionnaire)	Educating workers within the private sector on the usefulness of the e-government system; ensure web design is of exceptional quality and is able to handle any complex processes; provide an environment that will motivate more users to use the e-government system.

Table 2.3 Recent literatures on G2B dimension of e-government

The aim of the following e-government definitions listed in Table 2.4 is to illustrate the combination of the relationship between G2C and G2B dimensions of e-government implementation. Nevertheless, researchers in the e-government area always mention the e-government benefits for citizens, while improving the business and private sector within the region. As a result, all the next mentioned definitions are combining between G2C and G2B dimensions. Although many researchers (e.g. Ke and Wei, 2004; Chaffey, 2007) have defined G2B in the context of e-government, these authors argue that many of these definitions contain the word ‘citizen’ together with the word ‘business.’ In addition, these definitions are often focused on explaining the role of government towards businesses and citizens rather than business as a separate entity.

Definition of e-government	Focus	Reference
<i>A way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes</i>	Focus on providing better access to government information to citizens and businesses.	Fang 2002
<i>The application of electronic-commerce technologies to government and public services for citizens and businesses</i>	Focus on providing public services to citizens and businesses.	Chaffey, 2007
<i>E-government involves access to government information and services 24 hours a day, 7 days a week, in a way that is focused on the needs of our citizens and businesses. E-government relies heavily on agency use of the internet and other emerging technologies to receive and deliver information and services easily, quickly, efficiently and inexpensively</i>	Focus on the benefits of delivering government services electronically.	Ke and Wei, (2004)
<i>E-government refers to the use of IT by government that have the ability to transform relations with citizens, businesses and other arms of government. These technologies can serve a variety of different ends: better</i>	Focus on providing better services for citizens and businesses by utilising IT to deliver quality public online services, improve interactions, grow revenue,	World Bank Group, (2004)

<i>delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions</i>	increase transparency, and enhance effective management.	
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Table 2.4 Definitions focusing on the G2C and G2B dimensions

2.3.3 G2G Dimension

This sector illustrates the backbone of e-government, providing the sharing of data and controlling the electronic exchange between governmental actors (Bonham et al., 2001) and it considers e-government implementation as a concept aimed at improving efficiency (Sang et al., 2009; Belanger and Carter, 2004), accessibility (Choudrie et al., 2004; Al-Joobri, 2006), availability (Sang et al., 2009), and legislation issues (Zhu, 2009), not only in the government sector but in the state as a whole. In a very simple way, it is the online interactions among government agencies, departments, and authorities.

Therefore, government to government (G2G) scenarios mean that government agencies can achieve efficiencies of scale by using one portal to access all government services. G2G enables the integration of government front-office using e-government layer applications with back-office activities to support the integrations and interaction of various segments (Ebrahim and Irani, 2005). It also means enhancing transaction availabilities and sharing data between various government agencies. Nevertheless, this dimension is the most expansive and costly section which needs to be funded as the initial stage of country growth; for instance, in 2003 the US government spent \$2.85 billion to enhance the G2G sector (Werner, 2008).

Many researchers such as Abanumy et al. (2005), Ebrahim et al. (2003), Ezz (2003), Ghaziri (2003), Li (2003), Melitski (2003) and Reddick (2004b) have identified a number of motivators that are common in respect to developing the G2G dimension of e-government implementation. The main motivators of the G2G e-government dimension are the need for paperwork reduction, building an essential infrastructure,

establishing the use of electronic authentication (passwords or e-signatures), cost-savings by increasing the speed of transactions, the interest in improving government efficiency, reducing the number of personnel necessary to complete a task, and improving the consistency of outcomes.

Furthermore, Seifert and Petersen (2002) have noticed that the G2G dimension acts as the main driver for improving the management of government information technology and public resources. This improvement affects other areas of the public and private sectors to develop the best practices among e-government initiatives. Also, these practices emphasis G2G efforts towards implementing and ensuring the success of an e-government project by the re-engineering of various workflow processes, work policies and strategies of e-government initiatives (Seifert and Petersen, 2002). Thus, G2G is considered as the back operational process of other G2C, G2B and G2E dimensions, towards a completely effective successful model of e-government implementation (de Vries, 2008; Joia, 2007; Falk et al., 2008). Based on the previous literature on e-government dimensions, Table 2.5 summarises the recent literature and key contributions that are made in the G2G dimension.

References	Key Factors	Methodology	Contribution to the e-government Field
De Vries, 2008	Integration Process, Political-Organisational and Interaction	Case study approach (Qualitative)	Perceived ICT in the public sector to maintain autonomy; increase technical and financial efficiency and improve regional authority; Provide coordination between public agencies to provide efficiency, data accuracy and management information on mobility; Increased Formalization and Rule.
Scholl, 2005; 2006	Capacity and Dimensions of e-government		Improve effectiveness and efficiency of internal processes; Impact the outcomes and transformation of government practice.
Joia, 2007	Re-structure, Policy, Collaboration and Cooperation	Case study (interviews)	The G2G process is deploying more effective and efficient public policies; G2G processes are a good alternative for public administration to cutting the operational budget and controlling government expectations; G2G implementations give the

			<p>opportunity for the government to examine the ways in which various social influences shape their needs for an information system.</p>
Maluf and Bell, 2005	Integration and Sustainability and Infrastructure.	Systems composition (multiple technology databases)	<p>E-government works as a main driving force in developing integrated public services technology;</p> <p>G2G is a project management tool that requires quality storage and collaborative system development to maintain a strong database and management of public information;</p> <p>G2G enables local and global management to optimise technology to improve communication across multiple stakeholders.</p>
Flak and Nordheim, 2006	Efficiency, Quality of Service, legitimacy and Co-operation	Case study approach	<p>The initial perspectives of G2G emphasize the relationships between focal public administration agencies and their stakeholders;</p> <p>Ambiguous e-government stakeholders' objectives can slow development of e-government projects;</p> <p>The stakeholder theory is considered a powerful method to investigate the complexities and challenges of e-government adoption and implementation.</p>
Jing and Pengzhu, 2009	Trust, Interagency Compatibility, Leader's support, IT capability, Cost, Information Security and Perceived Risks	Case study (interviews)	<p>One of the main objectives of the e-government project is to set up the standardisation policy, which needs to be compatible with the national vision of the public administration;</p> <p>It is very important to provide every layer of management with the necessary authority, especially while collaborating among other agencies (horizontal functional agencies);</p> <p>The term "trust" is found as a major indicator for e-government practices, particularly among top-level leaders of government agencies.</p>
Falk et al., 2008	Normative , Infrastructure, Assumptions, Descriptive Aspects and Instrumental Aspects	Qualitative research approach (interviews)	<p>The e-governments' stakeholder objectives can represent and realize the setting of e-government implementations;</p> <p>The relationships between e-government and its stakeholders are forming and prioritising the future actions of e-</p>

			government; Analyzing e-government stakeholders' interests provides useful insights and focus into horizontal and vertical integration.
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Table 2.5 Recent literatures on G2G dimension of e-government

The G2G e-government dimension demonstrates the backbone of the e-government system; it includes infrastructure, the network nature of government, the integrity of various public agencies and inter-governmental linkage (Klamo et al., 2006). Thus, several e-government definitions concentrate on the G2G dimension mentioned in Table 2.6.

Definition of e-government	Focus	Reference
<i>E-government is the transformation of public sector internal and external relationships through net-enabled operations, information technology, and communications to optimize government service delivery, constituency participation and governance.</i>	Focus on the use of ICT operation to support the internal and external processes of public agencies.	Gartner Group, 2000
<i>The role of information and communication technologies in facilitating the delivery of public services.</i>	Focus on simplifying interaction among public agencies.	West, 2004
<i>Use the most innovation information and communication technologies and particularly web-based internet applications.</i>	Focus on the use of ICT among the public sector.	Fang, 2002
<i>the employment of all information and communication technologies from fax machines to wireless palm pilots, to facilitate the daily administration of government.</i>	Focus on easy ways to deliver online public sector services through any ICT mechanism.	UN/ASPA, (2001)

Table 2.6 Definitions focusing on the G2G dimension

2.3.4 G2E Dimension

Government to employees is one of the most important dimensions of e-government systems, where human resources (public employees) of various government units rely on the services provided for their workforce as well as the completion of transactions and administrative procedures of their staff starting from appointment and ending with retirement or service termination (Government Executive, 2000). It provides an accurate database of all the staff of public sector units as well as facilitating and

speeding up completion of transactions relating to those staff through the process of electronic government. Additionally, the dimension involves the electronic confirmation process with legal approvals and the automation of transaction flows so that they become more rapid and easy to follow up, along with finding the mechanism in the e-government system to ensure the accuracy of the fed entry both legally and procedurally (Chanana, 2008). Table 2.7 summarises the recent literature and key contributions that are made in the G2E dimension.

References	Key Factors	Methodology	Contribution to the e-government Field
Government Executive, 2000	Management and Centralization data	Descriptive research	G2E offers equal access to work line procedure regardless of the duty location; G2E increases and diffuses the regularity quality among society.
Chanana, 2008	None	Exploration study	The G2E model increases public employees' skills and learning level; G2E manages the change in employee-related issues (reduce resistance of change).

Table 2.7 Recent literatures on G2E dimension of e-government

The next table (Table 2.8) reports e-government definitions that are related to public employees' technological skills and their ability to contribute to e-government projects. A review of the literature has shown that only a few authors have discussed or defined the G2E relationship and focus in the context of e-government.

Definition of e-government	Focus	Reference
<i>E-Government is the use of information and communication technology in public administrations combined with organisational change and new skills in order to improve public services, democratic processes and strengthen support to the public policies</i>	Focus on the employees' skills in the public sector to maintain organisation change, and improve public services and workflow processes.	European Information Society, 2004

Table 2.8 Definitions focusing on the G2E dimension

E-government systems were adopted to automate business processes and functions, improve productivity and effectiveness in providing efficient delivery of online public service, and re-engineer the structures and performance within the government sector

(Duffy, 2000; Lambrinouidakis et al., 2003). To this end, the following Table 2.9 lists various definitions of e-government that presented comprehensive terms, which combine all stakeholders of an e-government system. The aim of these definitions is to demonstrate the usage of government services and information technologies to provide better services for citizens, business, government agencies and employees.

Definition of e-government	Focus	Reference
<i>E-government is the term used to reflect the use of ICT in public administration in an attempt to ease access to governmental information and services for citizens, business and government agencies.</i>	Focus on ICT usage for providing better access of government information to citizens, businesses and government agencies.	Lambrinouidakis <i>et al.</i> , (2003)
<i>E-government encompasses applications of various technologies to provide citizens and organisations with more convenient access to government information and services; and to provide delivery of public services to citizens, business partners and suppliers, and those working in the public sector.</i>	Focus on information technology to deliver government services to all stakeholders, including citizens, the private sector, employees of the public sector and other government agencies.	Turban <i>et al.</i> , (2002)
<i>E-government is the use of technology to enhance the access to, and delivery of, government services to benefit citizens, business partners and employees.</i>	Focus on the use of ICT by different government stakeholders.	Silcock, (2001)
<i>E-government is simply using Information Technology to deliver government services directly to the customer at any time. The customer can be a citizen, a business or even another government entity.</i>	Focus on delivery of public services to various stakeholders through IT usage.	Duffy, (2000)
<i>E-government means exploiting the power of information to help transform the accessibility, quality and cost-effectiveness of public services and to help revitalise the relationship between customers and citizens and public bodies who work on their behalf.</i>	Focus on using the power of information for transforming accessibility and service quality to government stakeholders.	Aldrich <i>et al.</i> , (2002)
<i>E-government is defined as the implementation of cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online. The concept integrates strategy, process, organisation and technology.</i>	Focus on government stakeholders benefiting from e-government via cost reduction. Integrate strategies and processes of public online services.	Whitson and Davis, (2001)

Table 2.9 Definitions focusing on the G2C, G2B, G2G and G2E dimensions

Based on the research accomplished within e-government literature, it can be said that combining all the features and characteristics of ICT used in implementing e-government and the provided benefits to its stakeholders in one single definition is a major challenge to the e-government phenomena (Torres et al., 2005; Yildiz, 2007). Although there have been several definitions of e-government, it can be argued that these definitions hold a specific meaning and focus for the research to which they have been applied, and therefore depends on the context and purpose of the e-government research and the researcher. Similarly, for the purpose of this research the following definition is most appropriate for its aim and objectives as it demonstrates the importance beyond the development of e-government phenomena to facilitate organisational pressures such as economic, political and social phenomena that assist in influencing the adoption of public online services. Thus, the most useful and suitable definition for this research is the following: *“e-government is a concept that exists without a firm definition. To some, it represents traditional government “with an ‘e’”, providing an alternative delivery method for government services. For others, it is a social, economic and political phenomenon, which promises to re-engineer the nature of democratic government itself”* (Riley, 2001:13). This specific definition focuses on e-enabling of services using ICT to provide a multi-method delivery for online public services; thereafter, this ICT technology with its promises enhances the various organisation (government) sides, including economic, political and social. While the above discussions have addressed various characteristics of e-government implementation via its definitions, there are other features of e-government systems relating to the implementation stages and evolution of e-government projects. A review of the literature indicates that e-government implementation can evolve from basic information provisioning (referred to as cataloguing) to more advanced stages such as horizontal integration (meaning fully integrated one-stop-type services) to transformation (i.e. such as personalised services) (Layne and Lee, 2001).

2.4 E-Government Stages

E-government has evolved since its inception during the late 1990s from offering basic government information on the internet to more value added transactions. Many researchers (Layne and Lee, 2001; Baum and DiMaio, 2000; Wescott, 2001; Hiller

and Bélanger, 2001; Chandler and Emanuels, 2002) posit that the e-government implementation process goes into a number of development phases, starting by establishing basic information browsing and ending with a fully integrated model. However, there is no universal model for implementing an e-government system. Nevertheless, some researchers suggested a three-phase model (e.g. Howard, 2001; UN, 2008), a four-phase model (e.g. Chandler and Emanuels, 2002; Layne and Lee, 2001; Baum and Di Maio, 2000; Murphy, 2005), a five-phase model (e.g. UN/ASPA, 2001; Hiller and Bélanger, 2001) and a six-phase model (e.g. Deloitte and Touche, 2001) for implementing e-government systems.

Further, the United Nations global report (2008) evaluated all 189 members based on the global services presented in their official homepages and their equivalent for various needs of the local citizens. In order to help mapping out global e-government and frame this broad assessment, three main key issues of e-government strategy and activity are pointed out as ways of summarising the focus of e-government, namely *infrastructure*, *integration*, and *transformation* (UN, 2008).

Infrastructure: ensuring privacy and safety for everyone using e-government applications can only come from the existence of a modern communication network. Infrastructure has the ability to transfer information very quickly while maintaining the integrity and confidentiality of the information. In order to achieve this objective, government must focus its efforts on providing all the necessary infrastructure requirements at both the infrastructure and the rehabilitation level. The infrastructure must be commensurate with the conditions of the state, and the various ways to use the applications must be discussed by decision-makers at the highest levels. It is an ambitious plan to transform the development of civilisation and is quite radical in the functioning of government. Infrastructure is one of the most costly aspects of e-government as transferring traditional government processes to an e-enabled state where services are reliant on efficient enterprise applications and network infrastructure (i.e. high speed internet connections) requires huge capital investments (UN, 2008). Moreover, the accountability of limited financial resources, particularly in developing countries, is an important challenge that governments need to manage well. Therefore, the stance adopted by governments should be one that is geared more

towards the effective utilisation of relevant resources, as well as any foreign aid that is offered to finance e-government-related projects (Al-Nahas, 2006).

Integration: One of the most important issues in the e-government models is the integration between different government agencies (Janssen and van Veenstra, 2005). According to Belanger and Carter (2004), the G2G model can establish a standard system or network between government agencies for faster and more efficient information exchange between them. Even more, this can be done by using a common or standard computer language under a secure system to save the information within any type of online connection. Researchers (such as Brooks et al., 2008; Lee et al., 2005; 2008) also assert that integration offers many benefits to e-government users. Among the greatest benefits of integration in e-government implementation is improving IT infrastructure and reducing logistical costs, based on data integration of various government agencies (Al-Khoury and Bal, 2007; United Nations, 2003; Ndou, 2004; Chesi et al., 2005; Al-Khoury and Bal, 2007). For example, collecting all data required for citizens in one portal can ensure that citizens have the ability to explore and use all services from home or work.

Transforming: It provides the location of government departments and that means for governments to enable optimal care of the interests of its citizens and institutions electronically. E-government uses advanced technology and eliminates the need for services between government departments. According to the United Nations, transforming is the main benefit of e-government, and lies in the use of transformation of the processes in the way that using e-government development via government networking patterns across various government agencies and within its levels under government control (UN, 2008).

Having studied several e-government stage models, it is rather noticeable that there remains a lack of harmony regarding how many stages of maturity an e-government system goes through. While United Nations (2008) believes that only three stages are necessary, others believe that four, five or even six stages are required. Many researchers such as Layne and Lee (2001) have repeated the key stages which are summarised below. On the other hand many researchers (see Chandler and Emanuels, 2002; Backus, 2001; Eyob, 2004) have mentioned that many of these classifications

overlap with each other. The following Table, 2.10, illustrates various models proposed by different researchers in the area of e-government and includes different types of stages.

Types	Stages	Perception	Reference
3 Stage Model	Publish Interact Transact	Information about activities of government available online; Enables citizens to have simple interactions with their governments such as sending e-mail or 'chat rooms'; Provides citizens with full benefits from transactions over the internet, such as applying for programmes and services, purchasing licenses and permits, etc.	Howard, (2001)
	Infrastructure Integration Transforming	Ensure the privacy and safety for everyone using e-government applications, this can only come from the existence of a modern communication network.	UN, (2008)
4 Stage Model	Information Interaction Transaction Integration	Delivery of government services online. One-way communication between government and citizens; Simple interaction between citizens and governments; Services that enable transactions of value between citizens and government; Integration of services across the agencies and departments of government.	Chandler and Emanuels, (2002).
	Cataloguing Transaction Vertical Integration Horizontal Integration	Creating websites and making government information and services available online; Enables citizens to interact with their governments electronically; Focuses on integrating, disparate at different levels; Focuses on integration of government services for different functions horizontally.	Layne and Lee, (2001).
	Web Presence Interaction Transaction Transformation	Agencies provide website to post basic information to public; Users are able to contact agencies through websites, e.g. e-mail, or self-service, e.g. download document; Users can complete entire transactions e.g. license application and procurement, online; Governments transform the current operational processes to provide an efficient, integrated, and personalized service.	Baum and Di Maio, (2000).
	Promote Access and Connectivity Provide Service Online	Focusing on developing infrastructure; Implementing basic services that are installed and adding an e-government presence to existing services;	Murphy, (2005).

	Transform the Enterprise Next Generation Government	Increasing emphasis is upon the automation of back office processes and integration both within and between services; It emphasizes future generation government, where most business processes are re-engineered and IS/IT systems are collaborated through organisation. This stage implies total transformation of government.	
5 Stage Model	Emerging Enhanced Interactive Transactional Seamless or Fully Integrated	Creating a government website with limited information; Updating information regularly; Provides users with reasonable levels of interaction enabling them to download forms and paying parking tickets; Enables users to complete online transactions, e.g. obtaining visas, licences, passports; Provides services across administrative and departmental lines with the highest level of integration.	UN/ASPAC, (2001).
	Simple Information Age Request and Response Service and Financial Integration Political Participation	Representing a basic form of e-government uses e.g. disseminating information by posting it on the web sites; Facilitation of citizen and government interaction; Transactions occur both between governments and individuals (e.g. obtaining visa), and between governments and businesses (i.e. ordering office facilities); This is similar to the last two stages in the Layne and Lee (2001) four-stage model. This stage refers to integrating separate systems at different levels (vertical) and from different departments (horizontal); Promotion of political participation through services such as online voting and surveys.	Hiller and Bélanger, (2001).
6 Stage Model	Information Publish/Dissemination Official Two-way Transaction Multi-purpose Portals Portal Personalization Clustering of Common Services Full Integration/Enterprise Transaction	Governments provide users with increased access to information; Agencies provide interaction between governments and users by using ICT such as digital signatures and security keys; Governments utilise a single portal to provide universal service across multiple departments; Governments enable users to customise portals according to their own desires; Governments enhance collaboration and reduce intermediaries (between operational processes) in order to provide a unified and seamless service; An ideal vision in which governments provide sophisticated, unified and personalised services to every customer according to their own needs and preferences.	Deloitte and Touche, (2001).

Table 2. 10 Stage Models for E-government Implementation

These various models are mainly dependent on different focuses of e-government implementation, and this can be led by the top management or the IT development team (Weerakkody et al., 2007; Liang et al., 2007). This focus includes integration challenges, simplifying and maximising the benefits of technology, more flexible and reliable access to government data, and improving processes, operations and management of the public sector (Borras, 2004; Navarra and Cornford, 2003). Further, the model phases of e-government implementation are increased in respect to the integration and technological complexity increase (Layne and Lee, 2001). Given this context, this section will demonstrate one of the most cited representations of the different phases of e-government development as appropriate (Figure 2.1). Figure 2.1 captures the process transformation and integration aspects and the scope needed for implementing the e-government web portal as “single point services” according to Layne and Lee (2001).

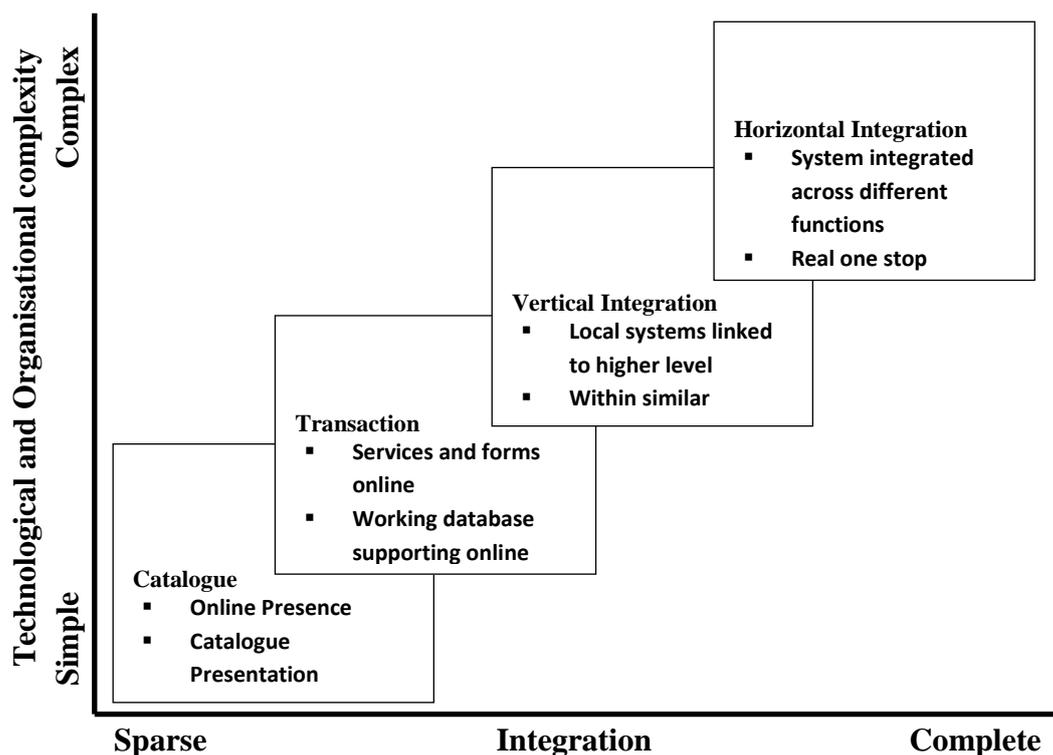


Figure 2.1 Dimensions and Stages of E-Government Development (Adapted from: Layne and Lee, 2001)

The evolution of e-government is captured by Layne and Lee (2001) in four stages that illustrate the various development levels in relation to the growth of technological and organisational issues related to e-government aspects. The four stages are defined as Catalogue, Transaction, Vertical Integration, and Horizontal Integration. These

stages explain the degree to which the properties of ICT have been used to enable the delivery of integrated services electronically. In this context, the first three stages in Layne and Lee's four-stage growth model outline: a) the importance of establishing an online presence (cataloguing); b) the need to allow citizens to electronically transact with government institutions by connecting internal government systems to online interfaces (transaction) (Vasilakis et al., 2003); and c) the need to offer more integrated services by improving local government's connectivity to central government (vertical integration) (Reffat, 2003). The challenge here is to achieve compatibility and maintain interoperability between various databases (Layne and Lee, 2001). In the final stage, horizontal integration, the realisation of a one-stop e-government system is proposed capable of homogenous information delivery by integrating different functions of government (Layne and Lee, 2001; Reffat, 2003; Weerakkody et al., 2007). In terms of Layne and Lee's representation, it is fair to suggest that the UK has realised many vertical level integrations and few horizontal integrations in their national e-government programme (Weerakkody et al., 2007; 2008). To realise the final stage of e-government as suggested by Layne and Lee (2001), public sector organisations require radical redesign of established business processes and legacy systems. This is a complex undertaking, and those organisations which realise the final stage will have to overcome many challenges in order to realise the potential benefits of e-government (Hazlett and Hill, 2003; Halachmi, 1997). The extant literature shows that those countries that have implemented the final stages of e-government [i.e. the horizontal integration according to Layne and Lee (2001) or transformation according to Murphy (2005)] have realised the most comprehensive benefits both for the government and citizens.

2.5 E-Government Benefits

2.5.1 Benefits of e-Government to Citizens

The purpose of e-government, according to Kostopoulos (2003), is to build a digital state where public services and information can be offered to citizens electronically. Researchers and practitioners also assert that e-government offers many benefits to citizens. Among the greatest benefits of e-government is improving IT infrastructure and reducing logistical costs, based on data integration of various government

agencies (Al-Khoury and Bal 2007; United Nations, 2003; Ndou, 2004; Chesi et al., 2005). For example, collecting all data required for citizens in one portal can ensure that citizens have the ability to explore and use all services from home or work.

The 2010 United Nations survey of e-government found that '*e-government is becoming a meaningful solution to providing better communication between the government (as policy maker and implementer) and citizens, and between the government (as regulator) and the financial sector*' (UN, 2010, p.26). E-government makes interactions with various stakeholders (citizens, private sector and government agencies) more convenient and cost-effective (Huang et al., 2006; Alston, 2003). Thus, e-government enables citizens and the private sector to gain quick and easy access to the most up-to-date information, in regard to the state of services and their regulations (Ke and Wei, 2004). In addition, they can complete some necessary processes, such as lodging of a tax return, online. Therefore, e-government stakeholders have to spend less time, money and other resources on getting the information they need from government by simplifying online processes and procedures (Choudrie et al., 2004).

E-government should simplify the processes whereby a citizen can easily contact his/her government authorities (Weerakkody et al., 2007). Sinrod (2004, p.26) states that, "*the internet helps them to transact business with the government.*" They can search on the internet for the information they need, and if they need to get a particular official or any government employee, they can easily find the most appropriate contact online (Yigitcanlar and Baum, 2006). In this context, Khalo and Hu (2010) explain further the process whereby this can be done, suggesting that citizens can interact and communicate with any government employee electronically through email service or electronic forms, or even by using a real-time (private chat room) service.

In most cases, these services increase the political participation among society (Oliver and Sanders, 2004). In many Western countries, political participation has become an important aspect of e-government (Warkentin et al., 2002). There has been a gradual decline in voter turnout in recent decades, especially among younger people. Roy (2004) posits that, while many people are disconnected from the political process, e-

government offers the opportunity to easily connect with government issues using information provided online, via a medium which young people are particularly attuned to. Furthermore, through online surveys and blogs, young people are able to express their own opinions on government activities and policies, and to truly engage with the major issues (Alston, 2003). We have already seen effective use of online consultations, so that elected representatives can gauge popular opinion on the major issues of the day (ibid). A good example of the online mechanism of participation is the petitions section on the UK's 10 Downing Street website (number10.gov.uk). In this website, citizens are able to post a subject for a petition on the site, which will then attract support from other visitors to the site. Further, they can increase support for the petition by encouraging users of social networking sites to follow a link to it and add their names. Recently, these petitions have increased dramatically as an effective measure of public opinion, and have lately been reported as major issues of the day.

Given this context, e-government has improved the accessibility among public administration services (Ko et al., 2005; Han, 2010), which perhaps increased the participation mechanism in the democratic consciousness (Zhi and Zhenhua, 2009). Thereafter, this gives a greater opportunity for e-government to raise issues such as transparency and accountability engendered by the introduction of e-government initiatives, and reinforces democratic values (UN, 2010). To this end, citizens will access government records, reports, statistics and other data in far more manageable forms. Additionally, e-government users will work as a distribution channel of government resources (Barnard and Patel, 2003). This will ensure information freedom within e-government as well as promoting transparency and accountability (UN, 2010). In order to obtain such advantages, e-government must create a feedback mechanism whereby citizens have freedom to express their feelings, and then government learn from these comments (Barnard and Patel, 2003). Such a mechanism should encourage and change the culture of government agencies and their leaders' decisions to publish most important data online, so that citizens can easily survey their activities with minimal effort (Roy, 2006).

A fundamental advantage of e-government for citizens is that it allows citizens to interact with government agencies at any time and from any location (Alston, 2003).

In the traditional process of government service, citizens need to travel to government agencies, which make the interaction very difficult, and in case of forgetting any documents for a service needed by an older person, then this service would be very difficult (Becker, 2004). Thus, e-government might make full engagement with government possible for the first time. The fact that citizens can access government information and contact channels 24 hours a day allows them to do so when it is most convenient for them (Sinrod, 2004; Bwoma and Huang, 2003). For instance, people who work full business hours will find an easy way to access information and complete lots of services such as lodge a tax return or pay a service fee (Warkentin et al., 2002).

Further, the 2003 United Nations report has ranked the Australian e-government implementation as one of the most effective public online projects, which evaluates the Australian citizens' feeling towards the e-government project as satisfied. This was proven by the Australian citizens who do feel the e-government project was beneficial (UN, 2003a). In response to a 2003 survey, 45% of Australian citizens considered that they have saved money by using an e-government service, while 80% saw a significant improvement in the ease of finding information, and 75% felt that e-government services made them feel better-equipped to make well-informed decisions (ibid).

Malhotra et al. (2009) concluded on the benefits of e-government in a rural area context that where a large population lives in remote rural areas such as in India, citizens who have internet provision can access information from government agencies with minimal effort, and might be able to complete most of the transactions they engage in with government agencies without having to leave their home. In this context, citizens are able to reach government services and benefit from them, no matter where they live (Becker, 2004).

2.5.2 Benefits of e-Government to Public Sector Organisations

For government departments and government agencies, the principal benefits of e-government should lie in increasing their efficiency and effectiveness (Glibert et al., 2004; Huang et al., 2006). Choudrie et al. (2004) suggest that e-government has the potential to improve external and internal relationships among the various

stakeholders involved in the government services delivery process (including citizens, government employees, external businesses etc) and facilitate sharing of knowledge among these stakeholders. For many governments, particularly in developing countries, reducing expenditure and cutting down the cost of running government institutions is also a major concern (Bwoma and Huang, 2003). For instance, e-government will eliminate the expenditure needed for building more physical premises and agencies around the country to provide government services to citizens. In addition, mismanagement and poor organisation, particularly in developing countries, are common, and affect public expenditure. In this context, e-government can cut costs by making operations constrained online. Moreover, e-government will encourage improved interaction and communication between governments and their citizens (Kostopoulos, 2003). Furthermore, e-government will also establish an environment where public agencies can remain open for 24/365 to serve their citizens and help establish a new line of services for the citizens (Bwoma and Huang, 2003). This environment will therefore reduce the need for direct contact with government agencies, thereby reducing the cost for government and improving services for the citizens (Awan, 2003; Stoltzfus, 2004; Martin, 2000).

The result of the aforementioned developments will affect communication as well as bring about reforms on the terms and conditions for using government services. The use of ICT will improve the whole process of government; not only how citizens will interact with such services, but also even help create greater trust between the government and their citizens (Choudrie et al., 2004). Moreover, e-government will reduce the time public sector employees have to spend in their offices, help create better polices, and improve the organisational competitiveness within all government sectors. Choudrie et al. (2004) classify two broad benefits of e-government, namely, improving government-citizen relationship, which talks about rapport between government and citizens, and gaining e-commerce benefits such as better cost management. As Belanger and Carter (2004) have highlighted, the main similarity between e-commerce and e-government is that in e-commerce people exchange money for goods, and similarly in e-government citizens exchange information and services with the government. Like in the e-commerce context, one of the most important issues in the e-government models is the integration between different government agencies. According to Belanger and Carter (2004), the e-government

implementation allows public authorities to establish a standard system or network between government agencies for faster and more efficient information exchange between them. Even more, this can be done by using a common or standard computer language under a secure system to save the information within any type of online connection.

While e-government in its simplest form can be seen as moving government interaction services online, in its broadest sense, e-government refers to the technology-enabled transformation of government services. It is the governments' expectation to reduce costs (Bwoma and Huang, 2003), improve efficiency and development (Reynolds and Regio, 2001; Davison and Martinsons, 2003), increase transparency (Danielson et al., 2005), improve service delivery (West, 2004), and facilitate the advancement of infrastructure in public administration (Ndou, 2004). Moreover, there are many other benefits offered by e-government, such as improved business processes, globalisation and increased use of the internet (Al-Khouri and Bal, 2007). In summary, benefits of e-government are generally implemented to improve efficiency and effectiveness within the public and to save costs (Glibert et al., 2004; Huang et al., 2006). The driving force can also be public demand for online services and information that increase democratic participation, accountability, transparency, and the quality of online services (UN, 2003b; Danielson et al., 2005).

Based on the aforementioned literature, there are many benefits of e-government for citizens and public sector organisations, however, the most common listed in the literature are synthesised in Table 2.11, summarising the key e-government benefits for citizens and public sector organisations.

Benefit	Focus	Literature
Internal and external relationship and sharing knowledge	Simplify the way of communication and knowledge sharing among G2G, G2C and G2B.	Glibert et al. (2004), Huang et al. (2006), Choudrie et al. (2004), Bwoma and Huang (2003).
Improve business process	Implementation of ICT and transaction processes to offer a better manner of service delivery.	Aydinli et al. (2009), Martin and Montagna (2006), Becker et al. (2003).
Reduce digital divide	Increase the points of availability and dissemination of online services among citizens, particularly in areas where there	Griffin and Halpin (2004), AlAwadhi and Morris (2008), Al-Sobhi et al. (2009; 2010),

	is a lack of computer knowledge.	Al-Fakhri et al. (2008).
Simplify processes and ease of access	Citizens and other government stakeholders can easily find the most appropriate service they require online.	Choudrie et al. (2004), Weerakkody et al. (2007), Sinrod (2004), Yigitcanlar and Baum (2006), Khalo and Hu (2010).
Improve efficiency and effectiveness	The accuracy and completeness with which users can achieve specific goals in the easiest way, with better output, reducing the time and increasing job performance using the online services.	UN (2003b), Charif and Ramadan (2003), Al-amer (2003), Boujarwah (2006), Sahraoui (2005), UN (2003a).
Improve IT infrastructure	Efficient infrastructure automates and integrates public business processes and services, such as organisational culture, strategies, structure and functionalities.	Maluf and Bell (2005), Falk et al. (2008), Joia (2007).
Reduce time and cost	The reduction on the convenient time and cost that citizens could spend on government services.	Sinrod (2004), Bwoma and Huang (2003).
Improve accessibility	Ease of access and use from different types of machines and platforms, allowing different types of users to access the service; actual possibility of usage from abroad.	UN (2003a), Al-shafi and Weerakkoddy (2008), Ko et al. (2005), Han (2010).
Improve communication and interaction	The concept behind exchanging and providing various information between government and citizens (e.g. private chat room, poll opinion).	Ramlah et al. (2010).
Improve transparency and credibility	The quality of information provided by government to be clear and transparent, which increases credibility and respect to the government.	UN (2003), Danielson et al. (2005).
Improved stakeholder participation in policy-making	A new way for the public to express their opinions and beliefs that could influence the recent management, political, and economic decisions.	Warkentin et al. (2002), Barnard and Patel (2003), Zhi and Zhenhua (2009).
Improve information exchange	The ability of the government to exchange their needed information between various government agencies with the use of e-government services and the integrity of front-office e-government layer applications with back-office activities to support the interaction of different levels of information.	UN (2003b), Charif and Ramadan (2003).

Table 2.11 Key Benefits of e-Government Implementation

2.6 Challenges and Complexities of e-Government Implementation

Although the above benefits motivate many governments to implement e-government, implementation efforts are often obstructed by numerous challenges. While public

sector organisations implementing e-government have to face and overcome various political, social, economic and technical challenges, on the other hand, citizens using these services will be faced with a set of different challenges that may impede adoption. These potential challenges are briefly examined below.

2.6.1 E-government Implementation Challenges: Factors that Influence Citizens' Adoption (User Perspective)

Many challenges have been mentioned in different articles published in the e-government field. The most common challenges in respect to developing countries include privacy and security (Al-Khouri and Bal, 2007; Sahraoui et al., 2006; Bwoma and Huang, 2003), accessibility (Sahraoui et al., 2006; Abanumy et al., 2005; Choudrie et al., 2004; Chesi et al., 2005), infrastructure (Al-Khouri and Bal, 2007; Bwoma and Huang, 2003; Chesi et al., 2005), and IT workforce capability (Bwoma and Huang, 2003; Chesi et al., 2005). Wilford et al. (2004) argue that researchers in the field of e-government consider security and privacy as among the most important key challenges for the implementation of an e-government system. Security issues commonly consist of computer security, privacy and confidentiality of personal data (Al-Khouri and Bal, 2007; Sahraoui et al., 2006; Bwoma and Huang, 2003). Conklin and White (2006) justify that information that is stored in databases and systems remains very valuable. In this case, security and privacy issues should be monitored and reviewed continuously. Underestimating the importance of this factor can result in unauthorised access to sensitive information and loss of citizens' trust, which might lead to e-government failure. Therefore, building a solid trust environment by providing a high level of data privacy, data integrity and user authorisation will ensure electronic transaction security and online identity authentication (Al-Khori and Bal, 2007; Conklin and White, 2006).

Also, Bwoma and Huang (2003) identified integration of technologies between government agencies as a major obstacle for e-government implementation. In this context, using interoperability standards for building e-government systems will increase the flexibility of integration with other systems (Borras, 2004). According to Layne and Lee (2001), e-government implementation is expected to provide access to citizens and other users from one single integrated gateway. Also, it requires participating government agencies to share their data to serve and achieve the citizens

or e-government system users' needs. Therefore, information technology standards are needed to avoid any hardware and system barriers that would hinder the implementation of e-government systems. However, although there is a real need for a common language to complete this process of integration, still many government agencies have their own regulatory environment and strategic priorities (Borras, 2004). Thus, the success of e-government will depend on "*how user-friendly government websites will be*" and "*what the website ability is*" as well as "*how familiar the users are with various web based technologies*" (Kostopoulos, 2003). Nevertheless, the most commonly discussed e-government challenges in the normative literature can be classified into a) accessibility, b) availability, c) system security, d) citizen trust, e) operational efficiency, f) awareness, g) citizen privacy and h) citizen confidence.

Accessibility

Abanumy et al., (2005) also note that website accessibility is a good measurement of e-government benefit, but at the same time serves as a barrier, because web accessibility will mean allowing universal use of the information. In the context of e-government implementation, accessibility allows the digital services provided by government to be offered to a wide range of users (citizens and businesses) (Abanumy et al., 2005). Accessibility refers to unhindered and convenient access to online services by citizens of all demographic variations and institutions of all types, irrespective of economic status, gender, age, physical ability or level of ICT literacy to minimise any digital divide (or social exclusion) in the respective society or country (Abanumy et al., 2005; Choudrie et al., 2004). Accessibility also encapsulates various online services that are offered by government websites and the medium by which they are offered (such as on a PC, mobile phone, PDA or through digital TV) (Sahraoui et al., 2006). Various e-government studies have time and again highlighted the need to offer online services using a multi-channel system (or services that are compatible with other media devices) to encourage adoption (Choudrie et al., 2004; Chesi et al., 2005). Similarly, it is imperative that e-government services are offered in national languages to overcome any digital divide.

Availability

The core advantage of implementing e-government in any country is to make available a large number of services on a 24/7/365 basis (Alshafi and Weerakkoddy,

2008). Therefore, the digital services act as a key motivating factor for various stakeholders benefiting from uninterrupted availability of different levels of e-government services ranging from the cataloguing of basic information to more complex transactions or dealings with government (Sahraoui et al., 2006; UN, 2003a). Availability encapsulates the different types, styles, quantities, and levels of electronic services that are offered by any government to its citizens and businesses / institutions within the state (Elnaghi et al., 2006). Empirical studies on e-government by different researchers have identified availability as an important factor in the adoption and diffusion of e-government (Alshafi and Weerakkoddy, 2008; Al-Busaidy and Weerakkoddy, 2009a). Studies have confirmed that when key services are not visible in government websites, citizens often lose interest in e-government interactions. This obviously translates to lower levels of e-government adoption, resulting ultimately in e-government failure (UN, 2003b).

System Security

One of the key elements while developing any online IT solution is the security level. This can be enhanced through deploying authentication and privacy standards to secure online transactions and protect the website contents (Medjahed et al., 2003). To this end, e-government is one of the IT areas that need security to reduce the risk against fraud and other vulnerabilities by ensuring protection at all levels of the e-government system (Ebrahim and Irani, 2005). Many researchers such as Gefen et al. (2002), Al-Khoury and Bal (2007), Joshi et al. (2001) and Lambrinoudakis et al. (2003) have highlighted that security issues act as an authorised process within external and internal access to systems and information, and this could be enhancing by employing a high cost of security applications and solutions. Further, Sang et al. (2009) and An (2009) identified security as a core objective for the government to achieve success within issues which play an important role towards protecting citizens' information from attacks and misuse, and improves citizens' privacy.

Citizen Trust

In the context of e-government, Sang et al., (2009) have defined trust as the observation of confidence in using various transactions of an e-government website and believing that the government body has implemented a reliable and secure system (Belanger et al., 2002). Trust gives indicators of the user's belief in security, privacy, and confidence, which can arise due to involvement of financial transactions and/or

personal information (ibid). Additionally, trust of individuals and institutions is an important factor of e-government adoption; lack of user trust can result in a major challenge to the acceptance of e-government services (Warkentin et al., 2002). Practically, Gefen et al. (2005) posit that trust in the agency has a strong impact on the adoption of a technology diffused by that institution. Before endorsing e-government initiatives, citizens must believe government agencies demonstrate the competence and technical ability necessary to implement and secure e-government systems. Transparent, accurate, reliable interactions with e-government service providers will enhance citizen trust and acceptance of e-government services (Al Shafi and Weerakkody, 2008). On the contrary, broken promises and fraudulent behaviour from government officials and employees will decrease trust and increase opposition to these initiatives (Carter and Weerakkody, 2008). Oxendine et al. (2003) compare citizen adoption of electronic networks in different regions of the US (Oxendine et al., 2003). They found that system adoption was more prominent in localities where citizens are more trusting. Due to the impersonal nature of the internet, citizens must believe that the agency providing the service is reliable. Wang and Emurian (2005) posit lack of trust as one of the most formidable barriers to e-service adoption, especially when financial or personal information is involved. Carter and Belanger (2005) found that perceived ease of use, compatibility and trust were significant indicators of users' intentions to use e-government services. Based on studies conducted during 2003, 2004 and 2005, Carter and Belanger proved that trust can determine the adoption of e-government services. These studies suggested that any increase in the level of trust will be positively related to a higher level of intention to use e-government services.

Operational Efficiency

Glibert et al. (2004) also noted that operational efficiency is a good measurement of e-government benefit, but at the same time acts as a challenge to implement in e-government initiatives, because efficiency will mean maximising the benefits which citizens can gain from online public services. The level of efficiency is one of the key performance indicators of e-government that needs to be considered when evaluating the success of online public services, and it offers a comprehensive comparison to traditional services (UN, 2003a). In terms of IT technologies used within e-government implementation, efficiency can be defined as the ratio of useful output to

total input in any system. In the e-government context, improved efficiency can only be achieved by re-engineering and re-designing the front and back office processes and the IT technologies that support the online services (Boujarwah, (2006); Sahraoui et al., 2006). Often governments succeed in e-enabling their services without paying much attention to the level of optimisation they achieve in a new service compared to the traditional way of offering the same service prior to e-government (Charif and Ramadan, 2003). This is one of the most difficult factors to measure as there are bound to be differences in expectations and opinions between the service provider (government agency) and the user (citizen) regarding the optimum level of efficiency in a service and/or system (Al-Amer, 2003). E-enabling of public service optimisation can only be achieved by redesigning the underlying system, evaluating the performance and re-engineering again in a continuous cycle until optimal performance efficiency is reached, particularly in the eyes of the end user or citizen. Certainly, most of the features used to improve the efficiency are of a technical nature and will involve systems development and programming activity to optimise search and access, data processing and decision-making, as well as developing user-friendly systems that take into account good principles of human computer interaction (Al-amer, 2003; Boujarwah, 2006).

Awareness

The initial step in the direction of adopting e-government by citizens is public awareness. Awareness of citizens is an important step that transfers e-government initiatives from employment to practices. Seifert and Petersen (2002) posit that e-government can raise public awareness through various activities and arrangements with respect to their political and social systems. Therefore, it is necessary to develop a public awareness policy while developing an e-government project through multi-points such as training sessions, TV, radio, etc. According to Bums et al. (2003), this will strengthen public views to use various e-government initiatives, and public participation. Conversely, these views and participations will help the government in assessing various e-government initiatives and provide the quality for delivering online public services (Cohen and Eimicke, 2001).

Citizen Privacy

In an e-government context, public privacy means protecting the data of individuals and institutions during any interactions with online public administration services

(Yoo et al., 2000). Privacy gives the individuals and institutions universal access and enables them to use e-government services in a healthy environment (ibid). Gefen et al. (2003) have argued that privacy can cause a major concern for e-government adoption, since the government databases hold vast amounts of personal information. Moreover, today, most internet users are concerned with misuse and fraud, such as unauthorised tracking, sharing of information with third parties, especially financial information (e.g. credit card numbers); therefore, public administration has to ensure that the system used in data collection is kept private and cannot be used without the user's authorisation, thus the users will trust the e-government interactions which will ensure enhancement of e-government adoption and privacy (Gefen, 2003).

Citizen Confidence

Many studies on e-government implementation highlighted the importance of including trust and privacy when examining adoption to achieve better understanding of user acceptance of electronic services (Gefen et al., 2003; Carter and Belanger, 2004). Online interactions and transactions between various individuals and governments involve exchange of sensitive information e.g. credit card details, therefore it is important for the adoption of such services that individuals have a high level of trust and privacy in e-government (Carter and Weerakkody, 2008). Therefore, governments need to employ trust- and privacy-building strategies to increase citizens' confidence in e-enabled services (ibid). Carter and Weerakkody (2008) argued that, in terms of e-government interactions, there are many dimensions of confidence such as transparency and accuracy of the services provided. Those dimensions contribute to boosting individuals' and institutions' confidence in the adoption of e-government services. Conversely, any unaccomplished processes or misleading behaviour from government officials and employees will decrease citizens' confidence in e-government services. Riedl (2005) emphasised that e-government is much less known than e-commerce, but the technologies employed in e-government implementation to achieve confidence are generally considered to require a higher level of security to safeguard citizens' data; they also need to demonstrate this to citizens in a convincing manner, as required for e-commerce. This is particularly important as the users of e-government services are the general public who represent various different demographic contexts; the levels of internet and ICT exposure and experience they possess may differ vastly when compared to e-business

users. Therefore, their concerns with privacy and trust towards e-government services are likely to range from being highly confident to not confident at all. These arguments are corroborated in a study by Klischewski and Scholl (2006), which found confidence to be the key motivating factor for individuals and institutions when adopting e-government services. Given these literature findings, this paper proposes that the evaluation of usage and adoption of e-government services by individuals and institutions needs to take into account the issue of confidence, as adoption is determined by the level of confidence users have in the e-services.

2.6.2 E-Government Implementation Challenges: Factors that Influence Public Sector Organisations (Service Provider Perspective)

Although there are a number of considerable challenges seen from the citizens' perspective as the key issues that impact citizens' adoption process of e-government implementation, there are other challenges that impede public sector organisations, and especially decision-makers, to adopt e-government services. A review of the literature indicates that the most commonly discussed e-government implementation challenges in the literature are often classified into a) economic, b) political, c) social and d) technological themes (Al-Shafi and Weerakkody, 2010; Al-Shehry et al., 2006; Tung and Rieck, 2005; Al-Sebie, 2009). These are summarised in the subsequent section and further explored in Chapter 3.

