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The Roles of Intermediaries in the Adoption of E-Government Services in Saudi Arabia

A thesis submitted for the degree of Doctor of Philosophy

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ABSTRACT

Electronic government (e-government) diffusion and adoption is a global topic that concerns many developed and developing countries worldwide. However, global efforts to provide e-services to different stakeholders (citizens) differ from one country to another in terms of readiness, challenges, adoptions and diffusions. These differences are due to the variation of technological, political, cultural, economic and social differences. A number of studies on e-government have focused on the technological, economic and political aspects of implementation, while others have examined factors that influence citizens' adoption of e-government services, such as availability, accessibility, usability, awareness and trust. This study will focus on the influence of intermediary roles played by third parties in helping diffusion and adoption of e-government. This study will use a qualitative research approach to reflect the roles of intermediaries on e-government realms in the Kingdom of Saudi Arabia. The study will aim to address the research question, "What are the roles of an intermediary in adoption and diffusion of e-government services?" In addition, the study undertaken for this thesis will examine the most salient factors that determine adoption of e-government services in Saudi Arabia and validate the UTAUT model in the Saudi Arabian context, particularly focusing on intermediary organisations. This aspect of the study will use a quantitative approach using a survey to understand citizens' perspectives regarding intermediary and e-government adoption. The outcome of this study will create a conceptual model for studying e-government adoption in Saudi Arabia. The theoretical and practical implications of the findings will be discussed, offering recommendations for future research directions.

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ABBREVIATIONS

IS	Information System
IT	Information Technology
E-government	Electronic Government
E-commerce	Electronic Commerce
E-services	Electronic Service
E-intermediary	Electronic Intermediary
E-office	Electronic Office
G to G	Government to Government
G to B	Government to Business
G to E	Government to Employee
G to C	Government to Citizen
ICT	Information System Technology
TRA	Theory of Reasoned Action
TAM	Technology of Acceptance Model
TPB	Theory of Planned Behaviour
C-TAM-TPM	Model Combined between TAM and TPM
MM	Motivational Model
DOI	Diffusion of Innovation
MPCU	Model of PC Utilisation
SCT	Social Cognitive Theory
UTAUT	Unified Theory of Acceptance and use of Technology
PE	Performance Expectancy
EE	Effort Expectancy
SI	Social Influence
TI	Trust in Internet
TOI	Trust of Intermediary
FC	Facilitating Conditions
BI	Behavioural Intention
PC	Personal Computer
VOS	Value of simplicity
E-readiness	Electronic readiness

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[B1] Al-Sobhi, F. & Weerakkody (2011) The Roles of Intermediaries in E-government Diffusion and Adoption: A Case Study of Madinah City in Saudi Arabia, in Shareef, M.A., Kumar, V., Kumar, U. and Dwivedi, Y.K. (Eds), Stakeholder Adoption of E- Government Services: Driving and Resisting Factors, IGI Global Hershey publication. PA, Pp. 103-115.

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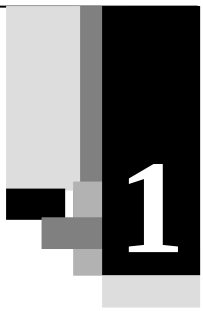


Chapter 1: Introduction

1.1 Background of Study

Over the years, Information Communication Technology (ICT) has been considered significant in modernising and transforming most organisational functions and operational practices (Beynon-Davies, 2005). Literature indicates that ICT has acted as an intermediary in facilitating effective interaction among a wide range of stakeholders (Grimsley et al., 2007; Zhang et al., 2005). In terms of electronic services provisioning, ICT has played a significant role in the private and public sectors (Beynon-Davies and Williams, 2003). However, much of the research that has been published pays close attention to functionality issues (Millard, 2007; Layne and Lee, 2001) and the technical aspects (Chen, 2002; Safai-Amin, 2000) of ICT in an electronic service delivery context. Comparatively little attention has been paid to issues pertaining to usability, accessibility and the availability of public electronic services from a citizen's perspective (Carter and Belanger, 2005; Reddick, 2005; Becker and Nowak, 2003). The emergence of the need for electronic service delivery in the public sector has been influenced by the need to serve citizens with better, more efficient and transparent means of interacting with government using web-based systems (Fang, 2002; Brannen, 2001). When the Internet emerged in the mid 1990s (Lee *et al.*, 2005), it was merely utilised for information provisioning and sharing, as well as educational purposes. Nevertheless, today it has become part of day-to-day operational activities for many people (Lofstedt, 2005; Villaplana, 2003). From a

commercial perspective, the Internet has become an important business medium for organisations attempting to expand their market portfolio through web presence (Richards and Jones, 2006). On the other hand, Pan et al. (2006) asserts that non-profit organisations, such as governments, can increase the availability of their information, and improve their security, services and local citizens' satisfaction through the Internet.

Most governments in developed and developing countries have established web portals to offer electronic services to their citizens (Chen *et al.*, 2006; Lee *et al.*, 2005). Among others, Saudi Arabia is one such developing country that has cultivated its web presence since the late 1990s (Kostopoulos, 2003; Al-Tawil, 2001). Literature indicates that with the help of these web portals, government organisations have increased their productivity (Norris and Moon, 2005), gain a competitive advantage (Deakins and Dillon, 2002; Whitson and Davis, 2001) and reduce the gap between the different government agencies and local authorities (Eyob, 2004; Silcock, 2001). However, there are considerable variations in the adoption and implementation of e-government services within several government organisations at a national and international level (Heeks, 2002; Moon, 2002). These differences can be attributed to individual organisational requirements, circumstances, readiness, as well as structure, size and cultures (Kamal *et al.*, 2008; Lam, 2005; Van Dam *et al.*, 2005). Although developing countries in the Gulf Cooperation Council (GCC) region have invested heavily in e-government implementation (Al-Shafi and Weerakkody, 2008; Al-Shafi, 2007), several researchers argue that these implementations have resulted in varying results and delayed outcomes (Al-Shafi and Weerakkody, 2007; Kurunananda and Weerakkody, 2006).

The internet and different information communication technologies (ICTs) are important gateways for e-government systems, and they play a key role in services delivery. Similar to e-commerce, they provide a direct connection between government organisations and citizens. Nevertheless, the introduction of such online services has emerged as an intimidation tool that threatens to bypass the role of traditional intermediaries as gateway service providers (Gellman, 1996). By doing so, transactional costs will be reduced and consequently will limit the role of the intermediaries in delivering public services (Janssen and Klievink, 2009). As a result, some have argued that traditional intermediaries will eventually perish and will no longer act as a mediator between governments agencies and citizens resulting disintermediation (Benjamin and Wigand, 1995; Gellman, 1996; Malone at.al 1987).

In developing countries, limited ICT infrastructure, lack of internet access, skills needed for the use of e-services (digital divide), and low trust in technology (Heeks, 2003; Sahay and Avgerou , 2002) have resulted in low diffusion and adoption of e-government services. In the new developments of multi-channel services delivery, traditional intermediaries have become a central issue for developing countries in order to leverage the e-government relationship with their stakeholders, government, citizens and business (Al-Sobhi *et al.*, 2009; IT-Arabia, 2007). The intermediary provides a trusted information channel gateway and also provides help and support (Bailey and Bakos, 1997; Sarker *et al.*, 1996), which may have an impact on citizens' usage of e-government services (Al-Sobhi *et al.*, 2010). As the aim of the e-government systems is to deliver e-services for different stakeholders, intermediaries have been widely used for years and they have the skills and knowledge of critical government factors that are necessary for successful government-to-citizen (G2C) e-government relationships (Alsobhi et at, 2011; Janssen and Klievink, 2009). Therefore, an intermediary organisation can provide citizens with a useful access gateway, supporting, e-government services, especially if the traditional intermediary is consolidated alongside information technology (Bailey and Bakos, 1997). Unlike top e-government countries, developing countries have limited resources with regard to e-

government readiness which negatively affect their e-government development position. This needs additional attention from decision makers to bridge the lack of technical resources and skills necessary for new e-government services.

1.2 Motivation for the Research

While a number of studies offered by researchers in developed countries (Carter and Weerakkody 2008; Carter and Belanger 2005; Warkentin *et al.*, 2002) promised to determine factors that encouraged citizens to use e-government services, relatively few researches have been offered in developing countries such as the Arabian peninsula (AlAwadhi and Morris 2008; Al-Fakhri *et al.*, 2008). Among these countries is Saudi Arabia. Saudi Arabia is a rich developing country in the Middle Eastern region that has started implementing national e-government projects since 1998 (Sahraoui et al., 2006; Abanumy et al., 2005). According to UN report, in the context of e-government readiness, Saudi Arabia significantly transformed its electronic service delivery from 2005 to 2008 (UN, 2008). The Saudi Arabian e-government efforts are largely focused on big cities like Riyadh, Mecca and Madinah. However, an in-depth analysis of these cities illustrates that they have merely managed 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 citizen (user aspects) (Hamner and Al-Qahtani, 2009; Al-Fakhri et al., 2008; Al-Shehry et al., 2006; Abanumy et al., 2005). According to a recent report by Internet World Usage and Population Statistics (IWS, 2008), the total population in Saudi Arabia is around 28,146,657 and about 6,380,000 Saudi citizens have Internet access. Despite a dramatic increase in the number of Internet users from about 200,000 in 2000 up to 6,380,000, a growth of about 3,090%,(ibid), there are still delays in utilizing and adopting e-government services (Al-Sobhi at al., 2010; Hamner and Al-Qahtani, 2009).

As shown in the literature, one of the most significant current discussions in relation to the challenges and issues facing the e-government programme in Saudi Arabia is the lack of sufficient e-government studies (Al-Fakhri *et al.,* 2008; Dwivedi and Weerakkody, 2007). In particular, exploring the role of intermediaries in the e-government adoption is vitally important. In Saudi Arabia context, there are many public service offices that provide government services to citizens. This number was around 22,759 in 2001, and they are distributed in different cities in Saudi Arabia (Al-Otaibi, 2012, MOCI, 2001). These traditional offices are private physical premises that are authorised by Saudi government and have existed for over two decades. The main purpose of these physical offices is to help citizens achieve greater access to public services across the country without needing citizens to visit government departments. Some of these offices are now been used as intermediaries by the Madinah government to facilitate e-government services to citizens. While the Madinah region in Saudi Arabia has established intermediaries under their local e-government strategy, there are still several regions that have yet to adapt the concept of intermediaries. Therefore, understanding factors that influence citizens to adopt new e-government services promoted by the role of intermediaries has research value and implications for strategy makers and researchers. Thus, the contribution of this thesis is to develop a framework to examine the factors influencing e-government adoption, and the roles of intermediaries (third parties). By doing so, this study aims to reduce the gap between 'e-government readiness', 'reality' and citizens' ability to adopt new e-services. This study looks at what value is added by an intermediary to citizens and government as a possible subset of the facilitating conditions of Saudi Arabia's e-government infrastructure. In addition, a considerable amount of literature has been published which investigates factors that significantly contribute to citizens' intention to use e-government from the internet applications' point of view and different ICTs (Al-Shafi and Weerakkody, 2009; Alawadhi and Morris,2008; Carter and Weerakkody 2008; Carter and Belanger 2005; Warkentin *et al.*, 2002). The issue of adoption between citizens and intermediaries has rarely been mentioned in the literature regarding e-government diffusion and adoption. Furthermore, the citizens' adoption of e-government in

many developing countries, including Saudi Arabia, has not progressed as expected (Hamner and Al-Qahtani, 2009; Al-Fakhri *et al.*, 2008). Thus, there is a need to understand to what extent an intermediary can minimize challenges that hinder e-government adoption. Consequently, these issues encouraged this study to generate questions such as; what are the challenges facing the take-up of e-government services in Saudi Arabia, and what are the roles that an intermediary could add to promote accelerated e-government development?

In order to undertake an exploratory study, this research focuses on Madinah, a city in Saudi Arabia. Madinah launched e-government services in 2003, and at present is considered to be the second most important cultural city in Saudi Arabia. The rationale for selecting Madinah for this research is influenced by the fact that, in terms of national progress, Madinah is the only city that has implemented the "e-intermediary" concept under their local e-government initiatives. As Madinah City initiatives adopted an intermediary in 2003, this study believes that the findings of this research will support local governments and other countries that have similar e-government situations to develop strategic plans in order to assist the diffusion and adoption of e-government services.

In order to explore the e-government efforts in Madinah City, and to answer the aforementioned research questions, this study uses a mixed methods research approach. This involves two stages of data collection; a qualitative and quantitative ones. The first stage comprises of three sets of in-depth interviews with two board directors of a large government department and a senior member from the Board of Directors of the Steering Committee of the e-government in Madinah City. This is followed by involving three sets of in-depth interviews with three intermediary managers at Madinah City. This aimed at determining the potential roles of intermediaries in an e-government setting. This is considerably important for the study as there is a lack of published study and official information about e-government implementation and intermediary. On the other hand, the second stage of this research focuses on surveying the Saudi citizens to

examine the factors influencing their adoption, and the role of intermediary in diffusion of e-government services.

The aforementioned arguments highlight the importance of intermediaries in playing an important role in e-government adoption. Therefore, this study aims to address the research question: "*How intermediaries can influence citizens' adoption and use of e-government services?"* This study is a first attempt to investigate the role of intermediaries in e-government adoption in the context of Saudi Arabia. Through conceptualisation of the role of intermediary organisations within an e-government adoption model using Unified Theory of Acceptance and use of Technology (UTAUT) as a theoretical base; this study will help in providing a better understanding of citizens' adoption of e-government services.

The research presented in this study will make the following contributions to knowledge in the field of e-government adoption and diffusion:

1- In e-government research, many studies have investigated different factors that may influence e-government adoption. However, no studies have been conducted that explore the roles of intermediaries in e-government adoption. For example, many researchers have investigated the relationship between trust in technology (internet) and intention to use e-government services where the intermediaries were considered as mediums that can improve trust to potential adopters.

2- This study offers a conceptual model that can be used to analyse the factors affecting adoption and the roles of intermediaries in facilitating e-government services.

3- In e-services, intermediaries were found to develop trust between services providers (companies) and services requesters (customers). This study proposes that intermediaries will have such an impact on the development

of trust in e-government adoption and establishes their role in the e-government adoption process.

1.3 Aim and Objectives

E-government is relatively new and still growing in the Kingdom of Saudi Arabia; it faces many challenges related to services providers (government) and services requester (citizens). This research seeks to examine the role of intermediaries in facilitating e-government adoption. By doing so, this thesis seeks to identify factors affecting adoption, and understand how these factors affect citizens' behaviour towards usage of e-government services. This thesis will review the prior research conducted on e-government adoption and intermediaries in order to develop a good understanding of the factors influencing citizens' attitudes towards the adoption of various e-government initiatives. In addition, this research seeks to explore the roles of intermediaries in an e-government context with particular emphasis on their impact on citizens' adoption of e-government services in the Saudi Arabian context.

According to the above aim, the objectives of this research are as follows:

- Review literature to identify the factors affecting citizens' adoption e-government services.

- Review literature on e-services (e.g. e-commerce, e-business, e-marketing) contexts, exploring the role of intermediaries on adoption of new technologies at individual level (citizens).

- Review and synthesis of the literature on the roles of intermediaries in e-government adoption

- Identify the relevant theoretical frameworks and models exploited in previous studies to examine citizens' perceptions towards technology and e-government adoption.

- Conduct initial qualitative studies to explore and verify the role of intermediaries in facilitating e-government adoption in Saudi Arabia.

- Develop a theoretical model and research hypotheses to study e-government adoption in Saudi Arabia and the role of intermediaries in facilitating adoption.

- Empirically validate the research model and hypotheses by conducting a quantitative questionnaire survey in Saudi Arabia.

- The theoretical and practical implications of the findings will be discussed, offering recommendations and future research directions.

The above aim and objectives will enable this research to investigate the role of intermediaries (or e-offices) in facilitating e-government services in Madinah City in Saudi Arabia. This approach allows the this study to gain a good understanding of e-government service delivery practices in a real-life context and offers a perspective on the challenges facing the progress of e-government in Madinah City in Saudi Arabia as well as at a more broader level across other developing countries.

1.4 Research Method

Data was collected from multiple sources at various time points during 2009-2010. First, in order to understand the current status of e-government implementation in Saudi Arabia and the concept of intermediaries in e-government services, an interview approach was chosen, including interviews

with a key government official in Saudi Arabia. In addition, further semi-structured interviews were conducted with the managers responsible for running intermediaries. This is aimed at maintaining further understanding of intermediaries' roles in e-government adoption. However, it is important to point out that these interviews and observations were only designed to understand the current reality of e-government development in Saudi Arabia and the concept of intermediaries in e-government diffusion and adoption. The qualitative part of this thesis was influenced by the fact that very few studies were found in the e-government literature that explains how intermediaries can help the dissemination of e-government services. Therefore, the first and second sets of interviews represent the perspectives of government officials and intermediary managers respectively towards the challenges facing e-government development, and the roles of intermediaries in such complex relationships. Consequently, these interviews then helped in the build up of the conceptual models which later maps the intermediaries' roles in e-government adoption.

In order to understand factors which affect citizens' adoption of e-government services in the Saudi Arabia context and the roles of intermediary in furthering e-government adoption, a model based on UTAUT was proposed and tested using a questionnaire survey. Using the adapted UTAUT model citizens were asked to express their attitude towards adoption and usage of e-government services, through the internet and via intermediary organisations.

1.5 Thesis Outline

As shown in figure 1.1, this thesis is divided into four main areas, following the methodology suggested by Phillips and Pugh (2000). These are as follows: (a) background theory; (b) focal theory; (c) data theory and (d) novel contribution. This study first reviews previous literature to identify the main research problem (chapter 2). Chapter (3) is the focal theory which aims to developing a conceptual model. Data theory is based on developing a suitable strategy for this research,

selecting an appropriate method for data collection and developing a research approach as identified in chapter 4. Chapter 5 and 6 respectively cover the data theory for this research. Finally, chapter 7 and 8 outline the novel contribution of this study. A summary of the chapters of this thesis is as follows:

- **Chapter One:** (introduction to the research area) gives the background of the research area, followed by details of the motivation for starting this thesis. This chapter also highlights the aim and objectives of this study; and offers the structure of this thesis.

- C**hapter Two:** outlines emergence of e-government services as global perspectives, highlighting the purpose of implementing e-government services. Then, the literature perspectives on e-government (fundamentals of e-government), definitions, benefits, challenges and the roles of intermediaries in e-services context are presented.

- **Chapter Three:** this chapter presents the research model adopted to understand further the role of intermediaries in e-government adoption. In section 3.2, the researcher presents the research theoretical background adapted. Next, the research model and the hypotheses of the Saudi Arabia e-government model are formulated.

- **Chapter Four:** this chapter highlights the methodology design and strategy that help to meet the objectives of this thesis.

- **Chapter Five:** as this research aims to understanding the factors that influence the adoption of e-government in Saudi Arabia, this chapter provides the background details about Saudi Arabia, such as location population and economic state. The chapter also provides details of information communication technology and the e-government status in Saudi Arabia. Furthermore, this chapter illustrates the background to e-

government in Saudi Arabia (initiatives, benefits and challenges), and the roles of intermediaries in the Saudi e-government initiative. Factors influencing implementation of e-government, roles of intermediaries on electronic environment, and factors that encouraged citizens to adopt new e-government are presented in this chapter.

- **Chapter Six:** this chapter provides the research findings. It reports that the result was conducted from a quantitative approach (questionnaire). It presents a comprehensive examination of the factors that impact the intuition of Saudi citizens towards e-government services.

- **Chapter Seven:** this chapter shows the key finding in this thesis, and it discusses the data from the questionnaire survey approach. The main purpose of this chapter is to revise the model that was proposed earlier in chapter 3. Data have been collected and presented in different ways, as was discussed in the research methodology chapter (chapter 4). Therefore, the novel contribution of this thesis provides the decision-maker with a good vision when implementing intermediaries under the e-government strategy. The model is then discussed to understand the factors influencing Saudi citizens.