2.6.2.1 Economic Influences on e-Government Implementation

The impact of e-government on the national economic context can be realised through various effective performances of enabling e-services within a government business processes scenario. Conversely, the strong economic condition affects the strategies and plans of the public sector, such as implementing e-government (Starbuck, 1976). As mentioned earlier, e-government systems provide within their implementation life simplicity, maximised benefits from technology, flexibility and reliability toward accessing government data and improved processes, operations and management of the public sector (Borras, 2004; Navarra and Cornford, 2003). As a result, these benefits affect the financial status, eliminate redundant data collection, improve the regularity of outcomes, and help raise cost reduction opportunities while maintaining and upgrading the technologies (Gupta et al., 2008).

Furthermore, e-government technologies have been established in government agencies, particularly in government units that provide services to citizens on a daily basis to facilitate improved services to their citizens. However, researches have shown that as e-government develops, the expenditure of government tends to increase with an increase in government income and activities (Bertucci, 2006; Holmes, 2001). E-government growth may vary from one government unit to another. In order to facilitate reform and help automate internal processes and integration of applications across a number of disparate databases, every governmental unit has to establish their IT network, linking their databases with other concerned public sector organisations in order to shape the back-end systems for implementation of e-government projects. In this context, e-government implementations play a significant part in ensuring sustainability of ICT developments and economic growth in a country.

2.6.2.2 Political Influences on e-Government Implementation

Establishing of any new notion within a government environment needs a political framework to ensure the success of this notion (Thelen and Steinmo, 1992). In this context, e-government implementations are dependent mostly on government roles in producing a proper legal framework that supports and protects the processes and operations of public online services. In addition, this legal framework acts as a best structure within public organisations to organise the collaboration of information sharing and resolve various complexities in regard to privacy and security issues (Peters, 1999; Welch et al., 2005). These ICT features can improve the citizens' adoption of e-government, because enhanced privacy and security may improve other challenges such as trust. According to Macintosh (2004), clear policy and guidance are necessary when implementing e-government, because this will improve citizens' adoption and trust. However, many researchers, such as Kim et al. (2009), Irani et al. (2003) and Meijer and Zouridis (2004) have argued that these will still pose a challenge with respect to implementing e-services in the public sector, which may impede the progress of e-government initiatives.

2.6.2.3 Social Influences on e-Government Implementation

Many researchers, such as Al-Gahtani et al. (2007), Rowlinson et al. (2009) and Schreyögg et al., (2011), have identified the importance of social motivations related to e-government implementation. Kim et al. (2009) suggested that e-government can

improve the social perspectives by solving various complexities and problems that are associated with citizens' needs. Other researchers, such as Liao and Jeng (2005) and Daqing (2010) posit that e-government projects involve key plans for implementing various policies that reduce social pressures by delivering the best ICT solutions to the citizens. Moreover, the G2C and G2B dimensions represent the main relationship between public sector organisations and citizens. Thus, the redevelopment of e-government plays an important role in accomplishing citizen satisfaction.

2.6.2.4 Technological Influences on e-Government Implementation

One of the responsibilities of government is to improve their overall processes; this will reform internal and external procedures at all levels and will enhance the electronic transactions for citizens, businesses, employees and other government agencies. According to Beynon-Davies (2003), the e-government implementation process leads to the widespread use of ICT in government agencies and huge improvements in the way ICT is exploited for improving service delivery. Many researchers, such as Kondra and Hurst (2009), Mignerat and Rivard (2005) and Irani et al. (2007; 2008), argue that e-government with advanced technologies improves interactions and relations with government stakeholders, and has the potential to radically change public sector agencies, as well as offering much other assistance not previously foreseen. In addition, Scholl and Klischewski (2007) suggested that one of the key outcomes of e-government implementation and related technology is the internal and external integration of various government services, in addition to the enhancement of government accessibility and availability. Further, Reynolds and Regio (2001) and Davison et al. (2005) posit that technologies used within e-government systems could be considered mainly as crucial improvements to the future government efficiency and development; therefore such tools will result in new pressure that will need more focus and further considerable amounts of effort to deal with.

Based on the aforementioned literature, there are many challenges of e-government for citizens and public sector organisations, however, the most common listed in the literature are synthesised in Table 2.11, which summarises the key e-government implementation challenges impacting public sector organisations (as service provider) and citizens (as users of the services).

	Challenge	Focus	Literature
Citizens	Accessibility	This term describes the degree to which e-government products, devices, services, or environments are accessible by all stakeholders.	Abanumy et al. (2005), Sahraoui et al., (2006)
	Availability	The degree to which a public system is operable and can make the system available in a large number of services on a 24/7/365 basis.	Alshafi and Weerakkoddy (2008), Sahraoui et al. (2006), UN (2003a)
	Security	The situation/condition that prevents the data used or network resources from damage, destruction, non-protection, fraud, mismanagement, and abuse.	Mansar (2006), Charif and Ramadan (2003)
	Privacy	Protecting the data of the users during any interactions with the online public administration services, giving the users universal access and enabling them to use e-government services in a healthy environment.	Mansar (2006), West (2005), Al-Busaidy and Weerakkody (2008; 2009)
	Confidence	The government needs to implement a high level of trust and privacy in e-government services to increase citizen confidence in e-enabled services.	Alshafi and Weerakkoddy (2008), Al-Busaidy and Weerakkody (2008)
	Trust	The observation of confidence in using various transactions of an e-government website and believing that the government body has implemented a reliable and secure system.	Sutton (2008), Alshafi and Weerakkoddy (2008), Charif and Ramadan (2003), Sang et al. (2009), Gilbert et al. (2004)
	Availability	Public online services for the citizens, businesses and government agencies are available, which in turn help to facilitate the implementation of e-services.	UN (2003b), Elnaghi et al. (2006), Kok (2008), Alshafi and Weerakkoddy (2008), Sahraoui (2005), UN (2003a)
	Awareness	E-government awareness among leaders, end users, and e-project team.	Altameem et al. (2006)
Public Sector Organisations	IT workforce capability	The skills of the IT employees of the public sector that would help in implementing better solutions and online services.	Al-Busaidy and Weerakkody (2008)
	Resistance to	Management resisting future changes,	Lam (2005), Ebbers and

change	which lead to e-project failure; the aim of empowering employees to accept and embrace desired organisational changes.	van Dijk (2007), Schwester (2009)
Effective Performances of Business Processes	The cross-organisational process and IS integration that present the main technical issues to realise a new integrated model of e-government service.	Weerakkody et al. (2006), Aydinli et al. (2009), Gupta et al. (2008)
Lack of funding	The budget and other costs to fund various applications, software and equipment that are needed to implement e-government projects.	Basu (2004), Jerry and Applegate (2007)
Lack of leadership	The power of decision-makers in the organisation that could impact the progress of e-government.	Ebrahim and Irani (2005), Al-Busaidy and Weerakkody (2009)

Table 2.12 Key challenges of e-government implementation

2.7 Summary

Although many governments in the developed world have realised the horizontal stage of e-government, only a few developing countries have done so (Bwoma and Huang, 2003; Weerakkody et al., 2007; Al-Busaidy and Weerakkody, 2011a). While the reasons for this are attributed to the complexities and various challenges associated with e-government implementation (Weerakkody and Choudrie, 2005; Welch and Pandey, 2010), the motivations for e-government implementation that are associated with different countries may also play a significant part in the progress made in terms of e-government evolution (Gupta et al., 2008; Accenture, 2004). These motivations are classified, either in a direct or an indirect manner, by many researchers into economic (Ma et al., 2005; Ho, 2002; Tolbert and Mossberger, 2006; Hirsch and Lounsbury, 1996), political (Chadwick and May, 2003; West, 2004; Pardo, 2002), social (Siau and Long, 2006; Ciborra, 2005; Ma et al., 2005) and technological (Yildiz, 2007; Pardo, 2002; Irani, 2007) pressures. As a result, those researches argue that these four pressures are facilitating various changes in public sector organisations and influencing e-government implementation in the developing country context.

In order to examine the above-mentioned pressures in the context of e-government systems, there is a strong need for exploring the wide value of each factor related to

these pressures. However, prior research has also supported this argument but none of these studies investigated those particular four pressures under a theoretical lens. Kumar et al. (2007), for example, found that factors such as customer satisfaction, service quality and website design influence the success process within e-government implementation. Likewise, Manfredo and Zinn (1996) categorised particular factors (such as internal political desire, overall vision and strategy, dominance of politics and strong change management) through an investigation of e-government implementation and adoption process to utilise the success and failure of government initiatives in the context of electronic services delivery.

The purpose of the wide values of these institutional factors and related pressures of government organisations are summarised throughout the next chapter, and contribute to the need for interrelationship between those factors and organisational pressures under an e-government context. Further, the researcher sought to enhance the understanding of the nature of those factors and associated pressures that would point to areas where a theoretical basis needs to be established. This will offer a better mapping for interrelation between factors in the used context and will increase the ability to understand various impacts of those factors on organisational change, which will facilitate e-government systems within public sector organisations. Therefore, the objective of the next chapter is to establish this theoretical basis and relate institutional factors that are examined from the literature of e-government implementation to organisational pressures under a theoretical lens.

Chapter 3: Developing a Conceptual Model of Institutional Factors Influencing e-Government Implementation

3.1 Introduction

The main aim of this chapter is to develop a conceptual model and taxonomy for e-government implementation. The reason behind developing such a model is to capture the government perspective of implementing e-government to map the complex issues impacting the implementation of e-government. This will allow the research to investigate the question of why the progress of e-government has been laggard in some governmental agencies while a few others have made exemplary progress to implement fully integrated and interactive e-government services. Furthermore, this will give the ability for the researcher to consider the challenges that might hinder e-government implementation from the government's perspective. The proposed conceptual model and taxonomy will be used as a road map for empirical data collection and analysis, and will help to establish a comprehensive overview of e-government implementation in the context of Oman.

As identified in Chapter 2, the implementation of e-government often faces many challenges. Although various e-government researchers have discussed such challenges, most of these studies have been superficial and failed to utilise theoretical models when identifying and analysing the various challenges and factors influencing e-government implementation. In fact, the few studies that have used theoretical concepts/models have confirmed the need for better use of theory to study e-government implementation. Among the studies that stand out in this respect include the research done by Hu and Quan (2006) to study external institutional influences for examining corporate IT budgeting processes; the work done by Luna-Reyes and Gil-García (2011) to explore the use of institutions to understand integrated e-government implementation; the work done by Pardo and Jiang (2007) to study organisational

transformation in the public sector using institutional aspects; the work done by Tan, et al., 2005 to examine the relation between organisational barriers and institutional hindrances to facilitate e-government implementation in Singapore, and the work done by Orange et al. (2007) to analyse the culture of local government organisations to create an integrated framework to support e-government systems.

From a theoretical perspective it is clear that while research has made important contributions to our understanding of the e-government phenomenon, most studies remain grounded in rational theories of organisations (Goulding, 1998). This one-sided theoretical framing to analyse e-government implementation and associated challenges and complexity is not new when considering other studies that have been conducted to research new phenomena. This chapter will analyse a set of appropriate theories to study e-government implementation and propose institution theory as a viable alternative theory to understand implementations. The work on e-government more explicitly focuses on transferring of existing government services to more advanced services based on web application technology. This process is influenced by a number of external and internal pressures that shape implementation and the ultimate institutionalisation of e-government into public sector institutions. Institution theory offers the most appropriate theoretical lens to study such influences. Therefore, using such a theory will enhance our understanding of such phenomena.

This chapter is divided into three main sections. Section 3.1 explains and discusses the various theories that have been used in prior research to study change in the institution sphere. These theories were used and proved by many researchers in the environment of institutions, and mainly considered to examine one or more of the three categorisations of organisation angles, including economic, political and social. Thus, Section 3.1 illustrates how these theories could be used in the context of e-government and the strengths and limitations behind each theory. Section 3.2 explains the three isomorphic processes (coercive, normative and mimetic) from the institutional theory perspective to present the structure of different factors that are categorised into five main themes that might impede e-government implementation in public sector institutions. These themes are derived from the e-government literature and institutional theory, and identified as organisational, technical, economic, social and political. Finally, Section 3.3 synthesises the e-government literature and

theoretical background of institutional theory in terms of drawing and mapping the key factors that are impeding e-government implementation in a conceptual taxonomy. Consequently, the conceptual taxonomy and the factors discussed in this section will be analysed empirically in Chapter 6.

3.2 Organisational Change Theories

The fundamental concept behind the implementation of e-government is the extreme change that it will introduce to the way services are delivered within public sector institutions (Nelson, 2003). However, any changes within formal structural organisations such as government agencies will mostly impose challenges that are surrounded by the procedures of those changes within the same organisation; nevertheless, these changes will lead the organisations to new and more advanced desirable situations (King et al., 1994). Drawing from the Aldrich et al. (2002), it can be argued that there is no single list of challenges to e-government implementation. However, e-government initiatives are not easy to implement as highlighted by many researchers (Alshafi and Weerakkody, 2008; AlSobhi et al., 2009). Ndou (2004) suggests that e-government initiatives are complex strategies that contain a number of challenges that could impede e-government implementation. Moreover, many researchers, such as Howard (2001), Al-Busaidy and Weerakkody (2011), Weerakkody et al. (2007) and Irani et al. (2005), argue that e-government includes fundamental transformation of the existing government which consists of other changes in many elements within public sector organisations, including structure, process, culture and beliefs of the public sector stakeholders. Thus, these changes create several challenges within government organisations (Howard, 2001; Hazlett and Hill, 2003; Irani et al., 2005).

As stated in Chapter 2, the challenges resulting from organisational change have been classified by many researchers, including the above-mentioned, into four key themes. These themes include economic (North, 1990; Hirsch and Lounsbury, 1996), political (Orren and Skowronek, 1994; Pardo, 2002), social (Burke and Donald, 1981; Swidler, 1986) and technological (King et al., 1994; Pardo, 2002; Teo et al., 2003) changes. However, as stated before, many of these studies have utilised various theories to study e-government at a high level and within limited scope. In this sense, looking at

the various theories that are relevant to the study of e-government is timely and necessary.

Over a period of 80 years, a number of researchers have employed many theories in order to understand various organisations' norms, actions and behaviours (See Veblen, 1906). However, studying various organisations' changes needs a deep understanding of how different theories are set in the literature to support the study of organisational change and human actions. One of the most widely-used theories for understanding change is structuration theory (Barley, 1986). It consists of three constructs to achieve its objective in changing organisation behaviours, namely modalities (resources, norms or rules), interactions (communication, or power) and consciousness (practical activities) factors (Pozzebon and Pinsonneault, 2005). Structuration theory is a special theory for studying social science. It gives attention towards the role of information technology in revision of the procedure of the structure and process of organisation (Jones et al., 2004). However, the theory is powerful in understanding the structure of modern organisation, but conceptualising of social norms, values and standard activities are an incomplete model when considering other organisation dimensions, such as the economic aspect and social interaction with organisation facilities/services (Thompson, 2004).

In this respect, some other researchers consider social exchange (SE) theory to understand organisational change when considering various interactions between organisations and citizens (Zhang and Jia, 2010; Gould-Williams, 2007). According to Emerson (1976) social exchange theory can be a framework for explaining various activities of organisation and its employees. Homans (1961) explained that social exchange theory is the manner used within an organisation where social interaction acts as an exchange of activity. This theory has the ability with its factors to establish the concept behind exchanging resources, knowledge and actors through its relationship (Emerson, 1987). Alexander (1990) and Cook (2000) argue that social exchange theory is subjective rather than objective and people are expected not to be controlled by their behaviours, because using such a model needs to employ every interaction of the users/people as the main mechanism for maximising organisation profits. Therefore, researchers suggest that most SE actions were borrowed from economics intellectuals (Coleman, 1986; Macy and Flache, 1995). Drawing from the

above discussion, while many researchers explored social exchange theory as a powerful tool to examine the social factors related to organisational change, many other researchers argue that social exchange has failed as a theory to implement a universal model that can be fit in all societies (Molm et al., 2003; Zafirovski, 2005).

In addition, there are many other theories that are mentioned in the normative literature and relevant to organisational change context, including organisational complexity theory and systems theory. While organisational complexity theory suggests that organisational change can be affected by various factors related to the nature of the core business of organisation (Anderson, 1999; Weick, 1995), system theory focuses on the complexity of various groups of activities contained in the system (Luhmann, 1995; March, 1994). Nevertheless, the above theories have made a large contribution by drawing great attention to internal organisational behaviours and related aspects that influence the required implementation of modern society and acceptance of change. E-government implementation is a phenomenon which is implemented by public organisations and can be influenced by a number of external pressures that are more complex than the internal pressures. Further, in the context of e-government, these external pressures are impacting organisational change and related activities and implementation, especially in the developing country context (Kim et al., 2009; Silva and Figueroa, 2002).

Many researchers argue that to understand various organisation activities (e.g. norms and behaviours), researchers need to link these activities with three main themes, namely economic, political and social. Scott (2008) posits that prior studies analyse these three themes by utilising different theories related to organisational behaviours. In this respect, there are a number of theories that have been proposed over the years to study inter-organisational changes, such as social theories, economic theories and political theories (Powell and DiMaggio, 1991; Scott, 2008), which are relevant for understanding e-government related change. Thus, in order to develop a comprehensive view of various organisational changes, the next subsection will broadly examine six different theories that are considered as commonly used to study organisational change, which offer valuable insights for e-government.

3.2.1 Economic Theories

In any business industry, including non-profit organisations, the stability of organisations with regard to their capabilities to cope with change and competitive environments will require a healthy economic environment (North, 1988). Stigler (1968) has explained the strong relations between the terms, business industry and organisation economies, where business industry could be assessed by the organisation economies. Moreover, many researches in the field of economics have highlighted the effects of transaction cost and resource value by using multiple methods and reviews (Hodgson, 1998; Maki et al., 1993; Silverman, 2001; Zajac and Westphal, 2002). Out of these methods, two of the more influential contributions in the economic area are briefly described in this section.

3.2.1.1 Transaction Cost Economics Theory

Transaction cost economics (TCS) is an earlier research that attempts to develop an economic theory that deals with organisation structure. According to Williamson, a company in any business domain wants to minimise its total costs, which are mainly decreased by production and transaction costs. Conversely, lack of information in regard to transactions could increase the total cost (Williamson, 1991). Therefore, Williamson mentioned in his study that the economics, either individual or institutional, should take an effective action to control the structure of economic behaviour within the firm (Scott, 2008). Scott (2008: 28) explained the reason behind the economic situation regulating the firm structure (e.g. rules and mechanisms) by pointing out the costs of negotiating a separate contract for every transaction, which takes place in the market.

This theory could be described as the system to control or regulate the economic exchanges (reducing transaction costs), which might occur within the level of international trading between firms or at the level of individuals among customers. This is because the theory is looking at maximising the profit that could be achieved by minimising the overall cost (Williamson, 1991:79). Further, in his earlier study, North (1989) focuses on the various sides of cultural, political and legal frameworks and their effects on economic processes in business, whereas Williamson has paid attention to consideration of various organisation rules and norms in economic theory in order to understand success. These studies offer valuable insights for e-government

with respect to how the wider economic influences/pressures impact success. Table 3.1 summarises the key strength and weakness of TCE theory in the context of its relevance to e-government implementation and institutionalisation.

Theory	Transaction Cost Economics Theory:	The Relevance of TCE to e-Government	References
Strength	<ol style="list-style-type: none"> 1. Since the theory determines the transaction cost to be the lowest in the market domain, this will make it easier for decision-makers to take the right action decision regarding adopting a new technology or innovation. 2. The theory explained the risk involved in the long-term transactions required over each transaction, and this clarifies the high and low uncertainty of the overall business process and the risk behind each process. 3. This theory assumes that firms in a particular business domain must fit to their environment, which will lead the firm to improve its performance and achieve better productivity. 	<p>This theory could help the decision-maker of e-government implementation to decide whether they need to outsource the technologies used in e-government or adopt in-house development.</p>	<p>(North, 1990; Williamson, 1991; 2005; Hirsch and Lounsbury, 1996; Scott, 2008)</p>
Weakness	<ol style="list-style-type: none"> 1. While the theory illustrates the sight of separating the production from the transaction cost, in real-world business this might be impossible. 2. The theory relies on the rationale of decision-makers, but in reality, the priority of top managers and other decision-making stakeholders are not similar, which may play a powerful role in enabling their interest. 3. Trust issues are very important in relationships but depend on transactions; doing profitable or non-profitable business will depend primarily on trust and the reputation of the organisation. Thus, this theory failed in considering these social issues such as trust. 	<p>Governments need to invest huge money in implementing e-government projects; nevertheless, this could involve a high level of risk because the e-government may or may not be adopted by the citizens. Therefore, using such theory could explain the high level of risk that may be involved while implementing e-government projects.</p>	

Table 3.1 Illustrates the relevance of TCE to e-government

3.2.1.2 Evolutionary Economics

Based on the ideas and notions created by Schumpeter (1939), Nelson and Winter (1982) made their assumption by including different behaviours of the organisation as well as the individual under the term 'routine'. The term 'routine' was widely used to involve all characteristics of the organisation, including work procedures, output products and hiring people. As genes in biology, routines are identified as important to help shape the organisation features in evolutionary economic theory (Scott, 2008). Usually in the same business domain, firms are facing the same problems; therefore the adoption of similar rules and work procedures will prevent the firm from bad business situations, and will involve profit maximisation. Similarly, at the individual level, using decision heuristics will help avoid individuals making mistakes (Nelson and Winter, 1982). In this context, the study of evolutionary economics offers some lessons for e-government implementation that are discussed in Table 3.2 below.

Theory	Evolutionary Economics (EE)	The Relevance of EE to e-Government	References
Strength	<ol style="list-style-type: none"> The theory compares the processes of a specific firm in the business domain to achieve better routines among other firms and make competitive the best routine used in practice. As a result, the theory assumes that the failed process will be expelled. The routines used as described earlier will implement the organisation under best practices and knowledge-based experiences. Also, these routines, knowledge and capabilities will be the best practices implemented by the most experienced people in the domain. 	EE is a very relevant theory for e-government because it gives the ability to reproduce and modify the various routines used to achieve the aim of different required changes. In general, e-government relies on the technologies to implement and diffuse services, therefore, it requires certain changes in order to maintain the system and be competitive among neighbouring countries, as well as attaining better practices.	(Nelson and Winter, 1982; Langlois, 1986; Knudsen, 1995; Scott, 2008)
Weakness	<ol style="list-style-type: none"> Mainly, the theory did not employ the term institution, but instead the term routine has been used for the behaviour of various actors. However, this cannot reflect all different phases and environments of the organisation. The theory developers suggest for implementing process 	The orientation process, or choosing the best routines or processes from different firms or governmental units without checking the overall outcomes, are not enough to be competitive among other neighbouring countries, therefore looking for another theory to examine various	

	orientation rather than comparing with other firms in the same business domain. This will not shape the firm as competitive among similar businesses because the company will be limited to specific processes.	changes was necessary.	
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Table 3.2 Illustrates the relevance of EE theory to e-government

3.2.2 Political Theories

Two of the most famous theories within political science are historical institutionalism theory and rational choice theory. Both theories are focused on analysing structured political behaviour (Hall and Taylor, 1996; Rothstein, 1996; Thelen, 1999). This section will identify the most important role that is played by each of these theories in the institutional arena.

3.2.2.1 Historical Institutionalism Theory

Since 1978, many researchers, such as Katzenstein (1978), Zysman (1983), March and Olsen (1989) and Evans et al. (1985), began the analysis of various issues related to historical institutionalists. Mainly, this theory is useful for understanding the real-world political outcomes, however these political outcomes (e.g. rules and procedures) could be illustrated as formal or informal structures (Thelen and Steinmo, 1992; Hall and Taylor, 1996). Further, these different structures are normally the reason behind the shaping of political outcomes (ibid). Therefore, this theory is interested in explaining an outcome; for example, this theory poses such questions as *why various organisations developed by same government are implementing different policies* (Hall, 1986). This could explain why historical institutionalist theory usually gives more attention to developing a deep and contextualised understanding of politics. Moreover, Evan et al. (1985) argue that historical institutionalism is having independent effects on social phenomena, and the outcomes from this phenomenon will act as consequences of the unanticipated effects on the organisation (Evan et al., 1985). In this respect, historical institutionalist theory offers relevant conceptual lessons that are useful for analysing e-government implementation, as outlined in Table 3.3 below.

Theory	Historical Institutionalism Theory	The Relevance of HIT to e-Government	References
Strength	<ol style="list-style-type: none"> 1. This theory looks at one stage of the old business that the firm was in, and compares and examines the current situation, which will improve the process and recognise the previous mistakes that have been made by the firm. 2. The approach consists of formal structure and informal rules and procedures used in the same structure, which indicates and explains the complex political forms that exist in this theory, and the great work that has been carried out by researchers in the area of historical institutionalism theory to help the organisation to identify actors and define their modes of actions and behaviour. 3. This theory is defined by many researchers as one of the best construction tools for building different political systems and trade agreements. National and international organisations are heavily dependent on different rules played by this theory to obtain the best private association. 	<p>Noticeably, the theory tries to treat old risks and mistakes by determining the old situation and comparing it with the new situation (historical changes), in the context of e-government. This might help in controlling the various required changes to enhance the e-government strategy and structure.</p>	<p>(Skocpol 1985; Hall, 1986; Hall and Taylor, 1996; Evan et al., 1985; Thelen and Steinmo, 1992; Scott, 2008)</p>
Weakness	<ol style="list-style-type: none"> 1. The approach holds two obvious limitations. Firstly, it is very difficult to choose any status of the organisation and compare it with a recent condition, because there are various other rational sides of the firm environment that could affect the organisation at other times, such as world recession or natural disaster. 2. Secondly, the theory depends on statistical analysis and did not mention the qualitative observation or knowledge obtained for participants or people's experiences, composed totally of limited resources and lack of in-depth information. 	<p>E-government is a project that needs to continually change with regard to different sides of the environment which contain social behaviours and cultural-cognitive behaviours. Therefore, these issues are usually maintained respectively with modern society and advanced technologies, which makes it difficult to compare one situation to another in a different time period. Furthermore, e-government as a phenomenon requires understanding different users' opinions and people who have examined the area of e-government and</p>	

		obtained knowledge of it, which this theory did not offer.	
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Table 3.3 Illustrates the relevance of HI theory to e-government

3.2.2.2 Rational Choice Theory

This theory could be seen as the extendable work of economic theories, whereby economic and political systems are considered as the main perspective of rational choice theory. Tullock (1976) suggests that introducing different economic perspectives will explain the political behaviours (Scott, 2008). In an organisation change context, Moe (1990) argues that in the real world, political systems are stable because of the important role of institutions, hence rules and procedures of the formal structure of the organisation are implemented by the choice available to organisation members. The law-making stability of political systems could determine the solution of different collective actions that relate to institutions' problems (Moe, 1990). Therefore this theory could determine the various political changes needed to implement e-government and the combination of economic and political views that rational choice theory offered could improve understanding of e-government initiatives. However, as outlined in Table 3.4 below, e-government is still not limited to these views.

Theory	Rational Choice Theory	The Relevance of RC to e-Government	References
Strength	<ol style="list-style-type: none"> The theory observes that decisions taken by humans are considered as a form of solving future collective-action problems, which could facilitate the business plans. As a result, this form will act as a political system which contains rules that have been made by decision-makers in general or specific firms, and apply to the future actions of the organisation. The theory consists of two terms; institutions and actors, where the actors are taking the decisions according to their advantages, which will be worthwhile in order to lower the transaction cost for social participations. Actors here 	E-government projects are adopted by governments themselves, therefore government will use the previous obtained rules as a political system for solving future problems. Therefore, this theory was seen as a good approach to measure all changes required for future implementations of e-government. Also, e-government as a business field requires rules and procedures to accomplish their needs, similar to those which this theory offered.	(Moe, 1990; Orren and Skowronek, 1994; Scharpf, 1997; Peters, 1999; Thelen, 1999; Pierson, 2004; Scott, 2008)

	<p>could refer to a specific nation that needs to maximise advantages and decrease the social transaction costs. To this end, researchers suggest a mathematical formula which could be implemented and applied for empirical comparison with the social sciences.</p> <p>3. In total, the theory could act as a specific tool provided to give a whole picture which will make sense to understand how institutions' structures could make explicit the strategic interactions.</p>		
Weakness	<p>1. The researchers in rational choice theory provided less information with regard to how the theory could give an understandable picture of political interactions.</p> <p>2. The statistical method used in this theory could be seen as a weak method when applied and used as a model for empirical data. That is why some researchers, such as Scott (2008), have suggested that this theory can be seen as an incomplete theory, which could be combined with another theory to make better sense.</p>	<p>The lack of clarity of how to obtain the previous rules and procedures stand as barriers to this theory. Further, it implies that e-government implementation has other sides of technical and organisational issues, towards which the theory has a lack of intention. Those issues are very important because this implementation usually will 'fit' in terms of social society.</p>	

Table 3.4 Illustrates the relevance of RC theory to e-government

3.2.3 Social Theories

Many researchers have also highlighted various theories in the research area of sociology. This section will introduce two of the most prominent theories that have been ranked as highly important by the sociological scholars. These are cognitive theory and cultural theory.

3.2.3.1 Cognitive Theory

Cognitive theory is a theory that attempts to explicate different human behaviours by comparing them with information processing. Logically, humans make their choices upon what makes more sense for their needs. Similarly, information processing is a process independent of the mental process (Markus and Zajonc, 1985). Thus, as a match between these two perspectives, cognitive theory obtains a number of

fundamental mental capabilities (Gopnik et al., 1999). Drawing from Durkheim's research, the essence of social and culture actions that have appeared from society are identified by Scott (2008) as a mental model. These dimensions offer insights for e-government that can help to develop a better understanding of its social aspects. Table 3.5 presents an outline of these aspects and the strengths and weaknesses of cognitive theory, which helps to understand e-government implementation.

Theory	Cognitive Theory	The Relevance of CT to e-Government	References
Strength	<ol style="list-style-type: none"> 1. The theory consists of both psychological and sociological sides, which are concerned with the effect of factors that influence information processing and problem-solving behaviours. This will help the researchers to explain human behaviours out of their life learning, and will act as assistance for the decision-makers to solve uncertain problems. 2. The theory explains the way in which the researchers can capture various human mental capabilities, which attempt to integrate all these ranges of capabilities and approaches on mental processes. These mental processes normally help the actors to handle needed changes or solve their problems. 	<p>The need for broader assessment for e-government implementation to continuously improve and enhance services for the public makes governments rely on multiple methods of research to perform better enhancement. Thus, the theory utilises human behaviours and examines them to optimise best practices.</p>	<p>(Tversky and Kahneman, 1974; Nisbett and Ross, 1980; Edelman and Tonini, 2000; Burke and Donald, 1981; Gopnik et al., 1999; Bergesen, 2004; Scott, 2008)</p>
Weakness	<ol style="list-style-type: none"> 1. Nisbett and Ross have suggested two main limitations of such a theory; the first limitation is the use of statistical analysis within the theory. The theory did not contain any logical or statistical rules to employ, which shows a lack of scientific analysis that the researchers could obtain. 2. Secondly, humans always depend on their behaviours, which usually cause a lot of mistakes and errors in assessing information. Therefore, and because the theory relies on human mental capabilities, then the limitation of the individual behaviours will remain as a weak spot of cognitive theory. 	<p>However, the theory utilises human behaviours to obtain the best practices, but failed to measure the satisfaction of the users. Further, e-government is implemented in the manner of huge projects that allow multiple users (of different cultures, thoughts and behaviours) to interact with, therefore such systems must be utilised to cover most of the users, and the need to investigate using multiple methods of research over every period of time is</p>	

		essential.	
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Table 3.5 Illustrates the relevance of CT to e-government**3.2.3.2 Culture Theory**

Essentially, culture theory involves many aspects of the real world, such as those that are useful to examine any phenomenon as social norms and behaviours, human anthropology and language theory (Boas, 1982). Also, culture theory explains how culture could be taken into account to create a mental understanding of how cultural dimensions demonstrate themselves in any phenomena or any kind of change scenario. Further, in any phenomena, culture helps to assess the effects of different aspects such as actors, ideas, feelings and even interaction between those aspects (Heise, 1979; Thoits, 1989). Moreover, in some cases cultural theory helps pay attention to how a particular phenomenon relates to matters of ideology within a specific environment. These arguments relate to e-government implementation and how the culture of various actors involved in implementation has influenced past success. Table 3.6 outlines the strengths and weaknesses of culture theory and how it may facilitate better understanding of e-government implementation.

Theory	Culture Theory	The Relevance of Culture Theory to e-Government	References
Strength	<ol style="list-style-type: none"> 1. Culture theory includes not only the culture effects, but it contains the entire behaviours of human life and demonstrates them in meaningful forms (semiotic function). Therefore, signs and symbols recognised from social life are important to represent the needed ideas and intentions of the people, and it gives a positive effect on effective human life. 2. The way this theory works could improve the knowledge capacity in human activity. This knowledge was gathered over a long period to enable different types of change; thereafter, culture could work as a toolkit to enable those changes. 	E-government as a project is one of the competitive advantages that governments adopt to compete in any region or country. This theory gathers human behaviour to explore various needs and enables those needs by facilitating different changes, which makes these changes as a competitive advantage in any region.	(Bellah et al., 1985; Thoits, 1989; Donald, 1991; Ridley, 2003; Scott, 2008)
Weakness	<ol style="list-style-type: none"> 1. However, the theory improves the knowledge capacity by capturing the human behaviours and activities; therefore, this could be a major problem of the theory, because in 	The culture theory needs a long-term period which in practice could affect the competitive advantage in	

	<p>reality, it is very difficult to capture those activities and to control others by applying previous knowledge. Therefore other researchers have to suggest the consideration of individual effects on a cultural system rather than collective human activities.</p> <p>2. Yet, few researchers have argued that culture theory does not follow the social structure because social structures contain individual behaviours and activities, whereby culture contains various contents that could be converted to ideas and values.</p>	<p>implementing the latest technology used in the area of e-government. Therefore, such technology needs better tools that could cover all ranges of the users' and organisations' behaviours and norms involved within this phenomenon to give the ability to enhance their services and be ready for future improvement in a technology sector.</p>	
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Table 3.6 Illustrates the relevance of Culture theory to e-government

While the theories mentioned above offer valuable insights into e-government implementation, as outlined in Tables 3.1 to 3.6, they have some limitations in helping to understand the various challenges facing e-government and its surrounding complexities. Moreover, these theories focus on different organisational perspectives and the above review helped to understand the weakness of those theories. The demonstrated theories are limited to different aspects of the organisational environment, and they have limitations with regard to the wider understanding of economic, political, socio-cultural and technological themes that influence transformational changes within the public sector, as outlined in Tables 3.1 to 3.6. Scott (2008) argues that researchers who have carried out their studies were restricted to some areas of research, therefore previous theories are limited to three rationales, including seeking to apply economic arguments or stressing their effects in constructing interests and actors, or focusing their attention towards cultural beliefs. Thus, the need for a more comprehensive approach was essential to develop an integrated model of institutions drawing on and encompassing much of the contemporary work of the e-government phenomenon. In this context, institutional theory covers the wider issues and institutional pressures that impact organisations more comprehensively than the other six theories mentioned above. While it encapsulates the social, political and economic context, institutional theory also captures the impact of IT on organisations. In the context of e-government, this is significant as the social, political, economic and technology themes have a major

influence when implementing change in public institutions. For this reason, the author of this thesis posits that the use of institutional theory offers a far more broad and in-depth view of the key internal and external pressures influencing change. Further, in the context of e-government, institutional theory in particular has been applied by various scholars such as Kim et al. (2009), Silva and Figueroa (2002), Andoh-Baidoo and Osatuyi (2009), Azad and Faraj (2009), Pudjianto and Hangjung (2010), Fountain (2007), Barclay and Duggan (2008), Orange et al. (2007), Rubaii-Barrett and Wise (2008), Welch and Pandey (2010) and Welch et al. (2010) to study the implementation of electronic services in the public sector. Thus, the next section examines institutional theory as the most relevant theory for understanding the various changes that take place in an e-government context and associated challenges.

3.3 Institution Theory

Various studies have examined the basis of power within organisations [see Weber (1947) and Selznick (1949)]. These studies begin by introducing the earlier works conducted by social exchange theorists and political scientists. For example, early studies by Robert Merton (1940) have discussed various aspects of bureaucracy and behaviours of the organisation (Merton, 1940). Following on from these ideas, many researchers have produced new ideas around the organisation's environment, including intra-organisational relations and relationships between organisations (March, 1965; Simon, 1997). Moreover, for many decades the agendas of many researchers have begun with a focus on sociological studies of organisations (Scott, 2008). Thus, the idea of institutional theory is surrounded by the question of why different organisations that have developed in different environments are often so similar in structure. According to Davis and Powell (1992) and Scott and Meyer (1994) institutional theory has no set of standard variables and it is not associated with a standard research methodology, therefore studies which have adopted institutional theory as a theoretical lens have depended on a different selection of techniques, including case analysis, cross-sectional regression and so forth (Davis and Powell, 1992). Before analysing institutional theory, the reader needs to understand the meaning of institutions.

Veblen (1906:594) suggested that institutions act as “*habits of life, particularly with the changes which the modern era brings in industry and in the economic organization of society*”. There is no single and universal agreed definition of an institution theory among the researchers and practitioners. For instance, Powell and DiMaggio (1991:8) assert that “*The new institutionalism in organization theory and sociology comprises a rejection of rational-actor models, an interest in institutions as independent variables, a turn toward cognitive and cultural explanations, and an interest in properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals’ attributes or motives*”. However, various researchers (such as Avgerou, 2000; Lawrence, 2003; Lamb et al., 2003) have offered different definitions to explain the concept of institution theory, but the most useful and suitable definition for this paper is the following definition: “*Institutions are social structures that have attained a high degree of resilience. [They] are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. Institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artifacts. Institutions operate at different levels of jurisdiction, from the world system to localized interpersonal relationships. Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous*” (Scott, 2001:48).

In the modern business environment, ‘institution’ has become a broader term with more complicated movements, rules and mechanisms to realise core business objectives (Tolbert and Zucker, 1994; Scott, 2008). Thus, Zucher (1977:728) noted that “*Institutionalization is both a process and a property variable... Institutionalized acts, then, must be perceived as both objective and exterior*”, though this process and property are dependent on the level of institutionalisation.

Thus, researchers treated organisations in much earlier times as general social problems, however, Merton with his students changed to more focus analysing field of studies. They recognised that the idea behind the term of organisations widely represents independent social actors in modern societal processes (Weber, 1946). Therefore, researchers such as Weber (1946) and Michel (1962) have suggested that the main role of formal organisations is to act as potential creators of new institutional

structures (Zucker, 1988). Therefore, researchers in the field of institutional study (such as Merton, 1948; Selznick, 1949; Gouldner, 1954; Blau, 1955) have suggested that the need to study organisations appears when there is a need to develop the general logic of functionalist social theory, and this can be done only by empirically testing a phenomenon (Tolbert and Zucker, 1994). Consequently, organisations give the opportunity for the researchers to conduct various comparative researches with different focus. However, such research needs empirical examination of various issues related to the organisations (Selznick, 1949; Tolbert and Zucker, 1994).

Moreover, the achievement of specific goals is crucial in the context of organisations structure, and every action within the organisation must occur in line with the main objectives of the organisation. Further, Selznick (1949:256) stated that “*Because organisations are social systems, goals or procedures tend to achieve an established, value-impregnated status*”. Selznick goes on to suggest that once the goals and procedures become accepted by the organisation then they become institutionalised. In this respect, Tolbert and Zucker (1994) have identified two main concerns when empirically studying organisations, including examining the nature of different elements of organisational structure and assessing the stability of beneficial outcomes of a given organisation (Tolbert and Zucker, 1994).

Drawing on the first concern of Merton (1940), in order for any organisation to achieve its business objectives and attain success, the entire structural components of the organisation system must be integrated and interrelated. However, change of any structural component within the system will result in other changes in the overall system (Merton, 1948; Tolbert and Zucker, 1994). Therefore, given this as the first assumption within a theoretical framework, one of the major challenges of the natural focus of this research will be to examine the empirical information of the integration and interrelationships among various Omani organisations in the context of e-government implementation, and the challenges and complexity that influence its progress.

Secondly, the stability of beneficial outcomes of the given organisations, where in this point the existing structures provide the social system’s functioning with the balance outcomes that are continually efficient (Merton, 1948; Tolbert and Zucker, 1994).

Given this as a second assumption within the theoretical framework, this will be the second major challenge for the Omani government, which is whether implementing e-government has led to an explicit concern with identifying both the dysfunctional and functional consequences of existing structures and processes of e-government implementation.

Reflecting the growth in the research area of institutions, the researcher argues that it is important to shift the focus from social problems to more in-depth effects of environmental pressures to determine the formal structure, functions and related aspect of organisations (Meyer, 1979; Tolbert and Zucker, 1994; Teo et al., 2003; Scott, 2008:37). Thus, based on new insight vision, institutional theory has gathered various aspects of the organisations including the economic, political and social pressures context (Carroll and Delacroix, 1982; Teo et al., 2003). Returning to the effect of environmental pressure on the organisation, institutional theory utilises the various aspects of the organisations by examining three types of pillars (DiMaggio and Powell, 1983; Tolbert, 1985). These three pillars have been identified by many researchers, such as DiMaggio and Powell (1983), Tolbert (1985), Tolbert and Zucker (1994) and Teo et al. (2003), as the isomorphic pressure which is usually driven through either interconnected relations or structural equivalences. Thus, the following sections will discuss the various pillars and pressures of institutional theory and relate these pressures to the e-government implementation context.

3.3.1 Pillar of Institutional Theory (Isomorphic)

The previously given definitions of institutions attempt to identify some of the varying thoughts and emphases of the early institutional theorists. However, Scott (2008:48) has defined the new vision of institutions thus: “*Institutions are comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life.*” Moreover, according to DiMaggio and Powell (1983), Burt (1987), Teo et al. (2003), Liang et al. (2007) and Scott (2008), the three types of isomorphic mechanisms pillars that institutions face can be categorised as coercive (or regulative), normative, and mimetic (cultural-cognitive), whereby coercive and normative pressure are controlled via interconnected relations while mimetic pressure is controlled by structural equivalence.

Further, the implementation of electronic services in the public sector involves introducing fundamental changes to establish business practices in government institutions. Therefore, in the study of public online services it is imperative to understand how these changes will affect public sector institutions and the resulting challenges they impose (Pardo, 2002; Reffat, 2003; Nelson, 2003; Weerakkody and Dhillon, 2008). In an environment where citizens' needs and demands continuously change, institutions need to respond as quickly as possible to these changes. In this respect, an institution's response to these changes will often depend on economic, political, social and technological developments and trends in different markets or national contexts (Wheelen and Hunger, 2002; Centeno et al., 2005). There are a number of theories that have been proposed over the years to study organisational change, such as system theory (Snooks, 2008), social theory (Baert and Silva, 2010), and the theory of reasoned action (Kritsonis and Student, 2004). Among the most widely used and earliest theories of organisational change are Lewin's model (Lewin, 1958; 1951), Lippitt's model (Lippitt et al., 1958), and institutional theory (Scott, 1987; 2001; DiMaggio and Powell, 1991). In the context of public online services, institutional theory in particular has been applied by various scholars, such as Kim et al. (2009), Silva and Figueroa (2002) and Currie and Guah (2007) to study the implementation of electronic services in the public sector. From this perspective, researchers such as Scott (1995b) and DiMaggio and Powell (1983) posited that an organisational field and its constituent organisations are shaped by the wider institutional environment through a complex combination of three pillars; coercive (regulative), normative, and mimetic (cultural-cognitive) influences.

3.3.1.1 Regulative Institutions (Coercive)

Usually, coercive pressures are the collection of rules, policies, procedures and collective agreements, whereby every member's interrelationship and behaviour with the institutions are influenced according to the basic rules and procedures of the institutional structure (Kondra and Hurst, 2009). Furthermore, according to Putnam et al. (1993) and Huntington (1968), the need for structure and formal institutions that are holding legal influences is crucial to develop stable and effective democracy around the state; however, both studies referred this kind of institution to the government itself (Peters, 2000). Therefore, King et al. (1994) suggested that

institutions such as governments will implement regulation in order to direct the behaviour of citizens under their influence. However, coercive pressure can be seen under the umbrella of the deployment of different IT innovations within the establishment of standard directives of governmental services (King et al., 1994).

While this thesis is focused around the e-government area, and e-government is a project that is essentially adopted, controlled and implemented by government itself, then coercive or regulative pressures presented in this research are vital ingredients for government organisations, especially when dealing with the adoption of new technologies (Hu et al., 2006; Liang et al., 2007). This is because coercive pressures are mainly the result of regulations which are produced by government agencies. Also, Park and Luo (2001) argue that developing countries are paying much more attention to creating policies to influence different types of government practices; therefore, regulative pressures mostly arise from the government side and its stakeholders. Powell and DiMaggio (1991), Toe et al. (2003) and Liang et al. (2007) agree that there are two types of coercive pressure that may affect the e-government phenomena, either formal (*direct*) or informal (*indirect*). While direct pressure is considered as a report that is required for a specific procedure, indirect pressure arises from firms or organisations that are associated to government. For example, in the context of e-government, the direct pressure could be the various regulations that exist in a governmental web application or a portal that other governmental agencies are required to copy in order to implement a different or more advanced phase of e-government or online service (similarly, the same applies to integrating organisational policies, work procedures, IT standards, etc, that need to be copied). On the other hand, indirect pressure might be rules that are implemented by one governmental unit which are required to be followed and/or copied by another government unit (in terms of the above example of the web portal, such rules may be developed by government councils or turned into parts responsible for portal implementation).

When the government operates the rules and regulations of some phenomenon, organisations associated with this phenomenon will usually be influenced by a common legal framework (Powell and DiMaggio, 1991). The common legal framework affects various aspects of the organisations in the business domain to simulate most of their behaviours, structure, and services (Powell and DiMaggio,

1991; Toe et al., 2003). Likewise, in an e-government context, the government will assign a governmental unit that acts as a regulatory body to develop and implement different phases of e-government projects, while other governmental units will follow the rules and regulations assigned by this unit (Al-Busaidy and Weerakkody, 2009). Consequently, the inclusion of any additional online services will track the same rituals and follow the same rules. This will ensure the success of governmental organisations in implementing such technologies, because the common adopted structure will provide much of the organisation and its users' interests (Pfeffer and Salancik, 1978).

Additionally, in the context of technology adoption, Teo et al. (2003) argue that if the supplier of the technology is perceived to be dominant over the supplied technology, then this is likely to influence the user of this technology to adopt it. As assumed earlier, the government is deemed as dominant over e-government, which puts greater coercive pressure toward e-government implementation and adoption (Teo et al., 2003).

3.3.1.2 Normative

Scott (2001; 2008) argues that normative is normal social actions that view certain types of process or behaviours as legitimate, and it operates as a system by imposing constraints on social behaviours. Also, Scott suggests that normative systems typically consist of both values and norms. While values can be described as the individuals' desires under existing standard structures of behaviours and attitudes of others, norms explain for the individual how they are supposed to behave in order to achieve their desires (Scott, 2008). For example, if one needs to obtain money out of selling cars, then the commercial system of the country will illustrate the legal way to do so. Within any organisation, there are systems for individual norms and behaviours (Burt, 1982), thus, facilitating and sharing these norms and behaviours among a number of organisation members will create and strongly increase the influence of organisation behaviour; later these norms and behaviours will define the rules of the organisation (Powell and DiMaggio, 1991). Therefore, normative pressures are proceeding as major influences of social actions imposing constraints on social behaviour. Lately, this will form the political system which will indicate the routine of what people are supposed to do (Scott, 2008). According to King et al. (1994), normative pressure in

bureaucratic organisations plays an important role in influencing the organisation through various norms, thus these influences will control the practices, rules and beliefs of those under the institution's system. In this respect, this reason makes normative pressure more important than other pressures.

The conception of information systems and IT innovation within organisations can be included under normative influences as these deals with how the institution adopts and implements the different technology that it needs (Silva and Beckhouse, 2003). Once the required technology is implemented in a firm then the people and organisations outside the firm will consider these as legitimate (King et al., 1994; Haggerty and Golden, 2002).

Researchers in the area of institutional theory referring to normative pressure use different terms, including “*Professionalization*” (Powell and DiMaggio, 1991), and “*best practices*” (Liang et al., 2007). When any project achieves success and becomes best practice among other competitors then normative pressure will appear. According to the given context, once e-government projects are established and offered for all businesses, citizens and other stakeholders, then shaping of the resulting norms and attitude of the users towards e-government will influence various changes on e-government implementation (Liang et al., 2007). However, this might be a lengthy process and may not cover the entire citizens' requirements, but essentially will shape the technology according to the majority of e-government stakeholders (Newell et al., 2000).

Burt (1982) argues that the normative pressure could appear when any organisation is adopting an innovation or new technology; then other organisations in the same domain are likely to adopt similar innovations. Therefore, sharing such new technologies will increase the desire among other competitors to change and progress. In the e-government context, these norms will shape the new implementation of online public services and at the same time will promote best practices between government units. Further, normative pressure could appear in e-government implementation through inter-organisational channels from strategy level to project establishment (Burt, 1982).

Many researchers (such as Powell and DiMaggio, 1991; Liang et al., 2007) argue that decision-makers' participation and norms towards acceptance of any technology is a critical factor that acts as an important antecedent towards faster acceptance of technology changes. Moreover, Powell and DiMaggio (1991) give a few examples of decisions, such as hiring top executives who are skilled for particular jobs. This action will tend to influence the institutional norms in organisational networks (ibid). Such norms will guide e-government implementation and its management to improve the business processes and work routines of the e-government system, and conversely examine what features of the e-government implementation can be modified to perform its processes and routines better (Liang et al., 2007).

3.3.1.3 Cultural-Cognitive (Mimetic)

Many researchers have identified cultural-cognitive or mimetic behaviour as the main distinguishing aspects between earlier and modern visions of institution theory (Haveman, 1993; Scott, 2008). Mimetic pressures represent output of the real content of notions, ideas and values in meaningful systems (Scott, 2008). In his book on culture and organisations, Hofstede (1991) showed us how culture can provide guidelines of thinking and acting among people, as well as how these can be implemented in the form of mental ideas that illustrate the effect of mimetic pressures. The powerful idea behind the effect of mimetic pressure explains the cultural-cognitive, where external issues of culture will shape the internal process of organisations in the same environment (DiMaggio and Powell, 1983; 1991).

Mimetic pressure may cause change in organisations to follow the structure, actions, economic plans and internal processes of other organisations in the same environment (DiMaggio and Powell, 1983; Teo et al., 2003). Mainly, this pressure causes the structural equivalence among organisations which will diffuse business best practices among organisations in the same business domain. Also, these best practices will control the business domain by continually succeeding (DiMaggio and Powell, 1983). Researchers such as DiMaggio and Powell (1983; 1991), Hoveman (1993) and Teo et al. (2003) have listed the basis why organisations mimic other organisation structures. These authors suggested that the same economic position, same industry, same goals and objectives, same challenges, same conditions and sharing the same customers and

suppliers are some of the key reasons for mimetic behaviours. Also, Teo et al. (2003) have classified the reasons behind these mimetic conditions as follows:

- In order for the organisation to acquire the same legitimacy status.
- To fit the organisation in the way that could control a wider social structure.
- To avoid the organisation facing a problem with an undefined solution.
- Help the organisation in such a way that could reduce the cost of search, test and experiments.
- To avoid any first-movement opportunities and risk that may cause business losses.

Earlier in the area of technologies adoption, governments as formal structure organisations were adopting modern technological solutions to divert their efforts to solving specific problems, while now governments adopt such technologies for growth purposes and for acquiring competitive advantages among other competitors in the region (Tolbert and Zucker, 1983). Additionally, Scott (1995a) has expanded the means of formal structure to comprise the complex network organisations that are involved in collaborative partnerships, both internally and externally. Thus, in the context of e-government, when the network among internal and external organisations has expanded, then the complexity of e-government will increase as well; thereafter, competitive advantages will be established among internal subunits and external organisations (Powell and DiMaggio, 1991).

In addition, e-government phenomena affect the organisation and its structure in a way that organisations will become similar to other organisations in the same environment, especially due to the influences of those phenomena that are related to modern technologies, which may help to achieve different advantages (Thompson, 1997). Thus, e-government affects the governmental units in such a way that each public sector institution will be encouraged to adopt online services. Therefore, in an e-government context, there are factors which play an important role in mimicking behaviours/processes of different organisations in the same environment, especially those organisations using technology to exchange interdependencies (Powell and DiMaggio, 1991).

Moreover, Powell and DiMaggio (1991) explain that in any phenomena, those organisations which share the same phenomenon in the same environment become isomorphic in their structure. However, in the context of e-government, these similarities in the work procedure or isomorphic behaviour in the structure will result in similar services, but at the same time will face a problem regarding the uncertainty of any new work process which will be introduced as they are likely to be redesigned (see for example Hammer and Champy, 1993; Davenport and Stoddard, 1994). Further, in the context of business process redesign (BPR), Liang et al. (2007) have raised an example of companies that assimilate other successful companies in the business domain and redesign their business process to perceived success in their core business. Therefore, institutional theory, via the multiple pressures that are influenced especially through mimetic pressure, can describe why different organisations, operating in very different environments are often so similar in structure (Tolbert and Zucker, 1994).

Table 3.7 lists the different mechanisms and logic that have been used in each of the three pillars of institution theory, and classifies the various indicators of these pillars.

	Regulative	Normative	Cultural-Cognitive
Basic of compliance	Expedience	Social obligation	Taken-for-grantedness Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules Laws Sanction	Certification Accreditation	Common beliefs Shared logic of action
Affect	Fear guilt / Innocence	Shame / Honour	Certainty / Confusion
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible Recognizable Culturally supported

Table 3.7 The Institutional Theory Pillars; Adopted from Scott 2008:51

Given the above discussion, it is evident that many studies have applied institutional theory to explore how formal structured organisations such as government departments are institutionalised by economic, political or social contexts in terms of meeting the society requirements (e.g. values and beliefs). Therefore, this research adopts institutional theory to study e-government-related changes by considering the various factors influencing implementation of e-government from economic, political and social pressures, as well as technological pressures. Although the traditional literature of institutional theory does not consider the influence of technology (see for instance Scott, 1987; DiMaggio and Powell, 1983) many recent studies have considered the impact of technology when studying any organisational change phenomena that are influenced by technology (such as e-government) (Currie and Guah, 2007; Andoh-Baidoo and Osatuyi, 2009; Irani et al., 2009; Kim et al., 2009). These economic, political, social, and technological pressures and related factors are discussed below from an institutional theory perspective, where the theory is used primarily as a frame of reference for classifying the internal and external institutional influences on e-government implementation. Figure 3.1 presents an outline of these aspects and the pressures expected to impact and hinder e-government implementation.

3.3.2 Institutional Pressures

The implementation of electronic services in the public sector involves introducing fundamental changes to established business practices in government institutions. Therefore, in the study of public online services it is imperative to understand how these changes will affect public sector institutions and the resulting challenges they impose (Reffat, 2003; Nelson, 2003; Weerakkody and Dhillon, 2008). In an environment where citizens' needs and demands continuously change, institutions need to respond as quickly as possible to these changes. In this respect, an institution's response to these changes will often depend on economic, political, social and technological developments and trends in different markets or national contexts (Wheelen and Hunger, 2002; Centeno et al., 2005). There are a number of theories that have been proposed over the years to study organisational change, such as system theory, social theory, and the theory of reasoned action (Kritsonis and Student 2004). Among the most widely used and earliest theories of organisational change are Lewin's model (Lewin, 1958; 1951), Lippitt's model (Lippitt et al., 1958), and

institutional theory (Scott, 1987; 2001; DiMaggio and Powell, 1991). In the context of public online services, institutional theory in particular has been applied by various scholars such as Kim et al. (2009), Silva and Figueroa (2002) and Currie and Guah (2007) to study the implementation of electronic services in the public sector.

Drawing from these arguments, this research adopts an approach to study e-government-related change by considering the key pillars of institutional theory influencing implementation from economic, political, social and technological pressures. Evidently, as the nature of each pillar has a different impact on the organisation structure and processes, the three pillars of institutional theory are not expected to have a direct impact on the identified pressures. These factors are discussed below from an institutional theory lens where the theory is used primarily as a frame of reference for classifying the internal and external influences on electronic service implementation in the public sector.

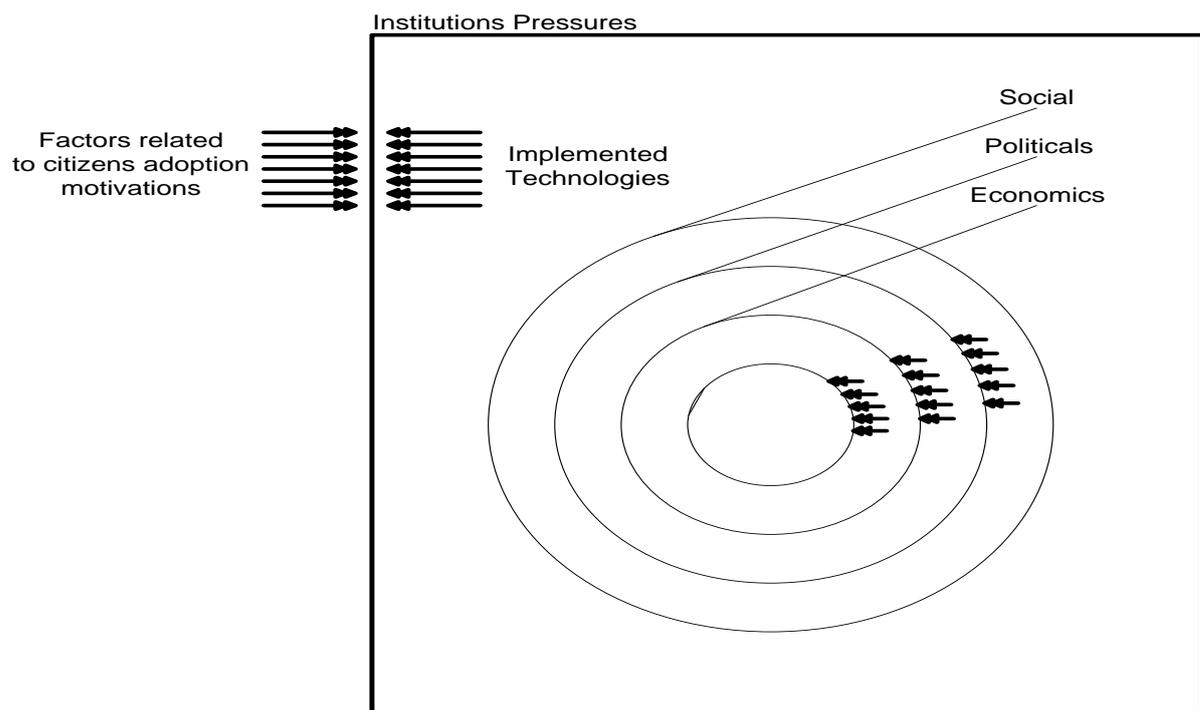


Figure 3.1 Illustrates various pressures that impact government agencies for implementing e-government technologies

3.3.2.1 Economic Pressures

Many researchers such as Williamson (1981; 1994) and North (1990) have paid relative attention to the effects of economic pressures on organisational behaviours.

According to Starbuck (1976), the goals of the organisation are strongly related to the economic status, whereby these pressures are the main driver for the relationship between the status of the economy and the methods used to evaluate workers' performance. Further, researchers in the technology field have noted that economic pressure mainly surrounds two issues, namely transaction cost and information dissemination (Lubbe and Heerden, 2003). Both issues are derived from economic status that could impact on organisations to involve the implementation of any technologies to improve the performance of a given service. In the framework designed by DiMaggio and Powell (1983) for classifying the main institution pressures, they argue that to obtain a survival economic situation, the practices and adopters on which the organisation is dependent must remain in good grace. Thus, economic pressures are considered as the main motivator of IT-enabled change that will utilise information systems to facilitate inter-organisational relationships among public sector organisations (Ciborra, 1983).

In the context of e-government, economic pressures help the government to implement efficient and effective practices of work by minimising various costs, eliminating government corruption and reducing the number of physical buildings (Eggers, 2004). According to Sang et al. (2009), e-government is a powerful tool that helps governments to improve the governance of public administration and reduce the lack of transparency and accountability in order to deliver best practices of public services. Also, from an economic perspective, the UN report “*Leveraging e-government at a time of financial and economic crisis*” (2010) confirmed that protection of social expenditure should be one of the main characteristics of e-government implementation, whereby all stakeholders of e-government will benefit. Moreover, Hwang and Syamsuddin (2008) argued that economic resource is very important to help strengthen e-government implementation to develop effective governance and increased transparency. Consequently, the remainder of this section will explain the different factors that are related to economic pressure and listed in e-government literature.

3.3.2.1.1 *Transaction Cost*

Transaction cost is involved in each and every change that happens within or across the boundaries of e-government systems (Ciborra, 1983). For example, when e-government works efficiently among users, then the cost of these transactions will

reduce; thereafter greater reductions in transaction costs will result in greater intent to adopt e-government systems (Malone et al., 1987). In 1994, Holland et al., suggested that campaigning for multi-functional technology and interrelationships with other organisations in the same business domain will reduce the transaction cost, which subsequently will increase the adoption of such services. Similarly, an e-government portal is a kind of service where most governmental units mix their services in order to increase service quality and user satisfaction (Holland et al., 1994).

In addition, Islamoglu and Liebenau (2007) argue that transaction cost was developed in public sector organisations to analyse the impact of information technology on the structure of the governmental units. They point out that transaction cost allows the different levels of management to obtain adequate decisions by monitoring lower levels of management decisions. In addition, transaction costs are adopted in public organisations to facilitate various possibilities to deliver and combine different public services in one website or portal, such as healthcare systems and education systems (Islamoglu and Liebenau, 2007).

3.3.2.1.2 *Revolution and Growth of ICT*

The ICT revolution and growth in using technologies and internet access are beginning to have an economic impact on adopting and deployment of e-government services in the public sector (Janssen and van Veenstra, 2005; Misuraca, 2006). Also, e-government implementation and ICT have grown exponentially in developing countries in the last 10 years, which indicates an enhancement of the economy in those countries (Al-Kibsi et al., 2001; Al-busaidy and Weerakkody, 2009). Moreover, Misuraca (2006) argued that implementing the best practices of ICT will improve the performance of the economy, especially in developing countries. In addition, the public sector as the main source of e-government services can stimulate the growth of ICT in the society. Cellary (2008) proposes that the growth of ICT and various electronic sectors such as e-government and e-business are pushed by economic factors, and this growth will continually have the effect of strengthening the economy. Therefore, the growth of the ICT field and economic pressure are related to each other.

3.3.2.1.3 *Control Expenditures*

Undoubtedly, citizens within the country require better services at lower costs and more responsiveness in a dynamic and continuously changing environment; thus,

Evans and Yen (2005) argued that e-government will protect these expenditures for both citizens and government. Controlling expenditures will result in better accessibility and availability of e-government services to stakeholders, and will reduce paperwork, the need for physical offices and the number of workers needed for public administration (Evans and Yen, 2005; Eggers, 2004).

3.3.2.2 Political Pressure

According to Hannaway (1993) political pressure is a significant force for organisations that operate in the same institutional environment and with similar technologies. Similarly, in this research, the political system of e-government could be conducted to extend the understanding of the political conditions under which public organisations adopt and modify their rules and regulations by the wider institutional environment (other governmental units; *ibid*). In the context of institutional theory literature, political pressure is viewed as a significant force that generates different changes and explains how organisations operate in the same environment and with similar technologies (Scott, 2001). Further, institutional theory explains how political pressures influence the structuring of new rules, procedures and organisation activities which are required to develop a successful organisation (Shepsle, 1986). O'Donnell et al. (2003) suggest that new rules and activities will pressure and direct the new decisions of top management in organisations, thus top management support plays an important role in shaping recent and future rules and regulations of the organisation. Henriksen and Damsgaard (2007) note that there is always a strong need for political consideration when a new strategy comes into place, such as new technology. However, new technologies will produce a number of opportunities and problems that could be organised using new rules and regulations (*ibid*). In the context of e-government, public administrators need to implement a new vision which will require new rules and regulations in order to achieve a new shape of services that will facilitate public sector transformation (Doherty and King, 2005). To this end, to ensure success of this transformation, e-government implementers would need to guarantee stakeholder support with regard to reducing the internal and external political pressures which may occur during the implementation process (Pouloudi and Whitley, 1997; Irani et al., 2003).

3.3.2.2.1 Leadership

One of the important rules in implementing an IT strategy and investing a huge amount of money within government projects such as e-government is the involvement of government support, and this could be provided by employing a strong leadership (Ebrahim and Irani, 2005). Throughout the implementation of e-government, many different problems and issues might occur while establishing e-government which may need fast assistance and movement by taking responsibility for managing and action to resolve these problems and issues during the e-government implementation (Bonham et al., 2001; Burn and Robins, 2003).

From an institutional theory perspective, Katz and Kahn (1978:528) stated that “*Leadership can describe as the influential increment over and above mechanical compliance with the routine directives of the organisation.*” Thus, the leader with his personal characteristics, skills and intelligence can help achieve the business objectives by controlling the actions of people in the right direction (Biggart and Hamilton, 1987). Many researchers in institutional theory, such as Scott (1981) and Mayer and Scott (1983) have explained the roles of leadership in political systems as the directive of different beliefs of the society to adopt the various practices of government and institutional systems. In other words, leadership directs the practices of the institutions not only for the workforce but rather for the workers among the organisation and practitioners adopting the organisation practices; in addition leadership roles will reflect the understanding of the system’s legitimacy (Mayer and Scott, 1983).

In the context of e-government, leadership can be classified as a strong political scheme that is employed to support various changes in e-government to successfully accomplish e-government initiatives (Edmiston, 2003; Andersson et al., 2005; Weerakkody et al., 2007). Further, use of a strong leadership structure will enable the use of an IT strategy, ensure communication to various e-government stakeholders and help evaluate citizens’ satisfaction by measuring e-government progress (Weerakkody et al., 2007).

3.3.2.2.2 Top Management Support

Top management is defined as all administrators, directors and managers who have the authority to establish and enforce policies and guidelines (Cavaness and

Manoochehri, 1993). Holland et al. (1999) noted that top management support is essential for organisations to deal effectively and efficiently with any new notions of implementing technology. As they explained, the reason behind this is that different administrators and managers must legitimise new rules and policies according to the new goals and objectives of the institution. Further, during deployment of these new ideas or concepts, those managers must be able to allocate valuable resources to the various phases of implementation (Holland et al., 1999).

As mentioned earlier in institutional theory literature, when there are new successful practices or technology implemented in any organisation, then other organisation in the same business domain will be mimicking these technologies; thus Chatterjee et al., (2002) suggested that top management support can influence a new organisational vision with respect to implementing the required IT strategy. Also, the roles played by top management could adopt other successful organisation practices in the same environment (Liang et al., 2007). These new practices/technologies which have been adopted from others need a parallel process to obtain new rules and policies in terms of the legal and right ways to use it (Cavalluzzo and Ittner, 2004). Therefore, top management can adjust and modify these policies by taking a right decision and encourage other management to adopt these policies. Similarly, in implementing technology, such as e-government, top management support and commitment is a signification factor in shaping the institutions' structure and legitimisation (Chatterjee, et al., 2002).

From e-government literature, it has conclusively been shown that the adoption of technology will require political resources such as top management strategic support, which acts as an important aspect for facilitating and promoting the implementation of successful e-government (Al-Busaidy et al., 2010). In previous studies, Al-busaidy et al. (2010) posit that top management support emerged as the most salient theme that was influencing e-government implementation across governmental agencies. Further, top management support and commitment are essential in order to provide and allocate sufficient resources and to speed up the progress of the adopted practices (Ke and Wei, 2004; Altameem et al., 2006; Liang et al., 2007).

3.3.2.2.3 *Rules and Regulations*

According to Liang et al. (2007), rules and regulations are powerful templates that guide the individual norms and behaviours in everyday activities. This template could expand to involve the procedures and actions of public and private organisations and alter the cultural-cognitive issues within organisations to mimetic rules and regulation of other organisations in the domain (Purvis et al., 2001). From normative pressure, Soares-Aguiar and Palma-Dos-Ries (2008) have determined the relation between organisations and various rules and regulations; accordingly, they illustrate that organisations share some norms and behaviours as the political system that increases the strength of these norms among organisations, thereafter; all other organisations will adopt these norms as rules and regulations within the current environment. This is what Soares-Aguiar and Palma-Dos-Ries called “*dyadic relations*” (Soares-Aguiar and Palma-Dos-Ries, 2008).

3.3.2.3 **Social Pressure**

Developments of e-government are limited by society’s usage and adoption of the internet (Pudjianto and Hangjung, 2010). While government concentrates on modern technologies in delivering public services and transforming traditional services to more advanced levels of electronic transaction through the e-government implementation, the adoption of these services by citizens remains ambiguous (Bjorck, 2004). Given this context, institutional theory explains how external pressures can control the input processes of an organisation, resulting in actions that would ultimately increase the quality of services and improve customer satisfaction (Bjorck, 2004). By gaining customer satisfaction, organisations will be able to reduce any negative external pressure of social behaviour within an e-government context. This procedure will help public organisations to transform from traditional services to online services with respect to social behaviour. Worthy of note here is the result that transformation will have on the implementation of new rules, procedures and organisational processes that relate to and shape social behaviours (Liang et al., 2007; Teo et al., 2003). Thus, the government must provide a strategy to leverage the level of internet knowledge among citizens. For example, the Cambodian government associated the implementation of e-government with the reducing of the digital divide within the country (Sang et al., 2009).

3.3.2.3.1 *Transparency Policies*

The stakeholders of e-government can recognise transparency when they feel that the information and services provided through the public sector websites reflect the decisions taken by government; also, among studies undertaken by the United Nations on finance and economy within the e-government sector showed that one of the major reasons for citizens to adopt ICT technologies and e-government is by increasing transparency (UN, 2010). Thus, e-government can produce increased transparency of the decision-making process, and improved adoption among citizens of public administration online services (Ndou, 2004; Jaeger, 2003). According to La Porte et al. (2002) and Kumar (2003), e-government is often viewed as a positive channel for enhancing government transparency and empowering citizens' adoption of e-government services. Moreover, with more information delivered and easy access to services, it is expected to increase transparency of government and empower citizens to more closely monitor government performance. Enhanced interactivity of the technology is also expected to improve the economy mode and make government more responsive to the needs and demands of individual citizens (Wong and Welch, 2004; Welch and Hinnant, 2003). Carter and Belanger (2005) also support the idea that e-government improves government transparency and helps to decentralise the administration of level governance in government agencies. This indicates that a more transparent government allows citizens to monitor the performance of public organisations more easily via the increase in the availability of information. There is no doubt that once transparency will increase, adoption will increase as well, and this will allow the citizens to participate in decision-making, which consequently will progress in better growth for ICT and e-government technologies and improve the state of the economy (Ndou, 2004).

3.3.2.3.2 *Digital Divide*

According to a UN global report (2005:24), digital divide is defined as “*The essentially issue of a disparity in real access, which is inequality in both physical access to ICTs and the ability, know-how and the culture to use the technology well.*” Belanger and Carter (2006) have described the digital divide as the ability to access the internet and the skills needed by e-government stakeholders to use online public services and related technologies. In this context, one of the e-government scopes is to cover all its stakeholders with required services, even those citizens with no internet access and those who have less ability to cope with new technology; consequently,

this will reduce the information technology literacy (Al-sobhi, 2010). Further, Belanger and Carter (2006) have classified the digital divide as one of the major challenges for e-government adoption and diffusion. This is because e-government implementations are mainly dependent on the knowledge required to use technologies that have been implemented in an e-government system, and if there is a lack of knowledge in technologies then the number of e-government participators will reduce. Accordingly, Barclay and Duggan (2008) have discussed the digital divide as one of the critical social issues that might hinder the adoption and diffusion of e-government implementation. As a result, reducing a digital divide is directly related to increasing the adoption of ICT in general and e-government technologies in particular (ibid).

From theoretical perspectives, DiMaggio and Hargittai (2001) have adopted in their research institutional theory to help them explained the reason behind adoption of different technologies at institutional levels. They explain that social groups adopted technologies due to various pressures that control the social beliefs, norms and actions (ibid). Additionally, pressures from modern societies and formally structured organisations, such as government and enterprise companies, are forcing society to adopt various technologies implemented by those organisations and subsequently reducing the digital divide (Barclay and Duggan, 2008).

3.3.2.3.3 *Citizen Empowerment*

According to King and Stivers (1998) the term citizen empowerment is the transformation of e-government users from process mode to performance mode, whereby the main focus of the government is to serve and empower the citizens rather than being concerned with building a physical bureaucratic office. To this end, governments are responsible for implementing the public police, therefore the leverage of levels of citizen empowerment is one of the government responsibilities (ibid). Furthermore, e-government as technology is implemented to influence transparency and accountability. Through the transparent operation of rules and regulations, e-government can help in the establishment of a democratic culture and empower citizens' participation in future government decisions. However, DeBenedictis et al. (2002) illustrate that there is a risk to lose governing control when government employs such a strategy. West (2004) notes that when the government applies a technology to citizens then the government will allow the citizens to place some comments and give opinions in regard to the implemented technologies, and this

could empower citizens to post their views and beliefs to shape new decisions in regard to their requirements (DeBenedictis et al., 2002; West, 2004).

However, there is a lack of theoretical literature in this area. Robey and Boudreau (1999) describe the effects of information technology adoption on empowering employees and company workers. They explain that implementing technologies among organisation structures and within employees' work will authorise the employees to participate in this technology and change it. Further, Attewell and Rule (1984) have noted that one of the social pressures is control of the information, and this will indicate the handling of power in various management areas. In addition, adoption of new technologies such as e-government will probably allow a shifting of the balance of power between government and its stakeholders (Attewell and Rule, 1984).

3.3.2.4 Technological Pressure

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

More recently, institutional theory has been used to study the effects of internal and external influences on large scale IT implementation. For example, a study by Liang et al. (2007) points to the influence of top management in mediating the effect of institutional pressures on IT assimilation in large-scale enterprise systems. Other researchers, such as DiMaggio and Powell (1983), Haunschild and Miner (1997), Meyer and Rowan (1977) and Teo et al. (2003), have all advocated the use of institutional theory for identifying and examining key institutional determinants of IT-based adoption. Bjorck (2004) proposes institutional theory for the stability of the institutional perspective in IS/IT security in organisations. Orlikowski et al. (1995) argue that individuals employ institutional structures of signification, legitimisation and domination to make sense of the technology. Kim et al. (2009) have used institutional theory as an analytical perspective to documents and to evaluate the development of an e-government system (an anti-corruption system) in the Seoul Metropolitan government. The study by Teo et al. (2003) utilises institutional theory as a lens to understand the factors that enable the adoption of information technology. Their study showed that institutional pressures have resulted in a significant influence on organisational intention to adopt a system, and the understanding of institutional pressures when investigating information technology innovation adoption.

3.3.2.4.1 *Standardisation*

Standardisation can be done by using a common or standard computer language under a secure system to save the information with any type of online connection (Moon, 2002). According to Layne and Lee (2001), e-government implementation is expected to provide access to citizens and other users from one single integrated gateway. Also, it requires participating government agencies to share their data to serve and achieve the citizens or e-government system users' needs. Therefore, the implemented technologies in public services require standard hardware and software to avoid incompatibility problems that would hinder the implementation of e-government systems (Belanger and Carter, 2004). Howells (2008) suggest a significantly different role of online services which work well on many different issues, such as information diffusion and its influence on adoption rates within the organisation. In the given context, e-government implementation can play a major role in the adoption and diffusion process by helping to standardise the technologies that are used to deliver online public services (Howells, 2008). However, because government agencies differ

between agencies, each of these agencies has different types of hardware and software which would complicate the standardisation progress among government agencies (Albusaidy and Weerakkody, 2010). Also, Bwoma and Huang (2003) identified integration of technologies between government agencies as a major obstacle for e-government implementation. In this context, using interoperability standards for building e-government systems will increase the flexibility of integration with other systems (Borras, 2004). Therefore, to conclude, for a successful implementation of e-government to occur, IT standards should be considered as a main and effective factor from an e-government implementation perspective.

3.3.2.4.2 Stability

Research suggests that citizens tend to prefer traditional service delivery rather than using online public services, because of less stability in rules and regulations related to information technologies (Basu, 2004; Chen et al., 2006). Further, in the context of developing countries, most transactions within e-government include the disclosure of either personal or financial information which individuals prefer not to share within electronic public services because of information mismanagement and organised fraud gangs (ibid). Thus, researchers such as Navarrete (2010) suggest that in order to understand various factors of online services such as trust, the researcher must utilise the stability of information technologies used within the e-government area. To this end, the stability among technologies can be an advantage for e-government transactions and activities (Navarrete, 2010).

In the context of institutional theory, Scott (2004) notes that the regulative pressures within institutional theory include the rules and policies which ensure the stability of the adopted technology environment. Thus, stability is an approach related to information technology outcomes to investigate the role of organisation. For example, government operates e-government in a highly technical environment so that the stability issue formulates the quality for government service (Robey and Boudrieu, 1999). Stability illustrates the testing and collaboration between different factors adopted in the technological environment (Ituma and Simpson, 2007). Furthermore, in the theoretical literature, stability can be provided by mimicking structure, processes and routines to strengthen the organisation's performance and reduce the organisation's turbulence (Powell and DiMaggio, 1991).

3.3.2.4.3 Internal and External Integration

According to Layne and Lee (2001), e-government implementation is expected to provide access to citizens and other users from one single integrated gateway. Furthermore, it requires participating government agencies to share their data to serve and achieve the citizens' or e-government system users' needs. Therefore, information technology standards are needed to avoid any hardware and system barriers that would hinder the implementation of the e-government system (ibid). Thus, one of the most important issues in the e-government models is the integration between different government agencies. Further, Belanger and Carter (2004) argued that the e-government context allows the government to establish a standard system or network between government agencies for faster and more efficient information exchange between them. However, although there is a real need for a common language to complete this process of integration, still many government agencies have their own regulatory environment and strategic priorities (Borras, 2004).

From a technological context, electronic integration is a strategy that needs a great level of knowledge and expertise, however, this acts as internal forces (e.g. pressures to hire skilled people necessary for modern technologies) and external forces (e.g. pressure to buy the latest hardware devices for integrating with other organisation) (Soares-Aguiar and Palma-Dos-Ries, 2008). Chatterjee et al. (2002) have described that integration is a strategy for innovation which contributes directly to the core business of the member organisations to raise the technological performance. According to institutional theory perspective, integration is more than a strategy to communicate between two or more organisations, it is a pressure for organisations to mimic other organisation decisions in order to achieve better services, select the most excellent technologies and improve interaction and communication between organisations (Tingling and Parent, 2004).

3.4 Conceptual Model and Taxonomy of Institutional Factors Involved in E-Government Implementation

Out of institutional theory perspectives and the literature on e-government research, a conceptual taxonomy that draws the key institutional factors influencing the implementation of e-government under the four broad themes of economic, political, social and technological is proposed in Table 3.8.

Pressure	Factor	Description	References
Economic	Transaction cost	Each and every change that happens within or across the boundaries of e-government systems	Ciborra, (1983)
	Revolution and growth of ICT	Implementing the best practices of ICT, improve the business processes by using the latest technologies	Misuraca, (2006)
	Control expenditures	Better services at lower costs, Reduce cost for public sector and citizens	Evans and Yen, (2005)
Political	Leadership	Decision makers in the organisation to understand the internal and external impacts of e-government	Ebrahim and Irani, (2005)
	Top management support	Providing the support for forming new rules, procedures, arrangements and actions towards e-government services	Chatterjee, et al., (2002)
	Rules and Regulation	Providing the support for regulatory and legal issues at all levels of government in order to achieve public sector transformation	Soares-Aguiar and Palma-Dos-Ries, (2008)
Social	Transparency policies	The ability to access information and transaction services, and citizen participation.	Belanger and Carter, (2006)
	Digital divide	Empower the citizens by reduce efforts to obtain their needs.	West, (2004)
	Citizen empowerment	Sharing of information and participate the citizens with new rules and regulation	Carter and Belanger, (2005)
Technical	Standardisation	Standard use of different development tools within e-government implementation	Howells, (2008)
	Stability	Operate e-government in a stable and secure environment (include privacy and security)	Navarrete, (2010)
	Internal and external Integration	Integrates a system across different roles that provide a full and real 'one stop shop'/portal.	Belanger and Carter (2004)

Table 3.8 Taxonomy of economic, political, social, organisational, and technological pressures that impact e-government Implementation

The literature and theoretical analysis offered in Chapters 2 and 3, and its close relation to an institutional theory, offers the basis for proposing a conceptual model that maps the various pressures of economic, political, social, organisational and

technological pressures in Figure 3.2. Furthermore, the conceptual model draws, along with these pressures, the institutional factors implemented in technologies related to citizen adoption motivation towards e-government initiatives. In particular, the conceptual model will offer the overall structure and guidance on the key lines of inquiry for exploring the external and internal challenges facing the Omani e-government implementation.

Further, Figure 3.2 illustrates how institutional theory helps the researcher to conceptualise various institutional factors in terms of the economic, political, social and technological pressures. Drawing from previous literature, the researcher assumes that those institutional factors act as the most key motivators and hinders the improvement of both the structure and processes of organisations, especially in public sector organisations. Using e-government literature, this research explored the influence of these pressures and their various associated institutional factors that impact public organisations when undertaking e-government implementation. In addition, Figure 3.2 indicates the effects of institutional theory and the three related pillars in mimetic various actions, norms and activities that will facilitate adoption of similar rules and regulations in order to reshape the structure and process of organisations. As a result, Figure 3.2 shows the above arguments and how the actions and norms proposed in institution theory and the different institutional factors identified in this study (under the economic, political, social and technological pressures) influence organisational change in e-government implementation.

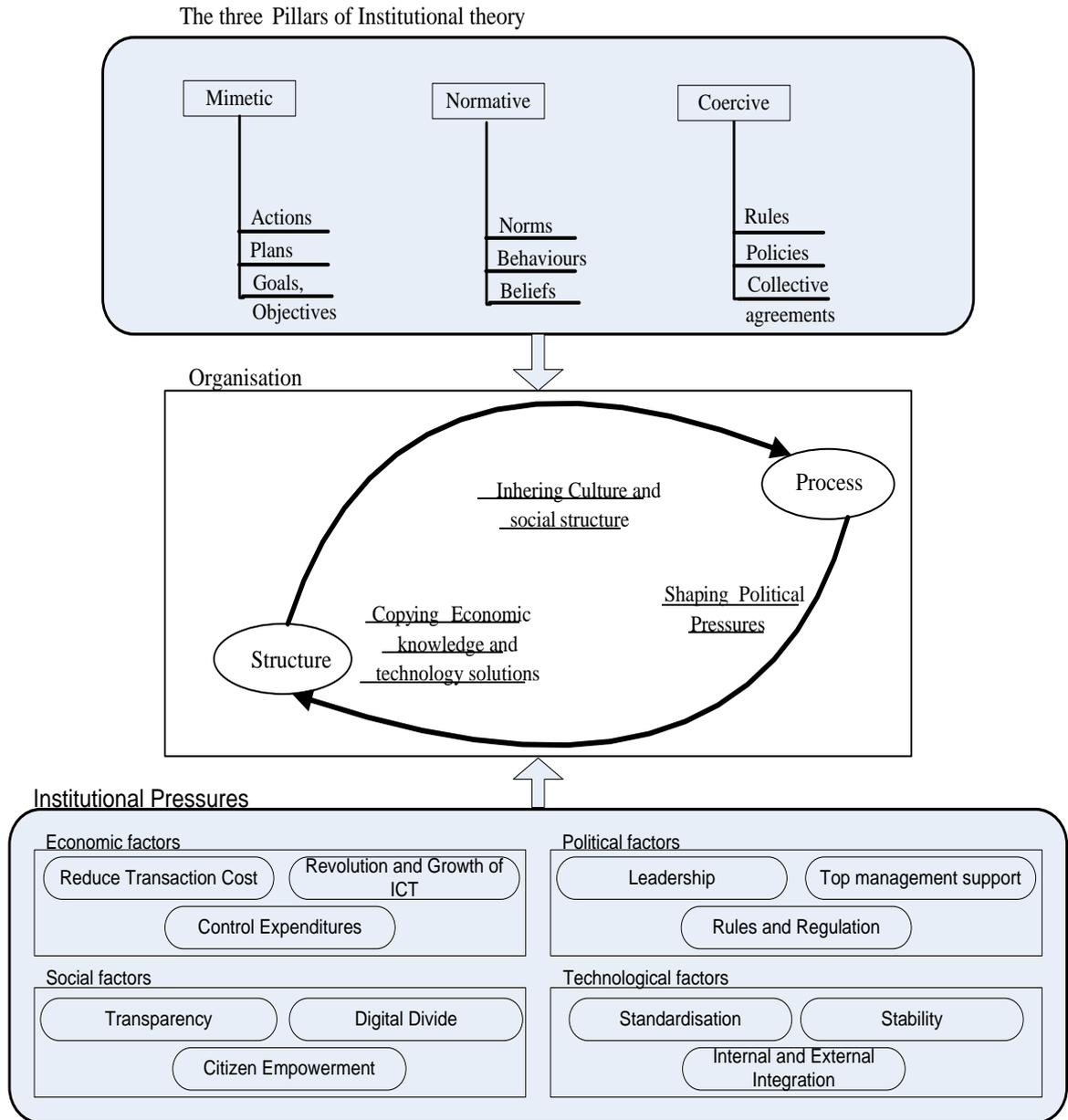


Figure 3.2 A Conceptual Model for e-government implementation from the perspective of Institutional Theory literature

3.5 Conclusions

The previous discussed chapter aimed to clarify the institutional factors surrounding e-government implementation using the published literature and theoretical contexts from the perspectives of implementation. Therefore, the researcher identified a gap in the e-government literature dealing with the presence of institutional theory to formulate a new conceptual model and taxonomy for e-government implementation.

While Chapter 2 discussed several challenges of e-government literature that provide an understanding of the principles behind e-government implementation in public organisations, Chapter 3 identified existing institutional factors influencing e-government implementation based on the institutional theory literature.

Thus, the proposed model (Figure 3.2) is different from other published models because it combines the e-government institutional factors into a taxonomy of economic, political, social and technological pressures that were identified separately in previous studies. The author argues that no previous studies exist to his knowledge that has attempted to combine these institutional factors under these main pressures to influence e-government implementation. Therefore, the above conceptual model (Figure 3.2) and taxonomy (Table 3.8) offers a conceptual frame of reference to the field of e-government research. Finally, in the next chapter, the researcher will present the research methodology used to test the proposed institutional factors and related issues of e-government implementation.

Chapter 4: Research Methodology - A Qualitative Case Study Approach

4.1 Introduction

This chapter describes the research methodology used to realise the research aim and objectives by resolving issues related to e-government and its implementation. Research began with the consideration of four research areas – epistemology, philosophy, methodology and method. Section 4.1 begins with a discussion of different epistemological stances, including (a) positivism, (b) critical theory, (c) post-positivism and (d) interpretivism. It concludes with a justification of interpretivism as the research approach most appropriate for this thesis. Section 4.2 distinguishes between qualitative and quantitative research and results and explains the benefits and limitations of qualitative research. Section 4.3 explains the selection of an appropriate research strategy for this thesis, while Section 4.4 explains the research methodology, which relied on interview techniques to gather information on selected cases. Finally, Section 4.5 concludes.

Since the 1960s, many researchers, including Benbasat et al. (1987), Galliers (1992), Irani et al. (1999), Myers and Avison (2002) and Bryman and Bell (2007), have suggested that four research areas should be considered during research design – epistemology, philosophy, methodology and method. Crotty (1998) defines epistemology as the assumption of knowledge embedded in a theoretical perspective (e.g. objectivism, subjectivism). Thus, epistemology is concerned with such issues as what should be regarded as acceptable knowledge in a discipline (Bryman and Bell, 2007).

Creswell (2003) identifies philosophy as a theoretical stance (e.g. positivism, interpretivism). While Creswell (2003) defines methodology as a strategy of action that links methods to outcomes, Bryman and Bell (2007) also argue that methodology

may be used to distinguish between methods and outcomes, and may be considered a helpful umbrella for a range of in-practice issues concerned with research (e.g. experimental research, surveys, case studies). Furthermore, decisions about which methodology is most appropriate to a particular research project are related to what is called “research design” or “research method” (Crotty, 1998; Bayman and Bell, 2007). Research method is usually associated with different kinds of research executions and the subsequent analysis of data collected. Regularly, it refers to techniques and procedures used within the research design. Therefore, an understanding and evaluation of methodological approaches and concepts is necessary to the selection of an appropriate methodological approach for a particular research project. The rest of this section will discuss the selection of a research approach for this project, a discussion of the main differences between inductive and deductive methodologies, and notes on qualitative and quantitative research methods.

4.2 Selecting a Research Approach

One of the most difficult tasks in information system (IS) research is selecting and identifying a research approach that is suitable for various stages of research. According to Land (1992), Galliers (1992) and Galliers and Baker (1994), no approach or research framework is relevant to all the fields of knowledge that are needed for IS research. However, each stage of IS research should be conducted using at least one major research approach to analysing data and formulating it into understandable information.

Orlikowski and Baroudi (1991) have also observed that IS's are not controlled by a single theoretical perspective. This, Orlikowski and Baroudi (1991) assert, allows researchers to choose suitable research methods. Guba and Lincoln (1994) propose four epistemological categories of research, based on research philosophy – positivist, interpretive, critical and post-positivist (Orlikowski and Baroudi, 1991; Irani et al., 1999). However, researchers like Galliers (1992), Straub et al., (2004) and Yin (2003) agree that positivism is the primary epistemology used in IS research.

Epistemology is a type of philosophy that concentrates on philosophical problems contiguous with theories of knowledge. Generally speaking, it answers questions

related to knowledge areas. Parkhe (1993) suggests that epistemology refers to how specific phenomena become known to researchers. Myers (1997) is also divided as to whether different epistemologies are essentially opposed to one another or can be contained within one study. He, therefore, states that in IS disciplines, several research approaches must be used. With regard to the selection of research approaches, it is also worth noting that, as Myers and Avison (2002) have observed, such selections are based on underlying assumptions about what constitutes or composes the research being conducted. The following discusses the differences between epistemological stances taken by different research approaches.

4.2.1 Positivist Research

According to Myers (1997) and Irani (1999), positivist studies test theories in order to increase predictive understandings of phenomena. Essentially, positivists assume that reality is objective and can be described by measurable properties. Furthermore, Irani (1999) declares that researchers with positivist views agree that knowledge may be learned or communicated when researchers are independent of instruments, tools and devices.

4.2.2 Interpretive Research

According to Walsham (1993; 1995), interpretive studies try to understand phenomena by assigning people and gathering information about their knowledge and experiences. Irani (1999) asserts that researchers with interpretive views gain knowledge through observation and personal experience with subjects in empirical studies. Many researchers, including Walsham (1995) and Kaplan and Maxwell (1994), have also observed that interpretive research methods attempt to understand research topics by focusing on how people make sense of a situation as it emerges. Tools used by researchers with interpretive views are, therefore, derived from such social constructions as language, consciousness and shared meanings.

4.2.3 Critical Research

According to Myers (1997), researchers with critical research views understand the world as constrained by various forms of social, cultural and political domination. Research can, therefore, be classified as critical if its main purpose is social critique, bringing to light the restrictive and alienating conditions of the status quo (Kihlstrom

and Klein, 1994). As Myers (1997) has suggested, researchers with critical views assume that social realities are historically constructed – that is, produced and reproduced by people.

4.2.4 Post-Positivist Research

According to Lincoln and Guba (2000), post-positivist methods attempt to transcend the limitations of positivism. Post-positivism is notable for its belief that no method of science is most correct. Instead, different methods may be used in different scenarios. Thus, post-positivism challenges the tradition that knowledge is apodictic and claims that knowledge is simply that which is accepted by a community (Galliers, 1992).

4.3 Selecting Interpretive Research Approach

The researcher argues that for the purpose of this thesis, the interpretivist epistemological has been selected for the following reasons:

- This research deals with public administrators. It touches on complex organisational issues related to structure and culture. According to Bendix (1968) and Wood-Harper and Wood (2005), the complexity of similar studies results from the uncertainty of interrelationships and relational networks of various technologies and social contexts. The researcher, therefore, needed a research approach that would allow the author to understand the knowledge, opinions, experiences, information and processes that are included in and influence e-government implementation and adoption.
- An interpretivist approach allowed the researcher to study e-government phenomena empirically and fully understand the problems facing the organisations studied. Using different research instruments – e.g. face-to-face contact, investigation and observation – helped the researcher to explore the challenges related to e-government implementation.
- As this research is an empirical investigation of public administration units, it deals with complex social organisations that are difficult to research because they are administered and controlled by different decision-makers. An interpretivist approach is ideal for understanding e-government implementation.

- As mentioned earlier, positivist approaches are most appropriate when testing hypotheses, variables or formal propositions. As none of these are being tested, a positivist approach is less relevant than other approaches and was, therefore, not used.

As indicated above, this research is qualitative in nature. Hence, an interpretivist approach is an excellent epistemological stance for these purposes, as observation and personal experience form the basis of qualitative methods (Irani, 1999). The following section defines qualitative methods and compares them to quantitative methods. The justification for an interpretivist approach becomes clear.

4.3.1 Justifying the Selected Research Approach for This Thesis

According to many researchers (Myers, 1997; Myers and Avison, 2002), qualitative and quantitative methods may be used to conduct a variety of inquiries. Each method comes from a different scientific tradition. While quantitative research methods were developed in the natural sciences to study natural phenomena, qualitative research methods were developed in the social sciences to study social and cultural phenomena (Maykut and Morehouse, 1994; Myers, 1997). Accordingly, quantitative research methods depend on the conversion of observations into discrete units, like objects and processes. These objects and processes are then compared using statistical analysis. Clarke (1994) suggests that researchers use quantitative research to create tests that describe and explain behaviour observed in the real world. Specifically, quantitative researchers generate operational terms, usually referred to as “hypotheses”, and test them using such quantitative methods as surveys, laboratory experiments and mathematical modelling (Myers, 1997). Table 4.1 shows the main features of quantitative and qualitative approaches (Missi, 2005).

Characteristics	Qualitative Research	Quantitative Research
Data forms	'Simple' numeric data	'Complex' rich data
Data provided	Explanation	Understanding
The used approach	Inductive	Deductive
General purpose	Depends on real situation, developing deep understanding, building a model, illustrating real life actions	Theory testing prediction, establishing facts, building a hypothesis test

The focus of the research	Interacts with participants, collects data by face-to-face interview from participants and observation	Isolated variables, uses large sample, often anonymous to participants, uses tests and formal tools, instruments and devices
Research plan and strategy	Start by initialising one idea involved in the research to obtain more in-depth knowledge about participants and setting, flexible, tentative proposal	Develop before study is initiated, structured, formal proposal
Research method	Action research, case study research and ethnography, qualitative data sources include observation and participants' observation, interview and questionnaire, documents and texts, and researcher's impression and reactions.	Survey methods, laboratory experiments, formal methods and numerical methods such as mathematical modelling
Data analysis	Interpretive and descriptive	Statistical and mathematical

**Table 4.1 Distinctive features of quantitative and qualitative approaches
(Adapted from: Missi, 2005)**

According to Creswell (1994) and Neuman (2000), there are five main differences between qualitative and quantitative research methods:

- The language used in quantitative research is formal, while the language used in qualitative research is informal.
- Quantitative research generally does not engage with previous research, whereas, qualitative research usually draws on previous research.
- Qualitative research leads to explanations and understandings, whereas quantitative research gathers understandable information that may be used to develop conceptual models or patterns.
- Quantitative research data is usually presented in the form of statistical analysis (i.e. numbers), whereas qualitative research data is presented in the form of documents.
- Quantitative research uses hypotheses or propositions, while qualitative research uses data to generate new models or present new explanations of reality.