- **Chapter Eight:** finally, this thesis concludes by summarising the key findings and outlining some recommendations for further research. This chapter also aims to provide conclusions driven from the literature review and from findings obtained in this thesis. The most important factors influencing citizens to adopt e-government services at Saudi Arabia context are provided. All chapters are summarised in Figure 1.1.

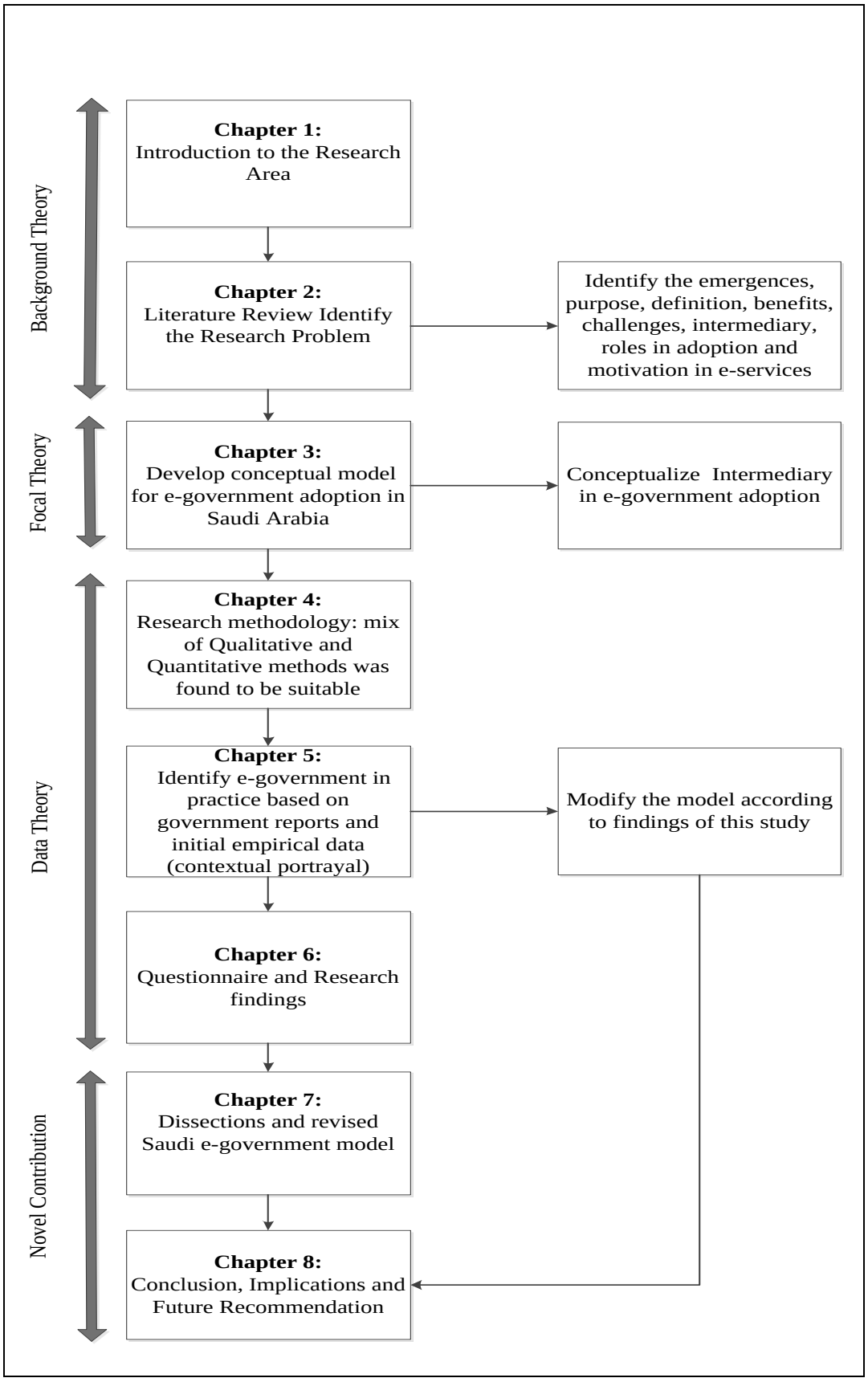
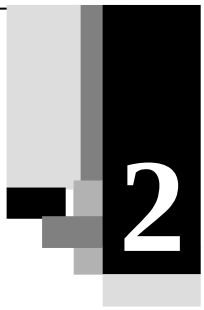


Figure 1.1 Thesis Outline

1.6 Summary and Conclusion

This chapter has provided the background of this study and details of the motivation for conducting the research as well as the aim and objectives of the thesis. Also, it has presented a brief overview of the research methodology applied in this study in order to meet the research aim and objectives. Although e-government adoption has been investigated by many researchers worldwide, there is a gap in research to investigate intermediaries' roles in e-government adoption. Therefore, this study will contribute significantly to the literature on adoption and diffusion, for intermediaries as well as e-government at large. It will help to fill the research gap between intermediary roles and adoption of e-government, particularly in a Saudi Arabian context. The next chapter provides the literature review of the elements mentioned above.



Chapter 2: Literature Review

Summary

This chapter reviews the literature concerning the usefulness of using an e-government system. In essence, this chapter presents: (a) a brief review of emergence of e-government services from a global perspectives; (b) the purpose of establish e-government systems; (c) different e-government definitions; (d) analysis of e-government characteristics;(e) a discussion of benefits gained from e-government systems; (f) a discussions of challenges that may face e-government implementation, diffusion and adoption; (g) the roles of intermediaries in e-services; (h) a review of different motivations of the establish intermediaries in the e-services context; and (i) a list examples of intermediaries worldwide.

2.1 Introduction

This section is a primary chapter and an important part of the research, providing an in-depth review of previous and current literature about the research topic and focus. This chapter highlights the importance of the factors that drive the adoption of e-government services at individuals' level and illustrates the literature perspective on e-government. Therefore, this chapter begins by highlighting the emergence of e-government services with a global perspective in section 2.2. In section 2.3, this study gives the background of the purpose of e-government. Thereafter, section 2.4 reviews the definitions of e-government and different initiatives that highlight the success and failure of e-government applications worldwide. After that, e-government characteristics are given in section 2.5, with the benefits of e-government discussed in section 2.6. In section 2.7, challenges of e-government are reviewed. Next, in section 2.8, different intermediaries are defined. The motivation of intermediaries in the e-services context is reviewed in section 2.9, and in section 2.10 the global intermediary initiatives are listed and reviewed. Finally, this chapter concludes with a summary of the key finding of the literature review in section 2.11.

2.2 Emergence of E-Government: A Global Perspective

The term globalisation may have many different meanings to different people depending on its context as there is no common definition that can specify globalisation. Nevertheless, the dimensions of globalisation and its impact can be divided into four important aspects: economic, political, cultural and environmental aspect (Wiseman, 1998). The new citizenship driven by globalization aims to leverage participating individuals in life activities, interconnection and the ability to combine globally through ICTs. Carnoy (1999 p 14) associated globalisation with the technology revolution "globalisation together

with new information technology and innovation processes they foment are driving a revolution in the organisation of work, the production of goods and services, relations among nations, and even local culture. No community is immune from the effects of these revolutions. It is changing the very fundamentals of human relations and social life." Despite globalisation this change would be enabled through ICTs (Walsham, 2001). Lect and Grosseck (2005) added that, in terms of global expansion, ICTs have made significant impact in many countries over the world; for instance, the USA, Europe and South East Asia. Examples of these impacts include the radical shift of how government organisations are structured, changes in economic movement, and changing ways of communication as a whole. ICTs change the way of doing things from a distance. They have played a significant role in impacting social and economic development (Hanna, 2003). Hanna also suggested that ICTs enable the comprehensive development that affects all sectors of state. Similarly, Selwyn (2004) added that ICTs can empower individuals' participation, raise social communication and enable government services. Additionally, however, he argued that if citizens were excluded from the benefits of ICTs they lose the opportunities that ICTs can add to societies.

Recently, many governments across the world have recognized the importance of ICTs for the delivery of services to businesses, citizens and even for communication between government agencies. Moreover, the most significant local and global initiatives of public administration were dependent on the adequate application of ICTs and amongst these initiatives e-government implementations were the most successful. Therefore, there are 189 countries that are listed in the 2008 report published by United States. Researchers such as Stoltzfus (2005) state that e-government is a global phenomenon that many countries over the world are aiming to establish. The reason behind this is external global pressures (international recognition of the state being an e-government state), and internal citizens-centric administration. Therefore, e-government establishment is no longer optional or an added burden for countries but an essential core activity to promote better governance (Gupta and Jana, 2003;

Mulgan and Albury, 2003). As such, the most important aspects of the new e-government is that it enhance the relationship between governments and their stakeholders, particularly citizens.

2.3 Purpose of E-Government

Until recently governments have managed public sector organisations using a 'closed-door' administration policy, but today this role has been changed and now governments around the world are more citizens-focused and transparent (Alshawi, and Alalwany,2009; Mosse and Whitley, 2008; Wang et al., 2005). Bakry (2004) and Al-Shafi and Weerakkody (2010) state that e-government can be understood from a citizens' satisfaction perspective. The purpose of establishing e-government is so that government can grasp citizens' expectations and meet their demands, through the provision of good quality services by a control system such as e-government (Gupta and Jana, 2003; Snellen, 2002). This will help citizens to utilise any technologies, such as e-government, which will lead citizens to achieve the features of accountability of public service providers (Wong and Welch, 2004; West, 2004; Chadwick and May, 2003; Snellen, 2002). Top government organisations control public services' demand by using the latest technologies. Thus, information technology is commonplace in every country for managing the huge amount of citizens' information and data that is needed to expand countries' economic development by focusing on citizens' needs and requirements (Bakry, 2004).

Various studies have stated different purposes for establishing e-government systems (Holliday and Yep, 2005; Tolbert and Mossberger, 2003; Fang, 2002). Each of these studies highlights the needs for e-government systems to leverage the efficiency and effectiveness of government agencies, in order to deliver a superior quality of government services and information to society in the information age. As such, the public are able to expand their accessibility to government services and information, via new ICTs. Some researchers highlight

the main purpose of e-government systems as the improvement of transparency to public and its potential to enhance social democracy (Welch et al., 2005; Wong and Welch, 2004; West, 2004; Chadwick and May, 2003; Snellen, 2002). The new government reforms are the way to increase citizens' participation in public services and citizen empowerment to organise internal affairs in accordance with ethical principles for both government and citizens (Basu, 2004; Chadwick and May, 2003). E-government, in this case, helps in increasing the responsiveness to citizens' needs and requirements (Chen et al., 2006; Moon, 2003). It also enhances the communications between the government and citizens through improved active involvement of the citizens (Chen et al., 2006). Thus, e-government has the potential to build a good relationship between government bodies, citizens and business by making the interactions easier, smoother and more efficient (Lee et al., 2005). Globally, various organisations are taking steps to provide one-stop services to citizens and businesses, and many of them have succeeded in this duty.

2.4 E-Government Definitions

There is a need to be explicit about exactly what is meant by the phrase *electronic government*. Electronic government is a term frequently used in the literature, but to date there is no consensus about its meaning. Electronic government is a relatively new concept that emerged in 90s (Caldow, 1999) and is commonly referred to as *e-government* or *e-Gov*. It is generally understood to mean public services with electronic support. The combination between the letter "e" and the government indicates that the government utilizes the power of "e" to execute public services electronically. Several researchers have offered different definitions of the e-government phenomena. However, these definitions differ depending on e-government interests and perspectives, as well as on the community's goals and values (Lowery, 2003). For example, the term "e-government systems" is used by Heeks (2006) to refer to information systems that are socio-technical: combining the technical and the human. It is used by

government to improve internal relationships for the government itself and to transform services externally to society, businesses and citizens. Such roles of e-government systems are supported by the world bank's definitions as they define e-government as "use by government agencies of information technologies, such as Wide Area Networks, the Internet, and mobile computing, which have the ability to transform relations with citizens, businesses and other arms of government" (www.worldbank.org, 2003).

Carter and Belanger (2005) offer a far more interesting and promising definition for e-government. They define it as "the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies" (Carter and Belanger, 2005, p. 5). Similarly, although with more focus, Fang (2002) defines e-government as "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" (Fang, 2002 p4). As the different definition perspectives suggest, the internet is one of the most popular channels that could potently handle and support the delivery of public services (Koga, 2003). Nowadays, governments worldwide are aiming to utilize the power of the internet application and different ICTs to leverage effectiveness and efficiencies delivering public services for citizens and other stakeholders. The key idea of e-government, as the definition mentioned above, is how to use different technologies and applications, particularly internet applications, as tools to enhance relationship between government on one hand and the public (citizens and business) on the other.

However, some scholars in the e-government realm define e-government from an innovations point of view where technology is one part of e-government systems' innovations, where different successful innovations need to be implemented in order to increase outcomes efficiency and effectiveness of government services.

This statement emerges from Mulgan and Albury (2003) where the definition clearly indicates "effective government and public services depend on successful innovation to develop better ways of meeting needs, solving problems and using recourses and technologies". This definition shows that governments have to use resources other than technology to position themselves well in e-government implementation. Also, it illustrates that e-government does not have to be concerned only with ICTs but has to consider other ways required for delivering services, such as a physical premises and offline infrastructure. Figure 2.1 illustrates this argument where the concept of intermediary is shown as helping to bridge the technology gap between citizens and public agencies.

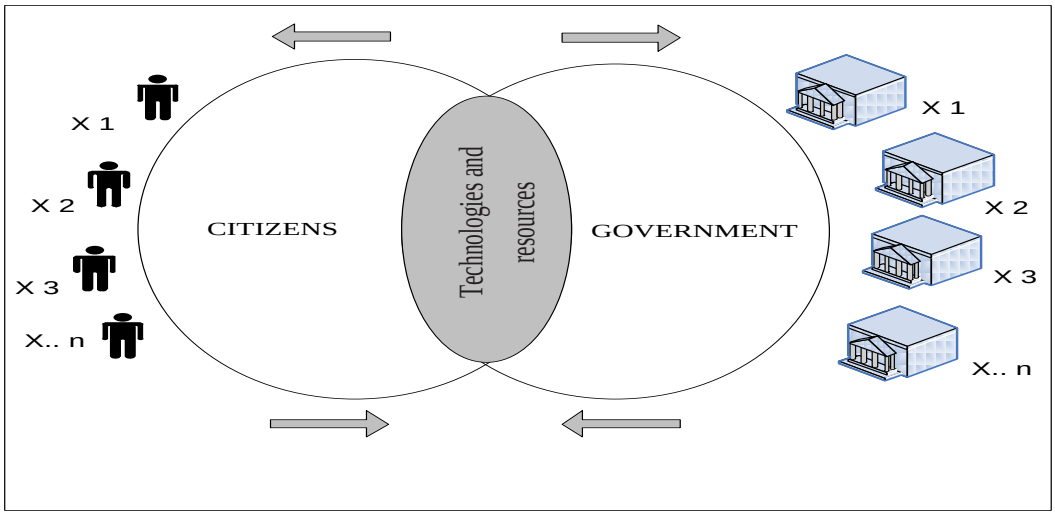


Figure 2.1 Definition and Overview of E-government

2.5 E-government Characteristics

E-government, as stated above, is the use of information communications technologies (ICTs) to transfer government services between and among different organisations and individuals (stakeholders). However, e-government goes beyond merely enhancing communication and interaction internally to government and externally to citizens. As such, e-government serves different actors other than

government and citizens. Therefore, it is important to clarify the different types of e-government in order to develop a better understanding of e-government characteristics. E-government may be classified into four categories as follows.

2.5.1 Government to Government (G2G)

The government to government (G2G) type represents the backbone of the e-government systems. This type includes exchanging data, information and services between one department and another. It is also concerned with exchange information and services at a domestic level (local, national) and an international level (between countries). Researchers in the e-government realm suggest that, in order to enhance this internal interrelationship, governments have to provide integrated services and bring all agencies together to offer efficient and effective communication between different entities (Huang and Bwoma, 2003). This represents a one-stop access of services instead of tracing the services and information through different links and websites. Many scholars in e-government have argued that information exchange between government and other organisations depends on the levels of governments' readiness (Gil-Garcia et al., 2007), in terms of technologies, reformulating public administration (Ezz et al.,2009; Joia,2004), and modifying government structures (Irani and Elliman 2008; Rani et al., 2005). Other researchers have associated government readiness with the success of the dissemination of services to the e-government stakeholders (citizens and business); for example, publishing details of government services that were provided in real life (offline) for citizens and businesses through the internet.

2.5.2 Government to Business (G2B)

This generally refers to the provisions of information, goods and services by the public sector to the private sector via the internet in order to increase the competition by improving procurement practices, reducing cost and drawing

together more information and data (Evans and Yen, 2006). Furthermore, the G2B type provides a convenient way to handle the main private services such as payment of tax or information registration. This relationship can be identified as enhancing the interaction between government and business in many ways, such as improving business quality, convenience and cost by offering digitising procurement services through ICTs (Seifert, 2003); by reducing cost through enhancing competition and procurement practices (ibid); or using the ICTs to offer a number of different services, such as sales and procurement. Further, obtaining data about businesses will help to improve the decision making process (Evans and Yen, 2006). Instead of looking for services in different places, this type can provide all such employment, environment, health, safety and tax rules in a one-stop shop (Evans and Yen, 2006; Wimmer and Tambouris 2002; Moon, 2002).

One example of a G2B e-government relationship in United Kingdom occurs in the area of e-procurement. This means government using electronic tools for every stage of government purchases, such as managing and advertising contracts, paying suppliers, evaluating tenders and reverse auctions (www.businesslink.gov.uk). This service accordingly benefits suppliers in a number of different ways, such as improving efficiency, speeding orders processing, reducing paper work and speeding up payments (ibid). Another example would be government sales ("GovSales") (www.gsa.gov). This is an initiative of the United States of America, providing one-stop access for the public (business) to find and buy federal assets. The main objectives of this initiative are: (1) simplified access for business to access find and buy government assets, (2) seeped up sales time and (3) lower government agencies' spending in relation to asset sales.

2.5.3 Government to Citizens(G2C)

This involves citizens interacting with government, and the government providing opportunities for citizens to access the services directly. These include information services, community services and tax payments, as well as license applications,

education, health care, libraries and hospital information. Here one example of the services offered by government can be found at the website of the Saudi Arabia e-government at http://www.yesser.gov.sa/. Such an activity with citizens is the primary goal of e-government as seen from some observers' perspectives (Al-Khouri and Bal, 2007). Typically there is a communication relationship between government bodies or agencies and their citizens, provided through forms, which join together to establish political links allowing citizens to participate in democracy; for example, sharing polls and voting online (Huang and Bwoma, 2003). According to UN and ASAP (2002), the definition of e-government is the delivery of government information and services to citizens through the World Wide Web. The government to citizens' concept revolves around terminate nepotism and cronyism, bureaucratic inefficiency, bureaucratic infectiveness and lack of accountability. It is hoped that e-government can improve the relationship between government bodies themselves and their stakeholders, and enhance transparency in the face of citizens on an equal base (Shahkooh et al, 2008; Hasan, 2003). Thus, e-government may expand the involvement of citizens with government and improve the democratic concept through the achievement of effectiveness and efficiency of delivery of e-government services.

The government-citizens dimension continually addresses the way of speeding up the provision of government services and simplifies it for all citizens alike (Weerakkody et al ., 2011; Lee et al., 2005; Silcock,2001). Here, the e-government can combat handling routine tasks in accordance with citizens' relationships.

One of the initiatives provided in the United States of America (USA) is the "GovBenefits.gov". This website offers missive services to citizens, including tracing benefits. American citizens can then simply enter their information into the website so that they are able to determine the kind of benefits they might be eligible to receive from government. Another example from the USA in performing the G2C e-government relationship is "free file". Citizens can account and pay their federal taxes using a new software, this e-service is provided for citizens from government free of charge (www.irs.gov).

2.5.4 Government to Employee (G2E)

This involves online interaction tools between government and their employee. G2E is one of four e-government models that have been especially established for government employees. This type of e-government provides a means of self-training employees (e-learning), knowledge sharing, information exchange, collaboration and employee productivity in intranet systems (Fang, 2002). This also includes the maintenance of personnel records, policy and information. Furthermore, this type may be established within government departments or between different organisations and agencies (ibid). The aim of employee empowerment is to simplify internal government processes in order to further serve citizens in a faster and more effective manner.

In the United Kingdom, the benefits system (www.direct.gov.uk) is one example of a G2E e-government relationship. This e-government system provides help and support for employees that receive low incomes, are disabled or retired, have children, or taking care of someone. The main objective of this e-service is to manage a low income and support illness or accidents caused by work. The different characteristics of e-government are summarised in table 2.1 with practices examples of the different e-government applications.

Table 2.1: E-government Characteristics

E-Government Type	Descriptions	Objectives	Some Example	Sources of Reference
Government to Government G2G	Provide a greater calibration between one department to another and also enabling government departments to work together at national and international levels	• Enhance the communication between government departments by integrating all departments in one system • Reduce government spending and raise collaboration	Interchange of data between Administrations (IDA)	http://europa.eu/legislation_summaries/information_society/strategies/l24147a_en.htm
Government to Business G2B	Increase the competition by improving procurement practices, reducing cost and enhancing work with business	• Improve efficiency • Speed up payment • Reduce paper work • Speed up orders process	E-procurement Government sales	www.businesslink.gov.uk www.gsa.gov
Government to Citizens G2C	Increase access for citizens to government services online furthering communication with government	• Provide one-stop shopping enabling citizens to access their information and services • Simplify the search for services and information	Tracing benefits E-file Renew license Register car Home tax service	GovBenefits.gov www.irs.gov ww.usa.gov www.nts.go.kr
Government to Employee G2E	Provide co-operation between employee using ICTs and for the increase of the efficiency and effectiveness of internal organisation	• Provide employee training • Enhance skills • Improve employee internal communication and collaboration • Enhance convenience and efficiency for business to communicate with government	Benefits system G2B portal GeBIZ	www.direct.gov.uk www.gebiz.gov.sg

2.6 E-government Benefits

E-government offers many benefits to public sector organisations, implementing electronic services for citizens. In this respect, in conjunction with several other phenomena such as e-Business, e-Commerce and e-Learning which provide multiple benefits, e-government also delivers a number of services to its stakeholders (governments, businesses and citizens). For public organisations, improvements in the IT infrastructure positively affect government organisations in terms of technologies and business processes (UN, 2008; Al-Khouri and Bal, 2007; Signore *et al.,* 2005). Moreover, the basic value of e-government is to enable different stakeholders to access government services around the clock (Albusaidy and Weerakkody, 2008; Bwoma and Huang, 2003; Reffat, 2003). According to many researchers, there are several benefits derived from e-government. For example, e-government implementation reduces government expenditures through direct channel communication between the public sector, the private sector and other government organisations by integrating various government agencies' systems through a single web portal (Al-Khouri and Bal, 2007; Aydinil *et al.,* 2007; Signore *et al.,* 2005). Furthermore, e-government increases public expectations and offers more transparent and accessible services to users (Al-Khouri and Bal, 2007), creating public-private sector collaboration. As a result, the majority of governments around the world are challenged to build their organisations and services to benefit from e-government by establishing one-stop access points, which facilitate the retrieval of information independent of the departments offering these services (Huang and Bwoma, 2003).

The benefits of e-government to developing countries such as Saudi Arabia are immense, particularly given the size and extent of the population. Saudi Arabia occupies an area of 2,240,000 square kilometres (about 865,000 square miles) in the Southern-Eastern region of Asia (MEP, 2008). Thus, distance often hinders citizens from travelling to government departments to access required services;

travelling to a capital city to access the services offered by a central government department from a another region is time consuming and costly (Al-shafi and Weerakkody, 2007; Huang and Bwoma, 2003). Conversely, e-government facilitates the reduction in the physical contact between citizens and government employees demanded by traditional services. Finally, the use of the Internet will reduce the costs incurred by the traditional government in providing services (Huang and Bwoma, 2003; Reffat, 2003). A synopsis of the key benefits of e-government to citizens is offered in table 3.1. A review of the literature reveals that many benefits have been identified by various researchers.

Table 2.2: Benefits of E-Government to Citizens

Benefits	Descriptions	References
Saving time and Money	Rather than using manual methods of requesting public services, e-government has the potential to save citizens time and money. From the economic perspective, no need for physical visits to official government departments.	(Al-shafi and Weerakkody, 2007; Huang and Bwoma, 2003).
One-stop access	Government offers an interactive single portal to every citizen. Therefore, citizens can make any level of government transaction, and apply for any services from one place. Citizens no longer need to know which government department is responsible for providing the services.	(Moon, 2002; Tat Kei Ho, 2002; Wimmer and Tambouris 2002; Layne and Lee ,2001).
Accountability, and transparency of service provider	Citizens monitor government department performance. This will make departments more responsive to citizens' needs and requirements.	(Welch et al., 2005; Wong and Welch, 2004; West, 2004; Chadwick and May, 2003; Snellen, 2002).
Increase public services accessibility	Citizens access government services from anywhere in a fast and easy way by using	(Carter and Belanger, 2005; Halchin, 2004; Doty And Erdelez, 2002;

and availability	ICT as an enabler to make government services more available and accessible to citizens. Therefore, the services are equitable for all citizens alike	Silcock, 2001).
Increase convenience	Generally, citizens can access government services from anywhere, either at home or on the move	(Fang, 2002).
Improved interactions with government	The most important benefit to citizens is the enhanced relationship with government and increased ability to communicate, making government services easier, more efficient and more effective.	(Lee et al., 2005; Reddick, 2005; Fang, 2002).
Citizen empowerment	Empowers citizens through increased access to services and information.	(Fang, 2002; Tat Kei Ho, 2002).
Enhance equitability	E-government is the means of serving every citizen in society with the same kind of services and information.	(Weerakkody et al ., 2011; Silcock,2001).

2.7 E-government Challenges

Whilst e-government presents several benefits to private and public organisations, it also results in a number of challenges to different internal and external stakeholders of the organisations. The key challenges related to e-government within the literature review can be organised into categories as follows: strategy, technology, police, social, cultural and organisational barriers. Successful implementation of e-government systems has been prevented by fragmented and incomplete understanding of these challenges.

2.7.1 Implementation Challenges

Many researchers have discussed the influence that technical infrastructure (Moon and Norris 2005; Davison and Martinsons, 2003; Riley, 2003) and business process related issues (Irani *et al*., 2007; Ebrahim and Irani, 2005) have on successful e-government implementation. Ebrahim and Irani (2005), for instance, have categorised a framework for e-government architecture into four layers: access layer, e-government layer, e-business layer and infrastructure layer. They provide an example of multi-channel services delivery to increase the accessibility of e-government web portals, such as mobile phones, digital TVs, PCs, kiosks, etc. The factors influencing the adoption and diffusion of e-government are closely linked to the availability of governments' capacity resources (Moon and Norris, 2005). Moon and Norris (2005) suggest that personnel, knowledge, financial resources and technical assets (hardware and software) of the government are the major resources of e-government implementations. Irani *et al.* (2007) claim that, despite the fact that the technical resources and different ICTs are changing the ways of delivering e-government services, greater emphasis and focus is required on cultural change, degree of commitment, business processes and organisational structure to gain a better position in terms of e-government implementation.

It has conclusively been shown that technical and organisational aspects require economic resources. For example, sustainable funding and non-economic resources, such as strategic, leadership and project management skills, are seen as important aspects for facilitating and promoting the implementation of a successful e-government infrastructure (Chatfield and Alhujran, 2009). Leadership is a key success factor of e-government implementation, as the observers of e-government projects have seen. E-government has long term challenges and best practice aims to meet the needs of different segments of society. Thus, leadership support is needed in order to minimize the effects of different challenges that may emerge. Similarly, Ciborra and Navarra (2005) discuss challenges for further progress of e-government. Their study shows that

there is no standard methodology that can be used to calculate the approximate cost for e-government projects and the benefits gained from e-government. Lack of a good estimation of the accomplishment of the e-government initiatives can result in delays in overall e-government implementation (Koga, 2003). Further, Koga (2003) argues that it is not obvious how top management can estimate such enormous initiatives. At the same time, while e-government success needs strong leadership support and standardisation in the management of public accounts, successful e-government projects need good coordination between the various actors involved (Ciborra and Navarra, 2005; Koga, 2003). Likewise, establishing an integrated e-government infrastructure is a major challenge faced by many government organisations around the world (Virili and Sorrentino, 2009; Wang et al., 2004; Medjahed et al., 2003). This opens new channels for sharing information through the Internet and is a relatively difficult challenge, especially in developing countries.

2.7.2 Adoption Challenges

Research has identified many barriers to the adoption of e-government services, such as trust (Carter and Belanger, 2005; Ebrahim and Irani, 2005; Dawes et al., 2004; Ndou, 2004), computer literacy (Pilling and Boeltzig, 2007; Pan et al., 2006), authentication (Akman et al., 2005), risks (Phippen, 2007; Ebrahim and Irani, 2005), usability (Criado and Ramilo, 2005; Chouderie et al., 2004), accessibility and availability (Jaeger and Thompson, 2003). Of the aforementioned challenges and barriers, computer literacy and accessibility are largely caused as a result of the digital divide, which means the gap that appears between citizens that use technology, have access to Internet, and have literacy skills, and those citizens who do not have access to the technology(Belanger and Carter, 2006; Selwyn, 2004;Fountain, 2003). Digital divide often represents the gap between the economically well-to-do and the less well-to-do in developed and developing nations (Lam and Lee, 2005; Selwyn, 2004). According to Belanger and Carter (2006), it is classified into the ability to access the Internet

and citizens' skills needed to use appropriate technologies. Furthermore, barriers to accessing the Internet were classified as age, level of education, and income (Belanger and Carter 2006; Selwyn, 2004). The skills needed by citizens were classified into two types: those needed by citizens in order to obtain e-government services and those required for information literacy (Belanger and Carter, 2006; Jaeger, 2003). Although an increasing number of citizens are utilizing e-government services, the digital divide can be considered as one significant barrier that impedes many citizens from adopting e-government services (Belanger and Carter, 2006).

While the literature has proved that the aforementioned factors are critical attributes for e-government adoption success, the absence of a basic ICT infrastructure, particularly in developing countries, often prevents these attributes being satisfied. Moreover, the literature suggests that offering multiple methods to access government services for different stakeholders, such as computers, the Internet, wireless devices, TV networks and mobile service centres, is seen as good practice in e-government service delivery (Sarikas and Weerakkody, 2007; Cabinet Office, 2005). If the ICT infrastructure is inadequate in a country, these channels of service delivery are unattainable, consequently resulting in a digital divide.

According to Al-Shehry et al., (2006), Saudi Arabia is facing a significant risk of digital divide, not only among citizens in general but even among employees in the government realm. Similarly, the study conducted by Abanumy and Mayhew (2007) illustrates the lack of web-based information availability in Saudi ministries. However, the same study finds that there are substantial improvements in the online presence in Saudi Arabia. For example, in 2003 up to 13 ministries had websites, compared with 18 ministries in 2005 and 20 ministries in 2007. However, the study also explores the issue that the information provided by the different ministries in Saudi Arabia does not meet citizens' expectations due to the lack of information availability (ibid). The diffusion of e-government services has been given much attention by a number of researchers (Eyob, 2004). For example,

Heeks (2005) suggests that the rate of adoption and diffusion of e-government, and the factors influencing adoption and diffusion, varies between countries. Heeks (2005) also explains how e-government initiatives differ from developed counties, such as European nations, to middle-income countries, such as those in Latin America and East Asia, to those developing countries that make no progress or have limited usage of ICT in an e-government context.

Within implementation, usability, availability and accessibility of e-government services for stakeholders through the Internet and e-government websites are considered as significant barriers which impede the adoption of e-government (Al-Shafi and Weerakkody, 2010; Carter and Weerakkody, 2008; Carter and Belanger, 2005; Kuk, 2002). To distinguish between these three terms, the reader should be aware of the different meanings of these terminologies. Usability can be defined as the kind of procedures and processes that have been implemented in other platforms and applications and that are widely used by a group of users (Wang et al., 2005; Lee, 1999). By way of illustration, Kuk (2002) shows how the usability and navigability of a website is a key factor that determines e-government implementation readiness. His study shows that usability is engaged not only with the take-up of electronic service delivery but also to make the government website easier to use and read, which in turn affects the service quality. As shown by the literature, improved government services could be achieved by improving the quality, range and maximal accessibility of services (Gouscos et al., 2002).

Basically, the term accessibility refers to the way in which users obtain different government services and have access to various information from different channels, data communications devices, and platforms via distant locations (Beynon-Davies, 2007; Ebrahim and Irani, 2005; Moon, 2002). Accessibility is one of the major factors that can enhance interactions, either online or offline (Deakins and Dillon, 2002). Accessibility differs from the term usability in a number of important ways; accessibility focuses more towards the interaction with each system, whereas usability describes the procedure of using the system or the

services. It has been argued that accessibility and usability are the terms used for improving the effectiveness and efficiency of systems and implemented technologies (Shackel, 2009). While the aforementioned discussion suggests that although both accessibility and usability can be a rating standard of e-government implementation success, availability of e-government services is also important.

Availability is the number of services that are available for the users; it gives an indication of the range of the available services around the clock; 24 hours a day, 7 days a week (Layne and Lee, 2001). Criado et al. (2003) illustrate that a combination of different factors, including accessibility, usability and availability, can enhance any implementation of e-government initiatives. Generally, retardation of e-government implementation is most commonly caused by a lack of standardisation of e-government websites and a shortage of IT developer experiences (Lam, 2005). According to Criado et al., (2003), e-government initiatives have been obstructed by a lack of standard technology use and skills needed to implement various technologies of e-government. Thus, e-government services should be accessible to stakeholders from distant locations and available around the clock, using secure gateways. Table 3.2 summaries the main e-government adoption challenges.

Table 2.3: The Key E-government Adoption Challenges

Challenges	Descriptions	References
Availability	Different services using official government gateways, e.g. internet, kiosk, and intermediaries.	(Al-Sobhi et al., 2010; Carter and Belanger, 2005; Becker and Nowak, 2003; Lambrinoudakis et al., 2003; Layne and Lee , 2001).
Accessibly	Enhance government access using different ICTs and channels to provide services to government, business and citizens alike.	(West, 2004; Jaeger and Thompson, 2003; Layne and Lee, 2001; West, 2000).
Privacy	Privacy means citizens' trust in the electronic medium, where people usually have concerns	(Al-Sobhi et al., 2010;Carter and Weerakkody, 2008; Carter and Belanger, 2005).

	about the security of the technology used for exchanging and storing their personal information, particularly when on-line financial transactions are involved. Therefore, the government should secure the data and establish a safe environment for citizens while transactions are in progresses, thus furthering e-government adoption.	
Trust	Enhancement of citizens' trust by reducing risk in government online services. Therefore, online services should be highly secure for use by citizens making financial transactions. Government officials must make all services available on the website and update them, and all services required by citizens must be delivered to service providers within accurate time.	(Horst et al., 2007; Tolbert and Mossberger, 2006; Carter, and Belanger, 2005; Gilbert et al, 2004; Warkentin et al., 2002).
ICT skills	In e-government adoption, lack of citizens ICTs skills is the most potential barrier that limits governments worldwide in achieving socially inclusive aims. This issue is particularly significant in developing countries.	(Ke and Wei, 2004; Selwyn, 2002)
Citizens awareness	Many studies have stated that awareness of benefits of using online services should be increased among citizens. Therefore, the more benefits citizens know about (e.g. saving time and money) e-government services will be adopted.	(Phang et al.,2006; Jaeger and Thompson, 2003)

A good infrastructure system of e-government implementation not only affects the diffusion of e-government services into society but also encourages the

acceptance and adoption of e-government services. Thus, the lack of soft and hard factors poses the need for a third party in the environment to act as an intermediary to reduce the gap caused by technologies and social aspects and to facilitate further development of e-government (AlSobhi *et al.,* 2009). This argument is supported by a number of researchers from e-business contexts (Howells, 2008; Sarker *et al.,* 1998; Bailey and Bakos, 1997). In this respect, intermediaries are expected to have a positive impact on e-services dissemination and on the attitude toward e-services adoption at individual level (Howells, 2008; Sarker *et al.,* 1996). In particular, intermediaries have the potential to make e-government more successful since the underlying aim of e-government is to attract more citizens to take benefits from e-services provided by an e-government (AlSobhi *et al.,* 2009). However, the literature regarding their added value in terms of adoption and diffusion of services is still lacking within an e-government context. The roles of the intermediary are discussed in the following section.

2.8 The Role of Intermediaries in E-Services

According to the literature, the concept of the intermediary is classified in different forms, ranging from Internet applications, such as PayPal, Amazon, and eBay, to physical organisations, such as estate agents, travel agents, and the Post Office (Janssen & Kilevink, 2009; Bailey & Bakos, 1997). In this research, it is necessary to clarify exactly what is meant by an intermediary. An intermediary is a mediator who transfers and passes services on to others (Janssen & Kilevink, 2009). In the literature, the term tends to be used to refer to third party organisation that operate in an electronic environment and help in the disseminations of information to societies, facilitating the exchanges within electronic services (Janssen & Kilevink, 2009; Howells, 2008; Sarker et al., 1998). An intermediary is commonly used to help in service transformation, yet is a concept that is difficult to define specifically. However, this study adopts the definition offered by Janssen & Kilevink (2009), who defined an intermediary as

"any public or private organisation facilitating the coordination between public services providers and their users" (Janssen & Kilevink, 2009, p. 38).

In this research, an intermediary is defined as a private organisation that operates between government departments and their customers (citizens) to help enhance the relationship between the two parties in Saudi Arabia's e-government development (Al-Sobhi et al., 2010; IT-Arabia, 2007).

These relationships between the service provider, service requester and the intermediary are changeable over time as a result of the environmental and social conditions (Ehrlich and Cash, 1999). Chircu and Kauffman (1999) identify a variety of strategies that appear in the relationship between different players in e-commerce, changing from intermediation to disintermediation and re-intermediation (IDR strategies cycle). Disintermediation means the removal of the physical intermediary from the service delivery channels (Chircu and Kauffman, 1999), whilst the term re-intermediation refers to the emergence of new intermediaries in electronic services environment by re-establishing themselves in the centre of the e-services transaction process (Chircu & Kauffman, 1999; Bailey & Bakos, 1997).

Furthermore, from many researchers' perspectives, the major threat for the physical intermediary comes from new technologies that are implemented by service providers to communicate with their customers on-line. This is because new technologies (e.g., Internet applications) have made it easier for service providers to communicate with service requesters directly, resulting in lower transaction costs. This argument has been made by numerous researchers in the e-business realm, thus giving rise to the term disintermediation (Benjamin and Wigand, 1995; Gellman, 1996; Malone at.al 1987). Disintermediation cost theory has been criticised by a number of researchers (Chircu & Kauffman, 1999; Bailey & Bakos, 1997). Instead of disintermediation, intermediaries can return, especially if they are "facilitated with information technology" (Bailey & Bakos, 1997) which means, they apply technologies in their organisation. Therefore, the

intermediary may add value for the service provider and requester in many aspects.