Since 1987 and due to a general shift in IS research from technological to organisational research – focusing on such topics as managerial problems and interests (Benbasat et al., 1987) – the number of researchers using qualitative research

methods has significantly increased. According to Benbasat et al. (1987) this is primarily because of the need to acquire competitive advantages by restructuring businesses, rather than investing in technical innovations. Thus, Chapters 2 and 3 of this thesis focus on factors that influence public sector administrators who implement and manage e-government services. The use of qualitative research methods in this study helped the researcher put people's thoughts, experiences and actions in their proper social and cultural contexts.

Mile and Huberman (1994) and Denzin and Lincoln (1998a) describe qualitative research as involving the interpretation of non-numerical data and focusing on problems or vague objects in their social and cultural environments. Myers (1997) observes that qualitative research examines people's words (through analyses of interviews/discussions/documents/participant observation data) and actions, in order to gain more detailed understandings of their experiences and explain social phenomena.

Further, this thesis focuses on institutional factors influencing e-government implementation in local public authorities. As reported in Chapter 3, understanding of human norms, actions, activities and behaviour among workforces of public organisations is important to realise the various natures of reality in the social world. Further, applying a quantitative method to study various consequences of human actions and in-depth information about organisation structure and process is mistrusted, thus, use of a qualitative approach is suggested for this study. The qualitative research method will map institutional factors in one model that will allow researchers to examine in-depth complexities and processes of less acknowledged phenomena such as e-government implementation in less documented and published literature contexts such as Oman. This will offer considerable flexibility during interviews and observations for the researcher, and will allow the researcher to study the e-government in a natural setting and generate theories from practices.

Finally, the researcher suggests that to gather in-depth information, the use of rich empirical data is required to provide more understanding regarding e-government phenomena in public organisations authorities. The need for rich empirical data indicates that the use of qualitative research methods is appropriate. Furthermore,

Myers (1997) suggests that whether it is appropriate to use different epistemologies in qualitative research depends on the underlying philosophical assumptions of research. While Myers (1997) proposes that qualitative research can rely on any epistemological type (e.g. positivist or interpretivist), Galliers (1992) also reports that qualitative research is usually connected to interpretive research.

4.3.2 Deductive and Inductive Research Methods

According to research logic, inductive and deductive research refers to the main purpose of research (Yin, 1994). Schutt (2006) and Collis and Hussey (2003) suggest that deductive research begins with a general idea and ends with a more specific objective (such as the composition of a model or theory). Deductive research may, for example, attempt to study one or more well-known theories, make specific predictions and test these predictions using empirical data. In other words, deductive research may lead researchers to focus on a few theories (conceptual or theoretical frameworks) that drive them to produce specific hypotheses that, then, guide them to collect (empirical) observations about these hypotheses, which, in turn, may confirm those hypotheses (ibid).

Unlike deductive research, inductive research begins with a specific idea (usually the idea of addressing a specific question or problem) that is then compared to specific theories. The comparison may lead researchers to formulate hypotheses that explore the problem or question being addressed. Such an exploration may end with the development of a conceptual model (Cavaye, 1996; Trochim, 2001). In essence, inductive research methods begin with observations (e.g. case studies) and empirically develop a theory. Appropriately, inductive approaches are generally used to collect data and develop a theory by analysing that data (Saunders et al., 2003). In this study, the researcher has used an inductive approach to empirically examine the input of the four key pressures proposed in the conceptual model in Chapter 3 on the real world with a use of the right validity mentioned earlier and then reconceptualise the model.

4.4 Case Study Research

The research topic, as well as the aims and objectives of this study, influenced the selection of a research method and strategy (Benbasat et al., 1987). The case study

method is appropriate because collecting knowledge and personal experiences from participants is important to understanding and critically assessing the context of a problem (ibid). In addition, case study methods are usually used to help researchers develop new systems or models and, in some cases, form the basis for the future development of guidelines (Berg, 2004).

While Benbasat et al. (1987) state that there is no standard definition of case study methods, Yin (2006:17) proposes that “*the central tendency among all types of case study is that it tries to illuminate a decision or set of decisions; why they were taken, how they were implemented, and with what result.*” Yin (1994) suggests that case studies are comprehensive assessments or examinations of specific phenomena in their natural settings, where data is collected from one or more entities via interviews, observations and questionnaires. Furthermore, case studies do not involve experimental control or mathematical analysis because their results are derived directly from participants’ knowledge (Benbasat et al., 1987; Berg, 2004). Case studies can be employed in many types of research, including structured, unstructured, positivist, interpretive, deductive and inductive; however, in different types of research, the use of case studies may lead to different types of results (Yin, 1994; 2007).

Benbasat et al. (1987) have identified the following as reasons why case studies are practical for IS research:

- Case studies can generate a theory by studying the natural settings of phenomena.
- Case studies, by explaining “how” and “why”, can create an understanding of the nature and complexity of a problem.
- Case studies are appropriate for research in areas where little research has been conducted – for example, on developing countries’ problems.

Mainly, case studies help researchers answer questions by prompting them to consider “what”, “why” and “how”. According to Yin (1994), there are two types of case studies – exploratory and descriptive – and which adjective applies depends on researchers’ objectives. Usually, exploratory case studies are carried out to explain an occurrence and propose or formulate new guidelines or a model with which to assess

a phenomenon's natural environment (Yin, 1994; Saunders et al., 2003). According to Saunders et al. (2003), exploratory case studies can include interviews with experts or, more generally, people knowledgeable about the environment within which a phenomenon occurs. Descriptive case studies describe events or situations that have happened and, therefore, have more to do with specific cases – for example, profiling organisations or individuals (Saunders et al., 2003).

The case studies used in this research can be classified as exploratory. This is because:

1. Exploratory case studies helped the author to identify the problem, develop a new model, and gain insights into the challenges of e-government.
2. Exploratory case studies focus on questions of “what”, and helped this study to identify the factors that influence e-government implementation.
3. The guidelines developed by conducting exploratory case studies helped the author to derive a new theory that will be valuable for future studies.

4.4.1 Single vs Multiple Case Study Research

Yin (1994) and Cavaye (1996) state that case study research represents a way to reorganise observations and aims, in order to gain a more in-depth understanding of complex social phenomena. Therefore many researchers, such as Yin (1994; 2007), Cavaye (1996), and Berg (2004), have thought it relevant to explain the difference between single and multiple case study approaches.

Whether a single or multiple case study approach should be used depends primarily on the question being addressed. According to Yin (2006), single case studies can be justified (1) when the propositions presented are believed to be true (as a critical test of existing theory), (2) when documenting the abilities or skills of a person or organisation (in an extreme or unique circumstance), (3) when testing a case that is representative of other cases, (4) when participants observe phenomena that were not previously accessible to them (revelatory) or (5) when researchers start to study two different points in the same case (for longitudinal purposes) (Bayman and Bell, 2007:64; Yin, 2007:53).

As Benbasat et al. (1987) and Yin (2006:53) suggest, a single case may be followed by a multiple case study. Further, multiple case studies have been described by many researchers, including Yin (1994) and Bayman and Bell (2007), as a common way of comparing different aspects of two or more case studies. Generally, multiple case studies allow researchers to compare and contrast the findings of each case, to conduct cross-cases analyses that identify understandings both unique and common to the situation at hand, and to empirically assess phenomena (ibid).

Furthermore, Yin (1994; 2006:102) has identified six sources of data for case study researchers – documentation, archival records, direct observation, focus group interviews, participant observation and physical artefacts. Table 4.2 lists the strengths and weaknesses of these six sources of data for case studies.

Source of Evidence	Strengths	Weaknesses
Documentation	Stable– can be reviewed repeatedly. Unobtrusive – not created as a result of the case study. Exact – contains exact names, references and details of the events. Broad coverage – long span of time, many events and settings.	Retrievability can be low Biased selectivity, if collection is incomplete. Reporting bias-effects (unknown) bias of author. Access may be deliberately blocked.
Archival records	[Same as above for documentation] Precise and quantitative	[Same as above for documentation] Accessibility due to privacy reasons
Focus group interviews	Targeted - focuses directly on case study topic Insightful - provides perceived casual inferences	Bias due to poorly constructed questions. Response bias. Inaccuracies due to poor recall. Reflexivity - interviewee gives what interviewer wants to hear
Direct observation	Reality - covers events in real-time Contextual - covers context of events	Time consuming. Selectivity - unless broad coverage Reflexivity - event may proceed differently because it is being observed.

		Cost - hours needed by human observers.
Participant-observation	[Same as above for direct observation]. Insightful into interpersonal behaviour and motives.	[Same as above for direct observation]. Bias due to investigator's manipulation of events.
Physical Artifacts	Insightful into cultural features. Insightful into technical operations.	Selectivity. Availability.

Table 4.2 Shows Six different Sources of Evidence: Strengths and Weaknesses (Source: Yin 2009:102)

4.4.2 Interviews

Interviews are a research technique usually used by social scientists as an active method of retrieving information. Researchers Hayes and Tatham (1989) and Denzin and Lincoln (1998b) have suggested that interviews are the best form of qualitative research. Yin (1994) argues that interviews are the main source of data in many case studies. Berg (2004) further observes that interviews may be used to measure different social scientific phenomena, and are particularly appropriate when studying beliefs, reactions and perceptions. Interview methods have begun to appear in a variety of areas of social science research (ibid).

While this study maintains an interpretive stance, case study interviews are used as the main source of data. Walsham (1993) suggests that interpretation is the best method of analysing interview data and, thus, when conducting interviews, researchers should record participants' accomplishments, including significant actions and events, views and aspirations. What is more, interviews are primarily social interactions, as the main way of collecting data in an interview is by interacting (Berg, 2004).

According to some researchers (Yin, 1998; Merriam, 2001), interviewers must possess five different skills. They must have an agile mind, listen, demonstrate adaptability, show understanding and be unbiased. The purposes of these skills are listed in Table 4.3.

Skill	Purpose
Inquiring mind	The ability to ask questions during the interview and the way how to job from one question to another in manner of discussion.
Listen	The ability to listening and observing a maximum required data.
Adaptability	The flexibility that interviewer could offer during the interview to handle any unaccepted event or change interview strategy to maintain the satisfaction of the participator
Understanding	The ability of the researchers to interpret and maintain the question to recover any other information that is required.
Unbiased	The researcher ability to gathered data without bias of the main aim of the interview.

Table 4.3 Various interview skills required within a character of the researcher (Source: Yin, 114-122)

4.4.3 The Research Strategy Used in this Study

In this study, the purpose of qualitative research was to collect in-depth information, in an understandable form of data that enhanced the understanding of interviewees' experiences and environments (Myers, 1997; Myers and Avison, 2002). Qualitative data helped the researcher to obtain a solid understanding of e-government implementation in Oman.

For this research a multiple case study approach was adopted. Case studies allowed the researcher to conduct an in-depth investigation of Oman's e-government (Yin, 1994; Cavaye, 1996). The investigation provided rich data that yielded insight into organisational structures and environments, including economic, political, social and technological issues (Yin, 2009:4). Case studies also allowed the author to generate a complete picture of e-government implementation in Oman. Multiple case studies produced more comprehensive insights, and therefore, it is maintained that multiple cases were most appropriate for this research.

To summarise, these are the reasons for taking a multiple case study approach:

- Case study research allowed the researcher to observe data collected from decision-makers in Oman's e-government, and then formulate theories that are useful for understanding the new e-government environment.
- Case studies were appropriate for the exploration, classification and development stages of research and allowed for comparisons of data collected on Oman's e-government, within the context of the theory applied.

- Case studies reliably answered questions, explained the challenges facing e-government, and developed a new understanding of the complex e-government phenomenon.

Qualitative research methods were used in this study to explore different perspectives within the Omani government on the implementation of e-government. The author used multiple case studies and semi-structured interviews to collect in-depth data from the decision-makers who implemented e-government. Using Yin's (1998) and Merriam's (2001) guidelines for interviewer skills and experiences, questions that facilitated semi-structured interviews were drawn up.

This research consisted of two data-gathering phases. The first phase was a pilot study of preliminary, semi-structured interviews with three high-level directors of management in the Information Technology Authority (ITA), the authority responsible overall for the national e-government initiative in Oman. The second phase was an analysis of documents and interviews with nineteen decision-makers and participators from three different organisations that act as key ministries in Oman's e-government.

4.4.4 Phase 1: The Pilot Study

At this stage of study, qualitative research method was used to outline the Omani government perspectives towards implementation of the e-government project (see Walsham, 1995). Using in-depth semi-structured interviews, the researcher identified three key employees from Information Technology Authority – the official Omani e-government implementer – in order to describe the current situation and identify various issues related to the national Omani e-government project (eOman). The e-government literature (Chapter 2) and conceptual model offered the frame of reference, which guide the researcher to design relevant research questions in order to prepare the initial semi-structured interview. This guidance (the initial interviews' questions) was reviewed and assessed by conducting three e-government researchers and practitioners as a pilot interview to evaluate various interviews' questions. Based on the pilot interviews, the interview guide and related questions were revised and modified.

The three pilot interviews offered an initial picture of the main factors that influence e-government implementation in Oman. In an Annual Report in 2008 entitled *Digital Oman, towards a digital society* it is stated that the Omani e-government project (eOman) lacks a clear, detailed plan for implementing e-government. Other research has suggested that this lack of direction has affected e-government's progress (Al-Jboori et al., 2006). The interviews explored the progress made by Oman's e-government to date, and attempted to identify various institutional factors that currently impede the progress of the national e-government initiative. The results show that the initial, semi-structured interviews with the Chief Executive Officer (CEO), Director of Infrastructure and e-Services Division and Director of Information and Awareness Division of the ITA were essential to this research.

The interviews covered questions relevant to the status of Oman's e-government implementation. Questions were divided into four areas – the history of Oman's e-government, different phases of implementation, problems and challenges faced in e-government's initial stages, and ministries and governmental units that have been involved in e-government implementation during the last three years, regardless of whether their efforts succeeded or failed.

The ITA is responsible for project managing the Omani e-government initiative. Acting as a legal body, it influences the implementation of e-government projects in Oman and is affiliated with the Minister of the Omani National Economy. ITA is responsible for implementing national IT infrastructure projects and supervising all projects related to the implementation of the Digital Oman Strategy (DOS), while providing professional leadership to various other e-governance initiatives in Oman. ITA serves as a competency centre between Omani government units, producing best practices in e-governance and the use of information and communication technologies (ICT) – offering efficient and timely services, integrating processes and improving efficiency in service delivery.

The preliminary interviews were with three of ITA's directors and aimed to identify issues that may need to be considered, in order for e-government to be a success. All interviewees had approval to participate in this study. Their positions are as follows:

1. CEO of ITA

This is the highest directorial position in Oman's e-government. He has a professional IT background and is responsible for around 200 employees, who have similar backgrounds. He has more than 23 years' experience managing and executing IT projects, and holds a PhD in Information Systems and Communications.

2. Director of Infrastructure and e-Services Division

This position is responsible for taking on each project that relates to implementing infrastructure projects and publishing e-services. He has more than 20 years of IT experience and holds a masters certificate in IT. His job is to develop and implement IT infrastructure, applications and online services. He also enables government organisations to deliver online services. He is responsible for designing and managing ITA IT infrastructure and has modelled the technical architecture proposed in ITA's strategy.

3. Director of Information & Awareness Division

This position oversees various developments in Oman's e-government. He markets and promotes the Omani e-government (eOman) initiative locally and globally through events, e-awareness campaigns and various forms of publications and media. He is also responsible for managing public and international relations.

The three interviews were conducted in Oman at ITA during July and August of 2009. They were conducted in person, to ensure that appropriate interviewing skills were incorporated into the research process. All interviews were conducted in interviewees' offices, where interviewees were comfortable with one-to-one interaction and where the researcher had the greatest opportunity to obtain in-depth data. Each interview lasted for approximately an hour-and-a-half, ample time to clarify unclear information. Also, by the end of each meeting, a variety of secondary data sources had been supplied, in the form of official reports, organisational histories, and plans for present and future projects. These materials helped the author to clarify some of the data collected during the interviews, and focus the rest of this research on different units in Oman's e-government.

4.4.5 Phase 2: The Case Studies

In order to create a link between literature, theory and empirical data, the author used case study methodology to compare theoretical propositions with empirical data gathered during this research. The results of the comparison support existing literature by exposing the effects of various elements of case studies. It was important to explore existing literature and theoretical propositions, using e-government cases. By taking a multiple case approach, the researcher could compare and contrast the findings of each case study (Yin, 2003; Bryman and Bell, 2007). This enhanced the researcher's understanding of the similarities and differences between selected cases. Interviews represented the main data source of each case study and were the main means of qualitative data collection (Walsham, 1995; Dix et al., 2004). They were conducted between September 2009 and October 2010 by visiting interviewees in their government departments in three different ministries in Oman. All case studies were of large governmental agencies that are responsible for delivering services to numerous Omanis.

This study compares and contrasts different cases, in order to highlight salient themes and key lessons. The three cases discussed in this paper differ in the degree of implementation of ICT and technology in e-enabled public services. The three cases revealed that further explorations must be made of Oman's e-government.

Fontana and Frey (2000) state that, "*Interviewing is one of the most common and powerful ways in which we can try to understand our fellow human beings.*" Thus, interviews are a tool for understanding the interactions between, and activities of, two or more organisations. The semi-structured interviews conducted in this study provided the researcher with rich sources of data (Gillham, 2000). Furthermore, it allowed the researcher to use open-ended questions to collect data that helped the author describe the current state of Oman's e-government.

Open-ended questions were intended to develop the author's understanding of the visions, strategies and projects currently used. The author also tried to assess the impacts that various organisations have had on the economic, political, social and technological factors that are important to implementing e-government in Oman.

During the interviews, the researcher asked the interviewees to determine the major risks and challenges facing e-government projects in the past and future. The current state of Oman's e-government was clarified through these interviews, and various supplementary materials were collected from interviewees.

Semi-structured interviews (Yin, 2003) were used to collect the perspectives of eight senior e-government stakeholders who were interviewed in three different government ministries. The cases chosen comprehensively illustrate local administration services within the Omani government that are actively involved in e-government implementation. The ministries are responsible for delivering key public services and, thus, play an important role in the relationship between Oman's government and its stakeholders. The interview questions covered the different roles played by each ministry in the last three years. Stakeholders interviewed will be listed in Table 4.4.

The governmental agency	The participator
Ministry of Manpower (MOMP)	<ol style="list-style-type: none"> 1. Director of IT department 2. Director of National Registration System (NRS) 3. Head of web application 4. Head of application development 5. Head of software development 6. One of senior development engineer 7. One employee from operational level management 8. One employee from operational level management 9. One employee from operational level management
Ministry of Higher Education (MOHE)	<ol style="list-style-type: none"> 1. Director of Higher Education admission Centre 2. Director of IT department 3. Deputy of IT director 4. Head of software development 5. One of senior software development 6. One employee from operational level management
Ministry of Interior (MOI)	<ol style="list-style-type: none"> 1. Director of IT department 2. Head of technical support section 3. One employee from operational level management 4. One employee from operational level management

Table 4. 4 Shows different participators' occupations in the interviews from the three case organisations

Directors and mid-level managers were chosen because they managed different projects relating to the e-government initiative. The researcher assumed that the interviewees held insightful views of the e-government initiative.

Interviews consisted of 42 questions that were identified and structured around key themes recognised from Chapters 2 and 3 and from the initial, semi-structured pilot interviews (Phase 1). The latter interviews contained questions that were constructed for the purpose of cross-case comparison of the current status of Oman's e-government. They identified a set of relatively standardised items that were described and analysed in each case. Participants discussed a set of propositions related to ITA reports and official documents and literature produced by the Omani e-government. Some propositions were also put forth by ITA's top management.

Based on the results of the interviews, a number of items are important to cross-case comparisons. The questions were divided into four areas – the current state of e-government implementation, current challenges to e-government development and issues that influence the economic, political, social, organisational and technological factors that are important to implementing e-government.

The three government agencies involved in this study were selected on the basis of insights and suggestions made by ITA's CEO and his ideas related to e-government practices and implementation in Oman. Furthermore, the author's prior experience and knowledge of working in one of the selected ministries in Oman for nearly ten years, together with a network of personal contacts at ITA and the selected ministries, made the decision-making process, familiarisation, and data collection process easier. To ensure that interviewees participated voluntarily, as well as to ensure that the information gathered would be clear and straightforward, interviewees were allowed to choose times for their interviews and the venue. All interviews were conducted in interviewees' offices, where interviewees were comfortable with one-to-one interaction and where the researcher had the greatest opportunity to obtain in-depth data. Each interview lasted for approximately two hours. In addition, a variety of secondary data sources were provided by the interviewees, in the form of official reports, organisational histories and plans for present and future projects. These materials helped the author to clarify some of the data collected during the interviews,

and focus the rest of this research on different units in Oman's e-government. Brief follow up meetings were held (face to face and over the telephone) to clarify any issues that were unclear to the researcher. Before each interview started, interviewees were notified that they could discontinue and withdraw from the interview at any time, if they desired. With permission from interviewees, interviews were audio-recorded and later transcribed into a Word file that was emailed to participants, who confirmed the content of the transcripts and clarified vague information.

4.5 Data Triangulation

According to Hakim (1992), to obtain one of the most powerful research designs, it is essential to employ multiple sources of evidence. Yin (2009) has recommended the use of multiple sources of evidence for conducting a case study approach, because it strengthens the case studies' evidence. This process of using multiple source of evidence or using multiple methods of data collection is usually referred to by the term "data triangulation" (Robson, 2000; Stake, 2000; Jick, 1979). This research has used and adopted triangulation to obtain data from various kinds of sources, including interviews (face-to-face), observation and documentation. Therefore, empirical data obtained from the three Omani public organisations will be triangulated.

4.5.1 Validity of the Empirical Data

Within interviews, the researcher tried to ensure, as Sarantakos (2005) recommends, that the results bore "credibility", "transferability" and "conformability", as these enable researchers to produce findings that are in agreement with theoretical or conceptual values that have been discussed in the literature (Sarantakos, 2005). Also, one of the main concerns of the researcher was gathering and collecting an amount of data that could reasonably be applied to an understanding of facts and issues gleaned from case studies (Irani et al., 2005). The researcher spent more than five hours conducting interviews and ensured that the data collected answered the research questions, in terms of the various institutional factors facing and influencing e-government implementation. The aim of the first and second phases of this study was achieved. The results of the case studies output and empirical analysis of those data collected are presented in Chapter 5.

4.6 Research Strategy

The overall research strategy followed four directions: 1) Interview the implementer of Oman's e-government, with the aim of improving the researcher's understanding of Oman's e-government; 2) conduct, compare and contrast multiple case studies; 3) interview eight decision-makers from Omani governmental agencies, with the aim of gaining an understanding of salient themes; and 4) analyse results, with the aim of contributing to public knowledge and understanding of e-government. The complete research process is outlined below, in Figure 4.1.

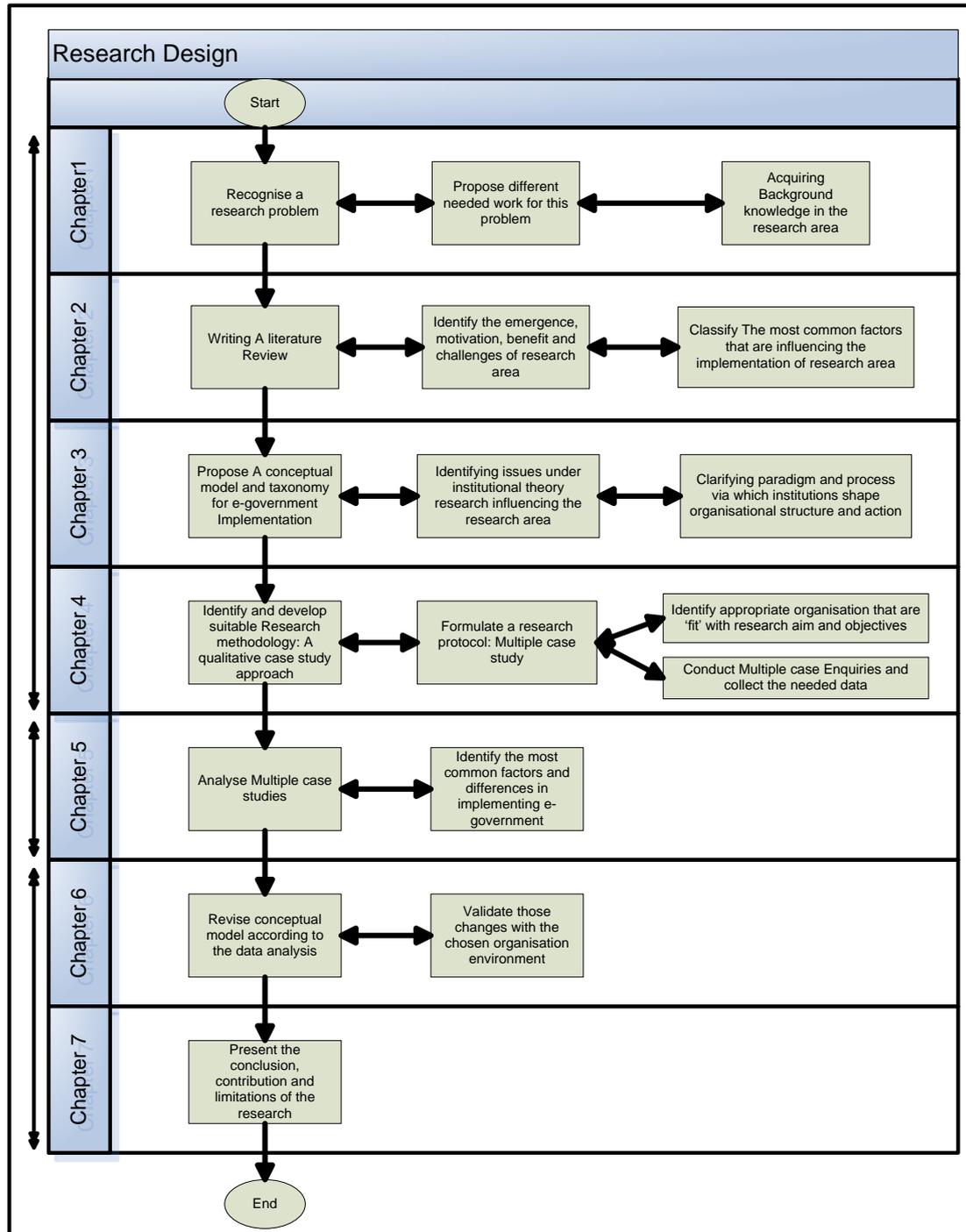


Figure 4.1 Illustrates the empirical research process adopted for this PhD thesis

4.7 Conclusion

This chapter explained and justified the research methodology adopted for this thesis, which helped the researcher to define the e-government phenomenon theoretically and practically. The use of qualitative research in this study helped the researcher to examine interviewees' perspective towards e-government implementation and related

institutional factors that influence the electronic services within public sector organisations in Oman. Further, in order to gain more understanding of details of interviewees' knowledge in e-government projects and clarify the e-government concept in the context of Oman, the researcher has included in the analysis (Chapter 5) various collected interviews, discussions, documents, and participant and observation data. This has helped the researcher to collect, in an understandable form, data that will produce a new taxonomy that actively assimilates e-government practices from real sources in Oman (Chapter 6). In this respect, the researcher assumes that this study will use multiple case study perspectives to allow interviewees to relate their knowledge and experience related to e-government implementation to the outcome of this research. Thus, the model that will be presented in Chapter 6 will provide a broader understanding of the e-government phenomenon in the Omani public sector organisations. The next chapter presents and analyses the data gathered from the case studies.

Chapter 5: Research Findings

5.1 Summary

In this chapter, the researcher examines and analyses various data collected from the three Omani public organisations. In order to investigate various institutional factors presented in Chapter 3, the researcher will combine and compare the literature with empirical findings gathered from qualitative methods used in this study. This will help the researcher to highlight the most important institutional factors that are influencing the e-government implementation in Oman, and finally will support the researcher to conclude this thesis with valuable recommendations.

In order to achieve the aforementioned aim, this chapter is structured as follows. The next Section (5.2) will present a background overview of the Sultanate of Oman, its geographical location, its political and economic systems, its resources and population. These are presented to give a clear idea about the case study of this research and where it was conducted. This is followed by Section 5.3, which offers a brief summary of the national Omani e-government project starting from 1997 until 2008. This is followed by two research finding phases that are conducted using a qualitative/interview approach in Sections 5.4 and 5.5. In light of the conceptual model presented in Chapter 3, Phase one was conducted with the ITA employees (national e-government organisation members), in order to show the challenges that might hinder their efforts towards e-government implementation.

The conceptual model proposed in Chapter 3 was used as a frame of reference for the second phase of the empirical data, and explores the internal and external pressure influencing the e-government implementation in Oman under economic, political, social and technological pressures. Thus, in Phase two, an analysis of qualitative in-depth interviews was made in order to collect important data related to Oman's e-

government and various institutional factors that are related to economic, political, social and technological pressures from three cases within Omani government organisations. Analysing these data has helped the researcher to conclude e-government implementation taxonomy for Oman and to obtain useful recommendations in the context of developing countries, which is offered in Section 5.6. Then this chapter concludes in Section 5.7 by highlighting the most important institutional factors that are investigated and realised within the three Omani public organisations used in this study.

5.2 Overview of Oman

Geographically, the Sultanate of Oman is located in the south-east of the Arabian Peninsula. Oman has joint land borders with Saudi Arabia to the west, Yemen to the south, and the United Arab Emirates to the north. Also, it is bounded in the north-east by the Gulf of Oman and south-east by the Arabian Sea (Ministry of Foreign Affairs, 2010). Oman covers an area of 309,500 sq km (about 119,500 sq miles).

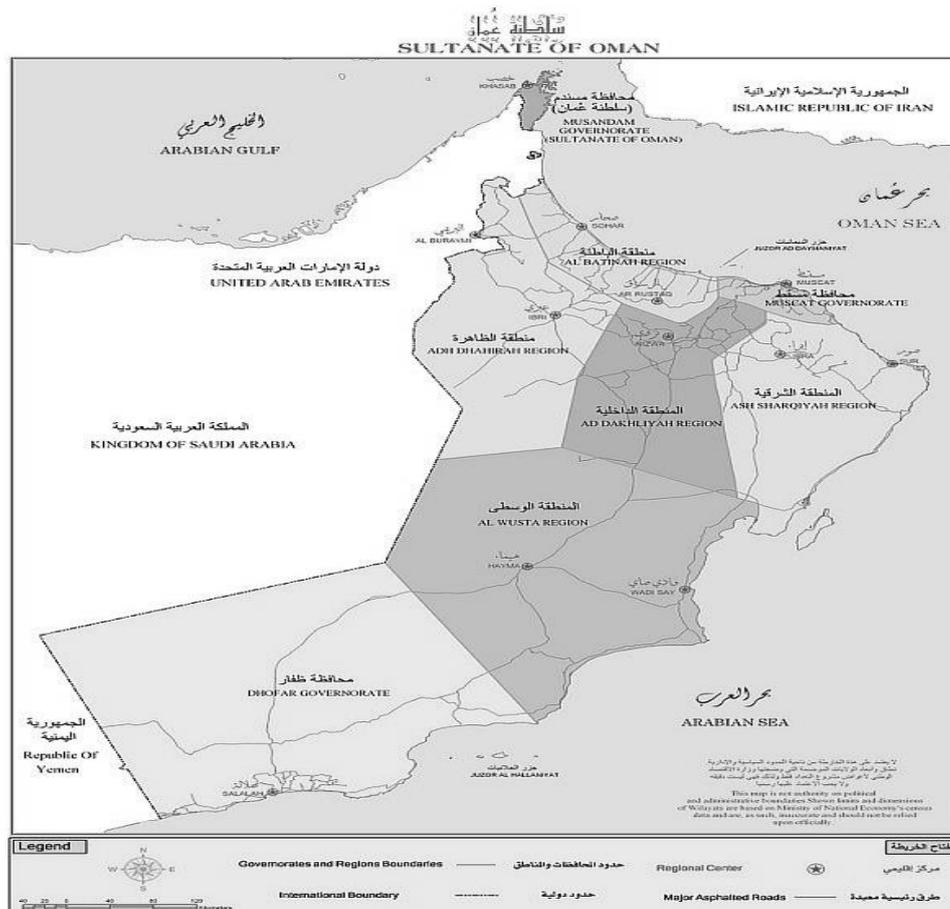


Figure 5. 1 The map of Sultanate of Oman, Source (MONE, 2010)

According to the Ministry of National Economy, in 2003 Oman had a population of 2.331 million people (including non-Omani) and a growth of around 46,800 every year; at the end of 2008 Oman had a population of 2.867 million. The majority of the population is Omani citizens, whilst the rest consists of residents who live or work in the Sultanate of Oman. The following Figure 5.2 shows the Omani population growth within the last six years (MONE, 2009).

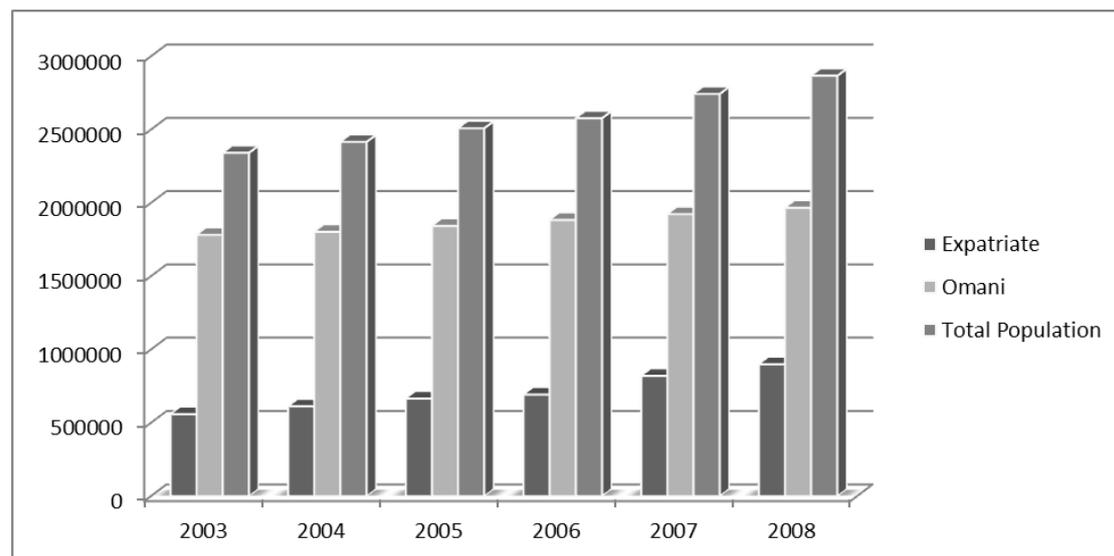


Figure 5. 2 Illustrate the growth in Omani population since 2003 to 2008

Further, to understand the right distributions of Omani and non-Omani residents, the following Table 5.1 and Figure 5.2 illustrate the distribution of gender among the total population in Oman at the end of 2008 (MONE, 2009).

Age Group	Omani		non-Omani	
	Male	Female	Male	Female
0-9	229137	220954	43509	35118
10-19	264517	255443	26336	19670
20-29	242580	237485	147426	53510
30-39	123587	122364	244772	60580
40-49	60009	65459	167655	27019
50-59	35674	37495	54012	7458
60-69	25544	21638	7661	2378
70-79	10074	9636	1387	895
80+	2993	3536	536	826

Table 5.1 Shows the distribution of gender among Omani's and non-Omani

The following Figure 5.2 demonstrates the percentages of Omanis and non-Omani genders at various levels of age among the total population in Oman at the end of 2008 (MONE, 2009).

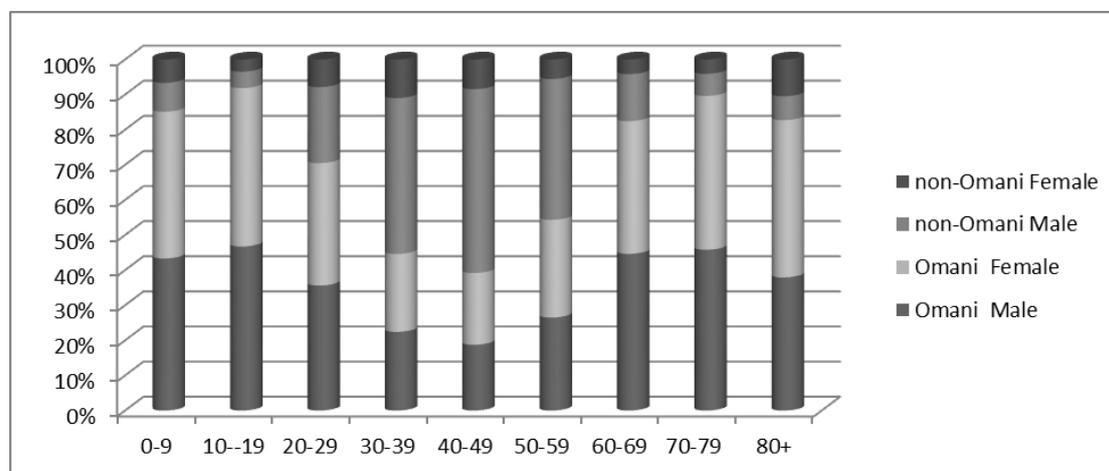


Figure 5.3 Distribution of gender among Omanis and non-Omani

Oman is a Sultanate, currently ruled by Sultan Qaboos bin Said Al-Said, who succeeded the throne of Oman on 23rd July, 1970. In this governance structure, Sultan Qaboos is the eighth ruler to ascend to the throne since the inception of the current Sultanate. The Sultanate of Oman is a member of the Gulf Co-operation Council. Other members of the Gulf Co-operation Council are the Kingdom of Saudi Arabia, Bahrain, Kuwait, Qatar and the United Arab Emirates. This Council aims to strengthen cooperation in areas such as agriculture, industry, investment, security, and trade among these six countries. Among the six Gulf countries, the Sultanate of Oman is the second largest country in terms of land area. Oman is constituted by five regions and four governorates. Muscat is the capital city of the Sultanate of Oman, and is located in the central region (Oman.om, 2010).

One of the Omani government responsibilities within the Gulf Council is ensuring the security policies and requirements necessary for regional stability. This involves producing an agenda for coordinating cooperation and collective defence training among the Gulf countries (MOFA, 2010). Additionally, the Omani Government believes in establishing the right strategy to guarantee stability among the Gulf States (ibid). As a result, Oman has attained the highest level of security, safety and peace. This has been proven by a high level of respect for human rights, good relationships

with other countries and a reduction in crime or terrorist activities. Consequently, this has improved the development and prosperity of democracy, human rights, labour law and the Omani economy (Ministry of Information, 2008).

5.2.1 Economic and Social Indicators

Socially and historically, Omanis played an important role in providing living goods (such as rice and wheat) for Arab markets. While earlier, Omanis had developed their seafaring skills in using the favourable conditions between Omani shores and the coasts of India, nowadays Oman's economy depends on exporting oil. Nevertheless, Oman has developed a strategic plan that aims to reduce the oil sector's contribution, and to grow other economic revenue streams such as tourism and gas-based industries (CIA Factbook, 2010). In 2009, Oman produced around 816,000 petroleum gallons per day; its economy is sound in terms of reserves.

According to the Global Competitiveness Report 2010, published by the World Economic Forum (Schwab, 2010), Oman is ranked twenty-fourth globally on the basis of macroeconomic indicators, and is ranked ninth in terms of global stability at the macroeconomic level, out of the 139 countries included in the report. It is also ranked 8th in the category of countries in the middle stage of economic development among 40 economies, and takes the second place in the Arab world in the same category (Schwab, 2010). In this regard, the Sultanate of Oman provides a good level of interest in the context of studying governance, economic and social structures.

5.2.2 Political Indicators

There are no political parties in Oman. Thus, the Royal Office in Oman is the primary legislator of the internal and external security policies within the country. The policies are created at the country's need in respect to maintaining any matters related to internal security. It is worthy of mention that Sultan Qaboos serves as the Prime Minister and Commander of the Omani National Guard and therefore, His Majesty is responsible for assigning the ministers and chairmen of public organisations. Further, the Royal Oman Police (ROP) is responsible for providing police rules and duties (e.g. traffic rules), security at the Muscat airports, various immigration services, and operating the coast guard (ROP, 2010).

Furthermore, in 1991, the Sultan of Oman formed a consultative council called Majlis Al-Shura, which contains 59 members. Every member of the Majlis Al-Shura represents every city (Wilayat) from the eight regions of Oman, and was elected directly, freely and fairly by every adult citizen. The number of members has increased steadily since 1991 through the first term of Majlis Al-Shura to 83 members in the last term, which was the council's fifth term (Majlis Al-Shura, 2010; Ministry of Information, 2008).

5.2.3 The Evaluation of ICT in Oman

Oman has embarked upon its attempt to transform public sector services by using ICT and empowering its citizens to face the global challenges facing the Omani economy. In order to achieve the aforementioned aim, Oman has gone through various steps towards maintaining the best environment for Omani e-government. In 1995, the Omani Ministry of National Economy developed a clear strategy for ICT, including streamlining government services to citizens and business, creating knowledge-based industries, developing a local ICT sector, supporting a better competitive environment, and enhancing social development using IT. In 1998, upon the suggestion of the MONE, the national committee was established. The main aim of this committee was to follow up the ICT strategy set up in 1995. In this context, one of the committee's commitments was signing agreements with Microsoft Corporation software (applications and platforms, e.g. Windows and Office) and Oracle products to ensure the standardisation of IT tools used within different government agencies in Oman. Also, the committee considered another contract with Gartner Company to examine Oman's capability and readiness for implementing the e-government project.

Finally, the MONE decided to form the eOman organisation as an individual body to pursue the Omani e-government implementation. It aims to create an effective government infrastructure that provides better public services to citizens. Nevertheless, this administration did not provide any concrete additions until the establishment of the Information Technology Authority (ITA) in 2006. The ITA was set up by the Royal Decree number 52 in May 2006 as an autonomous legal administrative body affiliated to the Ministry of National Economy.

Lately, Sultan Qaboos has become proactively interested in the adoption of high technology, including delivery of public sector services and partnership with the private sector using IT. His Majesty stated that *“Information technology and communications have now become the main elements that move forward the development process in this third millennium; therefore, we have accorded our attention to finding a national strategy to develop the skills and abilities of citizens in this domain with the aim of further developing e-government services”* (ITA, 2008). In this context, the Oman government has set up two regulatory bodies in respect to strengthening the ICT sector in Omani society, namely the Telecommunication Regulatory Authority (TRA) and Information Technology Authority (ITA) in 2006 (Al-Hinai, 2007). While TRA was set up to implement an efficient telecommunications regulatory framework that will develop the industry through the Omani market environment, the ITA was established to transform the Sultanate of Oman into a sustainable knowledge-based society by leveraging ICT to enhance government services, enrich businesses and empower individuals (ITA, 2008). Nevertheless, these initiatives are dependent on how Omani society is ready to move and transform to a digital society. To this end, the next subsection will explore various ICT indicators drawing from the TRA and ITA annual reports.

5.3 Background of Oman Telecommunications Industry

Internet services started to develop in Oman in 1997. At that time, one private internet services provider (ISP) was licensed, providing the landlines and internet services mainly in the capital, Muscat. Today, the number of ISPs has increased to two private companies due to the high concentration influenced by ICT (MOTC, 2010). The Omani ISPs are two large companies, namely Omantel and Nawars. Both are highly regulated in telecommunications and internet services and highly competitive in mobile industry services. However, the Omani market offers very limited competition in the internet sector. These two companies are strong operators, who are expanding aggressively internationally to compete on a global scale, and are also developing advanced networks and mobile applications (ibid).

Due to the high competition between these two companies, the number of subscribers to internet services in Oman has been increasing since 2002, especially after the government's efforts in promoting the digital environment and community e-government project, where the statistics indicate that there are (63,843 subscribers) over three levels of internet users, namely dial-up, DSL and leased line subscribers (TRA, 2006). This increase reflects the substantial demand for the service due to its high quality and reasonable prices, which included and expanded at the base of new and existing users. However, the number of internet subscribers rapidly increased in 2009 to 1,465,000 subscribers due to the obvious explosion in technologies and multi-access machines (CIA factbook, 2010).

These statistics reflect the growth in the number of users of internet services in Oman, especially with the introduction of new public services, which expand and attract new segments of users for e-government services, especially young people (ITA, 2009). In addition, both telecommunication companies introduced in the last two years wi-fi services in addition to ADSL and dial-up services to their users, which provide high-speed internet services to cover continuing customers. To this end, ITA has recognised the increased number of users that are interacting with government official websites using wi-fi services (ITA, 2009). Therefore, in order to realise a better understanding of Omani willingness for e-government implementation, the strategy and initiatives of ITA in implementing e-government in the local environment needs to be explored. Thus, the next section will investigate the role of the ITA in Omani e-government.

5.3.1 The Role of the ITA

Before 2003, the information system of the Omani public administration had a very weak resource base and ICTs were under-utilised (Al-busaidy and Weerakkody, 2008). Then, during the past seven years, many ICT developments took place in Oman, especially after the foundation of the ITA. However, ICT initiatives differed from one public agency to another. The ITA was set up to pioneer the implementation of Omani electronic society, thus the ITA acts as the engine that empowers various public sector agencies towards e-government implementation.

The government of Oman, through the ITA, attaches great significance to the e-government concept and the transformation process that leads to its realisation. It strongly believes in the concept of e-government for the national economy. Basically, the ITA has formulated a plan for providing government services and transactions electronically. In addition, the ITA management has realised that transformation to an information society cannot be achieved without comprehensive collaboration among various government agencies and concerted efforts to obtain a set of IT objectives. Therefore, the ITA established the Omani e-government portal in 2008 in conjunction with different government agencies around Oman, and it divided that integration of data and other online services into various phases (ITA, 2008).

5.3.2 ITA Strategy

The vision of the Omani government in regard to e-government is to improve the quality of public online services. In this context, the ITA designed a strategy to improve the efficiency of government services, enhance the activities of businesses, empower individuals with skills and knowledge to meet society's needs and expectations, and to direct Oman towards becoming a sustainable knowledge-based economy. The ITA comprises a wide range of initiatives and services that are proposed to improve the efficiency of public online services. It has executed ten different projects to achieve the previous strategy, namely eOman Awareness, the e-government services portal, the national e-payment gateway, the convergent government network, the disaster recovery centre, the innovation and support centre, national IT training and awareness, the standards framework, the information security management framework and e-transactions law. Furthermore, the ITA serves as a mediator among various government agencies by copying best practices and raising awareness among other agencies of different e-government initiatives. This will facilitate the digital society of Oman and complete the infrastructure of the digital Omani strategy.

5.3.3 ITA Initiatives towards e-Government Implementation

Since 2006, the ITA has established many initiatives towards the e-government project. There are three major pillars for these initiatives, namely infrastructure, support and empowering citizens. The first pillar includes the integrated networks,

electronic gateways and secured data centres. The second pillar includes providing the technical support and consultancy services to different governmental agencies to offer electronic services. The third pillar includes empowering the community to develop and deliver electronic services and enable users to make use of such services to better their lives. Figure 5.3 illustrates the various initiatives that are encapsulated in the eOman strategy (ITA, 2006).