In the literature of e-commerce development, an intermediary is a key factor in working side-by-side with e-services delivery, and it is not necessary to eliminate it from the service delivery channels. While the Internet and associated ICTs may reduce the roles of traditional intermediaries, they may also result in increasing their roles in cases where factors such as trust may influence their position (Datta & Chatterjee 2008; Bailey & Bakos, 1997). Secondly, intermediaries may facilitate communication between organisations (service providers) and their customers (Janssen & Kilevink, 2009; Bailey & Bakos, 1997) and, thirdly, they may work as a partner for helping a service requester access services provided electronically (Al-Sobhi et al, 2010). An intermediary is an important element in the e-services system and it may play a key role in helping the stakeholders to handle new e-governments. For example, they may help increase factors that hinder e-government adoption (e.g. trust) and decrease the challenges that occur as a result of the digital divide (skills needed for people to use e-government services and their ability to access the Internet). As the literature suggests, the impact of intermediaries in delivering electronic services is massive. Therefore, this study attempts to illustrate the roles of intermediaries in minimising e-government challenges and furthering adoption of e-government.

2.9 Motivation of Intermediaries in Electronic Services

The emergence rationale of the intermediaries in the e-services context is influenced significantly by the fact that the organisations are not capable of providing effective e-services to society. The principle partnership aim of the private sector and governments is to meet the funding needs for the development of physical infrastructure (IPPP, 2009). These efforts may not be possible by direct connection through using the Internet.

With the emergence of Internet applications and the growth of e-businesses during the 1990s, there was increasing concern that the roles of intermediaries were being eliminated (Gellman, 1996; Malone *et al.,* 1987). For instance, one study on disintermediation was undertaken by Gellman (1996). This showed that a number of invisible changes will happen after technologies (e.g. establishing websites via WWW) are diffused through societies, encouraging the roles of traditional intermediaries to be bypassed. However, there is a lack of empirical evidence to support this argument. Other studies that contradict this view suggest that while the Internet and associated ICTs may reduce the roles of traditional intermediaries, they may have the effect of increasing their roles in some cases where factors such as trust influence their position (Sarkar *et al.,* 1998; Bailey and Bakos, 1997). Bailey and Bakos's argument relies too heavily on the qualitative analysis of 13 case studies. Their findings show that the number of roles for traditional intermediaries emerged in the context of electronic markets which cannot be easily eliminated by direct interactions via the internet.

Four roles indentified by Bailey and Bakos's study are as follows: aggregating, matching supplier and customer, providing trust, and providing inter-organisational market information (Bailey and Bakos, 1997). First, intermediaries may enhance trust by reducing the risk of transactions failure by ensuring transactions between parties have been completed, and by keeping all parties up to date (service providers and requesters) with the transaction processes (Bailey and Bakos, 1997). Also, a traditional intermediary may provide legal contact between parties, enabling the authentication and security communication needed in such a relationship (ibid). Another role suggested by Bailey and Bakos's study is that intermediaries facilitate the transfer of information between parties in the case of the lack of a reliable infrastructure and standard electronic service, thus promoting a desire for value added by the facilitator (third party). In this insight, Datta and Chatterjee (2008) argue that intermediaries in an electronic market are emerging because of inefficiencies of electronic mechanisms to provide services; they posit that this will influence consumers' behaviour to trust in a third party who is

working as a link between the service provider and requester. The third role given in Bailey and Bakos's study involves matching a customers' need for services to what the supplier offers. Finally, the intermediary is aggregating the requests of many customers to products from different suppliers (Bailey and Bakos, 1997).

Similarly, Ehrlich and Cash (1999) stated that the role of an intermediary is often invisible. For example, users' support and help to use new systems (such as new technologies against users' experience) could be one of the hidden roles that may be provided by intermediaries. This role arises from the users' beliefs and their ability towards utilizing the systems. Howells (2008) suggests a significantly different role of intermediaries which works well with many different issues, such as information diffusion, and their influence on adoption rates within society. According to this research, third parties such as intermediaries can play a major role in the adoption and diffusion process by helping to standardise the technologies that are used to deliver e-services (Howells, 2008). This is particularly significant in the e-government context as the ICT applications used in government can be fragmented and diverse. Moreover, when taken in the context of public services, intermediaries 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). In this context, using an intermediary can support the training and education needs of citizens by facilitating the assisted use of technology, enabling the gradual transition of citizens towards 'self-using' new technology (Griffin and Halpin, 2004). In addition, this business model can be technology-driven and scalable, as in the case of public adoption rates from the citizens' perspective. Other benefits highlighted in the literature include the potential of electronic intermediaries to reduce the perceived risks of e-services and produce a trusting environment (Sarker *et al.,* 1996). Therefore, there is an increased convenience for both citizens and businesses in using intermediaries as a multi-service vending facility (Bailey and Bakos, 1997).

Research has shown that the intermediary role has emerged as a reaction to a different set of specific circumstances which are associated with environmental

and social conditions (Ehrlich and Cash, 1999). In some developing countries, the global vision for public service delivery is to transform the services of government agencies and to offer them through different channels, such as intermediary offices. In fact, the concept of intermediaries is not a new idea in real-life activities. For example, a post office can be considered as an intermediary point in helping citizens and businesses to indirectly access public services from anywhere in a country. In the United Kingdom and the United States, the post office is considered an independent agency that is responsible for mail delivery, as well as a communication gateway between businesses and individuals.

2.10 Global Examples of Intermediaries

There are many examples of intermediaries working in partnership with government or, as they are called, public-private partnerships (PPPs) to facilitate services for public or citizens worldwide, and numbers have increased during recent years (Johnston and Gudergan, 2007; Teicher et al, 2006; Bovaird, 2004; Wettenhall, 2003). Nowadays, the most famous intermediary is the VFS global company which helps people apply for visas for United Kingdom. This intermediary has established a partnership between the UK border agency at British Embassies worldwide and the private sector (http://www.vfs-uk-sa.com/). Based on this partnership, government e-services are simplified and deliver to public is made more straightforward.

Many examples of intermediaries, working with governments, can be found worldwide. The Al-Elm company is another example, with its cooperation between government and the private sector (http://www1.elm.com.sa/Portal/En). This company is a partnership between Saudi government and private sector, and its aim is to benefit the massive government database, building and designing electronic systems to deal with the accumulated data. Then, these data can be provided for stakeholders, the public and private individuals in an easy and straightforward way.

Another example comes from Chile, in South America. In the initial stages of establishing the Online Tax filing system, which started in 1999, the Chilean government stated that the only 5 percent of taxes were collected online. Six years later they reported that this had risen to more than 95 percent of taxes declared (IPPP, 2009). The services were found accessible and easy to use, but the public were obstructed by difficulties with internet access. The solution was to establish a hub of centres between the government and taxpayers, called a national public-private network. The Chilean government created more than 880 such centres (intermediaries) across the country (ibid). The taxpayers are now able to pay their taxes via these intermediaries either free or at a nominal cost, with help and support from the centers' staff.

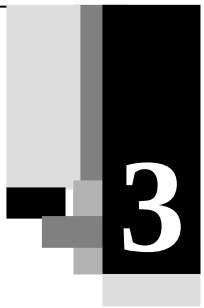
From India, PC Kiosks (telecentres) are used in an attempt to transform and improve the value of government services (Toyama el al., 2005). Using internet cafes in villages and rural areas provides access for the e-services requesters (citizens). There are more than 150 PC Kiosks established across India, the main objective is to empower Indian citizens with sustainable access to e-government services resulting from information technology, thus enhancing socio-economic development (ibid). In summary, this intermediary is essential for many reasons, the most important being furthering e-government adoption and usage.

2.11 Summary and Conclusion

This chapter reviewed relevant literature in order to identify the research gap in the e-government context. The previous discussion of literature perspectives indicates that there is no agreed definition of e-government. However, e-government is mainly known as e-services that are provided to different stakeholders, government, businesses, employees and citizens. The main tools that are used by government to provider e-services are internet applications and intermediary organisations. Almost every country is interested in obtaining e-

government applications to further develop their economy, based on new technologies of the information age. However, many challenges inhabit further development of e-government services from the government's perspective (e.g. e-government readiness) alongside many factors influencing citizens to adopt e-government services (e.g. digital divide and trust).

Accordingly, the intermediaries have massive impact on minimising the challenges that may slow down the development of e-government services. The intermediary is found to have different roles in adoption and diffusion in the e-services context. However, no such model has discussed the relationship between e-government adoption and intermediaries. Therefore, one of the most significant findings emerging from this chapter is that no such model was found in the e-government literature that models the intermediary to e-government adoption at the individual level (citizens). Therefore, as highlighted in chapter 1, section 1.3, one of the main objectives of this thesis is to conceptualize the intermediary within any information system model in order to measure the impact of the intermediary in e-government adoption. The next chapter will focus on modelling the intermediary concept in e-government adoption. This will allow this study to identify the most important factors that influence citizens' intention and usage of e-government services (in the Saudi e-government context). This gap comes from the literature review as well as considerations in next chapter (chapter 3).



Chapter 3: Conceptual Model

Summary

The aim of this chapter is to focuses on the examination of factors that are derived from chapter 2. Therefore, this chapter aims to: (a) give background of theories that are implemented in the information systems field; (b) develop a framework for this research using the most appropriate model in acceptance; (c) review demographic variables that link to adoption; (d) develop the hypotheses of this study.

3.1 Introduction

As prior literature in the information systems (IS) and e-government realms show, few researchers have carried out studies that investigate the impact intermediaries have on citizens' adoption and usage of e-government (Al-Sobhi et al., 2010; Janssen & Kilevink, 2009). Most studies associated with e-government adoption have focused mainly on citizens' attitudes toward e-government at individual level (Al-Shafi and Weerakkody, 2010; Carter and Weerakkody, 2008; Carter, and Belanger, 2005). Furthermore, studies have also highlighted the need to examine the adoption of e-services from the users' perspective, which are prompted by the roles of intermediaries (Howells, 2008; Bailey and Bakos, 1997). Studies that have focused on understanding citizens' behaviour when using intermediaries to access e-services have not utilised conceptual models to examine the influencing factors (Al-Sobhi et al., 2010; Janssen and Kilevink, 2009).

As many studies in information systems (IS) built their arguments on a theoretical background (Al-Shafi and Weerakkody, 2010; Alawadhi and Morris, 2008; Carter and Weerakkody, 2008; Carter and Belanger, 2005), it is essential to present a theoretical model or framework that helps to understand the factors that affect the individual level (citizens) of e-government services adoption prompted by intermediaries. Users' acceptance and adoption of technologies are considered as primary conditions for successful implementation and progression of any IT project. This is due to the fact that users' attitudes to use and adopt new technologies are important in determining the success or failure of any information systems project (Succi and Walter, 1999; Pinto and Mantel, 1990). According to Venkatesh et al. (2003: p. 446), users' acceptance of technology refers to the "initial decision made by the individual to interact with the technology". It has been found that numerous theories and models could be used to examine users' adoption of information technology (IT). For example, Technology Acceptance Models (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), the Motivational Model (MM) Diffusion of Innovation (DOI), the Model of PC Utilization (MPCU), Social Cognitive Theory

(SCT), the model combined between TAM and TPB, and finally the most recent model, the Unified Theory of Acceptance and Use of Technology (UTAUT) could be used. Thus, researchers are able to pick from the above and apply the most suitable model, ignoring the others (Venkatesh et al., 2003; Dwivedi, 2005). Therefore, for building a conceptual model specifically for intermediaries in e-government context, various IS models are reviewed in order to capture the most relevant factors in technology adoption and acceptance. In order to realise its aim, the chapter is structured as follows. Section 3.2 reviews the IS model of technology adoption. This section is also used to give a short discussion and introduction to the model adopted to explore e-government services from the citizens' perspectives. In section 3.3, the researcher presents the foundations of the proposed model and hypotheses for e-government adoption in Saudi Arabia. This is followed by demographic variables effect e-government adoption in section 3.4. The last section (3.5) summarises the overall chapter.

3.2 Theoretical Background

3.2.1 Theory of Reasoned Action (TRA)

The contribution area of the theory of reasoned action (TRA) is the initial theory that aims to understand human behaviour (Venkatesh et al. 2003; Ajzen, 1991). It proposes to explain behavioural intention towards new information technology. This theory consists of four main core constructs: behaviour, behavioural intention, attitude toward behaviour and subjects norm. According to Ajzen (1991), behaviour is determined by *behavioural intention* and *attitude towards the behaviour* and subject norms, which will explain *behavioural intention* toward adoption. This links the behavioural intention as a dependent variable, and attitude toward behaviour and subjects norm as independent variables. Fashbein and Ajzen (1975, p. 216) define attitude towards behaviour as "an individual's positive or

negative feeling (evaluative affect) about performing the target behaviour". Also they define subjective norm as "the person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fashbein and Ajzen ,1975, p. 302). TRA was used in a variety of technology acceptance uses, as shown in Table 3.1 where the use of TRA is outlined in the public sector context.

Table 3.1: Examples of Theory of Reasoned Action Utilised in Public Sector Research

Context	Descriptions	Level of analysis	References
Adoption of information technology of end users	This study has adopted TRA as one theoretical base to understand factors influencing users' decisions at organisations to adopt information technology. This study concluded that TRA is a strong model helping to understand factors influencing technology utilisation	Employee at organisations	Moore and Benbasat,1996
Citizens adoption of e-government services	TRA model were used as a guiding framework to determine factors affecting decisions of citizens to communicate using an online government.	Individual level citizens	Belanger and Carter, 2008
Explain employee intentions and predict work behaviour	TRA was used to predict employee intentions and behaviour toward punctuality and to engage in altruistic acts. This study found that TRA was superior to commitment in explaining employee intentions.	Employee level	Becker,1995

This theory is the initial theory in acceptance literature (Venkatesh et al. 2003; Ajzen, 1991) and was adopted by many researchers to further understand human behaviour in technology adoption or changes in work environment. A number of studies have identified limitations in using TRA for predicting behaviour. Sheppard et al., (1988), posits that in order to predict behaviour using TRA, the

attitude and intention should agree on action, context, target and time. Further, Ajzen (1985) noted that the theory is limited by what is called correspondence. In order for the theory to predict specific behaviour, attitude and intention must agree on actions, target, context, time frame and specificity (Sheppard et al., 1988). Given this context, TRA does not provide the needed theoretical basis for examining e-government adoption.

3.2.2 Technology of Acceptance Model (TAM)

Many studies state that the model widely used in this realm is TAM (Carter, 2008; Gefen and Warkentin, 2002). TAM was first established by Davis (1989), based on the theory of reasoned action (TRA) and constructed of two major core beliefs: perceived usefulness (PU) and perceived ease of use (PEOU), both of which influence one's intention to use a system (Figure 3.1). Davis (1989) defines PU as "the degree to which a person believes that using a particular system would enhance his or her job performance"(Davis 1989 p 320), whereas PEOU refers to "the degree which a person believes that using a particular system would be free of effort "(ibid). This refers to the efforts required from users to use any system, where person believes refers to, users' belief of utilising any systems will affect positively in their job performance.

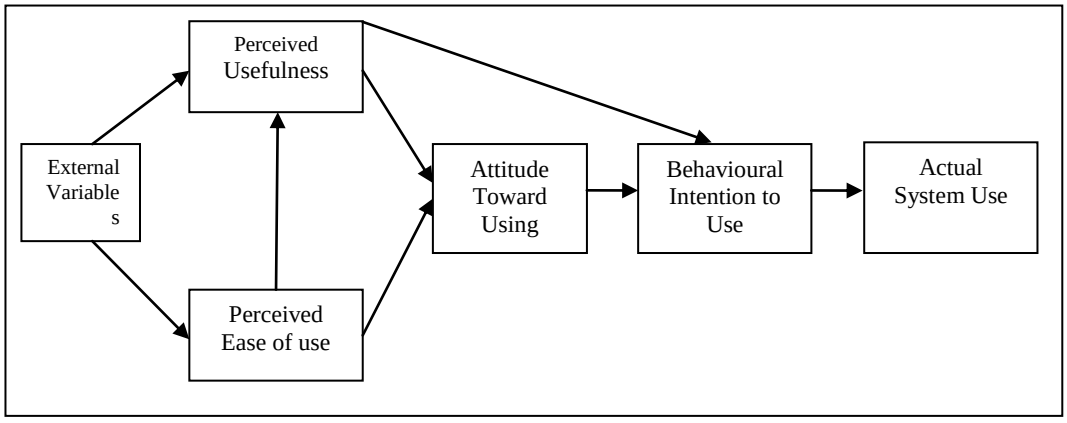


Figure 3.1: Technology Acceptance Model (TAM) (Davis et al, 1989, pp 985)

While TAM is a very well-researched and simple model that aims to explain and determine the factors affecting computer users' acceptance in a wide range of contexts, it also gives predictions and reasons as to why any systems may not succeed (Davis et al, 1989). TAM places researchers and practitioners in the position of tracing the impact of external factors on internal beliefs, attitudes and intentions (ibid). According to Davis, the TAM model predicts that if these two core factors (usefulness and ease of use) are high the intention to use will increase accordingly. Furthermore, perceived ease of use is predicted to influence perceived usefulness where intention to use is predicted by the two factors, perceived usefulness and perceived ease of use (Davis, 1989). According to many researchers, TAM is a reliable model, valid and powerful in predicting users' adoption of a new technology in a variety of contexts (Bélanger and Carter, 2008; King and He, 2006; Gilbert et al., 2004; Phang et al., 2005). Table 3.2 summarises the context and services in which TAM might be applied.

Table 3.2: Examples of Technology Acceptance Model Utilised in Public Sector Research

Services Context	Descriptions	Level of analysis	References
Online tax in services in western countries	TAM model is well-used in e-commerce context, measuring customers' behavioural intentions to use technology in online shopping and making online transactions.	Individual	Warkentin et al., 2002

Electronic tax-filing systems in Taiwan	TAM was applied in different technologies related to e-government services, similar to the tax-filing system. This study identified the appropriateness of using the extended TAM to understand people's intention to adopt the electronic tax-filing systems	Individual	Wang, 2003
Online voting and license renewal	TAM was used as a theoretical framework to further understand factors influencing citizens to adopt services such as online voting and license renewal	Individual	Carter and Bélanger, 2005

As explained above many studies were adopting TAM to investigate individual attitudes on information systems adoption. However, many limitations are commonly reported in literature on the use of TAM for predicting user behaviour. The most important one is the lack of context focus where constants of TAM do not reflect a variety of user tasks' environments and so failed to predict IT usage, as many factors can affect users' utilisation (Venkatesh et al., 2003; Moon and Kim, 2001; Dishaw and Strong, 1999).

3.2.3 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) was developed by Ajzen (1991) and is an extension of the theory of reasoned action (TRA) (Ajzen, 1991; Ajzen and Fishbein, 1980). Therefore, TPB was developed to overcome the limitations of the theory of reasoned action (TRA). The TPB consists of different core constructs: attitude toward behaviour, subjective norms (adapted from theory of reasoned action), perceived behavioural control (PBC), and intention and behaviour. Ajzen (1991, p.188) defines the perceived behavioural control construct as "the

perceived ease or difficulty of the performing the behaviour". As such, Ajzen (1991) hypothesises that perceived behavioural control (PBC) is an additional construct that helps to explore intention and behaviour. This perceived behavioural control construct is an original contribution to the theory of planned behavior TPB, which emphasise that an individual's intention is a central factor in performing the behaviour of intention (Ajzen, 1991). The new PBC factor can directly affect behaviour or indirectly through behavioural intention. The theory of planned behaviour (TPB) was applied in the contexts of many information systems. Table 3.3 summaries the applied the theory of planned behaviour (TPB) in the public sector context.

Table 3.3: Examples of Theory of Planned Behaviour Utilised in Public Sector Research

Service Context	Descriptions	Level of analysis	References
Public acceptance of e-government services in Taiwan	TPB is a well research model, explaining factors affecting citizens' adoption of online services and tax filing and payment system.	Individual	Hung et al., 2006
Electronic toll collection to pay toll plazas in highways	TPB used as theoretical promises for researchers to understand factors that influence drivers in using a new electronic toll collection system in Taiwan	Individual	Chen et al ., 2007
Electronic tendering system	TPB used as theoretical base for research to understand factors that influence using systems to apply for services such as tendering	Organisation	Chu et al., 2006

Although TBP was employed by a numbers of researchers to explain human behaviour across contexts, nevertheless, as it originally based on the theory of reasoned action (TRA) (Ajzen,1991) and thus has its limitations. For instance, Eagly and Chaiken (2002) used further variables in the TRA model that may predict intention and behaviour, such as, moral obligation and habit, which are not applied in TBP. Given the complexity of e-government and the diversity of its adopters, TBP therefore has limitations as a theoretical model for studying e-government adoption.