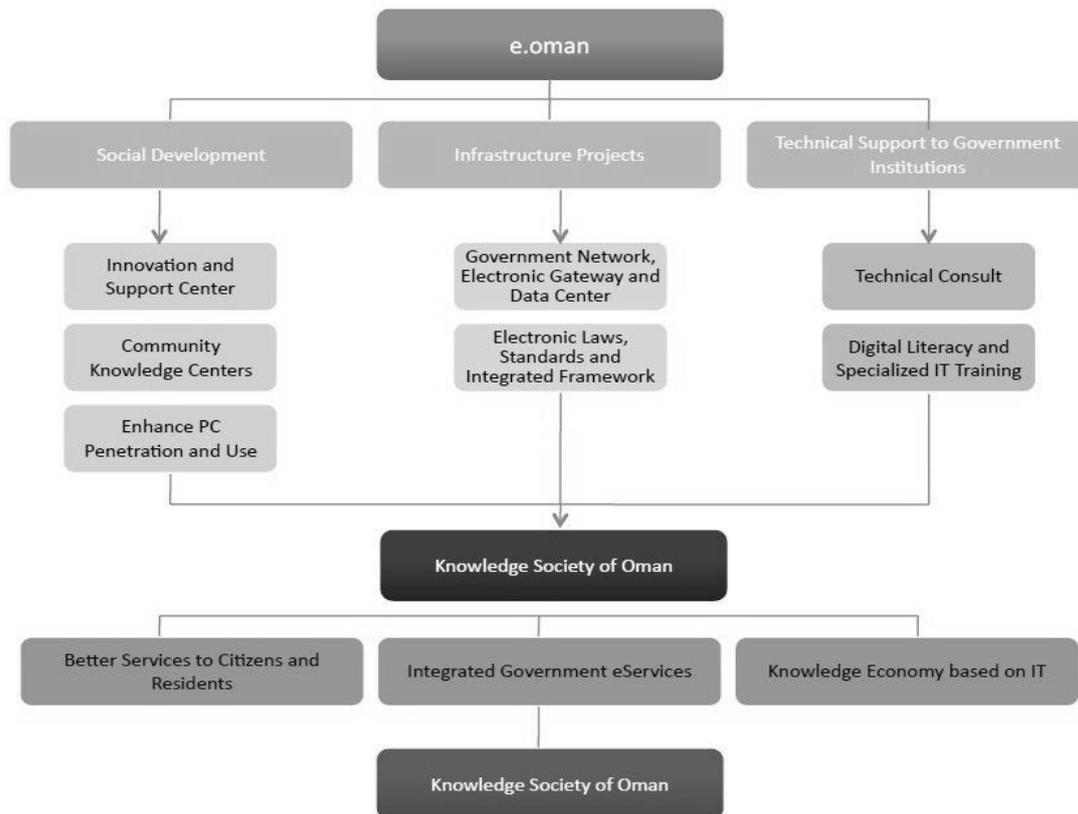


Figure 5.4 eOman priorities and initiatives towards an Omani knowledge society (Source: ITA, 2006)

While the discussion presented above clarifies the role of the ITA in implementing e-government among government agencies, the next section explores the current situation of Omani e-government. This is essential to identify the differences between the development of strategies, and implementing those strategies in the real environment. Thus, the next two sections will consider the current situation from literature and practical perspectives.

5.3.4 Current Status of Omani e-Government

As stated earlier in Chapter 1, there is little published information about e-government implementation in Oman. Studies by the United Nations (2003; 2008) and a few other researchers such as Abanumy et al., (2005) have suggested that e-government in Oman is still in its initial stage of building e-services, which concentrate on supplying information to the users (UN, 2008; 2005). Further, the United Nations Economic and Social Commission for Western Asia described Oman's ICT e-participation policies and missions as average when compared with Saudi Arabia, and below average when compared with the United Arab Emirates. In 2008, the UN world e-government readiness survey showed that the Omani e-government efforts improved significantly since the 2005 survey by moving up from 112th to 84th in the rankings. Sadly, though, according to the same survey Oman's e-government project was ranked last among Gulf countries (UN, 2008). In addition, the United Nations E-Government Survey, entitled "*Leveraging e-government at a time of financial and economic crisis*" ranked Oman as 82nd in the world and last in the region in terms of readiness for e-government implementation (UN, 2010).

In the light of the discussion presented above, the lack of a legal framework to identify guidelines and regulations regarding the use of electronic data is one of the main limitations of Oman's e-government concept (UN, 2005). Furthermore, according to the United Nations Economic and Social Commission for Western Asia, Oman needs to provide new laws to regulate the internet, which will control the relations between service providers and users (ESCWA, 2006). In addition, though Oman connected to the internet in 1997 the country still has only two internet providers, which means that not all towns and cities are covered by internet services (TRA, 2010). Of late, with the establishment of 'Oman Digital', the government has ensured the formulation of a national ICT strategy to enhance e-services such as e-procurement, e-payment and privacy (ITA, 2009; ESCWA, 2006). Nevertheless, sceptics have suggested that Oman lacks clear detailed plans for implementing e-government, which will affect their progress (Al-Jboori et al., 2006). Moreover, there are no software industries, which can grow with Oman's e-government needs. Other researchers have also identified common issues, such as usability and information

quality, as factors affecting the efficiency of e-government implementation in Oman (Al-busaidy and Weerakkody, 2008; 2009).

Today, the efforts of the Omani government, through the ITA organisation, are largely focused on the capital city, Muscat (Al-Busaidy and Weerakkody, 2008). However, the 2010 ITA report “Oman Digital, towards digital society” illustrates that an in-depth analysis of other Omani cities has been taken as an action to implement e-government initiatives (ITA, 2010). This will manage to implement basic e-government services, with emerging research studies accentuating various barriers to successful implementation and progress which are linked to the government (or service providers) and the citizens (user aspects) (ITA, 2010). Thereafter, a number of initiatives have been achieved by the Omani e-government project to assist the adoption and diffusion of ICTs in general and e-government in particular (ibid). The ITA-developed programme of e-government implementation is divided into fourteen different projects announced by the ITA at the end of 2008, include eOman Awareness (eOMAN-A), e-government services portal (UBAR), national e-payment gateway (NePG), convergent government network (CGN), disaster recovery center (DRC), innovation and support center (ISC), national it training and awareness (NITTA), standard framework (STDF), information security management framework (ISMF) and e-transactions law (eLaw). However, the Omani e-government project was established in 2008, but most of these projects are still under development and only a few have been designed and recognised by the citizens who can deal electronically with 46 government bodies working in the region (ITA, 2009). Furthermore, e-government initiatives in Oman are seen to be a move into cooperation with the private sector to manage and support the e-readiness of government services and to enhance Omani digital society in order to be able to use the internet and e-government services at national and local levels (Al-Busaidy and Weerakkody, 2011a).

In order to explore the practical issues influencing implementation of the e-government implementation in Oman, interviews were conducted with key employees responsible for e-government and its services concerning e-government implementation in ITA. The aim of this phase of data collection is to offer a synopsis

of the key factors influencing e-government implementation efforts in Oman through three main interviews with key employees responsible for e-government and its services concerning e-government implementation in Oman. The results of these interviews are outlined in the next section (Phase 1), which attempts to collate the significant factors that are currently impeding the progress of the national e-government initiative in Oman. Furthermore, these interviews aim to: a) identify various challenges that were impeding e-government implementation and not included in Chapter 2; b) explore the current situation of Omani e-government implementation and c) highlight the reason for slow progress in implementing e-government services among government agencies and further differences between those agencies.

5.4 Preliminary Research Findings (Phase 1): Understanding e-Government in Oman

This section presents the results of an initial pilot study that was conducted in Oman during July and August of 2009 in the Information Technology Authority (ITA). The ITA is the organisation that has overall responsibility for project-managing the Omani e-government initiative. The interview was conducted with the CEO, the general director of the Information & Awareness Division and the general director of the Infrastructure & e-Services Division; they each have a professional IT background and their organisation (ITA) is responsible for around 200 employees who have similar backgrounds. Using interviews, this section hopes to identify key issues that may need to be considered for e-government success from a government's perspective in Oman.

By doing so, the researcher hopes to answer a number of questions, such as (a) '*why the progress of e-government has been slow in Oman when compared with other countries in the same region*', (b) '*what are the key challenges for electronic service implementation in public sector organisations*', (c) '*why is it that some government agencies are more active than others in the adoption and dissemination of e-government*' and (d) '*why some government agencies vary from others in implementing e-government*'. Each interview lasted around two hours and provided the context of Omani e-government in practice.

The current situation of e-government in Oman is that the strategy procedure took some time to develop various contained phases, because the e-government officials looked at the different aspects, and then engaged a third party vendor (such as Gartner Group) to support them. However, the late appointment of a government organisation responsible for e-government or managing the Omani government initiatives played an important part in the slow move towards e-government. The general director of the Infrastructure and e-Services Division stated that, *“Yes, we are late in implementing e-government within government agencies and this is because there was no clear strategy and responsible organisation for e-government implementation; however, the real work was done after 2006.”*

The CEO pointed out the slow motivation among e-government initiatives compared to other countries in the region according to United Nation reports, by adding: *“The Sultanate has achieved remarkable progress in the readiness procedures of e-government from the position of 112 in 2005 to 84 in 2008, according to the UN report 2008; this jump refers to the level of acceleration of e-governance and related activities by the public and private sectors in the Sultanate of Oman.”* He also added, *“Since 2006, Oman has given the digital initiative momentum, especially in public sector institutions, and has provided information and interaction to achieve higher levels of consciousness.”*

During the last four years, the ITA has moved the Omani government agencies steadily into the digital age. The general director of the Information & Awareness Division claims that *“In 2006-2007, ITA awarded most of the tenders related to Omani e-government initiatives, which had previously held it up ... currently the ITA has completed the connections of 120 government websites, established the e-payment gateways and in July 2010 inaugurated the chance for the Omani national e-government portal to complete other projects that are related to digital society.”* At present, a number of e-services have been implemented in Oman, such as e-payments, e-learning and e-billing. According to the CEO, the next big challenge for the ITA is to move the country to activate plans for economic diversification. As the CEO states: *“...after 2006, the strategy was devised to introduce e-government and create a 'digital society' in Oman ... The vision Oman 2020 (future plans) is focused on*

developing an improved ICT sector in Oman with an aim to activate the economic diversification plan.”

The ITA website features allowed the establishment of a unified government network using the Omani portal, however, implementation of the Omani e-government portal first phase consisted of only five agencies which were ready to connect to this portal, out of 120 government agencies. In respect of this, the general director of Infrastructure and e-Services Division stated that the *“ITA has developed a government standard to manage e-government initiatives and projects, however, the reasons behind differences or delays in the integration process between various government agencies and ITA systems are due to four main reasons, namely a) the wrong advice from middle management (IT controller) to top management, and how can middle management support their ideas, b) the availability of a good IT team, c) sometimes but not always the budget, and d) did not renew the organisation business process.”*

Nevertheless, the CEO has explained other reasons for different behaviour of ministries in respect to integration or lack of ICT: *“Participation depends on leadership - I think this step needs strong support from top management. Additionally, we need in each agency at the initial stage a thinker team with the ability to produce thoughtful plans and exact information requirements from other government agencies, with support from top management, not only the implementation team.”* At the same time, the general director of Infrastructure and e-Services Division has confirmed the future plan that includes all agencies to be integrated in the Omani portal in the existing strategy. The Oman e-government strategy evolved through different project implementations. As the CEO of ITA explained: *“... The e-government services portal, national e-payment gateway, innovation and support centres, standards framework, and information security management framework ...”* are a few examples.

To implement these projects, it was crucial to involve five different government ministries (in the first phase) who were dealing with citizens frequently (on a daily basis). In addition, the ITA has tried to keep the initial e-government services in Oman as simple as possible, to understand and use in order to create a higher level of

citizen satisfaction and awareness. As the general director of the Information & Awareness Division stated: “... *In order to improve awareness of e-government services among Omani citizens, we developed a few centres that provide ICT training opportunities; we hope to improve computer literacy through these centres. These centres are called Innovation and Support Centres, Community Knowledge Centres and Government Training Projects*”. Also, he added that they understand the importance of the awareness campaigns: “*We have developed the marketing strategy for all the e-government programme levels; our plan will cover both government employees and citizens. This will have a strong communication campaign and wanted to give a good level of information in order to measure the success of various e-government initiatives among the public sector*”. Further, the ITA has developed a plan for the next five years to train numbers (approximately 93,000) of employees in various government agencies to improve the skills and performance of civil servants.

The next goal of the ITA is to interconnect all of the government agencies by using various applications, and integrating different levels of information to provide better management and usage of different types of e-services, such as e-payment. The CEO of ITA comments that “*We established the payment gateway according to very demanding standards and with a prioritised importance. The implementation of the Omani e-government payment gateway was chosen to be the only government payment gateway for any public online services, and thus prevented other government agencies from establishing any other payment gateway for any of their e-services payments. At the same time, we ensure privacy of every transaction to be hidden from any abuse or fraud.*” The e-payment gateway allows citizens to make payments to different government agencies through a single point of contact. Citizens can link to other government agency websites through the e-payment gateway, complete information on those websites and for those services that require payments, and then citizens will be directed back to the e-payment gateway. While this facility was tested during the period July to October 2008, since November 2008 the service went live for citizens to use. As the CEO stated, “*While the initial availability of this e-payment facility will be offered by five (of the 120) government agencies in November 2008, we will add the remaining 115 organisations to the portal within a very short time*”. The CEO explained that a phased implementation approach would allow the remaining

115 agencies to prepare the necessary IT infrastructure to integrate with the e-payment gateway.

Moreover, the CEO suggested that one of the critical success factors for citizens' adoption of the e-payment gateway would depend on gaining citizens' trust towards using electronic services for financial transactions. In this context, the ITA developed two new projects called information security centre (ISC) and information security management framework (ISMF). The general director of the Information & Awareness Division added that steps were taken to establish citizen protection for e-government transactions and ensure the security processes were in place: *"We have developed the ISC and ISMF projects to secure and protect the citizens' transactions. While ISC has been established to provide ICT incubators of local entrepreneurs and nurture skill and knowledge transfer within the community, ISMF has been developed to ensure the protection of information assets from unauthorised access. All of cybercrime and protection of election property are covered, actually, in these two projects."* Both projects will provide a secure environment for the processing of electronic payments and ensure that citizens' personal information is protected from unauthorised disclosure or intelligible interpretation.

In addition to trust and a secure environment, the general director of the Infrastructure and e-Services Division extended his talk to other challenges that the ITA faced through implementing e-government projects, adding, *"There were other barriers we recognised after we started implementing e-government in Oman, such as lack of infrastructure, lack of leadership, lack of multi-skills software programming and lack of citizens' knowledge in using e-government implementation."* Moreover, the CEO highlighted the information, *"sharing of information is without doubt one of the major challenges to meet when implementing e-government" ... "information sharing is still today a major problem; several government agencies perceive themselves as owners of data and information, and this end our staff to face another problems such as unwillingness in sharing data which prevented us from integrating our IT infrastructure ..."* Given this context, the ITA has faced and treated many barriers in regards to their structure and allocation of responsibilities in order to solve any

challenge for e-government implementation in Oman. However, e-government will remain subject to development which will bring several obstacles with it.

According to the interviewees, it has been found that the ITA agendas need to be focused more clearly on careful interaction and integration with public agencies that will deliver a more complex set of outcomes to enable citizens to interact and transact via a one-stop shop (Omani portal). The Omani portal appears to recognise the need for deeper thinking by the top management of various public agencies on this new shift that will allow them to set out a robust strategy for the transformation of the delivery of key public services. While the ITA holds a great potential to improve e-government performance within public sector organisations, there is a need for restructuring planning and implementation processes among government agencies to achieve high levels of adoption of e-enabled transactional services and a stronger focus on the delivery of services.

To conclude, it is clear from the interviewees' comments that the benefits from e-government will be realised when government agencies move from a legacy of bureaucratic delivery mechanisms to faster, simpler and more flexible service delivery. This transformation will require a deeper understanding of economic, political, social and technical pressures involved in various government agencies in order to answer the question of "*Why some government agencies vary from others in implementing e-government*". Therefore, taking a few case studies at this stage was essential to understand the differences and similarities between government agencies in implementing the e-government project.

5.5 Research Findings (Phase 2): Institutional Factors Influencing e-Government Implementation in Oman

The focus of this research is examining the institutional factors influencing public sector administrators towards e-government services implementation. Therefore, the chosen cases comprehensively illustrated local administration services within the Omani government and were actively involved in e-government implementation. These ministries are responsible for delivering key public services and thus played an important role in the relationship between the Omani government and its citizens. The

cases started by exploring the current state and different roles played by the ministries in the last three years (each separately). The interviewees were chosen because they participated in different projects relating to the e-government initiative in their organisation. The author assumed that the interviewees held insightful views of the e-government initiative in the ministries.

The interviews consisted of 42 independent questions that were identified and structured around key themes recognised from the literature, and initial semi-structured pilot interviews conducted with the top management of the ITA in Oman (see Chapter 4). The interviews with the ITA top management employees were held between July and August 2009, and the questions that were constructed for the case study was suggested from the current status of e-government in Oman. The questions identified a set of relatively standardised items to be described and analysed in the interviews. This was done by having the participants discuss and choose among a set of propositions related to the ITA CEO's suggestions. Based on the interview results, a number of items could be considered important in a focused case study. The questions were divided into three main areas, including establishment and current situation of e-government, pressures (economic, political, social and technological) that are related to e-government, and other expected challenges of e-government implementation in each and every ministry.

Furthermore, the selection of the MOMP, the MOHE and the MOI for this research was based on insights and suggestions made by the top management of ITA, related to e-government practices and implementation by various agencies in Oman. Additionally, there were two main reasons for choosing these cases: 1) all cases are responsible for delivering services for citizens on a daily basis, and 2) all cases are on different levels of setup for e-government implementation. The interview with each person lasted between two and four hours, and was performed over two to three meetings with the interviewer, often in the same week.

In this research, the author asked ten employees from each organisation, on a different level of management, to participate in this research. Those participants should have knowledge of general e-government information, e-government background, status of

the e-government project implemented in their agencies, and current problems and challenges encountered during the implementation of the e-government project. Unfortunately, none of the organisations have provided an exact number of employees to participate, and the number of participators differed from one organisation to another. For example, while the MOMP provided nine employees to participate in the interviews, the MOI only provided four participants. Therefore, and with the help of the NVivo software application, the contents and data gathered from each case study differed. The author suggests that this depends on how each case was organised and motivated in its progress in e-government implementation.

The researcher suggests that the reason behind providing more participants is the readiness of e-government initiatives. The realisation and achievements of various e-government benefits was clear in the MOMP more than in the other two cases. Therefore, the researcher observed that when an organisation is in a better situation of any kind of implementation, their employees would like to represent various successes and achievements and not vice versa. Further, to understand the quality of information gathered through the interviews, the participants hold a good level of education and experience, which will ensure the gathering of valuable information, which will help in clarifying many issues in regard to e-government implementation. Drawing from NVivo (statistical review report), it shows that 42% of participants hold undergraduate degrees, 21% hold postgraduate degrees (Masters and PhD) and 37% hold diploma certificates or equivalent. The following subsections will introduce the interview researches from each of the case organisations.

5.5.1 Case Study 1: Ministry of Manpower (MOMP)

5.5.1.1 MOMP Background

The Ministry of Manpower is mainly focused on G2C, G2G and G2B models of e-government. The objective of this ministry is the preparation of draft laws and systems regulating the labour market and vocational training sector in Oman.

In 2006, the Ministry launched its existing completely re-engineered website with a new look and feel. The Internet & Design section at the Ministry of Manpower is always updating the website with all the content changes and occasional design

changes to keep the site a pleasing and user-friendly experience for all browsers. The website is available in both Arabic and English, and it has been designed in-house by the Internet & Design Section. The MOMP's website caters to two major sections of the Ministry, namely the labour sector and the technical education and vocational training sector.

The Ministry's website has all the information, such as objectives, profile, goals, strategies, contact details etc, about different departments of the Ministry (www.manpower.gov.om). The MOMP's website has a library of downloadable publications, audio, video, application forms, etc. It also has a downloadable version in PDF format of Omani Labour Law, in English and Arabic. The website is a highly dynamic site, with each department having complete control of their information. The Media and Advertising Department at the Ministry is responsible for posting all the news and advertisements published by the Ministry. Occasionally the Ministry publishes mini-sites to interact more with the public during some special occasions like Ramadan, Renaissance Day etc. At the moment, the Ministry is conducting an advertising campaign in the media. A mini-site is also dedicated for the same purpose, with a forum to interact with the public.

After conducting interviews at the MOMP with the director of the IT department, the director of National Manpower Registration (NMR), the head of software development, two senior development engineers, the head of web applications and three other operational employees from the same ministries working at different levels of management and responsible for e-government implementation, it was determined that the MOMP's technological background illustrates that its IT infrastructure and e-government projects are far superior to those in other ministries in Oman. Therefore, the next subsection will determine the current situation of the MOMP.

5.5.1.2 E-Government Implementation at the MOMP: Current Situation

The interviews in the MOMP identified a number of different issues that followed the implementation and diffusion of e-government in the MOMP. As indicated below, the interview results also indicated that the MOMP investigated in the study was at a successful level of e-government implementation when compared to the literature on the evolution of e-government, and to other ministries in the Sultanate of Oman. The

findings are analysed according to the framework of economic, social, political and technology pressures drawn from institutional theory and proposed in the conceptual model proposed in chapter 3.

With regard to e-government, the IT director in the MOMP stated that *“we already started implementing e-government a long time ago. Our aim in implementing e-government services was to improve the relationship between public and private sectors and obtain the maximum benefit for jobseekers.”* Correspondingly, the head of web applications argued that the IT department team were the reason behind the MOMP improvement in e-government implementation. Thus he added that, *“Over 10 years, the Ministry of Manpower (MOMP) are devoted to improving our ICT infrastructure and performance under the Information Systems Dept.... Backed by seven years of successful regional experience, our commitment is to bring completeness to the (end-to-end) process.”* The Ministry of Manpower has reached the fourth stage of e-government, according to Lyne and Lee’s (2001) classification of e-government evolution. Their website has multi-functional activities provided for all its customers and stakeholders. The IT director added, *“We established e-government long ago, even before the government officially started the eOman initiative. I think that we are currently in the stage of expanding the e-services, which according to my thoughts will transfer all our services — even identification and authorisation of individuals — online in the near future.”*

The MOMP claimed that the ministry’s main focus is to ensure the labour market and training sector stability in Oman, and to overcome the challenges faced in the sector by having partnerships with the private sector and local citizens. The CEO of ITA (during the initial pilot interview) considered the MOMP as being highly successful in providing certain capabilities and expertise related to e-government and enabling e-services in the country. One of the senior development engineers at the MOMP stated, *“So, we have followed a sharing plan between three different partners - the ministry, private sector and citizens - to achieve our objectives for implementing e-government and creating a strong relationship with our users.”* Furthermore, the head of web applications clarified that *“the electronic services have been implemented in the organisation since 2001 by a high quality and experienced team of IT experts in the*

ministry. This team targets all kinds of users, especially large enterprise companies who have daily interactions and are registered in the Green Card department. Nevertheless, there is a lack of communication between the ministry and various companies. Also, there are still many services that can be automated and provided as electronic services for the public, and these will take at least a year to launch. Furthermore, it was clear that the main objective of the MOMP was to automate and integrate different information and data from the central databases of various governmental agencies with the main databases of the MOMP, to simplify and maximise the benefits of e-government and technology used.

Also, it was very clear that IT skills and budget played an important role in influencing the progress of implementing e-government services in the MOMP. The IT director stated, *“In my opinion, the availability of skilled human resources and budget were the main challenges in transferring traditional services to online services. Also, I think this is the reason behind the dissimilarities of implementing electronic services in Omani public agencies.”* According to the IT directors’ experience, the main factors to eliminate the gap of culture and improve the public adoption of e-government are simplicity, awareness and availability. Also, one of the MOMP’s employees added that *“the public could be an advert channel for your online services by making it very simple for them to use, so they will tell other people. Thus, this will enhance awareness.”* Additionally, the interviewees explained the ministry’s future plan for expanding e-government. The director of the IT department stated that *“in the coming year we look mainly to inflate our infrastructure and integration with other important government agencies in the state of Oman.”*

The author of this thesis argues that concerning the implementation of the MOMP e-government project, the interviews identified a number of challenges that needed to be addressed under the four key pressures, which were mentioned earlier in the conceptual model (see Chapter 3).

5.5.1.3 Economic Pressures

Noticeable economic challenges are a primary obstacle to economic development for public sector agencies. The head of application development highlighted that *“The online-based payment system is fully integrated with all solutions to provide flexibility*

in payment options for the renewal of labour permits. The processes have managed and increased the percentage of those using electronic e-payment transactions, and cash payments were completely eliminated. As a result, the ministry has reduced public effort and cost. This initiative of the ministry has played a big role in increasing income for the ministry and private sector services (assigned by the MOMP), and also increasing income for the government from the application forms provided by the ministry.” Hence, the MOMP has pushed out the electronic services in order to reduce the number of customer visits to their physical offices. Therefore, by improving accuracy, the MOMP can revise and audit all their transactions and tally the payment slips from the bank on the same day. Simply, the ministry accountants audit both the bank and ministry’s system transactions on a daily basis with the minimum effort. One of the senior development engineers in the MOMP stated that “... with the implementation of e-government services, the MOMP is able to process huge numbers of applications daily. As the size of the population rapidly increases day by day, it was critically important for the Ministry of Manpower to move ahead with better utilisation of technology. Today, the citizens, investments and private sectors are able to use our centres without visiting the physical offices of the MOMP. As a result, the ministry has reduced effort, and the cost to the public. This initiative of the Ministry has played a big role in increasing income for the Omani government from the application forms and technologies provided by the MOMP.” From the same perspective, the director of the IT department added that, “electronic services have influence on the national economy, so using techniques according to the most modern methods will save effort, time and speed. Therefore, it will contribute to decreasing traffic congestion so people who require service can obtain service from home. As a result, that may decrease the use of petrol and cars, and it may also reduce the physical and mental effort. Looking at this different life expenditure, we can improve the transaction cost for both citizens and government, and thereafter reduce the financial resources on our organisation.”

The technological background of the IT director of the MOMP illustrates that the MOMP’s IT infrastructure has been developed in the past ten years, which makes it more convenient for other ministries to integrate their systems with the MOMP. During the time of integration, the MOMP vision is to provide convenient electronic

services through numerous channels for everyone, with a special focus on web-based payment services for maximising citizen usage of Manpower IT and improving different economic challenges. Thus, the director of the IT department and others mutually agreed that *“over ten years, the MOMP has been devoted to improving our ICT infrastructure and performance under the responsibility of the Information Technology Department.”* Further, he continues *“... As technology developed, the MOMP developed a secure payment system using web services and the new web version of smart forms. The payment system is fully integrated with all solutions to provide flexibility in payment options for the renewal of labour permits.”* One of the operational employees mentioned that, *“Obtaining services through the website reduces the scramble of reviewers to get the service, and also it will improve management procedures with ease and speed, which will be reflected in the strong desire to deal with modern high technologies and use them widely and with ease, which motivates all parts to develop, improve and increase them.”*

Citizens within the country require better services at lower costs and greater responsiveness in a dynamic and continuously changing environment. In support of this, the MOMP makes some innovative use of ICT in delivering services, such as through SMS messaging by Omani jobseekers to pursue the registration process and transform their data between different public agencies. The web application manager stated, *“The nature of the MOMP’s work is to inform the job providers and jobseekers of various supports and opportunities that are appropriate for their needs. Thus, since 2005, the MOMP has implemented the SMS system to provide citizens with the needed information to update all their users with the latest MOMP news.”* The experience of the MOMP with e-government has protected and saved the expenditure of the Omani government and its customers for the long-term strategy. The director of the national registration system stated that *“Using e-government techniques will reduce special costs, which provided for large network structures such as the MOMP networks. Instead the MOMP will exchange information between all these different departments more easily, and our department strategy will save the need for multiple equipment and specific devices for each destination, providing one single database which will integrate the data and reduce the expenses of analysing a*

process and reviewing data. Thus, e-government helps simplify processes and makes access to government information more easy for both public sectors and citizens.”

5.5.1.4 Political Pressures

The MOMP implemented various policies to improve their services; however, these policies did not solve all political pressures because in many scenarios the MOMP process depends on other government agencies' information. In the context of the MOMP, some of the reasons affecting the political pressures and noted from the interviewees (director of IT, head of software development, one of the senior development engineers, head of web applications and other operational employees) during the discussions were: **(a)** management understanding and support, **(b)** better utilisation of technology (solutions, equipment, training), **(c)** strategic plans and implementation (set policies, budget, organisation structure), **(d)** create new initiative (e.g., electronic centres that have spread all over Oman), **(e)** collaborate with eOman strategy **(f)** better utilisation of technology (solutions, equipment, training) and **(g)** activate multiple channels for e-government services (SMS, call centres, web services, kiosk).

The MOMP acquired significant implementation support when attempting to build their e-government applications because of the necessary top management support and the requirement to provide an integrated system of laws and regulations. The senior development engineer reported, “... *our main key success is implementing policies and procedures per e-government; in our case, all the new procedures were approved and followed by top management, besides ensuring successful implementation.*” In the context of e-government, usually the various related projects are fairly long-term projects. Therefore, it needs high government support to serve and implement a successful e-government project. In the MOMP this support is explained by the director of the IT department, as he mentioned that “*Yes, higher administration had an effective role in the application of e-government, and our administration provided permanent support. For example, it brought in specialists to provide financial allocations to support the hardware and software required, and it followed up stages of the implementation of the project personally and spent time with specialists in relevant information technology projects in the ITA to implement the project at the best time that will ensure the course of the project runs with ease.*”

In addition, the support provides better implementation of e-government rules and regulation, as stated by the director of the national registration system: *“After certain years from starting the e-government, I think that the current procedures are going with ease, and go on as planned and receive the necessary legal support, which is the right path towards the implementation of e-government ... Also, this support has obtained the shortest possible way to maintain a fully functional e-government project, whether in technical, administrative or legal terms, which ensures its success and growth even more.”* Thus, legislation is an important factor for the e-government system, and it might be enacted prior to the implementation of e-government, unless there is real support from top management and leadership. Legislative includes authentication, e-identification, privacy, e-payment and e-signature. It might be better for these laws to be in place prior to the implementation of the e-government project.

According to one of the operational employees in the MOMP, there is a need to make better use of payment methods, and this may be resolved if the rules and regulations have been modified by the Ministry of Finance in Oman. The collection of such payments is not arranged by the MOMP, which is why the legislation for this process needs the top management of the Omani government itself. Therefore, in this respect the employee said that, *“I think rules and regulations are going in the right way, and serve their purpose, and are placed in order to streamline the work of e-government in the MOMP. However, I think to improve and ease the task of gathering government money, then the need to reorganise for certain rules in this specific issue will be crucial to generate a more comprehensive e-government project.”*

In addition, there was a key relation between management support and the building of a successful e-government system. The head of software development stated, *“... there was a real need to implement new rules and regulations parallel with the MOMP e-government workflow; thus, our management provides management understanding and support, strategic plans and better utilisation of technology.”* The IT director added, *“Our leadership gives enough support to the IT team and other participants in the implementation of any e-initiatives in our ministry.”* The MOMP found that the implementation of the e-government system has shown that the

regulatory dimension was most effective, and strong leadership was crucial to its success. On the other hand, building an open IT system such as the MOMP e-government system can explore how relations work between public agencies, and this will encourage other agencies to integrate/share one system.

Additionally, a few interviewees highlighted another political factor that needs to be developed while implementing e-government, namely structure. Organisation structure is developed under the supervision of the top management and steering of the leadership of the organisation itself. As one of the senior development engineers stated, *“The quick developments and changes that are happening in our ministry were involved at a time when it is undertaking a restructuring of the MOMP business process; also this implies a very high level of changes in policies, procedures and business process ownership. Many business processes are being streamlined and are owned by different departments and ministries”*. Also, one of the employees stated that, *“Yes, various changes have happened in the organisation structure. Before e-government services many employees were working in General Administration of Administrative and Financial Affairs, and after 2003, especially after e-government initiatives, we came under the supervision of the Directorate General of Planning and Development.”* Further, the director of the IT department argued that the e-government teams were unable to complete, unless they were a middle-team working to maintain the relationship between the top and operational levels of management. Thus, he stated that, *“Yes, DGPD was formed upon the need to restructure the business process of the MOMP according to new methods of service delivery.”* Furthermore, he added that *“normally mid-layer management within the organisation plays an important role in collaborating and mediating between top management and operational level management, which were done by DGPD to implement each and every change required to complete the business process chain.”* Given this context, the organisation structure and allocation of responsibilities in e-government implementation became a major political factor in the MOMP.

5.5.1.5 Social Pressures

Interviewees have highlighted that the MOMP has utilised information-sharing with citizens to promote and motivate them to engage with its services. The head of web applications reported, *“Usually after implementing new technology, we provide a*

video tutorial that shows how to use these services. Those videos are uploaded on our website for additional support.” Moreover, the head of web applications highlighted that “... the MOMP gives details about the use of e-services in newspapers, radio interviews and television interviews. Our brochures are distributed among the public through our offices and through our website to illustrate and maximise the benefits of e-services.”

Further, a senior development engineer illustrates the awareness strategy of the MOMP related to e-government implementation, which was a plan to empower citizens to use different services and add their opinions in order to achieve high-level solid systems. He states, *“Before we established e-government services, it was initially to make society aware in order to ensure ease of use for all in a variety of ways. Therefore, we introduced our initiatives via all kinds of media, brochures and publications, as well as describing the services beside the service location on the website, including how to make them larger and easier.”* The director of the National Registration System has confirmed the previous view, stating that, *“Yes, definitely the strategy of e-service should be clear to all at different levels and for a variety of users. Also, we believe that this is the basic strategy for providing any service quickly and accurately in order to accomplish the target of the service.”*

Through the website (e-services strategy), which was adopted in 2003 and implemented in May 2006, the MOMP has embarked on an ambitious journey of transforming services to empower citizens.

Also, facilitating e-government to help and empower citizens through determining the citizens' benefits for them has increased the citizens' adoption of e-government services in the MOMP. From the operational level, one of the MOMP employees stated that, *“In order to communicate with the outside community, you must understand their scientific, practical and cultural levels, and it is definitely not an easy process, and very complex. Our way of stimulating users to deal with these services was a key to complementing the e-government plan, so we did convince the public to use technologies to facilitate their daily work with all speed, accuracy and ease.”*

Thus, the MOMP has facilitated social participation, increased the quality of life, increased privacy and security and established e-payment in one single website. When we discussed the social issues of e-government with the MOMP participators, the director of the National Registration System replied, *“Citizens can post queries/complaints and check their progress with the relevant MOMP departments. This shows how the MOMP is committed to incorporating citizens’ participation into its decision-making process.”* The MOMP e-government implementation is used as a tool to ultimately increase and control the quality of its services and improve customer satisfaction. To maintain the improvement of customer satisfaction, the MOMP organisation will be able to improve citizens’ empowerment and transparency within the e-government context.

5.5.1.6 Technological Pressures

From the interviewee’s point of view, technological influences have led the MOMP to adopt online services and ICT-related procedures such as security and privacy, system reliability and availability, and international standards for successful e-government implementation. Thus, one of the most important issues in the e-government model is integration among different government agencies. The head of software development highlighted that the MOMP e-government system allows other government bodies to establish a standard system or network among government agencies with faster and more efficient information exchange. The director of the IT department reported, *“... Our IT team has implemented technology-related solutions as well as policies and procedures for the MOMP online services to maintain systems stability.”*

The director of the IT department stated that, *“As part of the Ministry of Manpower’s commitment to improve its services, our IT department has adopted some standards for its software application. The management of the IT department has introduced a group of various IT specialists (among the IT employees) to select and agree on any new developing tools. However, the Omani government agreed in 2001 to implement most of the background databases using Oracle developments.”* This has improved many aspects related to the MOMP customers, including accuracy of provided information, notifications, and tracking the status of services and availability of e-services (24 hours a day). In addition, whenever there are any updates in the

documents provided or in any other services, the IT department notifies the IT group in the MOMP to choose the most interactive model that will spread according to respective categories. Each of these interactive models depends on various designs and standard colours.

The standard process in the MOMP context as a term has extended to the field of security. The ISD created the information security section as part of overall management systems, based on a business risk approach to implement, operate, monitor, review, maintain and drive to information security policies and procedures (ISO27001). The senior development engineers stated that, *“MOMP is now in the implementation stage of the information security management system. By mid-March 2011, our ministry expects to have finished implementation of the ISD’s ISO international certification for implementing security standards. Using an international security standard will ensure information privacy and increase the citizens’ trust.”*

Moreover, the head of software development added, *“When we started our in-house software development, we decided that using the latest application software is an initial step. This has reduced standard related problems and has made upgrades and integration with other agency applications easier, resulting in a convenient environment for any internal and external integration.”* Further, one of the senior development engineers stated that, *“The MOMP has the largest network of 50 connections and branches that the system is integrated with, as well as there being another two offline applications in Qatar and UAE, which in the end are all integrated into one database system in the main storage in the MOMP. All these organisations gain benefits from and depend on the MOMP databases, which facilitating success in their electronic projects. Moreover, it helped them to fasten their deals by connecting to the ministry.”* According to the senior development engineers, the IT department used a central database as a strategy for collecting, holding and sharing the data of various ministries’ branches, in order to achieve better use of data that, together with the underpinning technologies, transform the raw data into usable information. *“The reason behind making our information available centrally is that it will allow us to manipulate timely and accurate management*

information on performance metrics against specified key targets.” From a similar perspective, the head of web applications added that, “... the central database and the portal help us monitoring new users, visitor tendering, visitor loyalty, browser capabilities, network properties etc. It also helps us find the traffic sources from search engines to campaigns and advertisements.”

5.5.2 Case Study 2: Ministry of Higher Education (MOHE)

5.5.2.1 MOHE Background

The second case study is concerned with providing higher education of high quality that meets the requirements of sustainable development in the state of Oman (www.mohe.gov.om). Six university colleges of applied sciences in particular are under the supervision of this ministry, and in addition students are sent on scholarships to study in colleges and universities, whether within or outside Oman. Since 2003, the number of academic colleges started to increase, and thereafter the number of students dealing with the ministry system increased too. Also, the number of private universities and colleges in the Sultanate has increased dramatically over the past decade, and now stands at twenty-six. There has also been a substantial increase in the number of scholarships awarded to students to study in-country, as well as abroad. Accordingly, the ministry has expanded and increased its capacity and strategy to manage and control growth in the system of higher education. However, compared to the MOMP, this ministry has made less progress with e-government implementation.

Thus, the MOHE insists on accomplishing its planning towards e-government to control such growth. The MOHE’s reasons to implement e-government noted from the interviewees (director of Higher Education Admission Centre, deputy IT director, head of software development, two senior software development staff and one operational employee) during the discussions were: (a) develop and enhance an overall administrative framework, (b) increase the system’s efficiency and ensure an effective response to this system, (c) meet the requirement of future growth, (d) create a high-quality system aligned with economic and social development, and (f) promote public awareness at the national and global levels.

5.5.2.2 E-Government Implementation at MOHE: Current Situation

This ministry is run by the primary development team of the Higher Education Admission Centre (HEAC) and the IT team in the ministry itself. The ministry claims that it has basically been established to overcome challenges by developing partnerships with universities and colleges, and also to ensure education stability. E-government officials (ITA) considered that the Ministry of Higher Education (MoHE) has succeeded in providing certain capabilities and expertise related to e-government and e-education in the country. Furthermore, the director of the Higher Education Admission Centre justifies that, *“So, we have followed a sharing plan between three different partners - the ministry, universities and colleges, and students - to achieve our objectives for implementing e-government and e-education”*. Furthermore, the IT head section in the MOHE clarified that, *“The electronic services have been implemented in my organisation since 2006 by the Higher Education Admission Centre, targeting the students who have graduated from the secondary schools and are registering to get a scholarship. Nevertheless, there is a lack of communication between the higher education ministry and the six cultural attachés in the online system, however; still there are lots of services which can be automated as electronic services for the public that will take at least a year to launch”*. For instance, in this case study, the main objective is to automate and integrate different information and data from the cultural attachés with the main databases of the MOHE to simplify and maximise the benefits of e-government and the technology used. Also the deputy IT director commented that, *“Our ministry is the first organisation which implemented centralised admission for the higher education institutes among the region, therefore, we are moving rapidly but in a planned way.”* In terms of challenges facing the MOHE, the director of the Higher Education Admission Centre stated that, *“Changing the paperwork to an electronic system requires computer skills on the part of the ministry staff. In addition, the IT staffs needs more skills to develop these services or the ministry will outsource a few companies to complete our works. A few times this has played an important role since the IT staff skills and experiences are limited, and there is an essential need for outsourcing”*. Given this context, the IT staffs have a lack of professional skills needed to interact with advanced technologies development.

The author of this thesis, using the conducted interviews, has identified a number of challenges concerning the implementation of the MOHE e-government project, and these challenges need to be addressed under the four key pressures which were mentioned earlier in the conceptual model (see Chapter 3).

5.5.2.3 Economic Pressures

The concept of network organisation and the integration of multiple technologies and information resources were introduced by the MOHE as an alternative form of supporting economic development of the Omani nation. The director of the Higher Education Admission Centre in the MOHE confirmed that, *“Our e-government project has supported both economic development and the MOHE decision-makers by embracing many benefits of e-government that would be difficult to achieve previously, such as lesser transaction costs, faster processing speeds, more transparency in the system, and better feedback and execution processes.”* Further, one of the senior software development staff added that, *“Our e-government agenda is premised upon the economics of ICT and its potential to improve the efficiency and reliability of the system to maintain the records of more than 60 thousand students every year. Today, the MOHE system has the ability to maintain about a 20% yearly increase in student growth.”* However, the deputy IT director explained that the previously mentioned maintenance for the system costs the ministry a huge amount of money, which needs another plan every year to buy new equipment or to hire (outsourcing) engineers.

The MOHE system can be an important source of productivity growth and economic development in Oman; because it provides a framework for organising a comprehensive structure that will reform the process between the student and the public sector. The head of software development stated that, *“E-government in many ways helps to reduce costs in each and every transaction that is done. Now these transactions happen in the span of minutes or seconds, due to which a lot of the lag that used to happen in transferring data from one entity to another has been significantly reduced. Also, the waiting time and lag that used to get created in the process was enormous.”* Moreover, the director of the Higher Education Admission

Centre added that, *“our e-government project efforts are to develop a full-fledged system which would reflect well on the overall national economic objectives.”*

Throughout the interviews, there were many benefits determined that will help in improving the business process of the MOHE; thus one of the operational employees mentioned that, *“... costs in the line of administration expenses and stationery expenses have been tremendously reduced. Due to faster ways of working, e-government has helped in numerous ways to reduce costs and improve the way work is executed.”*

5.5.2.4 Political Pressures

The MOHE is the local authority responsible for providing higher education for the public; however, the slow motivation of e-government implementation that is exhibited among the MOHE interviewees involved a lack of leadership and top management support and commitments till 2003. Thus, one of the senior software development staff commented that, *“Before 2003, the e-government project was out of the top management’s scope and priorities, whereas the need for providing more colleges and official studies within Oman was more important, and was a vital activity for our management in order to improve the education level among Omanis. After 2003, and the massive increase in Omani students dealing with the MOHE, it presented good political leadership in producing a clear ICT strategy and a clear operational plan.”* Further, the director of the IT department has another perspective, adding that, *“this is due to how IT-driven is the leadership in our ministry. In the context of ICT, simply when the middle-level of management drove the top management towards significant improvement in future, this is how the middle-level (or skilled IT team) are playing a role in promoting and encouraging top management to be more IT-oriented and IT-aware.”*

Also, as the director of the Higher Education Admission Centre in the MOHE added, *“... If there had been support from top management many years ago, we could have gone further than we actually have reached in our development in various technologies; however, with the amount of support we had, we pushed the implementation of e-government services. Now, our ministry is assessed as the first*

case in the Gulf which implemented a centralised admission for higher institutes. Therefore, we move rapidly towards online services and to be more precise, the whole online phase will be established with a fully-automated system in a year's time." This has explained the need for top management support and understanding of e-government benefits. Thus, the director of the IT department in the MOHE mentioned that the support of top management and government officials towards the e-government project varies from time to time in the MOHE, but in general it has good support.

In regard to political legalisation, the deputy IT director stated that, *"yes, our legislations process is quite slow in maintaining various rules and policies, and also the improper timing between the presentation of the application to use and carry the legislation required for this application is still one of the challenges faced by the MOHE."* In addition, the director of the IT department explained that, *"there is currently another strategy to maintain a new policy in collaboration with ITA for various introduced educational services in Oman, which will improve the rules and regulations regarding the use of e-government services, particularly by MOHE users."*

5.5.2.5 Social Pressures

The MOHE's responsibility covers all students around Oman; therefore, when considering the context of e-government, the MOHE system can help to increase the points of availability of services for students (citizens) particularly in areas where there is a digital divide. The director of the Higher Education Admission Centre stated that, *"it was essential for our system to be able to reach all students alike, including those students who stay far from our offices; therefore, we collaborated with the ITA system to introduce most of our services through the Omani portal. Also, we tried to simplify our services as much as we can for those who have less ability to cope with such technology."* Further, one of the senior software development staff added that, *"before 2006 and before our initiatives towards electronic services, the digital divide could be considered as one significant barrier that impedes many citizens from adopting our e-services."*

The MOHE played an important role in empowering and raising the level of citizens' skills to deal with various technologies and e-services. One of the senior software development staff in the MOHE mentioned that, *"As an overall picture, our ministry is not a major decision-maker for e-government to the same extent as other ministries, such as the MONE or ITA, but we play a vital role in passing on the basic concepts of e-government to all Omani students."* From this perspective, the MOHE has decreased the level of e-literacy by improving the skills of the new generation among Omani citizens. Also, this concept has the right effects on students, to accustom them to pick their life choices in future starting with their specialisation.

Most of the interviewees reported that the MOHE technologies appear to offer a useful opportunity for the ITA system to enhance student (citizen) satisfaction by improving procedural transparency. The way the MOHE system works has introduced and increased the transparency level among students; the head of software development stated that, *"We gave each student three choices so that he can pick any three of the specialised courses that he prefers, and the system produces the right formulation which provides equal opportunities for all students."* Although the MOHE system started in 2008, it is too early to judge the students' satisfaction and confidence, but it is fair to state that the MOHE system provides governments with tremendous opportunities for improving administrative transparency.

5.5.2.6 Technological Pressures

The MOHE organisation and its subunits adopted standard technological tools for producing various IT solutions, thus the centralised system for Omani student acceptance is very stable. It conforms with the wider rules of study that are certified and qualified by both internal rules (ministry, private colleges, education commission and students) and external rules (international universities and colleges). Accordingly, interviewees expressed the need for standardisation in each stage while implementing such a system to formulate a common data model. The deputy IT director stated that, *"Today, our system is a keen supporter of the emerging focus on the "e", representing a centralised system that performs efficient and effective e-services, and we ensure the use of various standardised ICT methods to play a crucial role in the Omani integrated portal."*

Further, standardisation within the MOHE has expanded to cover all the ITA rules that were formed to ensure the best efficiency of the system, thus, the director of the IT department stated that, *“Our IT department believes that pervasive standards-based infrastructure is essential to support efficiency of the internal/external working of the MOHE network. Therefore, our organisation is considered as the first educational public body in the Gulf region to implement such a system for its students.”*

Further, there were several reasons for the limitations in the MOHE integrating IT infrastructures and systems before 2006, and these were noted during the interviews. They included (a) resistance to change among the staff members, (b) cost of training the staff, (c) synchronising citizen’s data and (d) lack of information-sharing. Nevertheless, these limitations were solved after 2006; the director of the IT department stated that, *“... because we started only after 2003, therefore in the past we did not have any IS integration, and we were unable to communicate and share information with other ministries and councils in Oman ...”* Further, he added that, *“All our integration problems were solved after 2006 because we have changed our objective. Our objective towards e-government is to streamline the way data flows from one ministry to another (such as the MOE to the MOHE) and also the way each department within the ministry communicates and transmits data.”*

In regard to the same point, the senior software developer added that, *“...since information-sharing is certainly amongst the most important issues in e-services, thus, we follow all standards that were performed and implemented by the ITA to achieve one of the most reliable systems to complete each and every transaction with other organisation in a very secure environment.”* Additionally, he stated, *“... as a result we do accept all kinds of changes to accomplish sharing the information, which indicate extra ability to our system ...”*

5.5.3 Case Study 3: Ministry of Interior (MOI)

5.5.3.1 MOI Background

The ministry of the interior (MOI) was concerned with the G2C model of e-government. The MOI borough is recognised as one of the largest local government

authorities in Oman (www.moi.gov.om). It is the local authority responsible for providing diverse public services and initial national political leadership (e.g. a governor in regions, and a regulator – wali – in villages) within Oman. It employs more than 3000 employees and provides its services through the various ministry buildings. These offices receive queries from approximately 1000 citizens on a daily basis via telephone or face-to-face contacts. However, the main concern of this ministry is citizens, but the organisation has failed specifically in implementing various online services. The IT director in the MOI stated that, *“Our organisation is still in the initial phase of e-government, where the infrastructure is being prepared, there is no network between the local agencies of the organisation, and we still planning various software, procedures etc.”* Also, he stated that, *“we will be implementing the e-government phases in three stages, and this will include connectivity to internet. But the plan will not take less than three years from now.”*

5.5.3.2 E-government Implementation at MOI: Current Situation

This case was an interesting study for the research. Although the main concern of this ministry was citizens, the organisation has failed specifically in implementing various online services. The IT director at the MOI stated, *“Our organisation is still in the initial phase of e-government, where the infrastructure is being prepared. There is currently no network between the local agencies and the organisation.”* He also stated, *“We will be implementing e-government in three stages, and this will initially involve connectivity to the internet. But the plan will not take less than three years.”*

The major challenge of the MOI towards e-government is the top management support. It was found that e-government is given less attention by senior management and the priority for implementing e-government is not as high in this ministry when compared to the MOMP (first case). According to the IT director at the MOI, the organisation has its own plans, priorities and objectives, other than online services. Also, he stated that, *“the ability of higher management to embrace change and support online services was the main barrier towards implementing and transferring traditional services to online services. However, this is not the only challenge. The availability of reliable internet lines of the required speeds for local government to deliver e-government services was another issue that is hindering the implementation of e-services.”* Furthermore, the differences in employing e-government between

government agencies are coming from the implementers and adopters of e-government itself, because leaders of some organisations have now realised the future benefits of transferring to electronic services. Therefore, he added, *“The dissimilarities of adoption and diffusion of electronic services in Omani public agencies depends on the individual approaches and experiences of each government agency. Nevertheless, these plans cause a need for better awareness in the top management, which in turn will help management to understand and deliver the required resources provided for any project.”*

Furthermore, the IT director explained that a new strategy has been initiated recently which will consist of separate phases to e-enable and adopt e-government services within a period of three years. He said, *“In the next three years, we plan to deliver our e-services through the Wali offices [local agencies in different cities] that will help to provide the necessary awareness to the public, improve the MOI online services, and provide a good medium to enhance service delivery through the internet.”* One of the operational-level management in the MOI highlighted many other factors, such as staff capabilities, skills, availability of services and public awareness, as impeding e-government implementation in Oman. Finally, he highlighted essential issues in his last statement, saying that, *“we will be able to go along with other government ministries once the necessary legal issues for the MOI are sorted out. This will improve the common trust issue between this government agency and different stakeholders.”*

The author of this thesis, using the conducted interviews, has identified a number of challenges concerning the implementation of the MOI e-government project, and these challenges need to be addressed under the four key pressures which were mentioned earlier in the conceptual model (see Chapter 3).

5.5.3.3 Economic Pressures

The MOI faced many funding pressures and challenges in terms of improved resource and asset management. The MOI was also faced with strong pressures to reduce the cost of maintaining non-integrated IT infrastructure. Thus the director of the IT department in the MOI stated that, *“We benefit from e-government by reducing the paperwork as well as reducing employee efforts, which will increase the productivity*

of our organisation.” Also, he added that, “Nevertheless, we still didn’t establish e-payment transactions, but the existing services have led to increasing pressure on the usage of the ministry’s services on a daily basis.” In a similar vein, the head of the technical support section has confirmed the importance of existing e-services and the various effects of e-services in the MOI, thus he declared that, “As a result, we organised the tendering of all our e-government projects in the last two years; thereafter, this increased the opportunities for IT companies within the country to provide a better quality of technological solutions, increase opportunities for the private sector to compete, and give the chance for employment, outsourcing and training operational and technical employees.”

From another perspective, one of the operational level employees in the MOI verified some of the key benefits of e-services for the citizens’ side; he stated that, *“our e-services decreased costs for citizens to reach services at any time and under any circumstances, without any effort, and without the trouble of calling or coming to the place of service.”* Also he added that, *“even now we face fewer citizens and daily reviewers, which helps us in maintaining our office working hours.”*

5.5.3.4 Political Pressures

It was found that e-government is given less attention by top management in the MOI, but encouragingly this view has begun to change in the last three years according to some interviewees. The reason for this has been explained by the head of the technician support sector, who stated that, *“In the last three years, applying e-services policies has become one of the main priorities for the top management of our ministry. This is because our ministry is involved in a number of committees which work at studying the advantages of electronic country systems by membership of the ITA, the MONE and the IT department.”* Also in regard to these committees’ duties, he added that *“the committee formed by the national economy ministry and membership of the MOCS, the MOMP, the MOI and the ITA to obtain the maximum benefits of e-government implementation for MOI.”* Moreover, one of the operational level employees characterised the support level of the management as non-equilibrium, and this mainly depends on their understanding of e-government benefits.

In regard to legislation procedure, the director of the IT department stated that, *“In the context of the e-government legislation process in the MOI, this is an initial process with features and benefits from similar countries’ experiences or developed countries in the e-government field.”* Also, he added that, *“...we need to outsource experienced people to examine various roles and study different cases in order to obtain the required knowledge, rights and duties that identify the best services and practices to our citizens.”* Further, the head of the technician support section identified the various achievements of required legislation, thus he stated that, *“It must be done to achieve privacy and information security that will increase trust among citizens to use every single service of the MOI. Also, it must be applied in order to achieve confidence in their use, especially with regard to financial matters and political issues.”*

Furthermore, the head of the technician support section has described that, *“we started just two years ago, but as yet we cannot recognise any influence on regulatory structure. However, some responsibilities have been added to some departments that deal with governors’ offices or e-government procedures. Therefore, we have so far adopted e-services which target either the facilitation of services to citizens or confirming information accuracy or reducing the work environment. Therefore, I think the targeting of these simple achievements may not affect the regulatory structure of MOI.”*

5.5.3.5 Social Pressures

From the interviews, it was clear that no training plan has been formed yet for e-government projects; however, there is a general awareness among citizens because of the continuous announcement about Shura council services. It was very clear from the interviewees that there is a lack of social contact in regard to e-government initiatives; this is because a detailed strategy is still required to strengthen the implementation of e-government projects in the MOI. Also, one of the interviewees argued that while most other public agencies are using all possible means in the field of media and advertising for most of their services, the MOI is still in the early stages in this context. Further, as one of the interviewees claims, *“It was very important to our ministry to build a social contact with various citizens and users. Unfortunately this was not cited in the documented strategies and plans, and therefore, there is a strong need for establishing and implementing various strategies.”*

Further, there is a new strategy for the MOI in the coming years that will ensure constant contact through the media, which will play the role of enhancing communication with the public through TV, publications and booklets. This considers various established services, how to use them, and their objectives. This will use television and radio interviews.

5.5.3.6 Technological Pressures

The MOI was found facing strong technological pressures to provide better services, enhance IT infrastructure through integration, and support improved ways of working through collaboration capabilities. The head of the technician support section stated that, “... *IT infrastructure at the MOI remains as the main challenge impeding e-government implementation and related issues, such as information-sharing and internal and external integration.*” Further, the director of the IT department added that, “... *information-sharing is certainly amongst the most important issues hindering e-government implementation, and that indicates the inability of the MOI to interact with various databases and systems of other public agencies ...*” Thus, one of the interviewees commented that, “*Since we did not yet implement the right IT infrastructure which could efficiently support the MOI work processes this, therefore, became an obstacle for achieving our service delivery targets.*”

E-government implementation has thus played a significant role in continuing improvements within the Omani region. Due to this, the MOI has also started, as have other public agencies, to attempt to achieve the e-government targets. Thus, the discussions with the director of the IT department revealed that the lack of an e-government project team skilled to implement different e-services phases has delayed the e-government implementation procedure. Therefore, he stated that, “... *the motivation and e-government phases are relatively less important when an experienced and skilled IT team does not exist ... while we propose the first plan to implement the e-government project, we have discussed with our top management the need for a skilled IT team to overcome one of the main challenges of e-government ... outsourcing could be the solution for this, but on the other hand it is too costly.*” Further, most of the interviewees agreed that, “*By starting e-government implementation, we had extreme technological pressure from many sides, such as the*

central government, to improve electronic public services (ITA) ... however, the main obstacle is the absence of large computing companies that have the ability to produce enterprise solutions and have the capability and skills to develop such systems to cover the new needs of Omani citizens.” As a result, it appears that there is a strong need to have an IT industry company ready to implement the latest technologies according to the ITA standards.

5.6 Conclusion

Chapter 5 analysed and presented the e-government implementation practices by three local government authorities in Oman, namely the MOMP, MOHE and MOI. Empirical data for the present study was extrapolated through various sources of data like interviews, documentation and observation from these case agencies. The purpose of this data collection was to investigate the conception of e-government implementation taxonomy proposed in Chapter 3, including the: (a) various factors influencing e-government implementation in the public sector (Chapter 2), (b) mapping of various factors influenced by economic, political, social and technological pressures, and (c) prioritising the importance of these factors on implementation phases using three case studies. Data was collected until there was enough data to explain the pressures outlined in the proposed conceptual model and related factors summarised in the taxonomy in chapter 3. As highlighted in the above three case studies, most of the pressures and the e-government implementation phases were validated through the previous case studies. This will support the researchers’ literature findings on the proposed e-government implementation factors (Chapter 2) and various pressures that are facing the organisation structure (Chapter 3). Finally, the data collected from the three public case organisations was confirmed to be of relatively similar significance; therefore, it can be argued that selecting another case study with a similar setup would have provided similar results.

According to the empirical data from the three case organisations, the proposed conceptual taxonomy is appropriate for studying the research context. The analysis and study of the various pressures was made specifically to fit and be well-suited within the context of public sector authorities. As a result, it was apparent from the empirical data that pressures proposed in the conceptual taxonomy have influenced

the e-government implementation procedure in the three case organisations. Also, NVivo software was used in this research to assist the various gathered data to organise and prioritise the importance of various pressures, which faced public organisation processes and structures. However, the full assessment and the modification of the proposed conceptual taxonomy and the associated pressures are elaborated in Chapter 6. The main conclusions drawn from investigating e-government implementation in three Omani public organisations are summarised below:

- Economic pressures were classified into three categories, namely: reduce transaction cost; revolution and growth of ICT; and protect expenditures. Similarly, the political pressures were classified into four categories, namely: leadership; top management support; rules and regulation; and organisation structure. Likewise, the social pressures were classified into five categories, namely: digital divide; citizen empowerment; transparency policies; awareness; and organisation culture. Finally, the technological pressures were classified into three categories, namely: standardisation; stability; and internal and external integration.
- The findings from the three case organisations illustrate that economic, political, social and technological pressures represent an important issue during the utilisation and evaluation of e-government. However, the three case organisations have made different progress in their setup of e-government implementation. Thus, the three case organisations have achieved different levels of benefits and successes with regard to e-government implementation progress and availability. While the MOMP has achieved the most success within the Omani e-government environment, the MOI has just started its initial steps towards e-government. Also, the MOHE has established good practices in e-government, which support better service delivery, citizen satisfaction, integration of public sector data and processes, and improving data quality.

- Drawing from the empirical data presented and analysed in this chapter, new economic, political, social and technological pressures to e-government implementation, that were not included in the proposed conceptual taxonomy in Chapters 2 and 3, were identified and explored. These will be further considered in the revised conceptual model in Chapter 6.
- The findings from the Omani public case organisations also indicate that the case organisations have experienced several challenges during the adoption of e-government implementation. These include support from central government to work on different e-government phase projects, a lack of skilled employees on modern technologies required for e-government implementation, weak industry support for e-government, a low level of awareness, new organisation structure concerned with new requirement of e-government implementation, unwillingness to share and integrate data etc. Thus, barriers represent the main pressures that influence the implementation of e-government in these case organisations.
- NVivo software allows researchers to express their experiences that further assist in flexibly controlling the data and information gathered through interviews, and building a set of priorities among the different gathered pressures. The NVivo software demonstrates the importance and significance of pressures influencing the implementation of e-government in the case studies. This revealed how the qualitative data are collected to represent the importance of each pressure over other pressures in a given categorisation. This enhances the quality of the utilisation and evaluation process. Moreover, this provides insights into the direction of better understanding of interdependencies of the pressures that influence e-government implementation. This approach may support the quality of decision-making among public sector organisations when considering the implementation of e-government.

Ultimately, modifications to the e-government conceptual taxonomy (presented in Chapter 3), based on the empirical findings presented in this chapter, are carried out in Chapter 6.

Chapter 6: Revised Conceptual Model

6.1 Summary

In the previous chapter, we analysed and presented case studies conducted in three Omani public organisations (ministries). The empirical evidence gathered from the case studies and the resulting analysis in Chapter 5 indicate the need for modifications to the conceptual taxonomy proposed in chapter 3, as additional institutional factors were identified that previous literature has not yet discussed. In the light of the extant literature, this chapter will discuss and analyse these newly identified factors, and will outline the lessons learned from the empirical findings. Therefore, this chapter will aim to further delineate the institutional factors that influence e-government implementation in an Omani context, and categorize these into the four types of main institutional pressures (Economic, Political, Social and Technological) discussed earlier in Chapter 3. In doing so, this chapter will a) revise the conceptual taxonomy and model presented in chapter 3, b) help realise the overall aim, and specifically objective #5, of the study as set out in chapter 1 (to discuss the paradoxes facing e-government implementation in comparable organisations, and to offer recommendations as to how the various institutional pressures that cause these pressures can be managed effectively), and c) help conceptualise e-government implementation within an Omani context.

In order to achieve the aforementioned objectives, this chapter is structured as follows. The next section (6.2) briefly demonstrates the size and quality of the collected data. This is followed by a summary of the lessons learned from the case study organisations in section (6.3). Next, an analysis and discussion of the institutional factors affecting the progress of Omani e-government implementation in the case study organisations is offered in section (6.4). In section (6.5), a revised conceptual model and taxonomy for e-government implementation is offered. The chapter then concludes by discussing the most significant

contributions of this study in terms of the revised conceptual model, particularly from the perspective of Omani e-government implementation.

6.2 Key lessons learned from the e-government and institutional theory literature

In this thesis, the concept of electronic government is viewed as an effective mechanism for increasing government productivity and efficiency and as a key enabler of citizen-centric services. Furthermore, public sector organisations' efforts, especially in the context of developing countries, are focused towards increasing accessibility, availability, competitive advantages and enhancing services in civil administration. In this respect, the research conceptualised the value of e-government and the factors that influence success in the context of a developing country. Nineteen interviewees from three public sector organisations participated in the research to determine 19 different institutional factors that influence the success of e-government initiatives. From the perspective of government organisations, four types of pressures were seen to impede e-government implementation: economic, political, social and technological factors. While a review of extant e-government literature revealed that many of these factors were identified in previous studies, this research was based on the premise that there is an absence of theoretical models to understand how these factors influence and pose challenges to e-government implementation.

From a theoretical perspective, it is important to highlight that most of the factors that were seen to impede e-government implementation needed to be studied further using empirical research, and needed to be better explained from a conceptual angle. As a result, the use of a conceptual model based on an institutional theory perspective was proposed to create a normative understanding of the internal and external pressures influencing e-government implementation and the resulting organisational changes and actions. This helped the researcher to identify the reasons that led to success or failure of various initiatives within the organisation environment (Benbasat et al., 1987). In this respect, this research has integrated Institutional Theory perspectives into the e-government field to identify various institutional factors that influence e-government and compose a conceptual model (proposed in chapter 3). These factors were empirically explored by means of three interpretative case studies of e-government implementation to examine their mimetic, normative and coercive influence on public sector organisations. These case studies provided strong empirical support for the

arguments made in this thesis; it confirmed the prior literature of e-government implementation and helped to bridge the theoretical gap in e-government research.

6.3 Key Lessons Learned from the Case Studies

Throughout the empirical findings, the researcher considered studying the area of e-government implementation and its related issues using the conceptual taxonomy and model proposed in chapter 3 as a frame of reference. The case studies conducted offered a rich contextual setting for examining the relevance of the institutional pressures and associated factors impeding e-government implementation as outlined in the conceptual model. From the findings, a number of key lessons can be drawn that would help develop a deeper understanding of e-government implementation challenges and complexities in a developing country, and the Omani context more specifically. These lessons will be helpful in developing initial steps towards implementing a cohesive e-government strategy in Oman, as well as coming to appreciate how the impact of the various institutional pressures results in variations in the success of implementation between Omani public sector organisations.

- **Lesson 1:** E-government implementation is considered to be a long term strategy for a country's economic development. Economic development is considered to be a knowledge base, as it helps gather and advance various strategies and approaches to enhance growth (Hu and Quan, 2006; Gordon, 2002; Lehr and Lichtenberg 1999). Hence, mimicking good practices and experiences in economic development through e-government will easily direct organisation towards better public sector service delivery outcomes. For example, MOMP was seen to mimic various international economic practices (such as the reengineering of internal processes to reduce transaction cost and improve efficiency, adopting new ICT to facilitate citizen-centric online services and prevent expenditures through sensible accounting practices) that have resulted in MOMP's e-government services being ranked as 2nd worldwide by the United Nation.
- **Lesson 2:** Closely monitoring and understanding the factors that influence e-government will help public sector organisations to identify and manage the various challenges they face when implementing e-government. Mapping the various institutional challenges into economic, political, social and technological categories helps public sector organisations to better understand e-government implementation. This will help direct

top management priorities when implementing e-government. The case studies revealed that while MOMP has exploited the power of the Internet to successfully e-enable public services and entice citizens, MOI has been comparatively slow in developing successful e-government strategies. It is clear from the empirical evidence that the success of MOMP is largely influenced by the long-term strategy adopted by the ministry to commit appropriate financial resources for e-government implementation which has increased by threefold in the last four years.

- **Lesson 3:** The level of senior management awareness regarding the benefits of e-government will often determine the organisation's level of motivation to implement the concept. Accordingly, this will dictate the level of priority given to e-government implementation and consequent allocation of resources to different projects. In this respect, e-government awareness has the potential to hinder or facilitate implementation success. This is evident in the case of MOMP, when compared to the other two ministries studied here. Interestingly, in MOHE, the change of the senior management responsible for e-government, halfway through the project, resulted in better leadership that allowed the ministry to make significant progress over the last three years. However, the initial lag created during the first few years of e-government implantation from 2001 to 2006 meant that radical efforts were needed to raise the level of e-government service delivery (i.e. in comparison to MOMP).
- **Lesson 4:** In the empirical findings, it was revealed that MOMP introduced a new Directorate General of Planning and Development to cope with the new vision and requirements of implementing e-government. MOHE also introduced a Higher Educational Admission Centre (HEAC) to handle the new duties with regards to electronic services. These practices have enhanced e-government progress within those organisations. However, MOI failed to consider the additional work involved in implementing e-government and thus did not make any changes to its organisational structure or business processes. This resulted in MOI failing to move beyond the initial stages of e-government implementation. In this respect, changes to the organisational structure and existing work flow are critical when moving from traditional services to electronic services delivery.
- **Lesson 5:** The case study findings indicated that the availability of skilled human resources was key to the success of MOMP's e-government implementation. MOMP had in place various training initiatives for internal staff, while at the same time engaging

with external consultants in areas where skills were lacking. The employees were fully equipped to implement and manage the changes introduced to the ministry, and were considered to be key stakeholders in e-government at MOMP. In contrast, MOHE used a strategy whereby a majority of the technical development was outsourced to third party service providers. This strategy was effective in the short term, but the long-term sustainability of the implemented e-government services was questionable, as employees were not trained or skilled in managing them. In contrast, MOI made little effort to train or adopt new systems to support the implementation of e-government services and relied heavily on a single system to e-enable the core services they offered to citizens. This shows that a clear strategy is required to recognise the skills needed to implement e-government. This strategy should also outline the appropriate methods for providing the necessary staff training to bridge any gaps that are identified and/or acquire them from third parties (i.e. through outsourcing) where appropriate.

- **Lesson 6:** The case studies revealed that by being one of the first organisations to adopt e-government systems, MOMP was in a position to influence the formation of relevant rules and regulation for e-government service diffusion and adoption. By doing so, MOMP helped shape the social norms, beliefs and behaviours towards the use of certain e-government systems, such as smart forms for entering information. In this context, some of the new initiatives introduced at MOMP were developed through mimicking best practises that were implemented outside Oman (i.e. in North America and Europe) and adopting these to cater to local contexts. On the other hand, the good practices that were implemented at MOMP were mimicked by other public ministries in Oman such as the Royal Oman Police and Ministry of Health. Sadly though, neither MOHE nor MOI mimicked these systems. In this respect, understanding citizens' requirements and being among the first public organisations to offer services that simplify citizens' interaction with the government will allow such organisations to shape the formal rules and norms of service delivery and engagement.
- **Lesson 7:** The empirical findings confirmed that there were large disparities in the progress of e-government implementation among the three case studies. While it was clear that MOMP was taking positive steps towards implementing e-government, MOI was still in its initial stages, whereby the offered services were focused on cataloguing information. The empirical findings clarified that this was due to the political pressures faced by MOI. For example, the senior management at MOI did not see e-government as

a strategic priority and were less committed to implementation. On the other hand, the investigation within MOMP and MOHE revealed the opposite; in these organizations, the commitment of senior management was evident and reflected on the comparative success of these two ministries in terms of implementation. In this respect, political support and senior management commitment were critical for the success of e-government implementation.

- **Lesson 8:** Finally, a key lesson, related to the social context of the organisation, can be drawn from the empirical evidence. MOMP used an ‘open door’ policy, whereby citizens had the opportunity to meet officials ‘face to face’ in an open office environment; in contrast, MOH maintained a ‘closed door’ policy in which citizens had to queue up behind glass doors and walls to meet public officials. The open door policy adopted by MOMP meant that citizens had the opportunity to complain, as well as to offer suggestions for improving the online services offered by the ministry. A key feature here was that the citizens were allowed to track their complaints/suggestions in order to monitor the actions taken by the ministry. While this environment created a number of social pressures that forced MOMP to continuously improve services, these pressures resulted in improved efficiency and long-term sustainability of the ministry’s e-government services. Moreover, this environment created an opportunity for citizens to participate in shaping future policy and services in Oman.

In light of the above lessons learned and findings in Chapter 5, it is correct to revise the conceptual taxonomy formulated in Chapter 3. In this context, the following sections will revisit the various factors influencing e-government implementation in relation to the literature and discuss a number of new institutional factors identified from the three case studies, as categorized into themes of economy, politics, society and technology.

6.4 Revising the institutional factors influencing e-government implementation: A synthesis of literature and empirical findings

In Chapter 3, the researcher presented and discussed the institutional factors gathered from previous literature in the area of e-government implementation and classified them under four types of institutional pressures: Economic, Political, Social and Technological. This section aims to provide a better synopsis of these factors by examining their relevance in a practical

context in Oman. Furthermore, in this synopsis the literature is synthesised with the empirical findings to offer insight into the work, knowledge, experiences and behaviours of Omani public sector organisations.

The concept of e-government emergence has been generally explored by many earlier studies that highlighted the factors and challenges influencing e-government implementation in various developing country contexts; for example, these factors were previously discussed in Chapters 2. The specific notion of this section is to discuss the particular institutional factors that influenced e-government implementation in the Omani context under the four types of pressures.

6.4.1 Economic Pressure

6.4.1.1 Transaction Cost

The transaction costs incurred by public sector organisations in traditional service delivery (prior to e-government) are comparatively larger than when IT is used to automate the processes that help deliver these services (Noorderhaven 1996; Roberts and Greenwood 1997; Miranda and Kim, 2006). These transaction costs apply not only to the public sector organisation providing the service, but also impact the citizens using the service in terms of time, effort and travelling to physical offices. Furthermore, the use of IT can help generate long term benefits and improved service delivery, and can protect the public sector from incurring costs such as those required to maintain adequate human resources for completing various routine transactions. Holland et al., (1994) and Ciborra (1983) support this idea, and confirm that transaction costs are a key factor imposing economic pressure on public sector organisations.

The empirical findings from the case studies reveal transaction costs to be one of the main motivators toward adoption of e-government implementation (i.e. MOMP uses e-government to create a multi-functional technology platform that is capable of facilitating all the requirements of their stakeholders by integrating other governmental units through the e-government portal). Likewise, MOHE has implemented a single web portal system to handle all student admissions-related processes in relation to higher education through a single server. Moreover, the MOMP and MOHE portals are directly integrated with the main ‘e-Oman’ web portal, which is developed and maintained by the Information Technology

Authority (ITA). As a result, the daily transaction costs incurred by these two ministries have been dramatically reduced after the implementation of e-government. In this respect, both ministries have adhered to the long-term economic strategy for e-government set out by the Omani government, which states that local authorities should reduce paperwork, physical office costs and cost of employing new staff. In addition, the single portal concept has encouraged citizens to adopt e-government, in order to utilise the various needed services without visiting physical offices. In this respect, the reduction of transaction costs was a critical influence on the success of e-government implementation, From an Institutional Theory perspective, mimicking successful organisational actions and employee policies regarding the reduction of transaction costs for both the government and citizens in MOMP and MOHE resulted in more efficient back office processes, which in turn contributed to improved citizens' satisfaction and reduced economic pressure in accessing and using public services. Given this context, it can be argued that the reduction of transaction costs has contributed to improving the adoption of e-government services in these two Omani public ministries (MOMP and MOHE). This confirms previous studies by Islamoglu and Liebenau (2007) and Miranda and Kim (2006).

6.4.1.2 Revolution and Growth of ICT

Misuraca (2006) argued that the mimicking of successful practices in the area of ICT will often be common in efforts involving improvements to economic development. Similarly, Janssen and van Veenstra (2005) posit that the introduction of any technology like e-government always has a strong impact on the development of economic growth. In empirical terms, the IT Director in MOMP reported that local authorities need to be aware of the different benefits and advantages related to e-government, as this will result in highlighting the importance of economic knowledge in relation to core business developments for the ministry. Likewise, it was clear from MOHE interviewees that e-government projects were seen as a mechanism for economic development that could be used to improve productivity and reduce expenditure. On the other hand, interviewees in the third case study highlighted two additional points that included improving resource and asset management in terms of IT, which are points already supported in the literature (see Malhotra, 2000 and Sumita, 2008). The interview with the IT director in MOI indicates that the revolution and growth of ICT indirectly influenced improvements to the ministry resources, increased the skill and experience of employees and produced better decision-making processes for e-government. Given this context, it is clear that the revolution and

growth of ICT is a key factor that influences the economic aspects of e-government implementation through efficiency, effectiveness and productivity in the public sector. From an institutional theory perspective, mimicking successful practices related to the adoption of appropriate ICTs by MOMP and MOHE led to huge improvements in their services, resulting in better utilisation of economic resources in the ministries. Furthermore, the normative behaviour of the employees towards ICT in MOMP has enabled the ministry to increase their revenue from 38 million Omani Riyal in 2003 to 121 million in 2009. In this respect, it can be argued that the growth of ICT has empowered some public sector organisations in Oman to enhance their IT efforts and strengthen their overall economic fundamentals (See Cellary, 2008; Reddick, 2004a).

6.4.1.3 Controlling Expenditure

Issues related to citizens' adoption of e-government implementation, such as accessibility and availability, are mostly connected with controlling expenditure in terms of service delivery for public sector organisations (Bhattacharya, 2006; Eggers, 2004). This was clearly demonstrated in MOMP and MOHE, where the ministries have exposed many issues in relation to protecting expenditure, including, reducing the need for form-filling, performing traditional business processes in government offices and decreasing the number of physical offices through the introduction of e-government. Conversely, interviews in MOI were unable to determine whether or not the organisation reaped the various benefits associated with controlling expenditure, as the ministry had only recently begun to implement their e-government project. From a citizens' perspective, interviewees in MOHE found that citizens are able to interact with the MOHE system without incurring the expenses associated with traditional services such as the transport and subsistence costs involved when having to visit physical offices located in the main cities. Therefore, the empirical findings confirmed suggestions made in the literature by authors such as Bhattacharya (2006), Eggers (2004) and Stanforth (2007) to the effect that e-government helps to control expenditures for both the government and citizens in terms of delivering public services. From an institutional perspective, the ability of government to appropriately manage the distribution of funding and have the necessary frameworks to control social behaviours and actions that influence unjustified expenditure (see Bhattacharya, 2006) ensured that public money was not wasted. The transitions of MOHE and MOMP, from largely manual operations to fully automated ministries, provide evidence to this effect.

The above arguments show that institutional economic factors played an important role in Omani e-government implementation efforts. These factors also allowed the researcher to relate the Omani employees' experiences reported in Chapter 5 to the e-government literature. Table (6.1) summarizes and maps the economic factors that were significant in Omani e-government implementation onto the conceptual literature.

Pressure	E-government Literature			Empirical findings		
	Factors	Description	References	MOMP	MOHE	MOI
Economic	Reduce transaction cost	Each and every transaction that happens within or across the boundaries of e-government systems	Ciborra, (1983), Miranda and Kim, (2006)	Greater intent to adopt e-government systems; increasing income for MOMP	Indirect support for national economy, long term strategy that will enhance efficiency of services and reduce the cost of citizens' interactions.	No evidence
	Revolution and growth of ICT	Implementing the best practices of ICT, improve business processes by using the latest technologies	Misuraca, (2006), Sumita, 2008	Improve the MOMP information availability and transparency within and outside the ministry	Looking after the productivity growth needed for economic development	Acknowledged the need to improve IT resources and asset management
	Control expenditures	Better services at lower costs, Reduce cost for public sector and citizens	Evans and Yen, (2005), Stanforth, 2007	Reduce paperwork at MOMP and the need for physical offices.	Reduce the expenditure and time needed from citizens to travel to physical offices	No evidence

Table 6.1: Analysis of the Economic Factors across Omani public Organisations

6.4.2 Political Pressure

6.4.2.1 Leadership

Katz and Kahn (1978) explained the ways in which various leadership skills can direct and control the routines and actions of the other people in the organisation. Similarly, Mayer and Scott (1983) explained how leadership can encourage and inspire employees to perform and do their best. The empirical findings show that leadership played an important role in all three case study organisations. For example, since MOMP started its e-government initiative, the ministry has had committed leadership, while MOHE and MOI did not have such support for their e-government implementation efforts. The researcher observed that MOMP is considered to be a leader in e-government in Oman, as it was the first ministry to have

worked on an integration network that gathered many other governmental units into one access point or portal. Also, the interviewees at MOMP reported that their leadership in the ministry inspired and set a strategic direction on their own initiative to move the organisation towards becoming the leader in e-government in Oman. Comparatively, the MOHE leadership initiated the essential steps towards e-government in 2006, when its leadership recognised and acknowledged the importance of e-government. In this respect, leadership and its associated consequences have been a relatively important factor during the early phases of implementing e-government initiatives within public sector organisations in Oman. In this respect, it was obvious that the success of e-government implementation has often been linked to the presence of a leader who performs and approves the necessary steps to facilitate every change required for better practices of e-government initiatives (Akbulut, 2002; Garfield (2000).

From an institutional theory perspective, leadership can be explicated as normal social actions that influence the knowledge of different levels of management. In the context of e-government, the IT management's ability to explain the benefits of e-government to senior managers and their ability to influence decision makers will play a major part in the level of commitment to e-government projects (Armstrong and Sambamurthy, 1999; Sambamurthy and Zmud, 1996). Nevertheless, e-government projects incur high costs and are risky; therefore, senior managers are often reluctant to embark on such risky initiatives without appropriate benchmarks or guidance. In this respect, the empirical study revealed that the knowledge and actions of the leadership at MOMP was seen to mimic successful international practices of e-government implementation in their industry, and to disseminate this knowledge to other members of the organisation through appropriate training and methods.

6.4.2.2 Top Management Support

The case study findings clarify the significance of top management in e-government implementation. The interviewees in MOI reported that top management has been recognised as one of the most important elements necessary for implementing any new strategy. Apparently, the lack of top management support has impeded the progress of e-government implementation at MOI when compared with MOMP and MOHE. In both MOMP and MOHE, the interviewees categorised this factor as the most important element for implementing e-government. It was clear that in both these ministries interviewees realised

how important it is to have management support throughout the process of implementing e-government. The IT team at MOMP described how quickly they developed the various phases of the e-government project, with their directors and managers following every single phase of e-government implementation step by step, while at the same time encouraging every member of the IT team to follow suit. The interviewees in MOHE concurred that top management support helps to secure a new IT strategy and improved skills and knowledge for IT teams. This echoes suggestions by Chatterjee et al., (2002), Kamal (2006), Nah et al., (2001) and Colmenares (2004) in the extant literature, as well as the overall notion that in an institutional environment, top management support is one of the most important factors in the implementation of any technology (Liang et al., 2007). Given this context, top management support emerged as the most salient factor influencing e-government implementation across all three studied ministries. Nevertheless, there was a huge difference in the level of top management support between the three ministries. In the second case study, although MOHE needed continuous top management support for e-government, due to changes in leadership support was only sporadic over the last four years. Likewise, during the interview with the head of IT at MOHE, top management support was cited as being strongly required throughout the implementation of an e-government project. Conversely, MOI had a low level of support from top management. Some interviewees attributed this to the delay in e-government implementation in the ministry. The analysis of the results show that the implementation of e-government becomes easier when top management support is offered in each phase of a project.

From an institutional theory perspective, the management support received for e-government in the three case studies varied. For instance, while MOMP and MOHE had adequate support for e-government, lack of support at MOI was a major obstacle for e-government implementation. According to Liang, et al., (2007) the level of top management support facilitates political structures and normal social actions in organisations (e.g. the shapes of interaction and responsibilities among organisations' actors and various norms present in political systems). It was revealed that in MOMP and MOHE, the normative pressures influenced the ministries to reengineer their work routines and processes to realise fully integrated e-government (*horizontal integration*) services. Therefore, institutional theory regarding normative pressures explained why, in this study, top management support could improve the implementation success of e-government (Liang, et al., 2007). These developments were recorded in this study as a rationale for understanding the improvement in

enabling e-service progress, as well as the listing of top management support as the key factor in the conceptual model proposed in the research.

6.4.2.3 Rules and Regulation

“As rationalized institutional rules arise in given domains of work activity, formal organizations form and expand by incorporating these rules as structural elements structures” (Powell and DiMaggio, 1991:45). The political framework (Rules and Regulations) is very important for any structured organisation such as public ministries (Chavan and Rathod, 2009). The collection of rules and regulations in regards to e-government implementation is formed as a political framework. Thus, the sharing and adopting of this framework is unavoidable by public sector organisations participating in e-government (Soares-Aguiar and Palma-Dos-Ries, 2008). The interviewees in MOMP reported that while rules and regulations help to legalise the use of electronic transactions and to create a healthy environment for e-government implementation, from an IT perspective, more comprehensive legal frameworks were necessary to standardise the technologies and security protocols used here. Furthermore, the head of IT in MOHE attributed their slow e-government progress to the lack of frameworks needed to introduce the right rules and regulations for electronic service delivery in Oman. Lastly, the researcher observed that MOI was in the early stages of forming a committee from different public agencies to study the different rules and regulations needed for electronic service delivery. This accords well with the findings of Heeks (2001) and Elliman et al., (2007) that show that political frameworks, and their various related rules and regulations, are considered to be very important factors that need to be developed, employed and continuously evaluated and maintained.

From an institutional theory perspective and coercive pressures, e-government implementation and parallel changes within public sector organisation require a collection of agreements, policies and procedure, usually explained via the organisation structure and political system used (Scott, 2001; Davidson and Chismar, 2007). In this study, the public sector organisations were shown to be responsible for creating various required rules and regulations, the case of MOMP showed the way in which social actions and behaviours (through participation techniques) can influence and reshape the rules and regulations in respect to e-government implementation. In the context of implementing technology, the political structure of organisations, with the help of social actions and participation, forced

decision-makers to preserve and enhance the development of organisation rules in regards to electronic services delivery.

6.4.2.4 Organisational Structure

The organisational structure provides the procedures that organisations adopt to ensure the adoption of best practices of similar organisations in the same domain (Powell and DiMaggio, 1991). This structure is what makes the institutions aware of what they are supposed to do (ibid). Controlling people's activities and providing coordination between systems are an organisational structure's main objectives in the quest to fix a complex network of technical and related services, programs and policies (Meyer and Rowan, 1977). From many researchers' perspectives, e-government implementation introduces changes that are meant to redesign and re-structure a traditional workflow to provide a new organisational structure that will fit the new requirements of the public sector and its stakeholders (Scholl, 2005; Weerakkody and Dhillon, 2008; Janssen and Shu, 2008). From the empirical findings, it appears that interviewees from the three case studies did not share the same perceptions in regards to organisational structure. While MOMP and MOHE are more concerned with restructuring of their organisational departments to attain the best results of the adopted technology (i.e. e-government), MOI's interviewees were less concerned with this issue. The director of IT at MOMP indicated that the successful implementation of e-government in his organisation was largely due to the introduction of a new general directorate in the ministry to maintain and control the technology and resources needed for e-government.

Moreover, the researcher observed that MOMP had made significant strides in streamlining business processes to respond to citizens' needs. Likewise, the head of IT in MOHE reported that the progress of their e-education system was due to the formation of a new admissions centre to collect all information regarding student progress in one single server. Given these arguments, it is clear that public agencies will need to restructure and/or introduce new organisational structures in order to fully realise the benefits of e-government implementation. From an institutional theory perspective, regulative institutional pressures provide the ability to create rules and authorise various processes and activities. In some cases, this conception will manipulate rewards and sanctions or punishment for undertaking certain behaviour and may control future behaviours (Scott, 2008; Kondra and Hurst, 2009). Thus, the key factor of this pressure is how to make the organisation extremely unique by

implementing a structure that will lead the organisation to continued success (Teo, et al., 2003).

The arguments above show that institutional political factors played an important role in Omani e-government implementation efforts. These factors also allowed the researcher to relate the Omani employees' experiences reported in Chapter 5 to the e-government literature. Table (6.2) summarises and maps the political factors that were significant in Omani e-government implementation with conceptual literature.

Pre ssu res	E-government Literature			Empirical findings		
	Factors	Description	Referen ces	MOMP	MOHE	MOI
Political	Leadership	Decision makers in the organisation to understand the internal and external impacts of e-government	Ebrahim and Irani, (2005)	Participated in the MOMP e-initiatives and encouraged employees to do their best.	Deficiency of good leadership; lack of adequate knowledge on the benefits of e-services	Less attention given to electronic services
	Top management support	Providing the support for forming new rules, procedures, arrangements and actions towards e-government services	Chatterjee, et al., (2002); Colmenares, (2004)	Ensure the success of MOMP systems by following a step-by-step development and providing the needed management understanding and strategic plans.	Inconsistent support throughout e-government implementation stages	E-services considered as an unimportant strategy (less priority) for top management until more recently (last two years)
	Rules and Regulation	Providing the support for regulatory and legal issues at all levels of government in order to achieve public sector transformation	Soares and Palma, (2008); Chavan and Rathod, (2009)	Legalise the use of MOMP electronic transaction and obtain a healthy environment for e-government implementation.	Slow process in formulating the rules and policies that are needed for e-services development	Form a committee to study different rules in regards to new e-services

	Org. Structure	Workflow procedures, roles, organisational mechanisms and its related activities should conform to the prescriptions of governmental structure	Ravichandran, et al., (2009); Kondra and Hurst, (2009)	Implies a very high improvement in MOMP business processes to streamline citizens' needs and interactions.	Provided a framework for organising the institution structure that will reform their business processes	No evidence of attempts to reshape organisation structure
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Table 6.2: Analysis of the Political Factors across Omani public Organisations

6.4.3 Social Pressure

6.4.3.1 Transparency Policies

From a literature perspective, transparency policies are considered as a key factor to enhance the adoption of e-government implementation among citizens (La porte et al., 2002; Waters, et al., 2009; Ndou, 2004). Kim and Bretschneider, (2004) and Welch et al. (2004) suggest that using various IT tools, and creating the opportunity for citizen participation by improving procedural transparency, will enhance citizens' satisfaction. In this respect, the empirical findings in all three ministries confirmed the literature. In MOMP, citizens can provide feedback on the ease and difficulties they faced while accessing the ministry portal or e-services through an online feedback form. The feedback gathered from citizens is incorporated in the next release of the MOMP web portal. The IT team in MOMP has introduced a new service called the "JAWAB" SMS eService. As part of the transparency policy, this service is considered to be an important factor to improve communication between MOMP and Omani citizens. As part of MOMP's commitment to improving standards of services for its constituents, the ministry provides users with the information they need, notifications and tracking of the status of services provided to them 24 hours a day. JAWAB is introduced to save citizen's time by providing speedy services through an SMS tracking system. In addition, MOMP uses "online polls" and "complaint hotline" techniques for citizens to participate in contributing to existing rules and norms. Likewise, MOHE and MOI are developing an opinion poll system on their ministry e-government website. Such techniques offered an opportunity for the ministries to address concerns such as citizen satisfaction, practical transparency, and efficiency and effectiveness of online public services, all criteria commonly mentioned in the literature (i.e. Kumar, 2003, Welch and Hinnant, 2003).

Additionally, it was revealed that the system introduced for higher education at MOHE ensured unbiased processing of student progress records, as there was no human interference in the process. Such systems comply with the literature, which suggests that any effective and integrated system will improve citizens' satisfaction and internal and external organisation transparency (Welch, et al., 2004; Welch and Hinnant, 2003). From an institutional theory standpoint, Franco-Barrios (2003) explained how institutional theory through coercive pressure influences various collections of rules and policies, and represent them as a new way to increase transparency in any new innovation such as e-government. E-government as a technology continually reforms and improves the performance of government services; therefore, mimicking this procedure among public sector organisations increases citizens participation, and thereby increases transparency policies (Franco-Barrios, 2003; Sawyer, et al., 2005).

6.4.3.2 Digital Divide

According to the literature, e-government implementation can help to increase the points of availability of services for citizens, particularly in areas where there is a digital divide (Griffin and Halpin, 2004; Al-Sobhi, et al., 2010; Belanger and Carter, 2006). To this end, IT and e-government can support the training and education needs of citizens by facilitating the assisted use of technology. This will enable the gradual transition of citizens to 'self-use' of new technologies such as e-government. From a practical perspective, all three case studies show that e-government implementation has achieved some level of success by maintaining the availability and accessibility of e-government services. This has enabled citizens to develop new skills and to become familiar with new technologies. However, interviewees in all three ministries reported that a digital divide was a major concern of e-government. In this context, while MOMP has undertaken various initiatives to train citizens on the use of e-government systems and promote the concept through distributing brochures, newspaper articles and TV/Radio programs, MOHE has raised awareness and worked towards improving computer skills and capabilities among Omani students to encourage the adoption of their e-government systems. Sadly, MOI was only in the planning stages of introducing their strategy for improving adoption among its users.

These findings indicate that the implementation of e-government should incorporate appropriate strategies to facilitate the adoption of the various technologies and systems that are implemented to diffuse different e-government systems and reduce any consequent digital

divide that may arise among members of society (Al-Sobhi, 2010; Belanger and Carter, 2006). From an institutional theory perspective, the various social actions taken by the three ministries, such as advertising and promotional activities and related strategies, helped the ministries to generate social awareness and disseminate knowledge among the general public, as well as their own workforce. This contributed to reducing digital divide among the Omani public in terms of awareness and adoption of e-government services. These empirical findings confirm the suggestions made in the literature by Barclay and Duggan (2008), showing that the amount of knowledge related to ICT successfully influences and reduces the digital divide among society.

6.4.3.3 Citizen Empowerment

West (2004) suggests that when governments develop a new service to be used by citizens, the government should allow citizens to express their opinion and comment on this service. This will empower the citizens and help the government to improve their services by reshaping their original decisions (DeBenedictis et al, 2002 and West, 2004). In this respect, although the interviewees at MOHE agreed with the need to empower citizens to contribute towards the shaping of their services, the IT team concurred that citizen empowerment was not explicitly acknowledged as part of the ministry's e-government strategy. On the other hand, MOMP was proactive and used 'Opinion polls,' 'Surveys,' 'feedback forms' and 'tracking systems' to empower citizens to express opinions and contribute to the continuous improvement of service delivery in the ministry. Conversely, interviewees at MOI reported that one of the core aims of establishing e-government in their ministry was to 'empower citizens to use their services online without coming to the ministry.' In this respect, the views of the ministries varied from using citizens' empowerment to 'help continuously improve services' to that of 'offering an alternative method of service delivery that did not involve physical face to face contact.' The former view, reflected in the MOMP and MOHE strategy, is consistent with literature that suggests that citizens should be empowered to use electronic, rather than paper-based, services (Chavan and Rathod, 2009).

From an institutional theory perspective, coercive pressures put in place by implementing various rules and regulation to acquire better citizen participation will influence the adoption of various e-government services, and thereby empower the citizens to have better control of their information (Attewell and Rule, 1984; Chavan and Rathod, 2009). According to Robey and Boudreau (1999), concepts such as e-government will not only effect social behaviour,

but it will also empower the employees to pay more attention towards adopting better workflow structures, improve existing applications and expand skills. Such attention will not only authorise public sector employees to participate and adequately contribute to the technologies used in their organisations to realise the key benefits of e-government implementation, but also help them to contribute to improving the organisation (Markus and Benjamin, 1997).

6.4.3.4 Organisational Culture

Organisational culture is the common interests within any organisation that can be measured as activities or motivations under the consideration of a legal national framework (Smircich, 1983). Organisational culture can originate from other organisational behaviours, activities and actions, or from international organisations outside the country/region (Robey and Boudreau, 1999). Martin (1992) suggested that organisational culture helps researchers to define various agreements by different groups of people; this agreement includes shared values, assumptions and behaviours. Thus, people's attitudes and behaviour determine the organisational culture, which in turn influence the various activities, processes and functions of the organisation (Akesson et al., 2008). For example, MOMP was inspired to mimic international organisations' forays into e-government in the same business field, including the activities and behaviours of employees regarding e-government. Additionally, these activities became the norm, and were passed down from one level of management to another in order to utilise Omani culture and merge it with behaviours of other international organisations, and encourage better performance by MOMP employees. Likewise, MOHE replicated the practices of other organisations in Oman to mimic their achievements in e-government. These reactions helped MOMP and MOHE to realise a level of success in terms of their e-government project that were far superior to MOI, as well as other ministries in Oman outside this study.

From an institutional theory perspective, organisational culture is treated as one of the main organisational influences that may originate from other organisations (Robey and Boudreau, 1999). While researchers such as Ituma and Simpson (2007) have described organisational culture as a normative pressure that has an effect on other people to change their everyday activities, Scott (2008) has described organisational culture as a mimetic pressure that organisations copy from other organisation cultures to adopt some innovations or models.

While MOMP and MOHE were seen to mimic good practices seen in other e-government cases (both at a national and international level), in MOI, the researcher observed two different points that resulted in MOI's inability to mimic other organisations' behaviours. These were centred on the negligence of middle management and the lack of skills among employees. These findings are in good accordance with previous studies in the literature, such as the work done by Serour and Henderson-Sellers (2002), which showed that organisational culture can be continually changed and adopted through mimetic behaviours.

6.4.3.5 Resistance to Change

The introduction of change within an organisation often generates resistance from employees, and this resistance can delay or hinder the implementation of any new phenomenon (Pardo-del-Val and Fuentes, 2003; Robey and Boudreau, 1999). Al-Shehry et al. (2006) suggest that resistance to change in public agencies will usually occur among public agency managers and employees who become suspicious of the threat to their jobs by the use and adoption of the new phenomenon. In the e-government literature, Schedler and Scharf (2001) and Weerakkody and Dhillon (2008) argue that when developing e-government, there is a crucial need for collaboration among public organisations, internally (among employees and departments) and externally (among other government agencies).

Butler (2003) posits that institutional pressures are mainly a variety of internal and external pressures. Developing a new system or technology within an organisation may cause a resistance to change due to power distribution. The implementation of new technology often impacts the existing shape of power by re-shaping it according to new commitments and needs (Butler, 2003). Butler adds that this issue can be easily inflated, especially when there is a need to develop web-based applications, such as e-government implementation in public administrations (where power will shift from employer to citizen).

In the MOI case study it was clear that resistance to change played a significant part in slowing down the progress of e-government implementation in that ministry. It was clear that less priority was given to IT strategy and e-government, and most employees were not prepared for the potential changes that were to be introduced with e-government. Additionally, for many years MOI suffered from an ambiguous hierarchical structure in the organisation, segmented business departments and haphazard inter-organisation business processes. This environment created a number of obstacles to change and a volatile

environment in MOI. On the other hand, while MOHE suffered for several years (until 2006) from an old management that did not want to accept change and realise the various benefits of e-government, MOMP received direct support from senior management, who continued to search for the latest technologies; this forced the ministry and its employees (senior and top management) to implement the best practices in the field.

From an institutional theory perspective, mimetic pressure could effect and reduce resistance to change; hence the mimicking procedure is followed by implementing different parallel changes in the organisation to the structure, process, hierarchy and knowledge of the workforce. The institutional theory literature also argues that any change within the structure or business process of the organisation will not only reduce resistance to change, but also ensure that senior management responsible for facilitating this change may obtain an increase in status and position within the organisation (Powell and DiMaggio, 1991). This was clear in MOMP, where two senior managers at the forefront of e-government were promoted twice in less than four years.