3.2.4 Diffusion of Innovation (DOI)

Diffusion of Innovation (DOI) (sometimes referred to as Innovation Diffusion Theory, IDT) is the way information is disseminated to society. DOI was introduced by Rogers (1995), who suggested that adoption of innovation at the individual level can be categorised into five levels; earliest adopters of innovation; innovators, early adopters, early majority, late majority, and laggards. Diffusion of innovation (DOI) theory consists of five factors - four were found to have a positive impact on the rate of adoption (trialability, observability, relative advantage and compatibility) and one has a negative impact on adoption of innovations (complexity). In information systems context, Moon and Benbasat (1991) further developed the DOI model and generated different constructs in order to understand the acceptance of technology at individual level. These are ease of use, result demonstrability, visibility, voluntariness, relative advantage, compatibility, trialability, and image. DOI has been used in the public sector and the focus of DOI is diffusion of the services to the society. Table 3.4 summarises the context and technology of DOI utilised in the public sector.

Table 3.4: Examples of Diffusion of Innovation Theory Utilised in Public Sector Research

Context	Descriptions	Level of	References

		analysis	
Citizens adoption of online voting and licence renewal	DOI helps a researchers to explore factors influencing adoption of technology and innovation, this will enhance the decision-making process and further spread innovations between groups of people.	Individual	Carter and Bélanger, 2005
Management accounting practices	DOI is used as a theoretical base for diffusion and adoption of management accounting practices in public sector.	Organisation	Lapsley and Wright, 2004
Software engineering innovations	DOI is applied for predicting the adoption of technological innovations, including those related to software engineering.	Organisation	Bayer and Melone, 1989

As showed above a numbers of studies were employing DOI to explain factors effecting the adoption of innovation. However, this theory has some limitations in terms of providing reasons on how attitudes will influence the development of acceptance and rejection behaviours in users' decisions towards adoption as well as how the innovation's characteristics will help in their beliefs (Karahanna et al., 1999).

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

The Unified Theory of Acceptance and Use of Technology (UTAUT) is the most recent model in the area of information systems literature and aims to explain and predict users' acceptance of new technologies. This model was created and synthesized by Venkatesh et al. (2003) from different information system models.

It considers and integrates eight models as follows: Technology Acceptance Models (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), the Motivational Model (MM), Innovation Diffusion Theory (IDT), the Model of PC Utilization (MPCU), Social Cognitive Theory (SCT), and the model that combines TAM and TPB (C-TAM-TPB). The aim of the UTAUT model is to give a further complete explanation and prediction of users' behaviours which any older individual models have failed to achieve alone (Venkatesh et al., 2003). Each model mentioned above aims to explain user behaviour and usage of new technology with a variety of independent variables. In fact, the proposed UTAUT model is based on the similarities between these independent variables from each models cited above. According to the number of prior studies, the UTAUT model is the benchmark and most predictive model in the technology acceptance literature (Al-Shafi & Weerakkody, 2010; Alawadhi and Morris, 2008).

The UTAUT model contains different factors which either directly affect usage behaviour as facilitating conditions or affect behavioural intention by other determinant factors, such as performance expectancy, effort expectancy and social influence. Venkatesh et al. (2003) defined these factors as follows: facilitating conditions which is "the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p. 453); behavioural intention, "the person's subjective probability that he or she will perform the behaviour in question" (Venkatesh et al., 2003, p. 288); performance expectancy, which is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447); effort expectancy, which is "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450); social influence, which is "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451). Also the UTAUT model considers moderator variables influencing the four direct determinant factors of behavioural intentions and usage behaviour such as gender, age, experience and voluntary use.

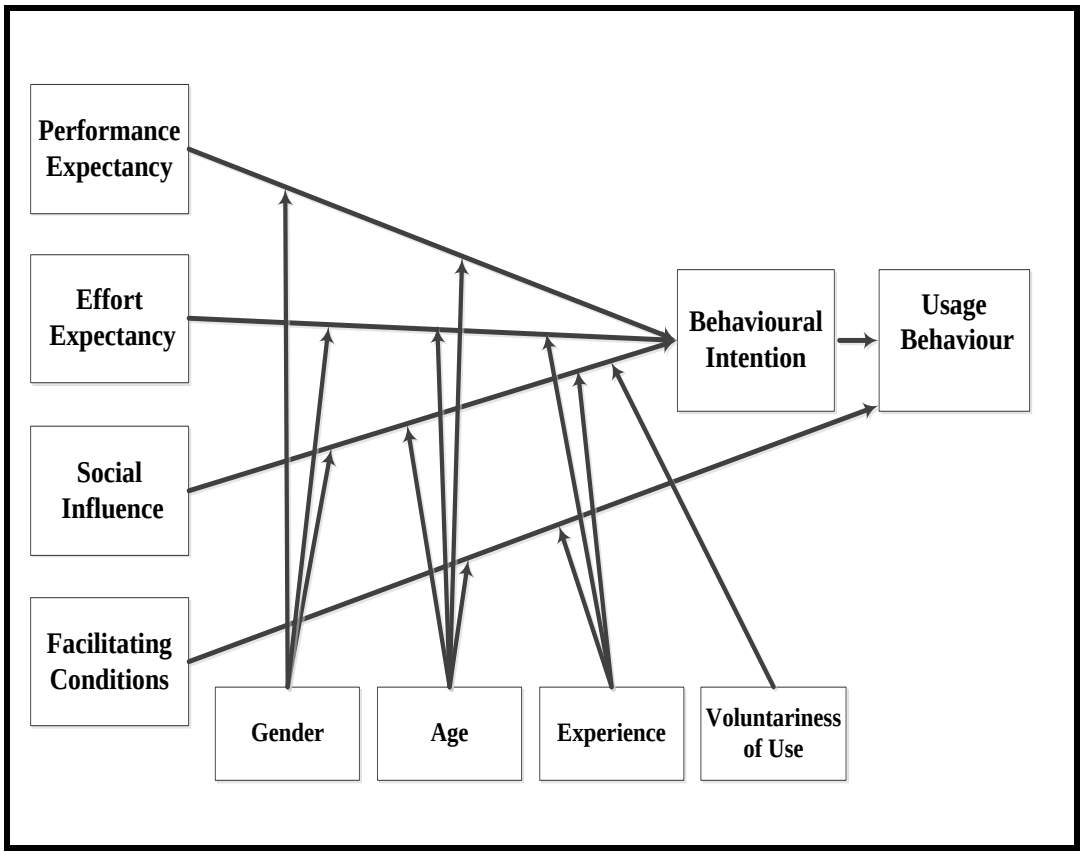


Figure 3.2: Unified Theory of Acceptance and Use of Technology (UTAUT) [Adapted from Venkatesh *et al.*, (2003)]

As stated above, many studies have adopted UTAUT to investigate individual attitudes towards information systems adoption in both the private and public sector contexts. Table 3.5 summarises the utilisation of UTAUT and the public sector contexts where the theory has been applied.

Table 3.5: Examples of the use of Unified Theory of Acceptance and Use of Technology in Public Sector Research

Context	Descriptions	Level of analysis	References
Citizens adoption of information kiosks	UTAUT helps researchers to investigate factors influence use behaviour regarding information Kiosks, therefore the use of UTAUT will help in information kiosk development and implementation public sector, furthering adoption of e-government among citizens.	Individual	Wang and Shih, 2009
Determine the publics' acceptance of e-government services	UTAUT is applied for investigate factors influence public to use online tax filing and payment system. This will help to provide gaudiness for strategy makers about success factors that will increase the user acceptance of e-government services.	Individual	Hung et al., 2006
Explore adoption of information communication technology in public sector	UTAUT is used to examine the adoption behaviour of employees towards using internet by as internal communication channels at organisation	Organisation	Guptaet et al., 2008

The wide use of UTAUT model in the context of public sector with different analysis levels encouraged this study to apply UTAUT as a research model to understand intermediaries' influence on e-government adoption. By placing

intermediaries to facilitate e-government adoption, governments can obtain one of the key objectives of implementing e-government, which is improving accessibility of public services (Al-Sobhi et al., 2011). Although studies have attempted to understand the factors influencing e-government adoption through different information technology channels (e.g. internet, kiosks, mobile technology etc.) intermediaries have received less attention. The diversity of e-government adopters (citizens), the different dimensions that may influence adoption (such as age, ICT skills, level of trust and Internet experience etc.) and related challenges encouraged this study to utilise the UTAUT model as the theoretical basis due to its ability to map between these various dimensions.

3.3 Conceptual Model and Associated Hypotheses for E-Government Adoption in Saudi Arabia (Madinah City)

As it is the most predictive model in the technology acceptance literature and is used as a benchmark (Al-Shafi & Weerakkody, 2010; Alawadhi and Morris, 2008), this study employs the UTAUT model as a framework in order to study the adoption of e-government in the Saudi context. While the research model used in this research was amended to suit the context of the study, the theoretical constructs included in the study are based on the literature reviewed above. A model depicting the factors influencing e-government and intermediary roles in perceptions of enhancing intentions to e-government usage at the individual level (citizens) is presented in Figure 3.3. As such, the conceptual model proposed in this study uses the following factors from the UTAUT model: performance expectancy, effort expectancy, social influence, behavioural intention toward e-government services, and facilitating conditions towards usage behaviour (actual usage).

A number of studies have applied UTAUT to explore citizens' acceptance of e-government in developed and developing countries, with many factors seen to be

influential (Al-Shafi and Weerakkody, 2010; Alawadhi and Morris, 2008; Certer et al., 2008; Carter and Belanger, 2005). It is very important in this study to consider these factors when investigating citizens' intention to use e-government services in Saudi Arabia. In addition, it is necessary for this study to consider and incorporate additional factors into the UTAUT model that are specifically related to the Saudi Arabian context of using intermediaries to facilitate e-government adoption. As such, the model developed to study e-government systems in Saudi Arabia through the intermediary channel needs to be tested for its robustness and to offer a further explanation of the adoption of e-government services in the Saudi context. Therefore, it is essential to evaluate each construct in detail, so that the relevant measurement factors toward the attitudes of e-government services in Saudi Arabia are identified and justified. Figure 3.3 summaries the conceptual model of this thesis.

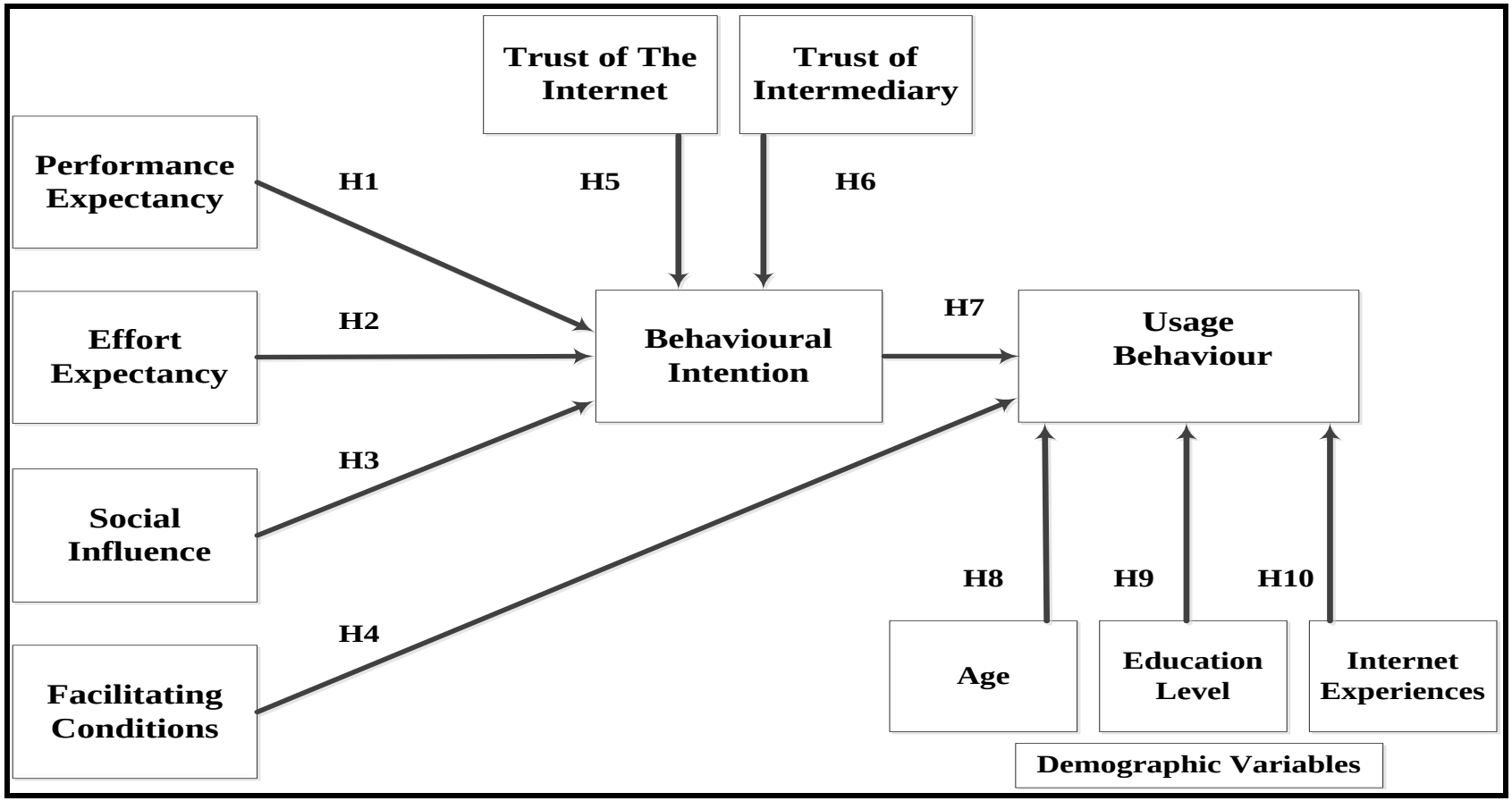


Figure 3.3 : Conceptual Model of Citizen Adoption of E-Government in Saudi Arabia [Adapted from Venkatesh et al., (2003)]

The following table 3.6 presents the suggested factors that were proposed to influence the adoption of e-government services.

Table 3.6: Factors Effecting the Adoption of Information System

Constructs	Definition	References
Performance expectancy	The degree to which an individual believes that using the system will help him or her to attain gains in job performance.	(Venkatesh et al., 2003; Davis, 1989)
Effort expectancy	The degree of ease associated with the use of a system.	(Venkatesh et al, 2003; Morris and Venkatesh, 2000)
Social influence	The degree to which an individual perceives the importance of the beliefs of others that he or she should use the new system.	(Irani et al., 2009; Venkatesh and Brown, 2001; Tan and Teo, 2000; Fulk and Boyd, 1991; Fulk et al., 1987)
Facilitating conditions	An organisational and technical infrastructure that supports individuals to use systems and remove barriers.	(Carter et al., 2008; Phang et al., 2005; Venkatesh et al., 2003)
Behavioural intention	The degree to which citizens intend to use the Internet or an intermediary for e-government services in the future.	(Venkatesh et al., 2003; Ajzen, 1991)
Trust of Internet	The degree to which citizens using the Internet communicate with government official.	(Carter, and Belanger, 2005; Gefen et al., 2005; Pavlou and Fygenson, 2006; Gilbert et al, 2004).
Trust of intermediary	The degree to which individuals adopt intermediary channels to communicate with government online.	(Howells, 2008; Pavlou and Gefen, 2004; Chircu et al., 2000; Bailey and Bakos, 1997).
Age	Differences in adopting technology based on age.	(Venkatesh et al., 2003; Morris and Venkatesh, 2000)
Education level	The difference in adopting technology based on education level.	(Akman et al., 2005).
Internet experiences	The level of internet experiences influencing individuals to adopt technology.	(Jaruwachirathanakul and Fink, 2005; Karjaluoto et al,. 2002; Schumacher and Morahan-Martin, 2001).

3.3.1 Performance Expectancy

Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et al., 2003). The performance expectancy constructs are drawn from different information systems models as follows: perceived usefulness (TAM and combined TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (DOI), and outcome expectancy (SCT). In addition, it is important to point out that performance expectancy is the strongest predictor of behavioural intention towards technology, and remains significant to all points of measurement in both voluntary and mandatory settings (Venkatesh et al., 2003). In this research context, performance expectancy refers to the degree to which an individual believes that using the e-government or intermediary (e-office) system will help him or her to attain gains in personal performance. This construct is measured by different variables or constructs: perceived usefulness, relative advantage, outcome expectations, benefits, and availability. The motivation for the researchers to use performance expectancy in this study is influenced by the fact that the performance expectancy found is a strong predictor of behavioural intention toward technologies (Alawadhi and Morris, 2008; Venkatesh et al., 2003; Davis, 1989). Further, a number of adoption factors have been identified in the e-government context (Al-Shafi and Weerakkody, 2010; Alawadhi and Morris, 2008; Carter and Belanger, 2005) precisely in the initial stage of e-government development. This study builds principally on the literature that has been published in developing countries. However, it has added an intermediary organisations factor, which may enhance the usefulness and accessibility of e-government for citizens (Al-Sobhi et al., 2010; Janssen and Kilevink, 2009; IT-Arabia, 2007). To determine the performance expectancy construct, this study measures citizens' perspectives regarding e-government services by benefits offered, reduced service time, saving money, effort required to contact government officials, and access to services around the clock, all of which were adopted from Venkatesh et al. (2003). Therefore, the following hypothesis is proposed:

H1: Performance expectancy will have a significant influence on behaviour intention to use e-government services.

3.3.2 Effort Expectancy

Effort expectancy is defined as the "degree of ease associated with the use of a system" (Venkatesh et al., 2003, p. 450). Effort expectancy constructs have been drawn from different information systems models including perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT). In addition, effort expectancy construct is a strong predictor of behavioural intention towards technologies in early stages and can become non-significant after periods of extended and sustained usage (ibid). In this research context, effort expectancy refers to the degree of ease associated with use of e-government services. Further, this study uses the three constructs from the UTAUT model: ease of use, complexity, and perceived ease-of-use. According to Venkatesh et al. (2003), there are similarities between these constructs in accordance with their definitions and measurement scales. Previous studies have reported that effort expectancy is always associated with age (Venkatesh et al, 2003; Morris and Venkatesh, 2000). In other words, age difference has been found to be the strongest predictor of acceptance and usage. Younger age groups have more positive attitudes towards using technology compared to other older age groups, and it can be claimed that the adoption of e-government services is dependent on citizens' age. As a result, effort expectancy will be more significant towards behaviour intention of e-government services if it is moderated by demographic variables (such as age, level of education and internet experiences). Consequently, the following hypothesis is proposed.

H2: Effort expectancy will have a significant influence on behaviour intention to use e-government services.

3.3.3 Social Influence

Social influence is defined as the degree to which an individual perceives the importance of the beliefs of others that he or she should use the new system (Venkatesh et al., 2003). In the current study, social influence is defined as the important people (family or friends) pressure that influences the intentions to use e-government, and the influence that an intermediary has on increasing the awareness and the social marketing to adopt e-government services. The relationship between social influence and adoption has been widely investigated in the information systems field (Venkatesh and Brown, 2001; Fulk and Boyd, 1991; Fulk et al., 1987). Many scholars in information systems have proposed the impacts that social influence, represented by friends, family, colleagues and peers, have on behaviour adoption at the individual level (Irani et al., 2009; Tan and Teo, 2000). Further study by Venkatesh and Brown, 2001 found that social influence of friends and families is a strong factor affecting adopting technologies. According to Venkatesh and Brown (2001, p 75), "social influence is exerted through messages and signals that help to form perceptions of a product or activity." Marketing of online government services, therefore, needs similar such signals (Maibach, 1993). For example, all organisations like government offices, banks, schools and others can be considered a hub for socially advertising e-government services and targeting individuals (citizens) in their location. In order to market e-government services, governments should gain the benefits of intermediaries' locations (frequented by citizens) to distribute the e-government services. In addition, because the intermediary is an important source of social support for new e-government services, the intermediary will work in the same way as other media, for example news and TV (Al-Shafi & Weerakkody, 2007), and help increase awareness of e-government services within society. Given this context, the following hypothesis is proposed.

H3: Social influence will have a significant influence on behaviour intention to use e-government.

3.3.4 Facilitating Conditions

A number of governments worldwide have proposed solutions in order to increase access to public services and effectively facilitate the usage of information technologies (Carter et al., 2008; Phang et al., 2005). Saudi Arabia has established a similar solution, using "intermediary organisations" to minimise the difficulties that hinder citizens from utilising technology in general and e-government services in particular, which revolve around augmenting citizens' acceptance and usage of a new e-government gateway (Al-Sobhi et al., 2010). Citizens' empowerment was set out by expanding the role and involvement of intermediaries in e-society to meet the main goals of Saudi e-government initiatives. In this respect, and according to UTAUT propositions, an intermediary can be proposed in this study, under facilitating conditions, which has been defined by Venkatesh et al. (2003) as an organisational and technical infrastructure that supports individuals to use systems and remove barriers. In this study, a facilitating condition is defined as the degree to which citizens believe that organisational (intermediary) and technical infrastructure supports the use of e-government services and removes barriers to adoption. Facilitating conditions can be a determent citizens' intention towards using a technology or innovation; however, according to Venkatesh et al. (2003), facilitating conditions become non-significant towards intention, if the two core constructs (Performance Expectancy and Effort Expectancy) are presented in the same model.

Literature indicates that technology usage is always hindered by demographic variables issues (Belanger and Carter, 2006; Selwyn, 2004; Loges and Jung, 2001). For example, in the categorisation of age, elderly people are often classified as non-adopters of technology; thus, any e-government strategy will need to consider how online services facilitate the needs of elderly people so that they are not excluded from receiving the benefits offered by e-government (Phang et al., 2005; Selwyn, 2004). In studies conducted previously elderly people were observed to require a greater deal of assistance and support in technology usage (Selwyn, 2004; Venkatesh et al., 2003; Morris and Venkatesh, 2000; Thompson et

al., 1991). In addition, technology usage can also be affected by a user's education level, and Internet and computer experiences (Alawadhi and Morris, 2008; Selwyn, 2004). However, in the scope of e-services, Internet experiences of citizens will be more valuable to the nature of e-government and how it contributes to changing the delivery of public services, rather than computer experiences. Therefore, the facilitating conditions for intermediaries in the Saudi Arabia e-government context would be more significantly influencing usage behaviour of e-government services if they were moderated by demographic variable, such as age, level of education and Internet experiences. As a consequence, the following hypothesis is proposed.

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

3.3.5 Behavioural Intention

This construct was found to have a direct influence on the individuals' (citizens') actual usage of any technology (Venkatesh et al., 2003; Ajzen, 1991). In this study behavioural intention is defined as the degree to which citizens intend to use the Internet or an intermediary for e-government services in the future. This argument forms the premise for hypothesis number five, as follows:

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

3.3.6 Trust in the Technology (Internet)

There are many studies that have highlighted the importance of trust in the adoption and acceptance of new technologies, and have assessed trust as an important factor that predicts user intention of e-services (Pavlou and Fygenson,

2006; Carter, and Belanger, 2005; Gefen et al., 2005; Gilbert et al, 2004). Once the interaction between parties takes place in a non-physical mode from a remote distance through a medium like the Internet, trust becomes an essential central issue to be defined and measured. Trust plays a major role in creating the initial relationship between citizens and e-government, where citizens still do not know about e-service providers (Carter and Weerakkody, 2008). Rotter (1967) explains trust as an expectancy that the promise of an individual or group can be relied upon. Broadly, the literature shows that trust is classified into two parts: (1) trust in the body (entity) that provides services (government bodies); and (2) trust in the tools that will be used to deliver services to users (the Internet in this study). Teo et al. (2008) argued that trust in the body that provides an online service is a necessary condition. However, it is not only important to get users to use an 'e-services method', but trust in the 'e-enabler' (Internet) is considered a significant, salient factor that predicts e-government adoption (Sang and Lee, 2009; Carter, 2008; Carter and Weerakkody, 2008; Gefen and Warkentin, 2002). Moreover, Gefen and Warkentin (2002) argued that trust positively influences the intention to use online government services. The underlying logic of this influence is as follows: when trust is low, citizens are expected to pay more attention, effort and time to finish required online services. Trust would reduce citizens' needs to monitor, control and understand online task interactions, making online tasks easier (ibid).

The aforementioned considerations have been hypothesised by many researchers in the e-government realm concerning building trust between 'government bodies' and 'requesters' of services (citizens). Nowadays, Internet applications are popular in exchanging information and conducting transactions between governments and its citizens. However, communicating with governments online depends on the level of trust in the Internet application, and this communication constantly deals with privacy, security and risk issues.

Accordingly, there are many risks when sharing information through the Internet, such as privacy and security (Carter and Belanger, 2005). These refer to citizens'

trust in the electronic medium, where people usually have concerns about the security of the technology used for exchanging and storing their personal information, particularly when on-line financial transactions are involved (Carter and Weerakkody, 2008). E-government adoption, in turn, is dependent upon citizens' beliefs that the medium (Internet) used by the government to provide e-services is highly secure and sufficiently reliable to be used for providing private information (Teo et al., 2008). Thus, a high level of trust is likely to increase citizens' desires to use e-government (ibid). Also, it influences the take-up of e-government adoption. Further, developing trust between a government and its citizens is critical for the continued growth of e-government services. Citizens must trust the e-enabler (Internet) to keep their information secure and private in order to accept and adopt e-government initiatives (Carter and Belanger, 2005). Given these arguments, the researcher proposes the next hypothesis.

H6: Trust in the Internet will have a significant influence on behavioural intentions to use e-government services.

3.3.7 Trust in the Intermediary

Studies on the adoption of e-services through intermediaries are just beginning to emerge and are exploratory in nature (Al-Sobhi et al., 2010; Janssen and Kilevink, 2009; Howells, 2008; Pavlou and Gefen, 2004; Bailey and Bakos, 1997). Several researchers who have studied intermediaries have shown how they can provide added value to service providers and requesters and increase trust between the two parties (Al-Sobhi et al., 2010; Janssen and Kilevink, 2009; Howells, 2008; Teicher et al, 2006; Bailey and Bakos, 1997; Resnick et al., 1995). For instance, according to Bailey and Bakos (1997) the central role of an intermediary is to enhance communication between parties by building trust and reducing risks in the electronic environment. Trust in an intermediary is defined as a "subjective belief with which a buyer believes that the intermediary will institute and enforce fair rules, procedures, and outcomes in its marketplace competently, reliably and with integrity, and, if necessary, will provide recourse for buyers to deal with

seller opportunistic behaviour" (Pavlou and Gefen, 2004, p.44). Given these insights, studying the role of intermediaries could help gain a better understand citizens' behaviour towards using e-services (Pavlou and Gefen, 2004; Chircu et al., 2000) and possibly e-government (Al-Sobhi et al., 2010; Janssen and Kilevink, 2009). Therefore, investigating the impact of intermediary organisations on e-government adoption has a research value and implications for policy makers and researchers. Furthermore, in the context of Madinah city, building trust in an intermediary is considered closely relevant to e-government services adoption, since Madinah's citizens have to submit their personal information to the e-government portal through an authorised third party organisation (e-office) (Al-Sobhi et al., 2010).

The relationship between trust and new technologies has been widely investigated in the e-government field (Tolbert and Mossberger, 2006; Carter and Belanger, 2005; Welch et al., 2005). This study aims to step further and investigate the development of citizens' trust in physical intermediaries that operate in the electronic services environment, aiming to help build trust and reduce risks that occur as result of the inefficiencies of internet mechanisms and the lack of information technology knowledge (Houghton and Winklhofer 2004). Recent developments in e-government have heightened the need for developing a trustful environment for communities remotely. In this respect, this research focuses its thought on the theoretical background of e-commerce, trustworthiness and the literature of information systems.

Datta and Chatterjee (2008, P 14) define intermediaries as "independent third-party structures that provide an institutional aegis for consumers in an uncertain market environment by controlling and processing market exchanges". Using this insight, Pavloun and Gefen (2004) argue that trust of online transactions could be built through institution-based trust mechanisms. Their argument was based on institutional mechanisms, as intermediaries exist in traditional physical environments, and therefore provide trust for service requesters (ibid). They define institutional-based trust as a feedback feature: escrow services and credit

card guarantees that are provided by third-party institutions to further facilitate online e-commerce transactions. Chircu et al, (2000) argue that trust in the value provided by specific intermediates is equivalent to the technologies that enable electronic services delivery. They find that trust plays an important role on consumers' intention for adopting the electronic services, either directly or indirectly, through affecting positively usefulness and ease of use of TAM model beliefs. Similarly, a study conducted by Belanger et al. (2002) aims to explore the importance of paying for services and goods through the web, suggesting four conditions for its acceptance: (1) third party security seals, (2) third party privacy seals, (3) privacy statements, and (4) security features. Their arguments, based on the online customers' decision for adoption online services, are influence by two levels of trust; trust based on a salesperson or the companies' provision services and goods; and trust based on the technologies that will be utilised by customers to communicate online. Their study shows that security features of the web are seen to be of greater significance than the other three factors.

In the e-government context, trustworthiness theory was adopted by Carter and Belanger (2005), where it aims to evaluate the trust of citizens' intention to use the e-government transactions. Their study is based on two levels of trust, in entities that provide e-government services (government organisation) and on the technologies tools that are utilised to execute transactions online (such as the Internet).

The aforementioned literature argues that trust in physical intermediaries' channels could build citizens intention to use e-government services in order to communicate with government online and should work together to influence citizens' decision to adopt e-government. In offline services, intermediary organisations have been established in Saudi public services for many years now, and these organisations are considered as successful entities, acting between the related relationships involving citizens and government departments (Al-Sobhi et al., 2010). As shown in chapter 5, the intermediaries were adapted by the Madinah government to provide online services for their citizens. Therefore, it follows the

same logic mentioned above that citizens' decisions to adopt the e-government services need some trust in the intermediary organisation, as well as their trust in the electronic mediums used to communicate online (for example, the Internet). This study suggests that trust in physical intermediaries could build citizens' intention to use e-government services and communicate with government online. Therefore, the final hypothesis as follows:

H7: Trust in the intermediaries (e-offices) will have a significant influence on behavioural intentions to use e-government services.

3.4 Demographic Variables

According to the demographic variables and focus of this study, some variables were included in the Saudi Arabian conceptual model (age, education level, and internet experiences) and they were hypothesised to impact on the adoption of e-government services (usage of e-government). Indeed, according to the aforementioned UTAUT, it was proposed that these variables would correlate with the adoption of e-government. This thesis suggests that the variables are central for the understanding of e-government adoption and usage. Therefore, the variables relating to the demographic variables are discussed as follows.

3.4.1 Age

In the adoption of new systems, age groups and demographic variables become vital conflict factors that hinder the effort of e-government services. Prior studies of technology adoption have found age differences significantly contribute either directly or indirectly to users' behaviour toward technology (Venkatesh et al., 2003; Morris and Venkatesh, 2000). For example, research on age differences indicates that the younger age group (15-17 years old) tends to be more willing to adopt computer usage than the older (26-35 years old) age group (Venkatesh et

al., 2000). Furthermore, this influence is shown to be more significant for younger workers compared to older workers in accordance with attitude toward using the technology (Morris and Venkatesh, 2000). The study conducted by Gilbert et al, 2004 uses age to evaluate the e-government mechanism indicating that elderly people are less willing to adopt e-government services than the younger age group. In a Saudi Arabia study, conducted by Al-Ghaith et al (2010), it is suggested the younger age group (15-25 years old) showed more willingness to adopt e-services than the older one.

This research considers that the age group is important to the policy maker in order to understand the importance of intermediary organisations in electronic services delivery channel, and makes better use of the overall resource in an e-government context. Also, there has been little discussion on the influence of age on e-government adoption at individuals' level (citizens). Therefore, the following hypothesis is proposed.

H8. There will be a difference between adopter and non-adopters of e-government of various age groups.

3.4.2 Education Level

One of the major challenges in e-government adoption today is the education level of the general public in relation to participation in all aspects of the information community, particularly e-government. According to literature, people with low education levels often do not use information technologies on a regular basis (continually) or they do not use it at all (Akman et al., 2005). This creates a gap in the use of information technologies between citizens who have a higher education level and those who do not have any education. People with a higher educational level appear more likely to be adopters of new innovations (Rogers, 1995; Burgess, 1986). Many previous studies show that there is such a positive relationship between increase in education level and adoption and usage of technologies (Mahmood et al., 2001; Venkatesh et al., 2000). Thus, people with

low education level require extra support with technology usage. At this point, an intermediary focus results in the elimination of education level barriers for e-government usage. Here, the intermediaries will develop equality of access of e-government services for non-educated people in the society and increase aspects of e-government participation. Thus, it is likely that citizens with low education levels would report more favourable attitudes as a result of going through the intermediaries to communicate with their e-government than with the internet alone.

As the internet application is an important tool for online communication, self-usage of e-government significantly rises among educated people. According to Jaeger (2003) and Losh (2005), usage of the internet application depends on the individual levels of income and education. At this point, people with higher educational levels will be more likely to benefit from e-government services. As a consequence, the following hypothesis is proposed.

H9. There will be a difference between adopter and non-adopters of e-government with different levels of education.

3.4.3 Internet Experiences

During the stages of information system development, internet experience has been thought of as a key factor in further adoption and acceptance of e-services (Jaruwachirathanakul and Fink, 2005; Karjaluoto et al,. 2002; Schumacher and Morahan-Martin, 2001). It widely assumed that participation by users of the information revolution has been fragmented by their attitudes towards internet usage (Karjaluoto et al,. 2002; Trocchia and Janda 2000). For example, in general researchers consider people with good internet experiences to have more favourable attitudes towards e-government adoption than citizens with lower levels of internet experiences. Internet experiences have always aided the nature of e-services. For example, in adoption those users with less internet experiences have been found to be less participative in e-services and have negative attitudes

towards usage. Although limited, research on internet experiences and e-government adoption has encouraged this study to add the internet experiences in order to measure the impact of internet experience on e-government adoption. On the other hand, the internet experiences variable is important because of the nature of e-government services in helping to provide services in distant locations. Thus, the skills associated with the Internet become critical for further adoption. Given this context, the following hypothesis is proposed.

H10 There will be differences between adopter and non-adopters of e-government with different levels of internet experience.

Table 3.6 summarises the overall hypotheses proposed in this thesis.

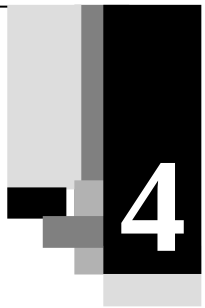
Table 3.7: Summary of Research Hypotheses

HN	Independent Variables	Dependent Variables
H1	Performance Expectancy (PE)	Behavioural Intention to adopt e-government system (BI)
H2	Effort Expectancy (EE)	Behavioural Intention to adopt e-government system (BI)
H3	Social Influence (SI)	Behavioural Intention to adopt e-government system (BI)
H4	Facilitating Conditions (FC)	E-government Adoption Behaviour
H5	Behavioural Intention to adopt e-government system (BI)	E-government Adoption Behaviour
H6	Trust on internet(TI)	Behavioural Intention to adopt e-government system (BI)
H7	Trust on intermediaries (TOI)	Behavioural Intention to adopt e-government system (BI)
H8	Age	E-government Adoption Behaviour
H9	Education level	E-government Adoption Behaviour
H10	Internet experiences	E-government Adoption Behaviour

3.5 Summary and Conclusion

This chapter launched the research model and hypotheses of e-government adoption in Saudi Arabia (Madinah city). It chapter has explained the central importance of intermediaries in e-government adoption. Five constructs are defined to influence citizens' intention towards e-government services (performance expectance, effort expectance, social influence, trust of technology and trust of intermediary) and two constructs facilitating conditions and behavioural intention were proposed to influence usage behaviour. Also, this research considers demographic variables which further impact on the adoption of e-government. These are age, education level and internet experiences.

Therefore, ten hypotheses were generated to explore the important factors that affect the adoption of e-government services in Saudi Arabia and the influence of intermediaries on the adoption of e-government. This chapter has developed a conceptual model to understand the different factors that influence adoption of e-government services and has considered that an intermediary is an important factor that influences usage and adoption of e-government services, and which relate to the access of e-government services and to the other social factors that influence further adoption, such as trust.



Chapter 4: Research Methodology

Summary

This chapter aims to meet issues identified in chapter 2 and 3 respectively, therefore it focuses mainly on: (a) clarifying the most appropriate research assumptions that will meet the objectives of this study; (b) identifying the most suitable research methods; (c) creating a map of research strategy and designs that is followed in this research; and (d) justifying the research methods, strategy and data collection approaches adopted in this study.

4.1 Introduction

In chapter 3, the conceptual model for e-government adoption in Saudi Arabia was proposed and described. In this chapter, the methodology that was employed to meet the research aim and objectives is discussed. Therefore, this chapter is very important as it will help shape the answers to the research questions and the choice of research design, the manner of data collection and coding, and the analysis of the data. As the focus of this thesis is about investigating factors affecting adoption and acceptance of new e-government services, the methodology adopted is based on one of information systems models. The e-government phenomenon, as has been discussed in chapter 2, is in its initial stages in many countries, requiring much research to be done. Therefore, the research methodology is described in accordance with answering each of the research questions of the current thesis. Likewise, the approach adopted for data collection, analysis and interpretation of the results is essential as it will impact on the research reliability and its validity.

E-government can be seen as both a social and an information systems phenomenon, with greater focus on everyday life activities which link directly to citizens. Introducing e-government systems has real impact on the lives of the citizens in terms of economic and social aspects. However, acceptance and adoption of e-government services has been impeded by many factors that could be categorized jointly or severally in relation to government readiness, as well as social reality for the current target adopter. In order to fully understand the factors that impact on citizens' adoption and acceptance of new e-government systems, it is argued that a mixed methodology should be applied for exploring citizen-related issues.

Different researchers have used different methods for studying user adoption of e-government systems (Al-Shafi et al., 2009; Alshawi, and Alalwany, 2009). In this study, two methodologies have been employed: quantitative and qualitative

approaches. A quantitative approach has been used to measure the different factors related to citizens' adoption, while a qualitative approach has set out to explore the current state of e-government implementation as an 'assistant tool' in the Saudi Arabian e-government context. However, each approach has its own advantages and disadvantages. Therefore, the remainder of this chapter will review the research methodology literature and then describe the design and synthesis of this thesis, the design of the data collection method necessary for this study and discuss the issues relating to sampling. This is essential due to the impact of data validity and reliability of the output of the research. The philosophical assumption employed is positivism, as will be explained later in this chapter, and a survey research approach was obtained, using a questionnaire data collection techniques.

This chapter is structured as follows. Section 4.2 reviews the differences between a) interpretivism, (b) critical theory, (c) post-positivism and (d) positivism. Section 4.3 illustrates the literature perspective of the qualitative and quantitative approach (triangulation), and its importance regarding strength of the findings of this research. Section 4.5 shows the research strategies and design. Thereafter, Section 4.5 explains the research methodologies adopted by this thesis, such as design of data collection, period/time of data collection, and some issues related to sampling. Next, in section 4.6, this study presents the research methodology adopted to conduct empirical data collection in Madinah City. In section 4.7, the researcher discussed the data collection technique used in this study. The data analysis approach is illustrated in section 4.8 and finally, the chapter is summarised in the conclusion in section 4.6.