6.4.3.6 Reduce Bureaucracy

Some researchers have found that bureaucratic rules give managers and decision-makers an effective role in managing and speeding up technology development and implementation (Ke and Wei, 2004; Altameem et al. 2006; Palmberg, 2010). E-government implementation is believed to offer opportunities to achieve better transparency, accountability, citizen empowerment and reduced bureaucracy among government agencies (Cavalluzzo and Ittner 2004). Brickley et al., (1997) assume that there is a strong relationship between democracy and the level of citizen participation in decision-making, which results in reduced bureaucracy in government. For example, the empirical findings from MOMP, MOHE and MOI indicate that one of the key aims of e-government implementation in Oman was focused on reducing bureaucracy in public sector organisations. Interviewees at MOMP reported that reducing bureaucratic rules contributed to increased social participation in e-government, as well as increased transparency and accountability in the ministry. The same views were expressed in MOHE, where the move from traditional systems to e-services was thought to have encouraged citizens' participation in these services. Even the most backward organisation in terms of e-government implementation, MOI, supported these views by expressing that the ministry is listening to citizens' views on how services should be delivered.

From an institutional theory perspective, reduced bureaucracy is considered to be a social action that needs to be applied by top management and decision makers in the organisation in order to facilitate change (La Porte, et al., 2002). Thereafter, in the context of e-government implementation efforts, senior management needed to work closely with the operational level, IT and technical staff, establishing a flatter organisational structure and culture of sharing responsibility and ownership. While MOMP demonstrated these features through their open door policy, MOHE and MOI were still operating in a relatively bureaucratic environment.

6.4.3.7 Management Awareness

Many researchers, such as Reffat, (2003), Morris and Venkatesh, (2000), Fang, (2002) and Choudrie et al., (2005) have highlighted the need for awareness campaigns during the implementation of new technology, such as e-government initiatives, in public services contexts. These researchers argue that these campaigns will stimulate and promote e-government services to achieve citizens' participation and adoption. From analysis of the empirical findings, the researcher observed that there were efforts in all three ministries to raise awareness of e-government among different levels of management before the focus moved to citizens. These ministries felt that it was imperative to educate their own employees before they were ready to educate the public. For example, while the MOMP strategy for raising awareness among employees involved training and education, their strategy for citizens involved using multi-channel methods for announcing various e-government services. Their citizens' strategy involved holding awareness campaigns in shopping malls, newspapers, media (TV/radio), and public places such as parks and public social festivals. These efforts have had a positive impact on citizen's adoption of e-government services in MOMP. MOHE and MOI were seen to mimic the MOMP strategy and took similar steps towards raising e-government awareness.

From an institutional theory perspective, management awareness can be explained as the propagation of knowledge from one level of management to another across the organisation (Ravichandran, et al., 2009; Barclay and Duggan, 2008). In this respect, the key agency responsible for e-government in Oman (ITA) has implemented a strategy to train all public sector employees (approximately 93,000 employees) on implementation and management aspects as well as the benefits of e-government implementation. The empirical results

confirm that only MOMP have benefitted from this strategy and effectively exploited the knowledge gained from these training initiatives, whereas the other two ministries have failed to exploit the knowledge internally among the ministries.

The arguments above show that institutional social factors played an important role in the Omani e-government implementation efforts. These factors also allowed the researcher to relate the Omani employees' experiences reported in Chapter 5 to the e-government literature. Table (6.3) summarises and maps the social factors that were significant in Omani e-government implementation onto the conceptual literature.

Pre ssu res	E-government Literature			Empirical findings		
	Factor	Description	Referenc es	MOMP	MOHE	MOI
Social	Transp arency policie s	Sharing of information and encouraging citizens participation in shaping new rules and regulations	Carter and Belanger, (2005);	MOMP provides feedback forms, online polls, and hotline complains for the citizens to participate in shaping policy and existing rules and regulations	Use standard formulas and data processing to ensure accurate handling of student progress records	Lack of social contact
	Digital divide	The ability for citizens to access information and transaction services has improved participation	Belanger and Carter, (2006)	The MOMP undertook to make citizens aware of their e-government initiative by distributing brochures, newspaper and TV/Radio adverts	Increase the availability of online services and improve computer skills and capabilities among Omani students.	Initials steps, are planned for awareness raising activities, but not yet implemented
	Citize n empow erment	Empower the citizens by reducing the efforts needed to obtain their needs	West, (2004)	The MOMP system offers multi-level support for citizens to allow easy access and delivery of services using multi channels	Simplify the services and ensure satisfactions to empower students to be familiar with e-government	No evidence was found

Mimicking Org. Culture	Replicate the common activities, action and behaviours of other organisation	Akesson et al., (2008); Robey and Boudreau, (1999)	MOMP were copying other international public institutions to study and implement better practices	MOHE were seen to be adopting one of the best practices in their core business for higher education	Senior managers showed little interest to mimic good practices in e-government
Resistance to change	The employee attitude of unwillingness to accept change	Pardo-del-Val and Fuentes (2003); Schedler and Scharf (2001)	Employee training, awareness and participatory approach used for e-government implementation ensured there was no resistance to change	Senior management involvement and persistence ensured any resistance to change was tackled at the early stages	Top management priorities in MOI strongly affected and slowed down e-government progress
Reduce Bureaucracy	The opportunity to achieve better transparency, accountability and empower citizen	Brickely et al., (1997)	MOMP implemented many technical applications and broke down silo mentality to increase Citizens' participation and staff opinions	Change few Administrative rules and implemented new technology to obtain citizens opinions on service satisfaction	No evidence
Management Awareness	Stimulating and promoting e-government services to achieve citizens' participation	Weerakody and Choudrie, (2005)	Using education and training for staff and promoting a participatory approach for e-government implementation	Using education and training for staff to increase awareness and participation	No evidence

Table 6.3: Analysis of Social Factors across the Omani public Organisations

6.4.4 Technological Pressure

From Institutional perspective, the three case studies indicate that ICT has played an important role in facilitating change within public sector organisations. The empirical evidence in MOMP, MOHE and MOI clearly indicate that ICT has helped to change the core business processes in the three ministries which have resulted in reshaping the structure of the organisations. At MOMP in particular, ICT has helped to reshape the organisational structure from a fragmented, departmental structure to a process driven environment. Furthermore, interviews indicated that ICT has also offered the opportunity for the public sector to embrace modernisation through new developments by comparing themselves with other organisations

in the same region. Therefore, in the context of e-government implementation, IT has enabled public organisations to focus on strategies that would be on par with other best practices in the region.

6.4.4.1 Standardisation

According to Keen and Klahr (1991), information technology standards are needed to avoid various challenges that would impede the implementation of an e-government project. These e-government standards include various programming tools, computing languages and developed applications, and in some scenarios, e-government projects are expected to provide one single form of access that provides a “user-friendly” and “familiar” link to public services. In the context of Oman, the researcher observed that Omani government, represented by ITA, has signed various contracts with Oracle and Microsoft corporations to maintain the use of limited computing tools such as Oracle products and Microsoft development kits to ensure that standards among public sector websites are maintained. Therefore, the interviewees from the three case organisations confirm that this factor did not effect or hinder the influences of e-government implementation in Omani public organisations. From an institutional theory perspective, it is argued that standardisation is a mimetic action between one organisation and another to ensure communication (Åkesson, et al., 2008). For example, adopting similar software at the front end of a system to mimic another organisation in the supply chain ensures that collaborative work can take place between the organisations. In the context of the three studied ministries, this was seen as a common practice at the application and platform level.

6.4.4.2 Stability

According to Navarrete (2010), the technological feature of stability can be an advantage for e-government transactions and diffusion. The stability of information technology can provide the expansion and enhancements of various issues, such as trust and confidence, for users. The interviewees in MOMP reported that the stability of their system offered a new formulation and shaping of e-government service quality. In MOHE, the head of the IT section explained that the applications used at the admission centre ensured stability by enhancing the quality of information either entered into or retrieved from their own system. This offered the chance for MOHE to ensure that the system was error free and stable for usage and adoption. Therefore, the researcher perceived that underestimating the importance of this factor can result in poor quality systems, which will result in uncertainty and hesitation

in terms of citizens' trust and confident in using the system; this in turn might lead to the failure of e-government implementation. Therefore, MOMP and MOHE managed to develop a high level of trust among their citizens by providing a high level of data stability and integrity. These findings confirmed previous studies by Basu (2004) and Chen et al. (2006) that have associated e-government failures with a lack of stability in the technology environment.

From an institutional theory perspective, evaluations of the stability of organisational activities will depend directly on how citizens (social actions) accept and adopt various technological changes (Scott, 2008). In this respect, the MOMP e-government systems were based on the mimetic influence of international good practices of similar systems. This has ensured the long term stability of these systems, resulting in more widespread adoption and diffusion among Omani citizens. Therefore, it can be argued that MOHE and MOI should recognise the need to mimic successful practices, like MOMP, so that these ministries could also establish stable e-government systems.

6.4.4.3 Internal and External Integration

According to Layne and Lee (2001), the integration process can be divided into internal and external integration. Internal integration takes place where local systems are linked to higher level systems and within smaller functionalities; external integration integrates a system across different functions to provide a fully integrated system that would act a 'one stop shop.' Evidence from the empirical data suggests that all three investigated ministries had to implement various internal and external integrations of workflow (processes) and IT systems. However, the interviewees from all three case studies reported that the *internal* integration of IT systems in each of their departments was homogeneous. From the empirical evidence, the researcher noticed that MOMP realised the importance of communication with other governmental organisations; therefore, the IT team in MOMP implemented many web services and database links in order to efficiently integrate them with other organisations. Through these services, MOMP were also able to help the e-Oman initiatives in providing a one-stop-shop solution to citizens, the private sector and other stakeholders of e-government implementation. This was able to occur because the central development of IT implementation, which was the responsibility of IT departments, used standard IT tools and the same programming languages to ensure the compatibility of systems.

Nevertheless, the situation of *external* integration was not the same in MOHE and MOI case organisations. MOHE and MOI faced significant *external* integration problems while working with other government agencies. MOHE was faced with a lack of information sharing because of poor collaboration among public agencies. MOI had no network infrastructure in place that was capable of facilitating external integration with other public organisations. However, interviews revealed that MOI has developed a new strategy that will be implemented to develop a network infrastructure within the next few years. The current network infrastructure was very basic, and thus it was difficult for MOI to integrate their own applications across the ministry buildings. This environment certainly contributed to the limited motivation showed by MOI towards e-government implementation.

From an institutional theory perspective, internal integration depends mainly on social actions (employee efforts, decision-makers and senior management supports) taken to improve the internal processes of the organisation such as outsourcing, training, standard use of applications and software among organisation departments, etc. (Chatterjee et al., 2002). Conversely, external integration depends on social behaviours (i.e. normative pillar of institutional theory) (e.g. cooperation between public organisations' employees, team work, resources) and a collection of rules and regulations (i.e. coercive pillar) (e.g. policies, collective agreements among public organisations, standard application and software tools, hardware devices). Therefore, in order for Omani public organisations to mimic good practices in e-government service delivery, internal and external integration are key components that need to be facilitated.

6.4.4.4 Degree of Collaboration

The literature indicates degree of collaboration between government organisations as an important factor in e-government implementation (Chen et al., 2006b; Ndou, 2004). The public and private sectors are built on the collective commitment of many organisations in a social network (Sawyer et al, 2005). According to Damsgaard and Lyytinen (2001), any market segment consists of a number of firms that collaborate to develop the rules and regulation for this business industry. For example, to successfully develop an e-government environment, many government agencies should come together to agree on these services by creating a new council to plan and organise the political system for implementation of services. Sawyer et al., (2005) suggested that the degree of collective and collaborative

actions among organisations provides a better place for the organisation in the market and reduces the pressures faced by the organisation from new entrants.

Investigations within MOMP suggests that collaboration within e-government projects takes place in several ways, including exchange of various applications, IT solutions, lessons learnt, IT expertise and solutions to similar problems. Furthermore, the interviewees from MOMP indicate that there was a good personal relationship between various managers and employees both internally or externally. Therefore, the ministry had 27 integrated internal branches that delivered the same services, and 11 other ministries under the Omani government who delivered different services. Likewise, during the interviews conducted within MOHE, the participants pointed out various integrated connections in local agencies and branches, which indicated that the degree of collaboration among internal directors, managers and employees are sufficient to communicate and perform the required tasks to support e-government services. The ministry were also establishing a strategy to cover various external government agencies in the coming year. Unfortunately, MOI failed to facilitate this collaborative relationship and working arrangements with other government agencies. These findings confirmed the literature, which indicated that the degree of collaboration among various organisations in the same environment is a powerful institutional factor that can determine the level of success achieved through e-government implementation.

From an institutional theory perspective, Powell and DiMaggio (1991: 48) explained the degree of collective organisation as *“through nation building and state formation, have developed rational-legal orders are especially prone to give collective authority to institutions.”* There are two main aspects of organisational change that influence organisational forms and actions, either internal or external (Layne and Less, 2001). In organisational change, these internal and external actions often revolve around collaboration between internal departments and external ministries. These collaborations face internal technological pressure when the internal workflow procedures need to be transformed from traditional to electronic methods (e.g. collaboration among employees and departments), as well as external technological pressure, when workflow procedures among public sector organisations have to be transformed (e.g. collaboration among government ministries) (Chiasson and Davidson, 2005).

6.4.4.5 IT staff skills

Employees in any organisation need many skills to improve their work; IT staff, in particular, require many technical skills. Al-Sebie and Irani (2005); Chanana, (2008); European Information Society, (2004); and Al-Busaidy and Weerakkody (2008) argue that an IT employee's skills were considered to be an important factor when implementing e-government. The MOI case study findings showed that the ministry's e-government implementation efforts were severely hampered by a lack of IT staff skills. The director of the IT department in MOI linked this issue to weakness in top management strategy, where information technology projects and developing IT skills and capabilities were not considered to be a priority for the ministry. The MOHE case study also highlighted a very important issue in this regard. The interviewee in MOHE described the requirements of IT skills as a limited resource in their organisation, and therefore the need for outsourcing, in addition to intensifying training courses for most of the programmers in MOHE, was an essential step towards improving their electronic services.

Additionally, the investigation in MOMP showed that e-government implementers and developers were fully aware of the importance of IT staff skills in facilitating successful e-government implementation. The interviewees from MOMP explained that their e-government strategy was a main concern, first due to the human resource skills and capabilities necessary to design the best e-services for citizens, and after that, other strategies such as equipment, design tools and IT standards. Moreover, all interviewees from the three case studies shared the same perceptions of the IT staff skills, and viewed it as one of the key challenges in e-government implementation.

From an institutional theory perspective, staff knowledge is the main concern when developing any change, and technological changes in particular (Boynton, et al., 1994). In a public sector context, knowledge among the IT workforce may need to be improved to facilitate the required level of skill for e-government implementation. Furthermore, relevant knowledge may help to constrain social behaviours and tendencies that are centred towards resisting change and the adoption of e-government implementation.

The discussion above shows that institutional technology factors played an important role in the Omani e-government implementation efforts. These factors also allowed the researcher to

relate the Omani employees' experiences that are reported in Chapter 5 to the e-government literature. Table (6.4) summarises and maps the social factors that were significant in Omani e-government implementation onto the conceptual literature.

Pr ess ure s	E-government Literature			Empirical findings		
	Fact ors	Description	References	MOMP	MOHE	MOI
Technological	Stan dardi satio n	Standard use of different development tools within e-government implementation	Howells, (2008)	The MOMP system can integrate with any other public agency applications.	Using various technologies that have been agreed by ITA as well different national and international coding.	Since it just started, MOI adopt technologies that proved by e-government officials
	Stabi lity	Operate e-government in a stable and secure environment (include privacy and security)	Navarrete, (2010)	Formulate and shape the quality of the MOMP e-government service	Enhancing the quality of information either entered or retrieved from their own system	None
	Inter nal and exter nal integ ratio n	Integrates a system across different roles that provide a full and real 'one stop shop'/portal.	Belanger and Carter (2004)	The MOMP is providing the access to citizens and other users from one single integrated gateway.	Sort of lack of information sharing and integration among public agencies	No such network implemented but it planned as next step, lack of external integration and very huge gap between MOI and other ministries
	Degr ee of Colla borat ion	Internal and External collaboration together to develop an integrated system for any specific business industry	Damsgaard and Lyytinen (2001)	Offer a good personal relationship between various managers and employees both internally or externally.	A good level of internal collaboration but None externally.	Good internal collaboration, but failed to facilitate such collaborative relationship and working arrangements with other government agencies.

	IT staff skills	Skills holds by IT staff to facilitate the required level of e-government development	Boynton, et al., (1994)	fully aware of the importance of IT staff skills in facilitating successful e-government implementation	limited resource in their organisation, and depends mainly on outsourcing	hampered by the lack of IT staff skills
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Table 6.4: Analysis of the technological factors across the Omani public organisations

6.5 Additional factors found in the Empirical Study

In this section, the researcher revises and extends the institutional factors in each category of pressure facing e-government implementation, as discovered in the research conducted in the three public organisations in Oman. The seven new factors were identified from the empirical findings and listed in table (6.5). However, the economic category of pressure showed that no more factors were added, but the empirical findings explained the importance of each of the economic pressure factors in the context of Omani government organisations. The last three pressures presented seven different factors that will impede the e-government progress in a developing country context. These factors are listed in table 6.5, whereas the changes and modifications to the conceptual model, outlined in Figure 6.3, sketch the relationship between these institutional factors and improvements in the structure and organisational processes.

While many researchers have highlighted the need for these factors during the implementation of e-government initiatives from a citizen perspective, this research realised the importance of implementing those institutional factors from public organisation perspectives. Thus, from analysis of the empirical findings, the researcher observed that in all case studies, the need for a considerable amount of thought regarding these factors and related issues in the organisation environment (strategies and plans) was imperative. Therefore, these seven institutional factors, in addition to the twelve institutional factors explored earlier in Chapter 3, were considered to be key factors influencing the success of e-government projects in the Omani context.

Pressure	Additional Factors
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Political	❖ Organisational Structure
Social	❖ Reduce Bureaucratic ❖ Resistance to Change ❖ Mimetic Organisational Culture ❖ Institution Awareness
Technologies	❖ Degree of Collaboration ❖ IT Staff skills

Table 6.5: Institution pressures found in this study

6.6 The impact of isomorphic pressures on institutional change in Omani public sector organisations (Mimetic, Normative, Coercive)

According to many researchers working from an institutional theory perspective, such as DiMaggio and Powell, (1983); Burt, (1987); Teo, et al., (2003); Liang et al., (2007) and Scott (2008), the three types of isomorphic mechanisms pillars that institutions face can be categorised as coercive (or regulative), or normative and mimetic (cultural-cognitive), whereby coercive and normative pressure is controlled via interconnected relations, while mimetic pressure is controlled by structural equivalence. From this perspective, researchers such as Scott (1995b) and DiMaggio and Powell (1983) proposed that an organisational field and its constituent organisations are shaped by the wider institutional environment, in a complex combination of three pillars: coercive (regulative), normative, and mimetic (cultural-cognitive) influences.

From an empirical perspective, the transformations of services that took place in MOMP resulted in improvement to their services and played an important role in e-government initiatives. MOMP has sped its internal and external development by mimicking initiatives adopted from other developed countries in the same business domain. This has confirmed the literature and suggested the concept of the three pillars of institutional theory (Mimetic, Normative and Coercive). The role of normative influences was very clear in the MOMP context; interviewees in MOHE and MOI confirmed that their existing strategies were built upon the use of either same actions and behaviours of successful e-government initiatives that have taken place in an Omani public organisation context such as MOMP, or by creating a committee to study required actions and behaviours regarding other e-government projects in Oman. Therefore, mimetic and normative procedures in MOMP (mimic global e-government

initiatives), MOHE (mimic one of the best admission centres in the global world) and MOI (mimic local e-government initiatives) organisations were seen to provide a very clear presence in this research when trying to understand how organisational changes will affect Omani public organisations and the resulting internal and external enhancements capability for using technologies that will improve the overall level of citizens' interactions and develop a better workflow of organisational structure and process (Kostova et al., 2008).

Since this research consists of employees' perspectives, this means that employees are expected to follow decisions made by their managers, and in the context of e-government IT departments face a similar dilemma. In the context of normal social actions (Normative pillar), IT staff starts to form their beliefs and new technologies based on the values and beliefs of top management (Liang, et al., 2007). Consequently, these values and beliefs are reflected in the adoption and implementation of new technologies aimed towards enhancing e-government services. From the empirical data, the researcher found that top management's support, belief and commitment affect e-government initiatives, used in the three case studies, by conceptualising the organisational interaction between top management support and the success of the e-government system. In this context, the positive support and commitment of senior management in MOMP and MOHE poses a significant level of empowerment among employees to increase their efforts towards implementing enhanced productivity levels. Therefore, this argument proves that Omani government agencies can simultaneously use both social actions (normative) and technical indicators to guide their actions and to help to implement successful technologies (See DiMaggio and Powell, 1991; Toe, et al., 2003). This confirmed the prior research by Liang et al. (2007) and Toe et al. (2003) which suggest that top management's support and social actions within an organisation are mainly associated with the success of e-government implementation.

With respect to coercive pressures, institutional theory relates to forming new rules, procedures, arrangements and actions that are required to develop a successful e-government system (Shepsle, 1986). Liang et al. (2007) suggest that leaders and top management have a greater affinity to observe needed policies, rules and regulations to accomplish systems that can serve all relevant stakeholders. According to Scott (2008) and Liang et al. (2007) public sector organisations are the main regulative force for policies and procedures and have the most significant impact on individuals' and organisations' behaviours. Such behaviours will therefore influence citizens' intentions toward adopting various e-government rules and

regulations (Hu, et al., 2006). In the context of Omani e-government, various organisations implement successful e-government initiatives such as MOMP rules, norms, beliefs and mimicking behaviours that will help form other organisations' process and structures, such as MOI (See Currie, 2009). From an institutional environment perspective, Currie (2009) explained that the formation of an organisation and its actors within organisation field has a significant effect on the organisation process and structure. Therefore, MOMP initiatives and the MOHE admission project and related effects will enhance the intra-organisation process and influence future implementation; its' adoption process will formulate a new model for implementing e-government within public sector organisations. Thereafter, these actions will form another organisations' structure that would improve the efficiency and effectiveness of service delivery in the Omani public sector (Burke and Donald, 1981; Currie, 2009). By confirming these literatures and the mimetic, normative and coercive pillars, this study argues that slow progress of e-government organisations such as MOI will reshape its actions and behaviours to operate as a new system by imposing constraints, which have been mimicked by other Omani public organisations, on social behaviours. To this end, the researcher observed that, within three years' time, various actions taking place in MOMP will enhance future business processes and will form a new structure for MOI and other slowly progressing organisations with respect to e-government implementation (See Figure 6.3).

Finally, Swanson and Ramiller (1997) suggested that overtime organisations with similar objectives in the same business domain will employ the same visions and common IT solutions. To this end, MOMP will establish its own e-government model, which will lead and drive other governmental agencies to coordinate and replicate similar initiatives to deliver better public services. This will allow MOMP to lead other government agencies to shape future initiatives towards implementing e-government projects. Such perspectives will enable public sector organisations to identify and assimilate e-government (Liang et al., 2007), and offers a broad answer to the question of "*why different organisations that are developed in different environments are often so similar in structure and process.*" Very briefly, this is the case because organisations try to identify and assimilate "best practices" within the business domain. Thereafter, this will provide the opportunity for an organisation to deal with a wide range of citizens/users with multiple languages and cultures, and reduce any organisational challenges and complexities. Thereafter, and according to Kostova et al., (2008) such an organisation will lead other initiatives and form a new organisational structure that can perform better service delivery.

6.7 Revised conceptual model and taxonomy for e-government implementation

While a review of e-government literature identified a number of factors that influence e-government implementation, institutional theory helped to conceptualise these factors in terms of the economic, political, social and technological pressures they impose on public sector organisations. Using an empirical study in Oman, this research explored the influence of these pressures and the various associated institutional factors that impact public organisations when undertaking e-government implementation. By doing so, it is hoped that this paper has taken a further step in helping to advance the understanding of the implementation and institutionalisation of e-government initiatives. When reflecting on the literature on institutional theory and e-government presented in this study, the authors concur that the wider social context (both internal and external to the organisation) imposes a number of pressures on the public institutions' structure and processes. This may have a major impact on their success or failure towards implementing change. Similarly, the internal organisational environment presents a number of further significant pressures that can ultimately determine the level of change that is implemented and the number of objectives that organisations achieve (Meyer 1979; Tolbert and Zucker, 1994; Teo, et al., 2003; Scott 2008). Based on these insights, this study has examined various institutional factors influencing organisational change, under the headings of four main pressures (economic, political, social and technological). The case study findings in the three public sector institutions in Oman identified 19 different institutional factors under these four main pressures. These factors were seen to have a major influence on the success or failure of e-government services in the three Omani institutions, and confirm the arguments presented in the literature to the effect that such institutional factors play a significant part in influencing the level of change by shaping the public organisations' processes and structure (see for e.g. DiMaggio and Powell, 1983 and Tolbert and Zucker, 1994). Figure 6.3 illustrates the above arguments, as well as how the actions and norms proposed in institution theory and the different institutional factors identified in this study (under the economic, political, social and technological pressures) influence organisational change in e-government implementation.

Based on the theoretical analysis carried out in Chapter 3, the investigation of e-government research issues identified and presented in Chapters 5 and the research syntheses and analysis carried out in this chapter, the conceptual model presented in Chapter 3 can be revised. The

revisions will take into account the existing and newly discovered institutional factors influencing e-government implementation, as identified in Chapter 3, 5 and 6. The revised conceptual model (Figure 6.3) will seek to map the relationships between e-government implementation, and the success structure and process of organisation from the perspective of the Omani government.

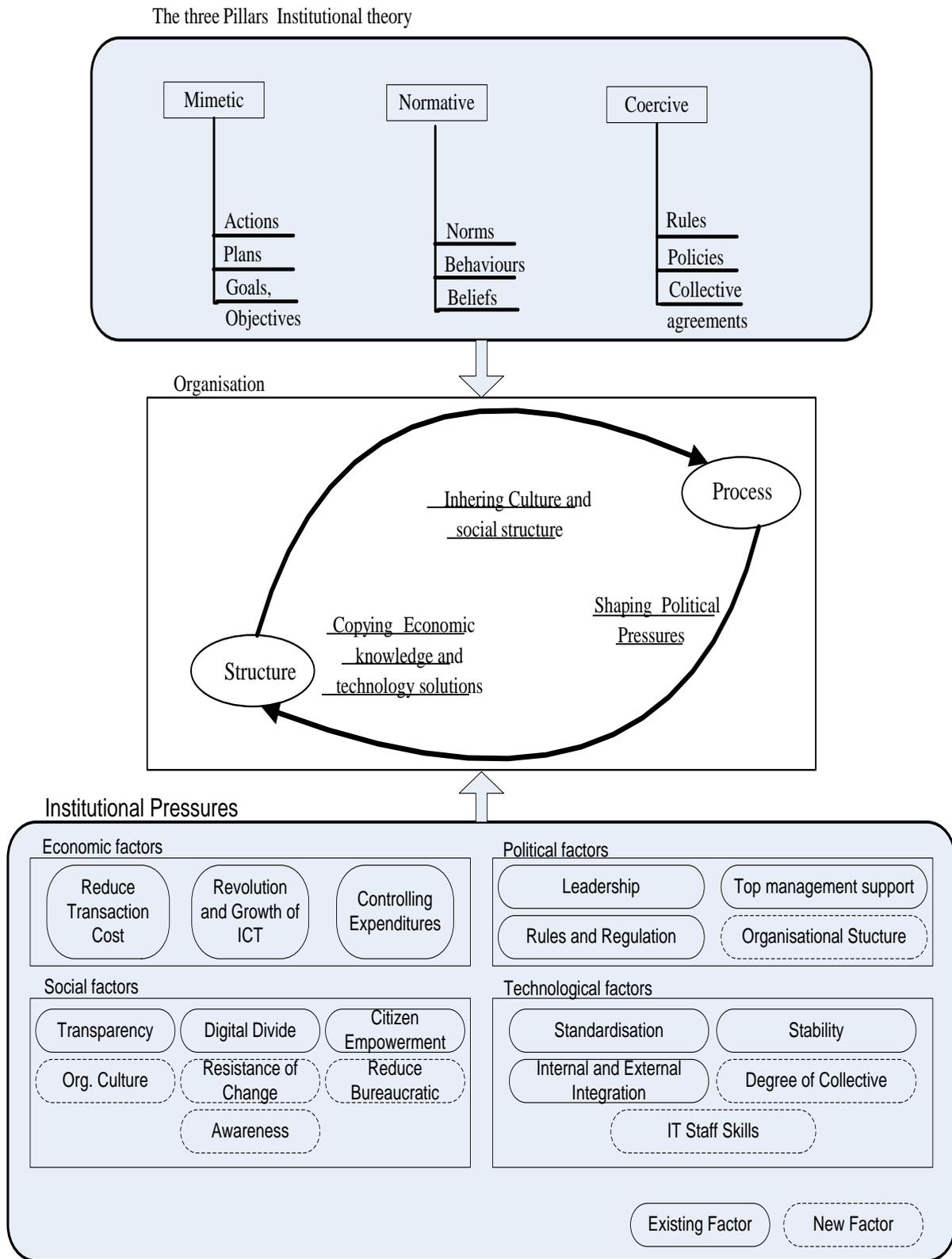


Figure 6.1 Revised Model for e-government system implementation from public sector perspective

From an empirical perspective, the analysis clearly indicated that the four key pressures (Economic, Political, Social and Technological) are crucial for bringing about high levels of

IT implementation success within public organisations. The case study in MOMP clearly showed that this ministry has confronted the various institutional factors that have influenced their e-government initiative and implemented a number of exemplary services (such as e-payments, smart forms, JAWAB¹, KIOSK², etc.). Given this context, the MOMP web portal was established and operated as a successful e-government initiative; therefore, MOMP can be treated as a best practice case for other agencies in Oman. On the other hand, MOI has only managed to implement basic online services, with limited transactional features. Furthermore, in MOI, several political, social, technological and economic pressures have led the authorities to continue with traditional services while attempting to implement basic electronic services. The comparative empirical findings from these two public institutions are summarised in Table 6.6 and mapped against the normative literature.

Thus, in this section, the researcher presents the findings regarding e-government implementation factors derived from the government perspective and conducted in three public organisations in Oman. As a result, the researcher develops an evaluation matrix that represents the perspectives of institutional theory literature (consequences of mimetic, normative, and coercive Pillars), e-government literature (nineteen factors derived from Chapter 3 and 5) and the investigation analysis (similarities and differences derived from Chapter 6) across the three public case organisations in Oman. While tables 6.1, 6.2, 6.3 and 6.4 illustrate the synthesis of the revised e-government factors using the four pressures from an institutional perspective, table 6.6 will confirm the validation of these e-government implementation factors, and their categorisation into the four main pressures within an institutional environment.

¹ Application used via SMS service to notify and track the services status

² Service helps to resolve customer queries in a timely manner.

Pre ssu res	The Institutional Perspective		E-government Literature			Empirical findings		
	The effects on organisation	References	Factors	Description	References	MOMP	MOHE	MOI
Economic	Copy various commitments in regards to economic knowledge and state. Assimilate various developments to spur the economy and productivity growth.	Orlikowski and Barley, (2001), Teo, et al., (2003)	Reduce transaction cost	Each and every change that happens within or across the boundaries of e-government systems	Ciborra, (1983)	Greater intent to adopt e-government systems, increase income for MOMP and private sector services	Indirect support for national economy, long term strategy that will enhance efficiency of the system and reduce the cost of citizens' interactions	Needs improved resource and assets management
			Revolution and growth of ICT	Implement the best practices of ICT, improve the business processes by using the latest technologies	Misuraca, (2006)	Improve the MOMP information availability and transparency within and outside the ministry	Look after the productivity growth needed for economic development	Recently established initial steps towards transformation of traditional services
			Control expenditures	Better services at lower costs, reduce cost for the public sector and citizens	Evans and Yen, (2005)	Reduce the MOMP paperwork and the need for physical offices	Reduce the citizens' expenditures in travel to the physical offices and reduce needs for standing in queues	Give less attention to electronic services
Political	Adopt the instituting arrangements such as policies, procedures and protocols. Change various beliefs at different individual and organisational levels. Use a legal mechanism by government that indicates new rules and laws to ensure compliance. Focus on the governance power system that contains suitable rules	Scott (1995b), Yildiz (2003), Kim, et al.,(2009)	Leadership	Decision makers in the organisation to understand the internal and external impacts of e-government	Ebrahim and Irani, (2005)	Participate in the MOMP e-initiatives and encourage employees to do their best	While leadership was weak in the early stages, since 2006 the leadership has shown adequate knowledge and motivation to implement e-services	E-services turn to be unimportant strategy (less priority) for top management until last few years
			Top management support	Provide the support for forming new rules, procedures, arrangements and actions towards e-government services	Chatterjee, et al., (2002)	Ensure the success of MOMP systems by following a step-by-step development and providing the management with needed understanding and strategic plans	Imbalanced supports throughout e-government implementation progresses	Form a committee to study different rules in regards to the new e-services

	and laws to shape the organisation processes and procedures.		Rules and Regulation	Provide the support for regulatory and legal issues at all levels of government in order to achieve public sector transformation	Soares-Aguiar and Palma-Dos-Ries, (2008)	Legalise the use of the MOMP electronic transaction and obtain a healthy environment for e-government implementation	Slow process in maintaining enough rules and policies that are reflecting the e-services development progress	None
			Org. Structure	Workflow procedures, roles, organisational mechanisms and its related activities conform to the prescriptions of the governmental structure	Ravichandran, et al., (2009)	Implies a very high improvement in the MOMP business process that streamlines citizens' needs and interactions.	Provides a framework for organising comprehensive structure that will reform business processes	Initials steps, planned but not implemented
Social	Replicate and inhere different cultures, social structures; impose authority system and routines of the individual within an organisation that reflects the expectation of the new required process.	Heeks, (2005), Al-Gahtani, et al., (2007)	Digital divide	The ability to access information and transaction services; citizen participation	Belanger and Carter, (2006)	The MOMP undertook the training of citizens about the e-government initiative and distribute its brochures, newspaper and TV/Radio programs	Increases the availability and improves the computer skills and capabilities among Omani students	None
			Citizen empowerment	Empower the citizens by reduce efforts to obtain their needs.	West, (2004)	The MOMP system possesses a multi-level of support for easy citizen access, and delivers services	Simplifies the services and ensures satisfaction to empower students to be familiar with such technologies	Lack of social contact
			Transparency policies	Sharing of information and participate the citizens with new rules and regulation	Carter and Belanger, (2005)	The MOMP provides feedback forms, online polls, and complaint hotlines for citizens to participate in the existing rules and conditions	Implements standardised electronic forms that are used to ensure equal opportunity among students using an automated process	General announcements through the TV, detailed plan for the next year
			Mimetic Org. Culture	Replicate the common activities, action and behaviours of other organisation	Akesson et al., (2008); Robey and Boudreau, (1999)	The MOMP duplicates other international ministries to obtain better practices	MOHE adopts one of the best practices in its core business	The employees neglect to increase their interest in e-government

			Resistance to change	The unwillingness actions from employees to accept the change	Pardo-Dal-Val and Fuentes (2003); Schedler and Scharf (2001)	Rare to find such actions	MOHE implemented a new hierarchy to illuminate this factor	Top management priorities in MOI strongly effect the e-government progress; the hierarchy structure is poorly implemented
			Reduce Bureaucracy	The opportunity to achieve better transparency and accountability and empower citizens	Brickely et al., (1997)	The MOMP implements many technical application to increase citizens' participation and staffs' opinions	Change few administrative rules and implement new technology to obtain citizens' opinions	None
			Awareness	Stimulate and promote e-government services to achieve citizens' participation	Weerakkody and Choudrie, (2005)	Uses multi-channels for announcing various e-government services to ensure citizen participation	Use the TV, radio and newspaper to announce different services	Since it just started, MOI adopted technologies proven by e-government officials
Technological	Form a process deployment of knowledge among individuals and organisations. Improve the standardisation procedure of IT tools, plans and strategy.	King, et al., (1994), Scott, (2005), Kim et al., (2009)	Standardisation	Standard use of different development tools within e-government implementation	Howells, (2008)	MOMP system can integrate with any other public agency applications; implement 34 different applications in this regards	Implement various technologies that have been agreed on by ITA as well as different national and international coding; Form a team from five different government bodies to implement same technologies and coding fields	Produce a strategy to implement different rules in regard to standardisation, not yet started
	Duplicate work plans and structures to improve the individual skills and assimilate the government front-end between various agencies, which obtain user-friendly interface.		Stability	Operate e-government in a stable and secure environment (include privacy and security)	Navarrete, (2010)	Formulate and shape the quality of the MOMP e-government service, produce a testing mechanism to ensure the reliability and stability	Adopt a part of an international solution to maintain stability of the system	It is planned as a next step, but No such network implemented yet; lack of external integration and very huge gap between MOI and other government agencies

			Internal and external integration	Integrates a system across different roles that provides a full and real 'one stop shop' / portal	Belanger and Carter (2004)	The MOMP provides access to citizens and other users from one single integrated gateway; implement few techniques to ensure the capability to integrate with any government agencies	Information sharing and integration among public agencies somewhat lacking	Some of the applications were integrated; no external integration provided
			Degree of Collaboration	Internal and external collaboration combined to develop an integrated system for any specific business industry	Damsgaard and Lyytinen (2001)	Offers a good personal relationship between various managers and employees both internally or externally	A good level of internal collaboration but none externally	Good internal collaboration, but failed to facilitate collaborative relationship and working arrangements with other government agencies
			IT Staff skill	Skills held by IT staff to facilitate the required level of e-government development	Boynton, et al., (1994)	fully aware of the importance of IT staff skills in facilitating successful e-government implementation; training and outsourced are offered in a good level	limited resources in their organisation, and depends mainly on outsourcing	Hampered by the lack of IT staff skills; there is a training strategy and has been implemented in some level, but no outsources strategy

Table 6.6: Summary of the Overall Perspectives of Institutional theory, e-government literature and Government Official's Implementing E-government Services in Oman

6.8 Conclusion

The focus of this chapter was to (a) investigate the various institutional factors related to e-government implementation, (b) analyse empirical findings gathered from three public organisations in Oman, (c) identify existing (i.e. Chapter 3) and newly (i.e. Chapter 5) discovered institutional factors realised from the institutional setting of e-government implementation and the empirical findings and (d) Revise the conceptual model and taxonomy (i.e. Figure 6.3 and Table 6.6) which aimed to map the relationships between e-government implementation and the success structure and process of organisation from perspective of Omani government. The case study led to a number of additional political, social and technological institutional factors facing e-government implementation which were presented in Chapter 3 (Figure 3.2) and revised in Chapter 6 (Figure 6.3). The revised conceptual model presented in Figure 6.6 is a novel contribution in itself as it encapsulates the following:

- The revised conceptual model and taxonomy are one of the first attempts to explore and understand economic, political, social and technological pressures facing governmental efforts in terms of e-government implementation (Figure 6.3 and Table 6.6).
- The use of institutional theory as a basis of investigation into various factors that impede public organisations aims to explore various institutional pillars (coercive, normative and mimetic) and their effects on public organisation processes and structures. The initial conceptual model was influenced by the provision of a strong and theoretically supported frame of reference for studying e-government implementation.
- Chapter six led to the identification of nineteen institutional factors which were presented and discussed separately under the umbrella of four main institutional pressures: economic, political, social and technological. Therefore, the revised conceptual model (Figure 6.3) includes a comprehensive set of pressures that face e-government implementation and may impact its success or failure.
- As outlined in Chapter 5 and Chapter 6, economic, political, social and technological pressures have a considerable impact on the implementation of

e-government projects. Reducing transactional costs, evolution and growth of ICT and protecting expenditures were outlined as the main factors of economic pressures. While leadership, top management support, rules and regulations and organisational structure were seen as political pressures, digital divide, citizen empowerment, transparency policies, resistance to change, organisational culture, reduction of bureaucracy and awareness have all been highlighted as the main social pressures that influence e-government implementations. Finally, there has been an emphasis on standardisation, stability, internal and external integration, degree of collective organisation and IT staff skills as technological pressures.

- Academics and researchers can use this revised conceptual model to understand the various institutional factors facing government implementation, as well as to understand various behaviours of public organisations' employees, such as the mimicking of various ideas, opinions, norms, actions and activities, and most importantly, the relationships between the institutional factors and the influencing of e-government implementation from an organisational perspective.

Finally, this research can be used as a frame of reference for decision-makers in public sector organisations in a developing country context, in order to support and help the implementation of e-government initiatives.

Chapter 7: Conclusion, Contribution, Limitations and Further Research

7.1 Introduction

This research has investigated institutional factors impacting e-government implementation in the Omani public organisations. These institutional factors were divided into four main key pressures (economic, political, social and technological) that were explored on the basis of institutional theory perspective. To properly utilise these institutional factors in public organisations, the research empirically investigated three public organisations in the Omani context. This helped the researcher to understand the fundamental aspects of e-government implementation, as well as various efforts by government institutions to achieve better results from e-government projects. The outcome of this research indicates that to successfully implement and diffuse e-government services, public organisations need to identify, develop a good understanding of, and manage the 19 different factors identified in this study under the umbrella of four institutional pressures. In this regard, this chapter will focus on the following aspects: (a) to summarise the various research tasks carried out in this piece of work, (b) to present various research achievements and contributions and (c) to highlight the limitations, future research directions and recommendations from this research.

In order to achieve the aforementioned, this chapter is structured as follows. The next Section (7.2) determines the research overview. This is followed by outlining the aim and objectives of this thesis in Section (7.3). Section (7.4) identifies the main findings of this thesis. This is followed by the novel contributions of this research in Section (7.5). Next, an analysis and discussion of the research limitations is offered in Section (7.6). This is followed by identifying and discussing future recommendations for the research in Section (7.7). The chapter will then conclude in Section (7.8).

7.2 Research Overview

This research investigates improvements that have been made to facilitate electronic services in three public ministries and their resulting impact (institutional factors) within these organisations using case study-based research. Chapter 1 started by defining the research problem and showing various motivations for conducting this research. This included examining the normative literature that discusses e-government implementation issues from a general perspective, as well as from the perspective of a developing country context, which focused on Oman. In the same chapter, the research clarifies the aim of this study, which is to explore the variations in e-government implementation practices between different public organisations that function in a similar environment and the institutional pressures that contribute to these variations. In order to achieve this aim, specific objectives were defined that focused on developing a conceptual model and taxonomy to help explore e-government implementation. It is proposed that this model and taxonomy will help researchers, practitioners and decision-makers to better understand the various institutional factors that influence e-government implementation.

Chapter 2 involved a comprehensive review of the normative literature on e-government implementation, diffusion and adoption. This chapter examined prior research discussing the various implementation challenges as faced by the government (or public sector organisations) as well as the various factors influencing the use of e-government services. Furthermore, in this chapter the researcher discussed issues related to e-government in general, and synthesised its various benefits and motivations. Therefore, this chapter has dealt with the following topics: (a) taxonomy of e-government definitions, related characteristics and suitable definitions for this research, (b) debating of e-government interaction dimensions, which was discussed and classified into four themes: G2C, G2B, G2G, and G2E, (c) various literatures on stages and phases of development of e-government implementation, (d) analysis of the literature on various benefits and challenges of e-government implementation, explaining the perspectives and mapping various factors that impede e-government implementation, (e) assessment of current research conducted in the public domain in the area of e-government implementation in developing countries, (f) summary of key themes identified in the literature to

highlight key research issues and (g) discussion of various institutional factors and motivators, which can be broadly classified under four main pressures (economic, political, social and technological), that influence e-government implementation and further elaboration.

Chapter 3 aimed to provide a clear theoretical framework for this research. In this chapter, the researcher identified a gap in the literature in relation to the lack of a cohesive theoretical model for understanding different organisational pressures (economic, political, social and technological) in the study of e-government. Therefore, to obtain a better understanding of the area of e-government implementation, the researcher used Institution Theory as the basis for studying institutional pressures influencing e-government implementation. These pressures will be used as a lens to examine various institutional factors related to organisational change in the implementation of e-government.

Institutional Theory, together with the e-government literature (reviewed in Chapter 2) helped develop a conceptual model and taxonomy that encapsulates the different institutional factors influencing e-government implementation within economic, political, social and technological contexts. The conceptual model and taxonomy also allowed the researcher to map various complex issues impacting the implementation of e-government and investigate different factors contributing to the varied levels of progress in e-government in different public organisations. Consequently, the proposed conceptual model and taxonomy was used as a road map for empirical data collection and analysis, and thus helped to establish a comprehensive overview of e-government implementation in the context of Oman. It is proposed that while the conceptual model provides a frame of reference for capturing the main internal and external pressures influencing e-government implementation, the taxonomy provides a comprehensive list of factors that impact e-government implementation. While offering decision-makers guidance for e-government implementation, the conceptual model and taxonomy make a novel contribution at a conceptual level to the e-government literature.

In Chapter 4, the researcher developed a suitable research approach and methodology used for the study. This research used a qualitative research approach to collect data

from three Omani public organisations. This chapter started with a justification of the selected interpretive approach, research methodology, research method and the reason behind the chosen methods. The qualitative data were gathered through interviews and multiple lines of inquiry, in order to test and validate the conceptual model proposed in Chapter 3. The chosen research methodology was then used in Chapter 5 to empirically explore the conceptual model and the key factors identified in the model.

Chapter 5 started by presenting a brief background on the Sultanate of Oman and its national e-government project. This was followed by discussing the findings of the two empirical research phases conducted in the study. The first phase of data collection was conducted with the ITA employees (national e-government organisation members) in order to explore the challenges that might hinder their efforts towards e-government implementation from a national perspective. In phase two, the chapter investigated the specific economic, political, social and technological pressures facing the implementation of e-government in three Omani public ministries, based on the conceptual model presented in chapter 3. The empirical data confirmed the institutional factors identified from the literature in Chapter 3, and contributed several new factors that were vital in the Omani e-government context.

The findings (from Chapters 3 and 5 – the conceptual and empirical perspectives) were synthesised in Chapter 6 to offer a reflective discussion of the economic, political, social and technological pressures and their influence on e-government implementation success.

Finally, in this chapter (Chapter 7) the research conclusions are offered by revisiting the research aim and questions. Furthermore, this chapter will outline the overall theoretical and practical contributions of the study, together with research limitations and future research directions.

7.3 Meeting the Research Aim and Objectives of the Thesis

The aim of this study is to explore how *different public sector organisations under the same government respond to the implementation paradoxes caused by the*

institutional pressures that influence e-government implementation. In pursuing this aim, this research sought to answer the following three research questions: a) the internal and external pressures that influence e-government implementation, b) how different public organisations operating in the same environment respond to these pressures and c) the key challenges that public organisations in developing countries such as Oman need to overcome in order to realise e-government success. To achieve this research aim and answer these specific questions, e-government implementation pressures were categorised into economic, political, social and technological factors through a comprehensive literature review of e-government research (in Chapter 2) and Institutional Theory (in Chapter 3), resulting in the formulation of a conceptual model and taxonomy. Consequently, this model and taxonomy was examined and investigated practically in Chapter 5, and analysed and redefined in Chapter 6. Additionally, by answering these research questions, the researcher has attempted to highlight some of the key institutional factors that can facilitate the success of e-government implementation

The literature clearly showed a lack of prior research exploring the economic, political, social and technological pressures influencing the concept of e-government using theoretical foundations. In this respect, institutional theory offered an appropriate theoretical lens for analysing these influences, and helped to conceptualise a number of factors that impact implementation in terms of the pressure they impose on public sector organisations. Finally, this study highlighted some of the key institutional factors that Omani public sector organisations face when undertaking e-government implementation. By doing so, it is hoped that this study has taken step further in helping to advance the understanding of the implementation and institutionalisation of e-government initiatives, specifically from a developing country perspective.

Furthermore, in order to achieve the aforementioned aim, a number of objectives were defined in Chapter 1 which was accomplished as discussed in the previous chapters and realised as followed:

- **Objective 1:** In chapter 2, a comprehensive review of e-government literature was conducted to highlight the motivations, benefits, challenges and complexities of e-

government implementation, and to classify the key challenges that influence e-government implementation into social, political, economic and technology categories.

- **Objective 2:** Using Institutional Theory, in chapter 3 a conceptual model for formalising the classification of e-government implementation challenges into economic, political, social and technological pressure was developed.
- **Objective 3:** In order to apply the proposed conceptual model for empirical inquiry and explore the influence of the various e-government implementation challenges, an appropriate research methodology was justified and explained in Chapter 4.
- **Objective 4:** Thereafter, using the conceptual model in Chapter 3 as a frame of reference and the methodology defined in Chapter 4, the researcher conducted empirical research using a qualitative case study-based method in a developing country (Oman) to explore the institutional pressures that influence e-government implementation under the economic, political, social and technological themes. The conceptual model was revised in Chapter 6 after analysing the empirical findings in chapter 5.
- **Objective 5:** Finally, using the data collected in Chapter 5 and literature reviewed in Chapters 2 and 3, the research discussed the various institutional pressures influencing e-government implementation within economic, political, social and technological themes and evaluated their impact on comparable public sector organisations in Oman in Chapter 6. In doing so, the research attempted to explain the paradoxes of e-government implementation and proposed recommendations for effectively managing the institutional pressures in an Omani context. Finally, the research sought to outline the theoretical and practical implications for the field of e-government research in the proceeding sections in this chapter (7).

Research Questions: To support the research aim and achieve the objectives of this thesis, a number of research questions were defined in chapter 1 of this thesis. The answers to these research questions are outlined below.

- *What are the key challenges for electronic service implementation in public sector organisations?*

Based on the literature review in Chapters 2 and 3, a number of e-government implementation challenges, from the perspectives of various e-government stakeholders, were identified and discussed by the researcher. Chapter 5 highlighted and analysed different factors that are impeding e-government implementation in practice from public sector employees' perspectives.

- *Why has the progress of e-government been slow in Oman when compared with other countries in the same region, and why has the level of e-government implementation varied between comparable public sector organisations?*

Based on the findings in *research phase one* of Chapter 5, the main reason behind the slow progress of e-government implementation within public sector organisations in Oman can be attributed to three key reasons: a) lack of strategic direction and senior management commitment in public agencies, b) limited understanding of the potential benefits of e-government to both government and citizens, and c) limited project management and ICT skills in public agencies in Oman resulting in heavy reliance on external service providers. The combination of these three reasons has resulted in formal e-government implementation being delayed until 2006; as such e-government in Oman is only five years old. The exception to this rule are organisations such as MOMP that have made better progress due to the effective management of the three key areas mentioned above. While the ITA is responsible for developing the standards and guidelines for implementing and managing e-government projects in Oman, each public organisation needs to follow these ITA policies and guidelines to enhance their e-government initiatives. Therefore, the reasons behind the variances of e-government implementation within Omani public organisations can be further explained as influenced by: a) wrong advice given by middle management (IT managers) to top management regarding e-government and how middle management can support implementation, b) senior management's inability to prioritise e-government as part of their strategy, c) the inconsistent allocation of budgets

and resources, d) relevant public organisation's lack of focus on reengineering their business process and e) fragmented IT systems causing delays in the integration required between the government agency and the ITA systems to facilitate electronic services.

- *What are the key institutional factors that influence e-government implementation in Omani public organisations?*

Based on the discussion in Chapter 6, the three Omani public organisations investigated in this study have shown that economic, political, social and technological pressures represent a number of factors that influence the success of e-government implementation. The empirical results indicated that the three case study organisations managed e-government implementation using different strategies, tools and resources, and that their level of motivation, knowledge and efforts varied. Consequently, and unsurprisingly, the progress of e-government implementation varied between the three organisations. The key institutional factors uncovered (and explained in detail in chapter 6) from the empirical work carried out in each of the four pressure categories are as follows:

- I. **Economic pressure:** Reduce Transaction Cost, Revolution and Growth of ICT and Controlling Expenditure.
- II. **Political pressure:** Leadership, Top Management Support, Rules and Regulation and Organisational Structure.
- III. **Social pressure:** Transparency Policies, Digital Divide, Citizen Empowerment, Organisational Culture, Resistance to Change, Reduce Bureaucratic and Management Awareness.
- IV. **Technological pressure:** Standardisation, Stability, Internal and External Integration, Degree of Collaboration and IT staff skills.

The above-mentioned factors have played a pivotal role in influencing e-government implementation in Omani public organisations. Therefore, managing these factors effectively will help achieve better e-government implementation, resulting in the creation of conditions for better service delivery, citizen satisfaction, integration of public sector data resources and processes improvement for the Omani government.

7.4 Research Findings

This research study relies on the conceptual model developed in Chapter 3 that involved key institutional factors influencing the implementation of e-government within public sector organisations. In order to help the researcher analyse the qualitative data gathered from the interviewees among the Omani public organisations (see Chapter 5), the researcher used Nvivo 8.0 software to manage, control and analyse the large volume of collected data. Therefore, Chapter 6 produced rich insight into various institutional factors that influence the development of e-government implementation in Oman. Lastly, to satisfy the requirements for the thesis in this section, the researcher identifies the overall findings derived from the work presented in this thesis.

Finding 1

There is limited literature in the public domain that studies Omani e-government implementation efforts, as well as the associated challenges and changes that are caused by e-government implementation. This has been confirmed empirically while observing data from MOMP, MOHE and MOI case studies. For instance, some of the empirical findings revealed here show that the internal and external pressures influencing e-government implementation in developing countries are often more complex due to the social and political contexts of these countries. This was made evident by the different levels of implementation success achieved by the three different ministries investigated in this study. While MOHE demonstrated exemplary e-government implementation practices (i.e. in being the first organisation to implement a centralised admission system for the higher education institutes) within the region (GCC countries), other ministries within the same country have failed to mimic these good practices in order to capitalise on their success.

Finding 2

The critical reviews of the published literature on e-government, institution theory and organisational changes directed the researcher to identify twelve institutional factors that are classified under four key pressures (economic, political, social and technological), and influence e-government implementation in public organisations. The twelve institutional factors are: (Economic) Reduce Transaction Cost, Revolution

and Growth of ICT, Controlling Expenditures, (Political) Leadership, Top Management Support, Rules and Regulation, (Social) Transparency Policies, Digital Divide, Citizen Empowerment, (Technological) Standardisation, Stability and Internal and External Integration.

Finding 3

Public organisations in Oman are presumed to exist within the same governmental (political), social and economic environment, but the variations in e-government implementation among the public sector in Oman led the researcher to identify seven institutional factors in addition to the twelve mentioned above that were derived from the normative literature. The additional seven factors are: (Political) Organisational Structure, (Social) Organisational Culture, Resistance to Change, Reduced Bureaucracy, Management Awareness, (Technological) Degree of Collaboration and IT staff skills. While the factors identified from the literature had a significant impact on impeding implementation, the additional factors further compounded the negative pressures influencing e-government.

Finding 4

Many of the identified institutional factors were investigated earlier by many researchers and practitioners. However, the earlier studies considered those factors from the citizens' perspective to understand various challenges facing the progress of e-government adoption in the context of developing countries, whereas there is very limited literature examining those factors from the institutions' perspective, particularly from the viewpoint of a developing country perspective. Therefore, it is crucial to explore and investigate the institutional forces impacting e-government from the organisational side and from the perspective of government employees. This will help organisations to effectively manage and implement e-government initiatives in Oman.

Finding 5

None of the earlier studies have attempted to divide institutional factors affecting e-government implementation into the categories of the four key pressures (economic, political, social and technological) identified in this study using a theoretical basis and drawing upon comprehensive support from the literature. Therefore, this research has attempted to try and fill the gap in the literature and the theoretical gap in e-

government research by proposing a conceptual model which encapsulates several institutional factors that influence implementation of e-government. The Nvivo software was used to highlight the importance of each institutional factor and to maintain a good level of understanding for each institutional factor, by utilising the vast amount of information provided by each interviewee. This helped the researcher to validate the efforts of each case study in terms of e-government implementation.

Finding 6

The presented conceptual model in Chapter 6 was validated through the empirical research conducted in Chapter 5 and revision of the e-government implementation factors. The researcher proposes that while the revised conceptual model can be used as a tool for public organisation decision-makers to identify appropriate strategies for e-government implementation, while helping to maintain future policies and organisational strategies that can be useful for practitioners to comprehend institutional factors that influence e-government implementation in an Omani context.

7.5 Contributions of the Research

This research presents and analyses the empirical data collected from three public organisations (government ministries) in Oman. The three case organisations are organised and controlled by the same government and cabinet of ministers and one official government authority (ITA) responsible for implementing e-government in Oman. However, this research found that the development and implementation of e-government in Omani public organisations varies from one public organisation to another. These variances and the comparisons between the three case studies helped the researcher to develop and refine a unique conceptual model for examining e-government implementation, which acts as a novel contribution to this thesis. As a result, the researcher argues that this model will help us to better understand the implementation of e-government initiatives in Omani public organisations. Exploring the various institutional factors listed in Table 6.6 helped to better understand the practical implications associated with e-government. In this respect, this research study acts as a pilot study for researchers and practitioners in the wider Omani context, as well as developing country contexts. To further delineate the contributions of this research, the following sections divide the contributions into theoretical and practical perspectives.

7.5.1 Contributions to the E-government Research Community

This research makes several theoretical contributions to the state of knowledge; the main theoretical contributions of this research are as follows:

1. Chapters 2 and 3 defined the need for theoretical models to understand the different challenges impeding e-government implementation. In this respect, the researcher proposed and conceptualised various institutional factors that ensure the success of e-government implementation as discussed in Chapter 3. Using institution theory as a lens, the researcher identified the various challenges influencing the implementation of e-government initiatives, which were captured in the conceptual model and taxonomy at the end of Chapter 3. Thereafter, empirically, this model was discussed in Chapter 5 and analysed in Chapter 6. A revised conceptual model and taxonomy is represented at the end of Chapter 6 (Figure 6.1 and Table 6.6). From an e-government perspective, these research efforts offer the e-government research community a theoretical and empirical roadmap to study e-government implementation.
2. The research proposed (a) four key institutional pressures (economic, political, social and technological pressures) influencing e-government implementation in public organisations and (b) identified 19 different institutional factors under these pressures that influence the implementation of e-government. It is evident that understanding and managing these pressures are critical for governments' adoption of e-government services. The empirical findings illustrate that Omani case organisations faced these pressures while adopting e-government implementation. Therefore, the conceptual model proposed in Chapter 6 (after empirical validation) provides a novel contribution by helping to contextualise the institutional factors and identifying their influence on Omani public organisations. In this respect, both the conceptual and empirical research conducted in this study presents directions for e-government researchers to perform similar studies in other developing country contexts.
3. Since there is no universal model for implementing the concept of e-government, there is a need for in-depth views and detailed studies on the implementation of successful e-government examples, such as MOMP and

MOHE, to speed up and improve the implementation of e-government among organisations in the same or a similar environment. Furthermore, the need to study failed examples or slowly progressing organisations such as MOI is essential to avoid citizens' dissatisfaction. In this respect, the research has explored successful and unsuccessful examples of e-government implementation and created the foundation for researchers to focus on developing relevant models for studying e-government implementation. This is particularly significant, as the models and theories for studying e-government adoption from a citizen perspective are particularly well established, while the implementation side suffers from a lack of theoretical models.

4. In Chapter 2, this study introduced various challenges of e-government, which are relevant mostly to citizens' perspectives; however, at this stage it was essential for the reader to be aware of the various barriers related to e-government implementation. In Chapter 3, and based on using Institution Theory literature, the researcher concentrated on a more in-depth assessment of e-government implementation, which resulted in the identification of 12 institutional factors relevant for understanding organisational change behaviours. After investigating the three Omani public organisations, the researcher has a more thoughtful perception of these institutional factors influencing e-government implementation. The model revised in Chapter 6 has 19 proposed different institutional factors, and the researcher posits that these factors are the main mechanism that ensures successful e-government.
5. In order to develop success within e-government implementation, public sector organisations need to pursue these 19 institutional factors, and laxity in development of these institutional factors would result in either slower progress or failure of e-government. In this respect, this research offers valuable insights and lessons for the research community that is planning similar studies.
6. In this research, the researcher extended prior research on institutional theory and applied this to investigate and analyse the context of e-government in Oman. While the reviewed literature on e-government (see Chapter 2)

identified a number of challenges that impact e-government implementation, the institutional theory literature enabled the researcher to classify institutional factors into a taxonomy consisting of four main pressures, namely economic, political, social and technological factors, as depicted in Table (6.6). This taxonomy presents the research community with a list of factors that can be further explored in contexts beyond Oman.

7.5.2 Contributions to Practitioners

From a practical perspective, while MOMP and MOHE are highly ranked based on the quality of e-enabled public services, MOI have failed to maintain equal success in the area of electronic services. Thus, MOI are currently focused on cataloguing and providing information and basic services. In this context, the findings confirm that the success of e-government in Oman will largely depend on how well the public organisations capture and manage the 19 institutional factors detailed in Table (6.6). Therefore, the practical implications from this study for policy-makers and e-government project implementers in Oman can be summarised as follows:

1. The low level of capability shown by public organisations in Oman to manage the 19 institutional factors during implementation leads them to seek external support from multinational service providers resulting in high-cost investments for e-government. The only evidence from MOMP indicated that the majority of these institutional factors were managed appropriately, which directs the authors to argue that MOMP has reached a better level of e-government implementation success. On the other hand, evidence from MOI indicates that this ministry has ignored these institutional factors and their management. This directs the authors to assume that MOI has used a high risk strategy that has resulted in high costs, but poor results. It was evident that in order to address these issues, organisations need to employ experienced practitioners and skilled people who can leverage these 19 institutional factors.
2. The use of institution theory as a basis to investigate the institutional factors that influence e-government implementation helps researchers to understand how the various actions and norms presented by e-government effect public organisations' processes and structures. Thus, the comparative findings from

these three case studies were influenced by the strong theoretical frame of reference offered by institutional theory for studying the impact of institutional pressures on the process and structure of the Omani public organisations.

3. The institutional factors identified in the three cases in this study offer practitioners and policy-makers an idea of the potential challenges that they will face when implementing e-government initiatives in other Omani public agencies.
4. According to many researchers such as Pardo (2000) and Moon (2001), a failure to predict and overcome the various challenges facing the implementation of e-government projects will result in other complexities that will cost governments a great deal of financial and other resources. Therefore, the use of empirical research in organisations such as MOMP and MOI to identify the various complexities will help to improve the understanding of e-government implementation, resulting in better guidance for other public organisations in Oman and the improvement of their e-government implementation efforts in the future.
5. The challenges outlined in Chapter 2 and the institutional factors examined in Chapters 3, 5 and 6 indicate that the e-government objectives are not easy to realise in practice, and that a tighter focus is needed to develop strategies that will minimise the negative impact of these challenges, factors and related issues. Thereby, appropriately addressing these institutional factors will result in an improvement of e-government implementation and diffusion efforts in Oman.
6. Well-coordinated efforts are needed on the part of various government agencies' leaders and policy-makers, as well as implementers, to substantiate that a good level of standardisation, stability and integration among the used technologies are provided to ensure the quality of public sector online services. Therefore, for the successful implementation of the e-government project (eOman), technological factors have to be considered for providing a better quality of service while the political, economic and social support should be in place to support them.

7. In the context of e-government, institutional theory (through political pressures) relates to forming new rules, procedures, arrangements and actions, which are required to develop a successful e-government system. Therefore, the rules and regulations that have been adopted by MOMP influenced the behaviours of leaders and decision-makers in public organisations in Oman. Henriksen and Damsgaard (2007) noted that there is always a strong need for political consideration when a new strategy comes into place, such as the forming of new rules and adopting of new technologies. However, new technologies applied and implemented in MOMP, with regards to e-government implementation, produced a number of opportunities for MOMP to produce and organise these rules and regulations. On the other hand, MOI needs to mimic similar rules and regulations in order to achieve a new shape and success level of electronic services that will best facilitate their service delivery.

8. In the context of change, the key role played by external stakeholders (citizens and private sector) is to speed up the development of e-government implementation by understanding citizens' needs and implementing the required changes. This will encourage public sector organisations to ensure improvements in key areas such as trust by providing the appropriate level of reliability and usability within electronic services. Such pressure will accelerate government strategy towards adopting the required change in public sector services. While citizens contribute to the organisational change process by participating in the activities of government organisations through feedback and opinion polls, private sector stakeholders help government to change the required processes and structure by addressing their business concerns in regards to attaining public service efficiency. On the other hand, internal stakeholder (government agencies and employees) can help educate and influence external stakeholders' (such as citizens and businesses) intentions towards using various public e-services, which can play a role in decreasing any digital divide that may prevail. Such practices improve public enthusiasm for participation in policies and increases publicity and scalability, which in turn influences the procedures required to obtain the needed change. In

addition, attaining these changes within public sector organisations will perceive autonomy, increase technical and financial efficiency and improve regional authority. This will provide coordination between public agencies to provide efficiency, increase formalisation of the processes and structure and help maintain the implementation of appropriate rules and policies in public sector organisations.

7.6 Limitation of this Research

A number of important limitations need to be considered in this study.

1. The most noteworthy limitation of the study lies in the fact that this research studied three public organisations that are working on delivering different kinds of services, whereas various types of services require different rules and policies due to the variance in different citizens' needs and concerns. Although understanding these citizens' needs require more in-depth studies and reviews, this research relied only on the interviewees conducted, and various publications by the three case organisations. Furthermore, each of these case organisations vary in structure, size, number of employees and nature of work, which affects their needs and progress in terms of e-government implementation.
2. The number of interviewees was limited, especially in MOHE and MOI. The researcher observed that this was due to the lack of people that are directly involved in e-government implementation and have the authority to participate in the study. While this study specifically relied on qualitative research and information provided by the interviewees as the primary data for this study, further senior and operational level participation in the study would have provided further depth to the findings. This was particularly important as some middle managers and operational level staff contributed less and provided limited critical opinions to the study, due to their fear of being reprimanded.
3. This study has adopted a qualitative research method, which relied primarily on the data collected from face-to-face interviews. However, using detailed

semi-structured interviews was a highly appropriate strategy for obtaining rich contextual data associated with human and organisational change. This is because all interviewees were generally more willing to participate in this type of research, as they are more interested in drawing a good picture of their organisation. Therefore, further research could possibly examine the effectiveness of e-government within the Omani citizenry. This would provide a balanced and comprehensive perspective, from both citizen and government perspectives, of the potential influence of the 19 different institutional factors on e-government implementation.

4. The review of relevant theories in chapter 3 proved that Institutional Theory offered the most appropriate conceptual framework for studying how organisational change is implemented and established. Also, the theory was previously applied by various scholars, such as Kim et al. (2009), Silva and Figueroa (2002) and Currie and Guah (2007) to study the implementation of electronic services in the public sector. However, one limitation that this author found in the theory, when applied to study change, revolves around social pressures. For instance, it is argued that issues that are linked to socio-cultural pressures such as the influence of family and religion on the organisational environment are factors that are difficult to conceptualise and evaluate using institutional theory. In particular, the board of directors or senior managers in some organisations in Oman (including those investigated) are appointed due to family and/or religious background. In this respect, the motivations of these individuals to contribute to, or oppose change may be rooted in their values and beliefs that are influenced by family and/or religion. Although, such influences are outside the scope of this study, this is an important area that requires further study. It was found that the literature on Institutional theory did not expand on these themes and therefore other organisational psychology theories may provide the conceptual context for such studies.

7.7 Relevance of the Research Findings to Other Developing Countries

The focus of the thesis was to understand the key institutional pressures influencing public organisations and how they impact implementation success. As found in the three case studies (MOHP, MOHE and MOI), while the level of impact of the four pressures (economic, political, social and technical) and the organisational response to these will vary between organisation to organisation and country to country, it is argued that the four main pressures and associated factors identified (which were initially derived from the literature) will relate to all public sector organisations implementing e-government irrespective of whether they are in the developed or developing world. Indeed, the literature (Crotty, 1998; Davidson and Chismar, 2007) identifies that social pressures (i.e Digital Divide, Resistance to Change, Organisational Culture) posed the biggest obstacles for e-government related change in developed countries. In this respect, the author observed that in the context of Oman, political pressure (leadership, top management support, rules and regulations, organisation structure) was the main obstacle for the three case studies and it is argued that this will be the same in other developing countries, particularly in the gulf region. However, it is fair to state that although these pressures will be found to influence e-government-led change in the developed world, the literature indicates that the impact of these pressures will vary from the developing world (see for e.g. Chen *et al.*, 2006b; Gupta *et al.*, 2008; Butler, 2003). Likewise the approach taken by public sector organisations to manage these pressures may certainly differ in the developed world.

7.8 Recommendation and Future Research

This study used analysis of qualitative in-depth interviews in order to collect important data related to Omani e-government projects, and various institutional factors that are related to economic, political, social and technological pressures from the three Omani public organisations. Although detailed empirical research validated the proposed model in the study, the researcher argues that there remain some limitations which indicate that this research can be further developed. The following points act as recommendations for future research.

1. A multiple case study is acknowledged as a good research design (Yin, 2009). The research data was collected using in-depth interviews with key employees responsible for e-government, official government documentation and observations. However, to increase the ability to generalise and utilise the empirical findings in the wider Omani context, further research must be planned to pursue research in other ministries, in order to maintain the needed level of data triangulation.
2. The face-to-face interviews were made in Muscat, the capital city of Oman; therefore, this research could be extended to ascertain the opinions of a wider section of employees of local government agencies from different cities in Oman. Therefore, future research could also target other cities in Oman to examine the willingness of other ministries that provide traditional (manual services) to shift to e-government services.
3. Since this research has focused on the views of government employees, this research is not specifically designed to evaluate issues related to citizens' perspectives on the adoption of and value added by e-government. Although detailed semi-structured interviews were conducted with different levels of management in three public government organisations responsible for e-government implementation in Oman, this represents governments' perspectives and views on e-government implementation. Government employees are generally more willing to participate in this type of research, because they are more interested in drawing a picture of their official business. Therefore, further research could possibly examine the effectiveness of e-government within the Omani citizenry. Thus, future steps in regard to this research will be to offer and compare more comprehensive citizens' perspectives in order to explore various factors, challenges, issues and the complexities of e-government implementation in the country.
4. Since this research study was conducted to investigate institutional factors of e-government implementation, the researcher observed that there are multiple internal and external pressures that directly or indirectly influenced e-

government implementation in the three Omani public organisations. A recommendation for future study may be the detailed identification and analysis of internal and external factors that are related to e-government adoption, rather than implementation, and the interrelationship of these factors that influence e-government adoption among various stakeholders.

7.9 Thesis Conclusion and Reflection

This study extended effort to conceptualise the pressures influencing e-government implementation from an Institutional Theory perspective. Through this research, the researcher attempted to highlight some of the key factors that can enable the e-government implementation process to succeed. The literature showed that there is a lack of prior research which explored the economic, political, social and technological factors influencing e-government conceptually. In this respect, the use of institution theory offered a theoretical lens for analysing these influences and helped to conceptualise a number of institutional factors that impact implementation in terms of the pressure they impose on public sector organisations. As a conceptual research, this study has therefore highlighted some of the key challenges that public sector organisations face when undertaking e-government implementations. By doing so, it is hoped that this study has taken a step further by helping to advance the understanding of the implementation and institutionalisation of e-government initiatives. From a practical perspective, the proposed conceptual model and taxonomy of factors will provide e-government implementers and decision makers a frame of reference for better understanding e-government implementation.

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Appendix A: Acronyms

'e'	Electronic
ASPA	American Standard Public Administration
CEO	Chief Executive Officer
CGN	Convergent Government Network
CIA	Central Intelligence Agency
COT	Cognitive Theory
CRM	Customer Relationship Management
CT	Cultural Theory
<i>DGPD</i>	Directorate General of Planning and Development
DIAD	Director of Information and Awareness Division
DIE-SD	Director of Infrastructure and e-Services Division
DOS	Digital Oman Strategy
DRC	Disaster Recovery Center
EET	Evolutionary Economics Theory
eLaw	Electronic transactions Law
e-Oman	Electronic Oman (National Omani e-government Project)
eOMAN-A	Electronic Oman Awareness
G2B	Government to Business
G2C	Government to Citizen
G2E	Government to Employees
G2G	Government to Government

GCC	Gulf Corporation Council
HEAC	Higher Education Admission Centre
HIT	Historical Institutionalism Theory
ICT	Information and Communication Technologies
IS	Information System
ISC	Innovation and Support Center
<i>ISD</i>	International standards Development
ISMF	Information Security Management Framework
<i>ISO</i>	International Standards organisation
ISP	Internet Services Provider
<i>ISS</i>	International Security Standards
IT	Information Technology
ITA	Information Technology Authority
<i>MOCS</i>	Ministry of Civil Services
MOFA	Ministry of Foreign Affairs
MOHE	Ministry of Higher Education
MOI	Ministry of Interior
MOMP	Ministry of Manpower
MONE	Ministry of National Economy
NePG	National e-Payment Gateway
NITTA	National IT training and Awareness
NMR	National Manpower Registration
ODR	Online Dispute Resolution
RCT	Rational Choice Theory
ROP	Royal Oman Police
SCM	Supply Chain Management

SET	Social Exchange Theory
SMS	Short Message Service
STDF	Standard Framework
TAM	Technology Acceptance Model
TCST	Transaction Cost Economics Theory
TRA	Telecommunication Regulatory Authority
UBAR	Unofficial Battlefield 2 Awards and Ranks Guide (e-Government Services Portal)
UN	United Nation
UNDPEPA	United Nations Division for Public Economics and Public Administration
WWW	World Wide Web

Appendix B: Interview Agenda

This thesis contains two sections of interview questionnaire that intended to address the following purposes:

Section A: Interviews questions with the ITA senior management. These interviews offered an initial picture of the main factors that influence e-government implementation in Oman (Omani Organisational Background).

Section B: Interviews questions that represent the main source of collecting qualitative data from three public organisations in Oman as well this questions will draw the real compares and contrasts between different cases used. Further this question are Open-ended questions were intended to develop the author understanding of the Omani visions, strategies and projects of e-government implementation.

Section A: Interviews questions with the ITA senior management

The purpose of this interview questions is to investigate issues related to the field of e-government and its practices in Sultanate of Oman. The data collected from the questions will be used for research purposes only.

Date:

Name:

Position:

Organisation:

Telephone:

Part A: Questions intend to ask in the Officials meeting in Government Sector. These questions help the researcher to understand the current state of e-government implementation in Oman.

E-government Plans and Strategy

1. The e-government strategy was established on May 7th 2003; when is it going to be implemented? And if already started in your opinion, in what stage is it now?

2. What are the different phases planned for implementation of the Omani e-government strategy according to vision 2020?

3. Where do you see Oman and e-government after three years from today?

4. E-government advantages are so obvious, what are the key challenges for e-government implementations in Oman?

5. What is your assessment of e-government in Oman compared with other Gulf countries? Are we moving slowly / Mediatory / rapidly?

6. Is there any law(s) (legal framework) established in Oman to govern online activities?

7. Why is it that some government agencies are more active than others in the adoption and dissemination of e-government in Oman?

8. What options are planned for Omani citizens to encourage them to use e-government? And how are you planning to deal with lack of awareness of e-government initiatives among Omani citizens?

9. When can Oman establish Omani e-payment portals for different services? And how will you deal with trust issues?

10. Do you think the level of current education and training in universities/colleges equips standards adequately to interact with e-government services when they graduate?

11. What other challenges are expected to be faced in implementing e-government in the next three years?

12. What is your opinion about Information exchange/Integration between government agencies?

Part B: This section is to be asked and completed by the researcher within the interview time. This will help the researcher to understand the current state of various factors in terms of e-government implementation and with regards to citizens' interactions with various e-government initiatives.

[Please indicate the answer by circling one of the following columns in the right hand side of the table below]

		5. strongly agree	<input type="checkbox"/>				Not
		4. Agree	<input type="checkbox"/>				Kn-
		3. Natural	<input type="checkbox"/>				ow
		2. Disagree	<input type="checkbox"/>				
		1. strongly disagree	<input type="checkbox"/>				
		[5]	[4]	[3]	[2]	[1]	[0]
01	Accessibility of e-government services for all citizens	[5]	[4]	[3]	[2]	[1]	[0]
02	Availability of e-government services	[5]	[4]	[3]	[2]	[1]	[0]
03	Operational efficiency of e-government services	[5]	[4]	[3]	[2]	[1]	[0]
04	Citizen confidence with using e-government services	[5]	[4]	[3]	[2]	[1]	[0]
05	System security in relation to online public services	[5]	[4]	[3]	[2]	[1]	[0]

Appendix B

06	E-government services offered currently protects citizen privacy adequately	[5]	[4]	[3]	[2]	[1]	[0]
07	Omani citizen have a high level of trust in e-government services that are offered	[5]	[4]	[3]	[2]	[1]	[0]
08	Omani public agencies have a highly competent internal IT workforce	[5]	[4]	[3]	[2]	[1]	[0]
09	There is a high level of information exchange/sharing between government agencies in Oman	[5]	[4]	[3]	[2]	[1]	[0]

Note:

1. Is there any comments would you like to add below or in a separate sheet and attach it with the answers?

Section B: Interviews questions, main source of collecting qualitative data from three public organisations in Oman

Interview Questions – In English Language

The study as a whole is designed to investigate the implementation and impacts of e-government technologies, systems and processes in Omani Public Sector. The current phase of the study aims to explore e-government initiatives and related experiences in the Omani context to understand the main reasons behind the level of differences in implementing e-government initiatives among Omani public sector. It is anticipated that the materials generated via the exercise will provide a solid foundation for the examination of e-government activities in Oman, and assist in efforts to work towards the development of a conceptual model and a new taxonomy. Key issues to be addressed in the scoping interviews are set out below.

Organisation name:	
Interviewee name:	
Interviewee Position:	
Department:	
Telephone:	
Email:	

General Interview Information (Current state of the organisation)

a) When did e-government implementation/initiatives start?

b) How many government agencies are connected to your organisation? And how many employees work in the IT department?

c) Is these initiatives driven by technical team / top management / ITA?

d) Does your organisation have a clear plan and strategy towards e-government?

e) Do your organizational top management has a clear vision and realize the significant of e-government project?

f) What are the stages/phases that you followed to fully implement e-government in your organisation? And in which stage your organisation is?

g) Are there any eServices offered/ started? If yes, can you describe it?

h) What are the key challenges that influence e-government initiatives in your organisation?

i) How many citizen queries does your local authority receive on daily basis?

j) What barriers do you think you faced while adopting e-government? Literature indicates that due to e-government/eServices adoption by public organisations faced several barriers as illustrated in the following table. Please highlight which barriers your organisation faced?

Barriers	Less Important	Moderate	More Important
E-government requires higher levels of investment			
Resistance to change			
Politics and political impact (e.g. who controls the processes)			
No time for training employees on integration technologies			
Extra cost for redesign and change business structure, processes			
Lack of employees with e-government program skills			
Cultural issues			
High complexity in understanding the processes and systems in order to redesign and integrate them			
Complexity of business processes			
Proliferation and confusion among the integration technologies			
Reluctant to share data			

Economic Pressures

1. Describe the potential benefit of the product/e-service to the development of the national economy? (Transaction cost)

2. Describe the impact of the product/e-service on the fulfilment of business processes and the operating environment? (Revolution and growth of ICT)

3. How do your e-government objectives reflect on the national economy objectives? (Revolution and growth of ICT)

4. Define how does the e-government Impact on Protect expenditures? (Protect expenditures)

5. In your opinion, how does your e-government benefits the National Development of economic?

6. Would you consider economic issues as a key challenge in developing the e-government implementation in your organisation?

Political Pressure

1. Is e-government implementation a priority for the leadership? And if so, could you explain the role that played by leadership in your organisation toward e-government implementation?

2. How would you illustrate the support and commitment of the top management in your organisation towards the e-government implementation?

3. How would you describe the current legislative process?

4. Is there any online services regulation and legislation in your organization? (e.g. Digital Authorizations, E-signature, Cyber-crime, Data protection, and Copyrights).

5. Describe the organisational structure of your local authority? And explain if there was any change before and after e-government project?

6. Can you explain the collaboration between the e-government organisation and other government organizations?

7. Is there any respected coordination institution that motivates and coordinates the e-government development process?

Social Pressure

1. Are there standards curricula in ICT? If yes, so are these curricula in ICT focused on business/citizen needs? (DD)

2. When you develop any project such as e-government, are there any training facilities for such project for the public? If yes, please describe training available? (Citizen empowerment)

3. Is there any available strategy in explaining the benefit of each e-service for the different level of users? If yes, could you describe it?

4. How would you describe the communication strategy with the public, especially citizens? Is it complicated?

Technical Pressure

1. Would you consider the following as factors that would influence the development of the e-government in your organization?

S.	Target Audience	Yes	No	Don't Know
1	Access Internet in cities			
2	Access Internet in rural areas			
3	Lack of government wide intranet (central and local level connectivity)			
4	Lack of LANs in government offices			
S.	Infrastructure	Yes	No	Don't Know
1	Inefficient technology legacy system in place (e.g. phone, fax computers, databases, and existing networks)			
2	Internet access providers (Omantel)			
3	Unreliable internet connections			
4	Adequate bandwidth (Speed of connections)			
5	Adequate computing and processing speed			

6	Reliable power supply			
7	Adequate network security			
S.	Technical Support	Yes	No	Don't Know
1	Availability of technical support for design			
2	Availability of technical support for implementation			
3	Availability of technical support for operations			
4	Other (Specify):			

2. Is there any partnership with industry have been developed? If yes specify:

S.	Industry partnerships	Yes	No	Don't Know
1	Technical consultants			
2	Computers and networking equipment			
3	Telecommunications			
4	Database management and hosting			
5	Servers			
6	Security, firewalls, intrusion detection			
7	Software			
8	Other (Specify)			

3. Do government agencies have their own IT units that relate to the e-government project organisation?

4. Are there standards for database and application development? (relevant documentation)

5. If you have come across the need for integration of your systems, can you please describe what the process towards integration was?

6. Is there any ICT infrastructure development plans? If yes, do they comprise:

S.	ICT infrastructure plan	Yes	No	Don't Know
1	Universal access to Internet			
2	Backbone network development			
3	Wireless technology			
4	Broadband technology			
5	Open standards			
6	Other (Specify):			

7. Is there any on-going program to track usage trends in citizens' usage of e-government services and to ensure that adequate ICT infrastructures exists support future projected usage trends?

8. Is the local industry of ICT strong enough? And is it reliable?

9. Are any of the below areas of e-government development in your organization being outsourced?

S.	Outsourced e-government program	Yes	No	Don't Know
1	Network architecture and online service delivery development			
2	Website development			
3	Human resources training			
4	Ongoing operations and technical support			
5	Transactions and collections			
6	Other (Specify):			

10. Is internal ICT technical support easily available?

11. How would you describe the external technical support?

12. Describe what best characterises the provision of online government services?

S.		
1	No services online	
2	Only information available online	
3	One way interaction possible	
4	Two-way interaction possible	
5	Complete transaction possible within single agency	
6	Complete transaction across multiple agencies	

13. Does the e-government organization have set standards for the national e-government portal usability (look and feel) to the following:

S.	Portals Standards	Yes	No	Don't Know
1	Interface			
2	User feedback			
3	Usage metrics			
4	Indexing of Information			
5	Other (Specify):			

Closing Questions (Interviewee opinions)

14. Are there any specific areas that you would like to be included and/or excluded in this research instrument?

15. What would you have done differently?

16. What do you think is the most interesting part of the interview?

**End of the Interview
Questions**

Interview Questions - In Arabic Language

أسئلة المقابلات باللغة العربية

تهدف الدراسة ككل للتحقيق في تنفيذ تكنولوجيات الحكومة الإلكترونية ، والآثار التي تقوم بها مثل هذه التقنيات في المجتمعات وبالأخص المجتمع العماني ونظم العمليات وتأثيرها في القطاع العام العماني. المرحلة الحالية من هذه الدراسة تهدف إلى استكشاف مبادرات الحكومة الإلكترونية والخبرات ذات الصلة في السياق العماني لفهم الأسباب الرئيسية وراء مستوى الاختلافات في تنفيذ مبادرات الحكومة الإلكترونية بين مؤسسات القطاع العام العماني. ومن المتوقع أن المواد المتوقعة استخدامها في هذه الدراسة وايضا طريق الممارسة باستخدام مقابلة الافراد المسؤولين والمطبقين والمتبنين للخدمات الالكترونية بين مختلف مستويات الادارة في القطاع العام الحكومي سيوفر أساسا متينا لدراسة أنشطة الحكومة الإلكترونية في سلطنة عمان ، والمساعدة في الجهود الرامية إلى العمل من أجل وضع نموذج مفاهيمي وتصنيف لاهمية الانشطة والعمليات الجديدة المستخدمة لتطوير تقديم الخدمة في القطاع العام العماني. ومن المتوقع أن تعالج القضايا الرئيسية الخاصة بتطبيقات الحكومة الالكترونية في المقابلات الشخصية ومن خلال الاسئلة لمبينة أدناه.

أسم المؤسسة:	
اسم الضيف:	
:الوظيفة الحالية	
:الدائرة	
:رقم الهاتف	
:العنوان الالكتروني	

أ متى بدأت الحكومة الالكترونية؟

ب كم عدد المؤسسات الحكومية المرتبطة بانظمة المؤسسه الخاصه بكم؟ وكم عدد موظفي الدائرة؟

ج من القائد لمبادرات الحكومة الالكترونية هل هو (الفريق الفني/الادارة العليا بالمؤسسة/الهيئة العامة لتقنية المعلومات)؟

د هل يوجد خطة او استراتيجيه واضحه لدى مؤسستكم لتطبيق الحكومة الالكترونية؟

هـ هل المسؤولين على دراية كافية باهمية وفائدة تطبيقات الحكومة الالكترونية؟

و ما هي المراحل المنفذة من خطة تقديم الخدمات الالكترونية؟ وما هي المراحل المخططة بالنسبة لتنفيذ تقديم الخدمات الالكترونية؟

ز هل بالامكان شرح الخدمات المقدمة بالنسبة للحكومة الالكترونية؟

ح ما هي المعوقات الاساسية لمبادرات الحكومة الالكترونية؟

ط على الصعيد اليومي, كم عدد المعاملات المنجزة بشكل الكتروني؟

ي من خلال تبني عملية خدمات الحكومة الالكترونية, ما هي الصعوبات التي تم مواجهتها؟ من خلال البحوث تم التوصل الى عدد من هذه الصعوبات والتي من شأنها تعوق من التقدم في مراحل الحكومة الالكترونية الجدول ادناه يقوم بسررد بعض من هذه المعوقات, الرجاء توضيح اية هذه المعوقات كان لها الاثر في عملية تطبيق الحكومة الالكترونية؟

المعوقات	اقل اهمية	ذات اهمية متوسطة	اكثر اهمية
الحكومة الإلكترونية تتطلب مستويات أعلى من الاستثمار			
مقاومة التغيير (الرغبة لدى بعض الإدارة لعدم التغيير)			
السياسة والتأثير السياسي (على سبيل المثال القيادة المسيطرة على العمليات)			
عدم وجود الوقت الكافي لتدريب الموظفين على تقنيات التكامل			
تكلفة اضافية لإعادة تصميم وتغيير هيكل الأعمال والعمليات			
عدم وجود موظفين من ذوي المهارات ببرنامج الحكومة الإلكترونية			
القضايا الثقافية			
مشاريع الحكومة الالكترونية عالية التعقيد لذا يصعب تفهمها من أجل إعادة تصميمها ودمجها مع باقي الانظمة			
تعقيد العمليات الداخلية بها والتحكم بادارة البيانات بها			
الانتشار والارتباك بين التكنولوجيات المختلفة الخاصة بالتكامل بين هذه الانظمة			
التتردد في تبادل البيانات بين بقية مؤسسات الحكومة			

2- الضغوط الاقتصادية

أ صف الفائدة الحقيقية من خلال تطبيق خدمات الحكومة الالكترونية للاقتصاد الوطني؟

ب ما هو التأثير الناتج عن تطبيق الحكومة الالكترونية على دورة العمل وبيئة التشغيل؟

ج من خلال عمالك, كيف ترى ان اهداف تطبيق الحكومة الالكترونية تعكس اهداف تنمية الاقتصاد الوطني؟

د عرف من خلال خبرتك العملية, كيف ان تنفيذ مختلف تطبيقات الحكومة الالكترونية تؤثر وتحافظ على التقليل من تكلفة التشغيل؟

هـ من خلال نظرتك كمنفذ لهذه الخدمات، كيف يفيد تطبيقات الحكومة الالكترونية الاقتصاد الوطني؟ وهل يعتبر الموارد الاقتصادية كاساس يعوق من تقدم تنفيذ مختلف تطبيقات الحكومة الالكترونية؟

الضغوط السياسية

-2

أ هل تعتبر تطبيق سياسات التحول للخدمات الالكترونية من الاولويات الرئيسية للقيادة بالمؤسسة؟ واذا كان الامر كذلك، هل بالامكان ايضاح الدور الذي تقوم به القيادة بالمؤسسة نحو تطبيق الحكومة الالكترونية؟

ب كيف تصور الدعم والموافقات من قبل القيادات العليا بالاتجاه نحو تطبيقات الحكومة الالكترونية؟

ج كيف نستطيع وصف عملية التشريع الحالية لاستخدام الانترنت؟

د هل هناك تشريع واضح وتنظيم لعملية استخدام الخدمات الالكترونية في مؤسستك؟ (على سبيل المثال , التصاريح الالكترونية, التوقيع الالكتروني , حماية المعلومات والبيانات, وحقوق النشر والتوزيع)

هـ صف الهيكل التنظيمي للادارة الداخلية بمؤسستك باختصار؟ وهل هناك اي اختلاف من قبل او بعد تطبيق مشروع الخدمات الالكترونية؟

و هل بالامكان وصف التعاون وتبادل المعلومات فيما بين المؤسسات المطبقة لمشاريع الحكومة الالكترونية؟

ح هل هناك أي مؤسسة تقوم بالتنسيق والتحفيز على عملية تطوير الحكومة الإلكترونية, صف؟

3- الضغوط الاجتماعية

أ هل هناك معايير منهجية في تكنولوجيا المعلومات والاتصالات؟ وإذا كان الجواب بنعم , هل هذه المناهج يرتبطه بحاجة الفرد والمجتمع الخاصة بالمستقبل التجاري للمواطن؟

ب عند تطبيق أي مشروع مثل الحكومة الإلكترونية ، هل هناك أي مرافق للتدريب لمثل هذا المشاريع الوطنية؟ وإذا كان الجواب نعم ، يرجى وصف نوعية التدريب المتاح؟

ج هل هناك أي استراتيجيات متاحة في شرح الاستفادة من كل الخدمات الإلكترونية بمؤسستك وفي مختلف مستويات المستخدمين؟ وإذا كان الجواب نعم ، هل يمكن أن تصف تلك الوسائل؟

د كيف تصف استراتيجيات التواصل مع الجمهور ، لا سيما المواطنين؟ وهل هي معقدة؟

4- الضغوط التكنولوجية

أ- هل تعتقد في ما يلي من العوامل ان من شأنها أن تؤثر في تطور تطبيقات الحكومة الإلكترونية في المؤسسة الخاصة بك؟

S.	الجمهور المستهدف	نعم	لا	لا اعرف
1	الوصول الى الإنترنت في المدن والمناطق المختلفة بالسلطنة			
2	الوصول إلى الإنترنت في المناطق الريفية بالسلطنة			
3	عدم وجود شبكة حكومية واسعة (المركزية والمحلية على مستوى الاتصال)			
4	عدم وجود شبكات محلية في المكاتب الحكومية			
S.	البنية التحتية	نعم	لا	لا اعرف
1	عدم كفاءة النظام القديم التكنولوجي في مكان (على سبيل المثال الهاتف ، الفاكس أجهزة الكمبيوتر وقواعد البيانات والشبكات القائمة)			
2	موفري الوصول إلى الإنترنت (عمانتل)			
3	وصلات الانترنت غير موثوقة			
4	كفاءة عرض النطاق الترددي (سرعة اتصالات)			

Appendix B

5	كافية الحاسبات وسرعة معالجة			
6	عدم الوثوق بامدادات الطاقة			
7	شبكة كافية للأمن			
S.	الدعم التقني	نعم	لا	لا اعرف
1	توافر الدعم الفني لتصميم			
2	توافر الدعم التقني لتنفيذ			
3	توافر الدعم الفني لعمليات			
4	أخرى (حدد):			

ب- هل وضعت هناك أية شراكة بين القطاع العام و شركات صناعة التقنية بالسلطنة ؟ إذا كان الجواب نعم حدد

S.	الشراكات الصناعية	نعم	لا	لا اعرف
1	للاستشارات الفنية			
2	أجهزة كمبيوتر ومعدات الشبكات			
3	الاتصالات السلكية واللاسلكية			
4	إدارة قواعد البيانات ومواقع الانترنت			
5	أجهزة الخادمت			
6	برامج ومعدات الأمن ، الجدران النارية ، كشف التسلل			
7	البرمجيات			
8	أخرى (حدد)			

ج- هل هناك دوائر تقنية المعلومات خاصة بوحدات الحكومة وتتعلق بتطبيق مشروع الحكومة الإلكترونية؟

د- هل هناك معايير ثابتة ومتعارف عليها لقاعدة البيانات وتطوير التطبيقات لجميع الوحدات الحكومية؟ (الوثائق ذات الصلة)

هـ- إذا كنت شاركت في مرحلة التكامل بين قواعد البيانات الخاصة بمؤسستك في تطبيق مشروع الحكومة الالكترونية الرجاء وصف عملية التكامل؟

و- هل هناك أي خطط تطوير البنية التحتية لتكنولوجيا المعلومات والاتصالات؟ إذا كان الجواب نعم ، فهل تشمل :

S.	خطة البنية التحتية لتكنولوجيا تقنية المعلومات	نعم	لا	لا اعرف
1	القدرة من قبل الجميع الحصول على الإنترنت			
2	تكوين وانشاء العمود الفقري لشبكة التنمية			
3	التكنولوجيا اللاسلكية			
4	تكنولوجيا النطاق العريض (Broadband)			
5	المعايير المفتوحة			
6	أخرى (حدد) :			

ز- هل هناك أي برنامج جاري انشائها لتعقب اتجاهات الاستخدام في استخدام المواطنين لخدمات الحكومة الالكترونية وتكنولوجيا المعلومات والاتصالات لضمان وجود البنى التحتية الكافية لدعم الاتجاهات المستقبلية المتوقعة للاستخدام؟

ح- هل صناعة تكنولوجيا المعلومات والاتصالات المحلية كافية وقوية؟ وهل يمكن الاعتماد عليه؟

ك- هل يجري تحويل وانشاء أي من مجالات او برامج تنمية الحكومة الإلكترونية والموضحة ادناه الى شركات او مؤسسات خارج المؤسسة الخاتمة بك؟

S.	الاستعانة بمصادر خارجية لبرنامج الحكومة الإلكترونية	نعم	لا	لا اعرف
1	الشبكة الهندسية المتخصصة بتطوير وتقديم الخدمات عبر الإنترنت			
2	الموقع الخاص بتقديم الخدمات			
3	تدريب الموارد البشرية			
4	استمرار العمليات والدعم التقني			
5	المعاملات وتجميع البيانات			
6	أخرى (حدد):			

ل- هل الدعم الداخلي التقني لتكنولوجيا المعلومات والاتصالات متاحة وبسهولة؟

م- كيف تصفون الدعم الخارجي التقنية؟

ن- اوصف مما يلي أفضل ما يميز توفير الخدمات الحكومية عبر الإنترنت في مؤسستك؟

S.	
1	أي نوع من الخدمات عبر الإنترنت
2	المعلومات المتاحة على الإنترنت فقط
3	اوحادي التفاعل
4	ثنائي التفاعل
5	إتمام العملية الممكنة داخل وكالة واحدة
6	إتمام العملية عبر وكالات متعددة

س- هل وضعت مؤسستك خدمات الحكومة الإلكترونية حسب معايير لقابلية استخدامها بالبوابة الوطنية (الشكل والمظهر) على ما يلي :

S.	معايير البوابة الوطنية	نعم	لا	لا اعرف
1	واجهة			
2	تعليقات المستخدمين			
3	قياسات الاستخدام			
4	فهرسة المعلومات			
5	أخرى (حدد) :			

4- أسئلة ختامية (آراء الضيف)

أ- هل هناك أي مجال من المجالات المحددة التي ترغب في إدراجها أو استبعادها من هذا البحث؟

ب- ما هو الشيء الذي قمتم به بشكل مختلف؟

ج- في رأيك ما هو الجزء الأكثر إثارة للاهتمام في هذه المقابلة؟

انتهت الاسئلة