4.2 Understanding the Philosophical Assumptions

In order to choose the research approach it is necessary to understand the philosophical assumptions of the research. This is necessary because it allows the

formulation of the research approach of the study. Further different terms were used in research methodology, such as positivism versus interpretivism; deduction versus induction; quantitative versus qualitative; and, finally, confirmatory versus exploratory. Literature shows multiple kinds of approaches which are dependent on the variations of the researchers' assumptions and focus (see figure 4.1).

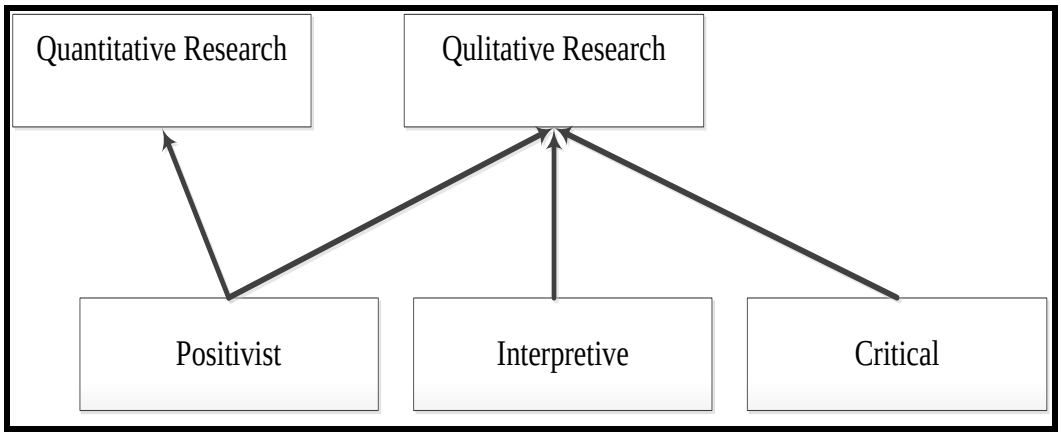


Figure 4.1: Epistemological Assumption for Qualitative and Quantitative Research (Source: Adapted from Straub et al., 2005)

According to Bryman and Bell (2007), the starting point to increase familiarity of this field is to understand the epistemology term. Epistemology is a term concerned with any increased knowledge in a discipline (Bryman and Bell, 2007). Drawing from the same study (Bryman and Bell, 2007), epistemology involves three types of research: interpertivism, critical and positivism. The latter approach was adopted for this thesis.

Many studies in the information system field argue that positivist research is the most popular paradigm in information system discipline, and interpertivism is traditionally viewed as a second approach (Chen and Hirschheim, 2004; Weber, 2004;Walsham,1995;Orlikowski and Baroudi, 1991). However, the interpertivism approach is increasingly used in information system research (Walsham, 1995).

Positivist is an epistemology that is used to test a theory, whereby hypotheses are generated in order to further understand the phenomena under study. This kind of approach believes that the phenomena always exists beyond the human mind (Orlikowski and Baroudi, 1991; Bryman and Bell, 2007). In action, positivism epistemology is always differentiated between facts and value in research (Bryman and Bell, 2007). In this way, researchers' beliefs are not taken into account in the research output as positivism epistemology always makes a distinction between researcher and reality (Weber, 2004). On the ontological perspective positivist eliminates the values, beliefs and intentions of the researchers (Howe, 1988; Weber, 2004). This starts with the theory and data 'analytical constructs' working together to develop a conceptual framework, the result of which will be a conceptual model that helps in the creation of regularities of the data (Bryman and Bell, 2007).

The other strand of research methodology is the interpretivism approach. Interpretivism defines paradigms that are concerned with accessing the meaning of the participants in order to understand the phenomena under study (Orlikowski and Baroudi, 1991). This epistemology supports the idea that researchers' intentions and beliefs cannot be eliminated. As such, interpretivism is a knowledge that could be obtained from personal live experiences (Howe, 1988; Weber, 2004). Thus the interpretivism approach will reject the factual and objective philosophy assumptions from the positivist side (Orlikowski and Baroudi, 1991). Interpretivism in action tends to grasp the subjectivism meaning of social action towards future achievement (Orlikowski and Baroudi, 1991; Bryman and Bell, 2007).

Weber (2004) differentiates between positivism and interpretivism approaches in data collection tools; in positivism, tools of data collection are field studies, experiments, and surveys, whilst in interpretivism approaches are case studies, ethnographic studies, phenomenographic studies and ethnomethological studies. Choice between these approaches, according to Weber (2004), depends upon different factors, such as type of training the researchers have received, social

pressures associated with advisors and colleagues, and preferences for obtaining certain types of insight during the research (ibid). Furthermore, the following table (table 4.1) summarises the differences between the positivist and interpretive research approach assumptions.

Table 4.1: Class Notes Provided by Jörgen Sandberg in Weber (2004, p IV)

Metatheoretical Assumptions	Positivism	Interpretivism
Ontology	Person (researcher) and reality are separate.	Person (researcher) and reality are inseparable (life-world).
Epistemology	Objective reality exists beyond the human mind.	Knowledge of the world is intentionally constituted through a person's lived experience.
Research Object	Research object has inherent qualities that exist independent of the researcher.	Research object is interpreted in light of meaning structure of person's (researcher's) lived experience.
Method	Statistics, content analysis.	Hermeneutics, phenomenology, etc.
Theory of Truth	Correspondence theory of truth: one-to-one mapping between research statements and reality.	Truth as intentional fulfilment: interpretations of research object match lived experience of object.
Validity	Certainty: data truly measures reality.	Defensible knowledge claims.
Reliability	Reliability: research results can be reproduced.	Interpretive awareness: researchers recognize and address implications of their subjectivity.

Therefore, according to previous review, identifying the research approach is not simple as expected, as different dimensions impact on the choice of research assumptions. As such, this thesis is mainly influenced by aspects of philosophical assumptions and positivism is selected as a suitable research approach, exploring

the roles of intermediaries in the adoption of e-government services. The rationale behind this selection is as follows:

- As shown in chapter 3, Unified Theory of Acceptance and Use of Technology (UTAUT) is used to further understand the intermediary roles in e-government adoption; it is about conceptualising the intermediary organisation with the acceptance model (UTAUT). The main principle of the positivism approach researchers is the ability to create hypotheses that could be tested through data collecting (Bryman and Bell, 2007).

- Another reason behind selection of positivism in this thesis is the neutral of factors in e-government adoption is separated from the researcher's mind. Acceptance factors, intermediary, demographic variables and adoption have been measured statistically, using different sets of techniques; for example, T, F and Chi-square test, which will help to see if the collected data supports the research hypotheses.

- The main technique for data collection in this study is questionnaire survey. Therefore, according to above review (Weber, 2004) this thesis adopts the positivism approach.

The aforementioned list contains the justifications for selection of positivism as appropriate approach. This study does not claim that other epistemologies cannot be applied for this study. However, with the understanding of the philosophical assumption reviewed above and the methodology employed in this research, it argues that the positivism epistemology is more appropriate for this study.

4.3 Qualitative and Quantitative Approach

Many researchers in different disciplines have agreed that three approaches are commonly used to meet research aim and objectives. These are qualitative or quantitative approach strategies or a mix of both which is often referred to as triangulation (Bryman and Bell, 2007; Creswell, 2003; Avison et al 1999; Gable, 1994; Jick, 1979).

The main distinctions between the two paths are the levels of analysis and techniques of data collection that researchers use. For example the qualitative approach deals with words and the meaning of data with a deep level of analysis with complex phenomenon. Therefore, this approach is very helpful for understanding people, cultural and society (Myers, 1997). Whereas, the quantitative side is concerned with numeric data. According to Denzin and Lincoln (2004), "qualitative research is multimethod in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, life story, interview, observational, historical, interactional and visual texts – that describe routine and problematic moments and meanings in individuals' lives." (Denzin and Lincoln, 2004, p. 2). In contrast, the quantitative approach shows an empirical investigation of social phenomena using mathematical or statistical data techniques. Furthermore, the qualitative approach is associated with different kinds of data collocation, strategies and techniques, such as observation and interview, whilst the quantitative approach uses surveys and questionnaires (Bryman, 1992; Denscombe, 2003). These techniques and methods are related to this study and are discussed in depth in section 4.7.

According to the above review, there are many comparisons between the qualitative and quantitative approaches, the key differences being as follows:

1. In qualitative research, data is obtained from words meaning, whilst in quantitative approach, data is in the form of numbers.

2. Language used in qualitative research is formal but informal in quantitative research.

3. In qualitative research, researchers are not separated from things being studied. However, in quantitative approach researchers and subject are separated.

4. In qualitative research, theory is the outcome of the research. For example, the process of research starts from observation leading towards creating a theory. However, in quantitative research, findings are based on well-known theory.

Therefore, each approach has its own properties and varieties. With such differences, the researchers synthesise their methodology in accordance to their different research objectives and goals. In this thesis, the mix-method approach is conducted to realise the research aim and objectives

4.4 Mix-Method Approach

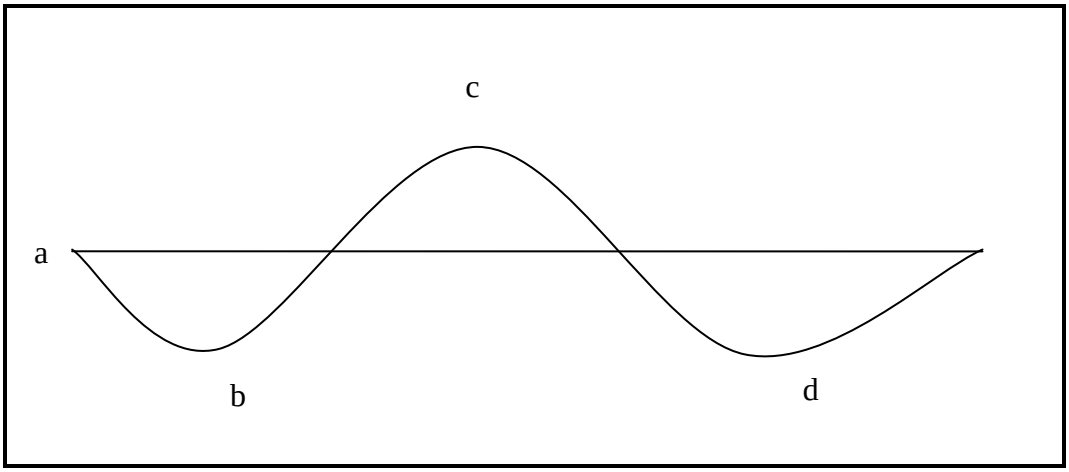
The most important aim of the triangulation approach is to study the same phenomenon from different angles or multiple perspectives (Kaplan and Duchon, 1988; Jick, 1979). Triangulation emerges as result of the weaknesses of other approaches, which appear to be a complementary rather than against other types of research (Jick, 1979). No single approach alone will provide rich information about a single phenomenon (Kaplan and Duchon, 1988). Therefore, many researchers promote the mix methods approach to make the research more

effectiveness (Johnson and Onwuegbuzie 2004; Kaplan and Duchon, 1988). In research methodology, triangulation can be perceived in many ways. However, it is stand to study same research problem from different dimension. According to Jick (1979), triangulation is about scaling, reliability and convergent validation, with some time to capture the holistic and contextual portrayal of the unit(s) under study. According to Johnson and Turner (2003, pp 298), the triangulation (or Intramethod) involves "mixing which must include either a combination of qualitative and quantitative approaches within a single method, or a method that is neither purely quantitative nor purely quantitative".

In this study, both approaches were conducted to obtain data. A questionnaire survey was chosen to investigate the factors influencing citizens' behavioural intentions towards e-government adoption (the main conclusion of this study), and interviews, observations and reviews (initial triangulation) of government-documents were used to develop an understanding of e-government and the role of intermediaries in e-government implementation, in the Saudi e-government context (contextual portrayal). For example, the roles of intermediaries in e-government adoption were studied in this thesis by interviewing government officials and owners of an intermediary organisation (using qualitative approach), and complemented by measuring citizens' perspectives (using a quantitative approach). Although this thesis used several data collection approaches, all were focused on investigating the roles of intermediaries (phenomenon) in diffusion and adoption.

According to Mingers (2001), there are different types of multimethod research designs: sequential, parallel, dominant, multimethodology, and multilevel. Sequential means "methods are employed in sequence with results from one feeding into the later one" (Mingers, 2001 pg. 252). Also, sequential refers to two types: a statistically analyzed questionnaire followed by some in-depth interviews to better understand the results, or ethnographic research and content analysis to design a questionnaire.

According to the above categorisation, this study followed the sequential approach: (a) literature review, (b) interview government official, scanning government documents and observation (c) interview intermediaries' owners, and (d) questionnaire survey. (a), (b) and (c) were all used to build the final questionnaire survey used in the study in (d). Figure 4.2 illustrates the sequential multimethod research approach employed in this study.



a. Literature **b.** Interview government official , scanning government documents and observation **c.** Interview owner of intermediaries **d.** Questionnaire survey

Figure 4.2: Multimethod Research Designs Conducted in this Study

All interviews, observations and analysis of government documents was set as an initial stage in order to form a picture of e-government implementation in Saudi Arabia and build some items of the questionnaire survey, which has been conducted to understand e-government adoption. The next section explains the overall research strategy followed.

4.5 Research Strategies and Designs

Research design is a set of systematic processes that aim to explore phenomena that exist in society. This knowledge is from the human mind which is very complex to understand. Therefore, applying different set of approaches:

quantitative, qualitative or some time combination of both approaches (Gable, 1994), and using different set of conditions to collect data and for analysing the data, is appropriate to meet the research aim and objectives (Bryman and Bell, 2007; Creswell, 2003; Avison et al 1999; Gable, 1994; Jick, 1979). The main purpose of starting research is to extract knowledge about a particular field by using different research designs or strategies. Generally, research is an "open-ended" process, which aims to obtain as much knowledge as possible, jumping from one place to another, with one place maybe providing the initial set of questions to be answered, and another place providing a set of answer for these questions, with a number of steps existing in between, including the collection and analysis of the data (Yin, 2009). This is exactly how the stages proceeded in this study. It started with interviews with Saudi government officials in order to further understand current e-government implementation, and it was found that an intermediary is a effective success factor for e-government development, and ended with a conceptualisation of the intermediary using the acceptance model UTAUT (see figure 4.4).

Therefore, research always starts by literature review, which aims to cover existing knowledge, theories applied, research methods employed, significant controversies, and inconsistence in findings, and specifies unanswered research questions in the area being investigated (Bryman and Bell 2007). This stage uses secondary sources or secondary data, whereby knowledge that exists is not related directly to the research being studied, but was published by other researchers in reports, books, papers or journals articles (Collis and Hussey, 2003). The review of literature is a necessary stage to realise the aim and objectives of any research. This thesis started with a literature review to find the research gaps and to highlight the main area of intended research.

Another kind of source is primary data, which is related directly to the research area. According to Collis and Hussey (2003), primary data (often called original data) is the data collected by the researchers in order to answer the research questions; in other words, meeting the aim and objectives of the research. Such

data can be collected through different methods, including surveys, case studies, laboratory experiments, field experiments, action research, archival research, grounded theory, longitudinal studies and cross-sectional studies (Saunders et al., 2009; Bryman and Bell, 2007; Saunders et al., 2006; Orlikowski and Baroudi, 1991). The choice between approaches depends on the questions that are highlighted by researchers (Avison et al 1999). Such data can be collected by different tools, such as interviews (structured interviews and semi-structured or unstructured), observations and questionnaires (Saunders et al., 2009; Bryman and Bell, 2007). As such, several approaches could be used to obtain primary data; for example, qualitative or quantitative research, or some combination of both approaches. This thesis follows both approaches, as it has used the interviews, observation and questionnaires processes protocol (see figure 4.2).

As this research has employed UTAUT as an acceptance model of information system field, a theoretically based (chapter 3) survey approach was most appropriate for this study. Many researches in the information system field, in general, and e-government, in particular, have used this model of an information system as a framework, and a survey approach as the methodology for data collection (Carter and Bélanger, 2005; Gilbert et al., 2004; Gefen et al., 2002). Therefore, this research follows the same approach for data collection. Furthermore, this study is a student research project which has limited budget, resources and data access, and therefore the questionnaire survey is more suitable compared to other techniques such as interviews.

Figure 4.3 shows the research strategy followed in this study. This was designed to examine factors affecting e-government adoption in Saudi Arabia and the roles of intermediaries in this relationship. Therefore, this study adopted UTAUT as the theoretical framework (chapter 3). This is similar to other research conducted in information system, in general, and e-government, in particular, to explore the attitudes of individuals (e.g citizens) in accordance with adopted technologies. This was very helpful in the formulation of the hypotheses of this study and the selection of the survey research approach. This chapter identifies the philosophical

assumption, sample selection, survey administration, and data analysis techniques used. The background of Saudi Arabian e-government and intermediary implementation are listed in chapter 5. This is followed by data analysis and hypotheses confirmation results in chapter 6. Mapping the literature review and results obtained from this study are provided in chapter 7. Finally, this study concludes by offering contributions, implications, limitations and future research recommendation and directions provided in chapter 8.

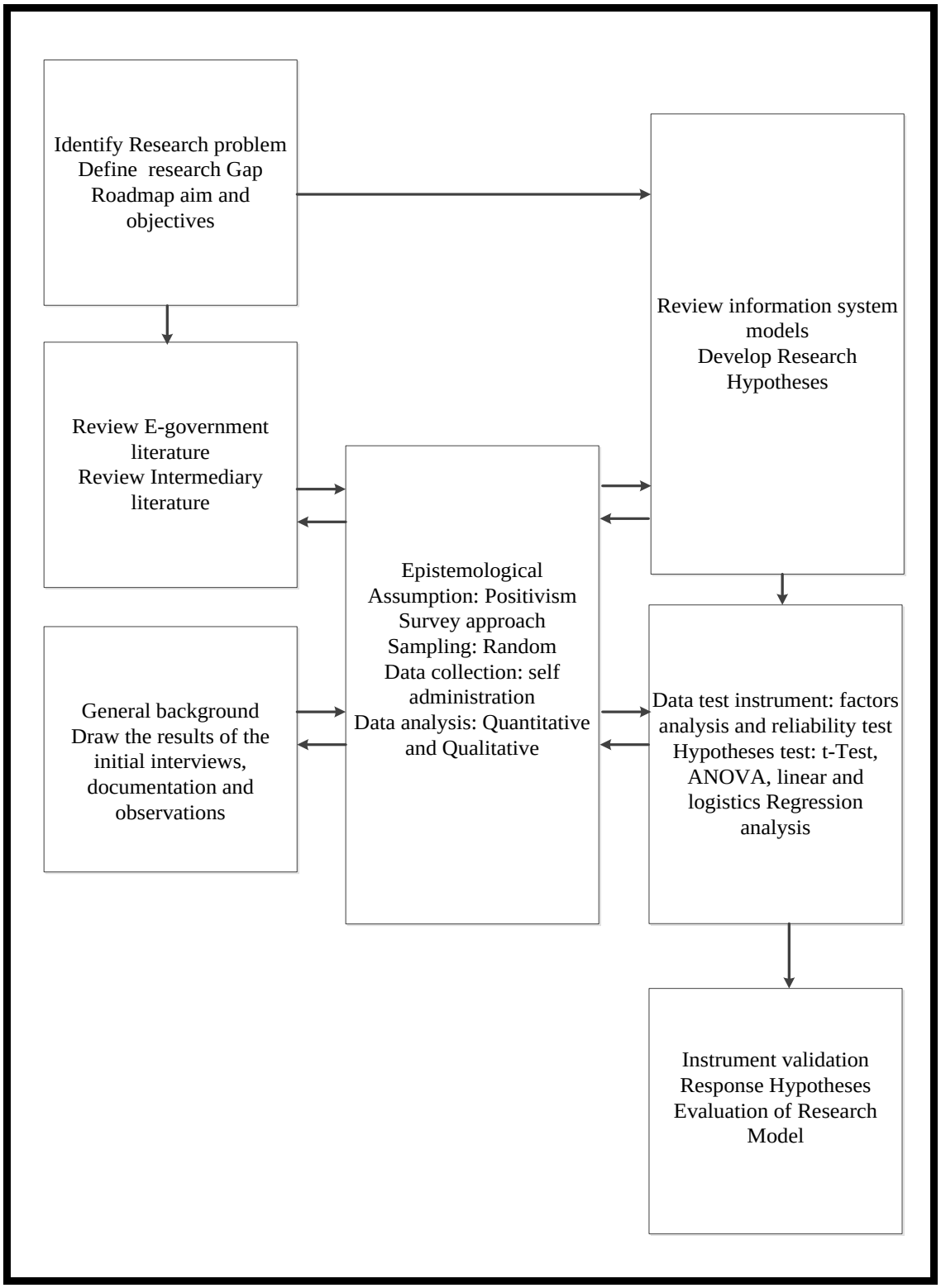


Figure 4.3 : Research Strategy and Design Used to Explore E-Government Adoption in KSA

4.6 The Data Collection Strategy Adopted for this Research

As highlighted above in section 4.4, data can be gathered from different sources; primary and secondary sources. In primary data, collection methods have multiple protocols, such as documentation, interviews (structured, semi-structured or unstructured), observation and questionnaires (Saunders *et al.,* 2009; Bryman and Bell, 2007). The purpose of using multi-collection methods is to further enhancement of research results (Yin, 2009; Johnson and Turner, 2003; Jick, 1979) and capture an accurate portrayal of the context. The tools used for collection of data in this thesis are (a) documentation, (b) interviews, (c) observations and (d) questionnaires. However, questionnaire surveying is the main tool for the collection of data and drawing conclusions in this study. These will be discussed in detail in the next section. Table 4.2 presents the data collection methods that are used in this study, with their respective strengths and weaknesses (Yin, 2009).

Data Collection Data Source and Evidence	Use of Techniques In This Study	Strengths	Weaknesses	Context
Documentation	• Analysis of e-government documents • E-government plan for the future • Review report published by government	• Stable - in this study, official e-government implementation documents have been reviewed on a regular basis. • Unobtrusive - used secondary data to confirm the primary data derived from cases. • Exact - documentation contains figures, strategies and polices that illustrate e-government implementation in Madinah City.	• Retrievability - it was difficult to find relative documents • Biased selectivity - few of Madinah e-government publications were incomplete or did not reflect the real picture of current state	Initial contextual study
Interviews	• Unstructured interviews with government officials • Unstructured interviews with intermediary officials.	• Target – focuses directly on e-government implementation in Madinah city to explore the various phases of e-services strategy • Insightful – provide a lens of the current state in implementing e-government	• Response bias - considering some sensitive (political pressures) • Reflexivity - the interviewees present the positive constructive points rather than reflecting the reality	Initial contextual study
Direct observation	• Visited three intermediary (e-offices) • Meeting intermediary owner, responsible for running the intermediary	• Reality - covers the work progression, process and human interactions in the intermediaries (e-offices) • Contextual - illustrates the real interactions between the government agencies and e-offices (Khdamatec)	• Time - consumed a lot of time, which required physical presence • It has cost implications	Initial contextual study

Questionnaire	• Measuring the citizens' attitudes toward e-government adoption using 626 cases • Provided a brief explanation about e-government to participants • Close-ended questions	• Not expensive, this study is a student dissertation which has limited financial support and funding • Helpful for measuring citizens' attitudes towards e-government adoption • Makes possible to measure the ways of citizens' thinking • Questionnaire is very quick to administer and return. In this study each case of the questionnaire took participant 10-15 minutes to fill • High measurement validity and reliability, for this study. Factors analysis was used for validity and Cronbach's coefficient alpha for reliability of the data • Very useful for confirmation and for exploration • Save time - in this study data collection took three months to collate	• Item has to be short, therefore in this study content validity using pre test and pilot study was done to ensure that items short enough for participants. • Lack of participants' awareness, participants may misunderstand when filling out some questions. Thus for this study, self-administration was found more appropriate to bridge this weakness of data collection. • Return rates can some time be below the acceptable rate (mail and email administration). Thus, self-administration was suitable. • Time consuming for analysis open ended items. Therefore, close-ended questionnaire was used for this study. • Needs validation, pre-validation (per test, pilot study) and post validation (factors analysis and reliability test) instruments were obtained in this study.	Core data source and evidence that were used to draw the conclusions of this study

Table 4.2: Strengths and Weaknesses of Data Collection Methods

As discussed early in section 4.4 and table 4.2, the main purpose of triangulation is to strengthen the research methodology, furthering the output results by using many approaches and data collection methods to study one phenomenon from different angles (Johnson and Onwuegbuzie 2004; Kaplan and Duchon, 1988; Jick, 1979). This thesis has followed the same strategy in data collection, where four sources of evidence were used for the primary data: observation, interviews, documentation and questionnaire survey. All these have been used in this research as assisting tools for drawing an accurate portrayal of the context (Jick, 1979) of e-government implementation initiatives in Saudi Arabia, with the exception of the questionnaire which was used to draw the conclusions of this study.

4.7 Methodological Approach of This Study

This thesis is based on a mixed-method (qualitative and quantitative) research approach. The aim of this study is to examine e-government implementation (intermediaries of e-government services) from the government's point of view. It also evaluates e-government progress from the citizens' perspective. Therefore, different approaches have been used for collecting valid data in order to help to meet the main objectives of this study. However, as stated before, analysis of the three stages of data collocation (documentation, interviews and observation) mainly stands to illustrate the current state of e-government implementation through interviews with key people e-government strategy development in Madinah city. A further set of interviews were conducted with managers responsible for the intermediaries (e-offices), the main aim of which was to focus on background services offered, benefits provided for e-offices users (citizens), and some of the problems faced by the e-offices. Prior to commencing the research, ethical approval for the study was obtained by completing the relevant documentation at the school of information systems, computing and mathematics. In keeping with these ethical guidelines, no names of individuals were identified in the study and all participants engaged in the research at their own free will. All

participants (interviews and survey participants) were informed that they can withdraw from the study at any time without prior notice. Figure 4.4 illustrates the research methodological approach conducted in this study.

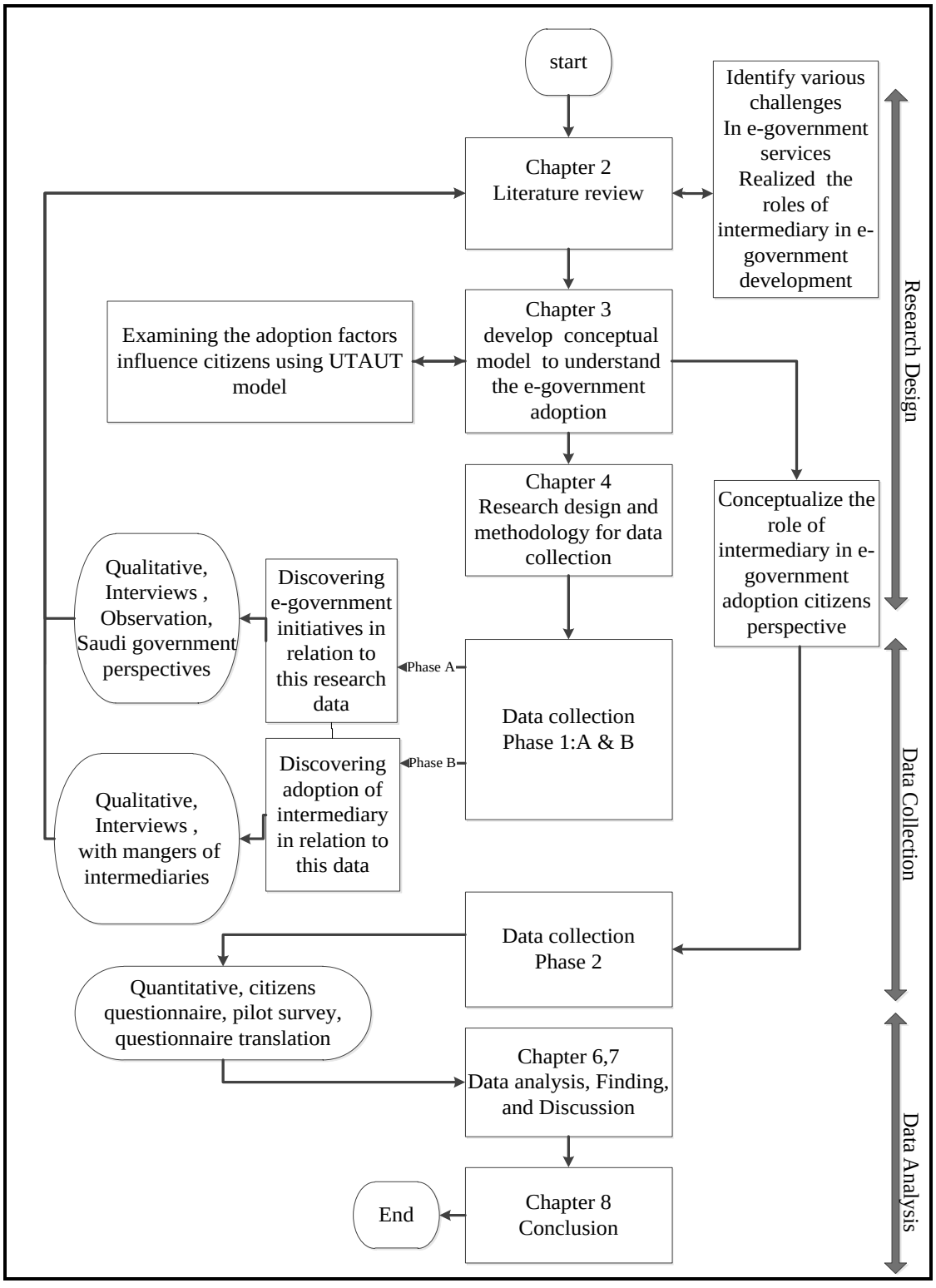


Figure 4.4: Stages of the Research Process

4.7.1 Documentation

To understand the role of intermediaries (e-offices) in e-government diffusion in Saudi Arabia and to explore the arguments set forth above, the researchers first reviewed official reports and literature from the Madinah government that are related to intermediary roles in facilitating diffusion and adoption of e-services. The aim of this review was to highlight the research gap and objectives. The data collection via documentation consisted of official information reports published by the 'Iimaratalmadinah' organisation within the Saudi Arabian government. However, these publications do not provide an overall illustration of the current state of affairs. On the contrary, to a certain extent they highlight the major benefits and current challenges facing e-government implementation in Madinah City.

4.7.2 Interviews

As the purpose of this research is to investigate the current state of the Madinah city e-government initiative and to examine the role of intermediaries in an e-government context, this study adopted an in-depth interview strategy. Interviews are regarded as the main tool of qualitative research for data collection process (Denzin and Lincoln, 1998). In this research, interviews constituted the main data source in the case study. The interviews were conducted between August and November 2008, by visiting the interviewees in a large government department at Madinah City.

Two board directors of a large government department were interviewed using semi-structured interviews (Bryman and Bell, 2007), lasting about an hour and a half. This provided the opportunity to obtain an overview of the e-government implementation in Madinah City, as well as of the specific challenges facing the government. The interview also focused on exploring the benefits and challenges facing the intermediaries (e-offices), the primary channel for e-government

diffusion in Madinah. Another semi-structured interview was conducted with one of the board directors (BD) of the Steering Committee of the e-government project in Madinah City. The main advantage of semi-structured interviews is the flexibility they offer in understanding events by getting more detailed information (Yin, 2003).

The interviews were arranged through a number of personal visits to government departments and numerous telephone calls to interviewees. Therefore, the investigator started to classify the interviewees on the basis of their involvement with e-government; these interviewees are responsible for the national e-government project in the Madinah region. Further, the two government departments selected for the initial study were chosen based on the involvement in the national e-government project. The purpose of these interviews were to obtain an overview of e-government initiatives in Madinah city and associated challenges.

Three government officials were interviewed. The positions of these government officials are as follows:

1. Board directors (BD) of the steering committee of e-government project in Madinah city.
2. Director of e-government services at government department 1.
3. Director of e-government services at government department 2.

The two government departments are identified as Government department 1 (GD1) and Government department 2 (GD2) due to confidentiality and ethical reasons.

The interviews were complemented and supported with observation, by visiting three e-offices in different areas of Madinah City. Since the only sources of published information on e-government in Madinah are official government reports and publications, the use of multiple methods or triangulation was useful

for gathering more details about e-government diffusion and related challenges in Madinah City, and to get an in-depth perspective of the wider aspects of the research context (Denzin, 1989). Moreover, the triangulation approach helps the researchers to compare the written and spoken version, and increased the reliability of findings by confirming evidence from multiple sources.

This was followed by interviews with the key people that are responsible for administrating the intermediary (e-offices) organisation at Madinah City. Figure 4.3 shows the research methodology that aided the researchers of this study to answer the research questions set out in the study. Madinah City was selected in this research because it is the only city in Saudi Arabia that has implemented intermediary (e-office) gateway e-services under their local e-government strategy (Al-Sobhi et al., 2010). As the primary focus of this research is to explore the role of intermediaries in an e-government context, a semi-structured interview (Yin, 2003) was conducted between July and October 2009 by visiting three e-offices in different areas of Madinah City. The interview protocol used was as follows. The interviewees decided a convenient time and location for the interviews and were given enough time to make arrangements. The interviews took between one and a half and two hours. One manager in each intermediary (e-office) was interviewed and these interviewees are identified as follows:

1. Manger of intermediary 1.
2. Manger of intermediary 2.
3. Manger of intermediary 3.

The purpose of the interviews with the managers was to understand the main challenges that face Madinah's government in implementing e-government and the roles of e-offices in minimizing such difficulties. When the interviews commenced, the interviewees were informed that they could withdraw from the interview at any time if they desired. The interviews were tape-recorded with permission from the interviewees. It was essential to use a tape recorder in order

to have enough time to analyse the data. The interviews were transcribed immediately after completion and analysed to identify relevant themes.

4.7.3 Questionnaire Development

After a review of the documentation and the interviews, the researcher carried out a questionnaire survey to compare and contrast factors that have been highlighted by government reports and documents and to record citizens' views on the access to e-government services using the Internet (Saunders et al., 2003). This was necessary in order to understand the role of intermediaries in facilitating e-government adoption and diffusion, as the government's rationale for implementing intermediaries was based on improving citizens' accessibility of e-government services.

To assess the research model adopted for this study, a questionnaire survey was used. The main advantages of using the questionnaire are that it is easy to distribute to several locations at the same time and is less costly to administer (Bryman and Bell, 2003; Yin, 2009). The data for this study were collected from citizens in Saudi Arabia living in Madinah city, the selection of this target population is influenced by the fact that, as this study hypothesises the intermediary as an important factor influencing adoption, this survey should be distributed in Madinah city as an example of a city developing intermediaries as part of e-government strategy. In order to collect random data, a self completion survey approaches was used. Thus, this study made sure that the information provided to participants was well understood (Bryman and Bell, 2003). The survey of this study consists of 15 questions, divided up as follows: (1) multiple choice questions with single answers showing the demographic variables such as gender, age, education level, computer experiences and internet experiences; (2)

one open-ended question designed to determent the usage (Yes/No) of e-government services; and (3) close-ended questions, using Likert scale (1-5) that ranged from strongly disagree to strongly agree, addressing the adoption of e-government services (Appendix E). Because e-government is a relatively new concept in developing nations, the researcher provided a brief explanation about e-government to participants. The aim of this study was to explore roles of intermediaries in the adoption of e-government. As such, the sample was influenced by the objectives of this study to examine the influence of intermediaries in affecting individuals' (citizens) adoption of e-government. Thus, the survey was randomly distributed to 750 citizens in Madinah city, from September to December 2010. According to Bryman and Bell (2007), there are two main formats for the distribution of questionnaires: mail or postal, and self-completion. Postal questionnaires refer to one send by post to the respondents with an explanatory letter requiring them to return it after completing the questionnaire by the same method (i.e. by post).

This study followed the following methods for distributing the questionnaires: (1) through the intermediary (e-office) staff in order to hand them to the intermediary visitors, (2) through the universities in Madinah city who distributed to their student, and (3) face to face distribution at various locations in Madinah city. A Self completion survey approaches refer to one that is distributed by the researcher themselves. This study used the self-completion questionnaires due to the consideration that the postal questionnaire was not appropriate as a consequence of the difficulty of using post offices in Saudi Arabia. Furthermore, self-completion questionnaires (self-administrated) are appropriate to ensure that all questions are understood by participants as the researcher is there for any help needed to explain any questions that do not appear obvious.

The survey was randomly distributed to Saudi citizens and, therefore, the response rate would be considered an issue in representing the achieved sample (Bryman and Bell, 2007). Mangione (1995) suggested five different classification rates of questionnaire response; over 85% excellent; 70-85% very good; 60-70%

acceptable; 50-60% barely acceptable; and below 50% not acceptable. In the analysis of the responses received, 626 responses were found to be useful (83.4% of total survey), and 124 were discarded because of incomplete answers (90 questionnaires) or because they were completed by females (34 questionnaires).

NOTE: Since this survey was focused on the Saudi traffic department as an example of e-government service, females were eliminated from the questionnaire survey since they do not have the right to drive in Saudi Arabia. The items of this survey were adopted from other researchers (Carter and Belanger, 2005; Venkatesh et al., 2003; Davis, 1989; Davis et al., 1989; Moore and Benbasat, 1991; Fishbein and Ajzen, 1975) and modified to meet the research objectives (see table 4.3 in next section, 4.7.4). In addition, some items were built based on intermediaries' literature in order to understand the roles of intermediaries in facilitating e-government adoption and validate the added items using the pre-test and pilot study instrument validation. The next section shows the validation instrument processes that applied in this study.

Thus, the response rate of 83.4% is based on the following formula.

(Response number X 100) / distributed questionnaires = Response rate

(626 X 100)/ 750 = 83.4%

Therefore, this response rate is found to be very good.

The response rate should represent the overall sample population. Based on the study offered by Krjecie and Morgan (1970) in determining sample size in accordance to given population per million, each million required 384 cases (see Appendix h). As this study focuses on the Madinah region, and since the population of the region is 1,777,933, 700 completed questionnaires would be required to be administered in order to reflect the overall population (CDSI , 2010).

4.7.4 Questionnaire Instrument Validation

In the last twenty years of development positivism research, instrument validation has been established as a key factor in the validation of data under study. This stage is important for the confirmation of data representation of the real world (Dwivedi et al., 2006; Straub et al., 2004). Instrument validation can be obtained through different forms; content validity, construct validity and reliability (Dwivedi et al., 2006; Straub et al., 2004). According to Straub et al., (2004, p 68) content validity means "the degree to which items in an instrument reflect the content universe to which the instrument will be generalised. This validity is generally established through literature reviews and expert judges or plans". Construct validity is "one of a number of subtypes of validity that focuses on the extent to which a given test/instrumentation is an effective measure of a theoretical construct" (Straub et al; 2004, pg 68). Reliability means "the extent to which a variable or set of variables is consistent in what it is intended to measure. If multiple measurements are taken, the reliable measures will all be very consistent in their values. Reliable measures approach a true, but unknown, "score" of construct" (Straub et al; 2004, pg 68). This instrument validation should apply in different periods, both before and after data collection (ibid).

In order to validate the data that was obtained to understand the factors influencing adoption of e-government services in Saudi Arabia, pre-validation (pre-Test and pilot study) and post-validation (factors analysis and reliability test) data instruments have conducted, or know as prior and primary validation (figure 4.5). These instruments are important to show the accuracy of survey estimation.

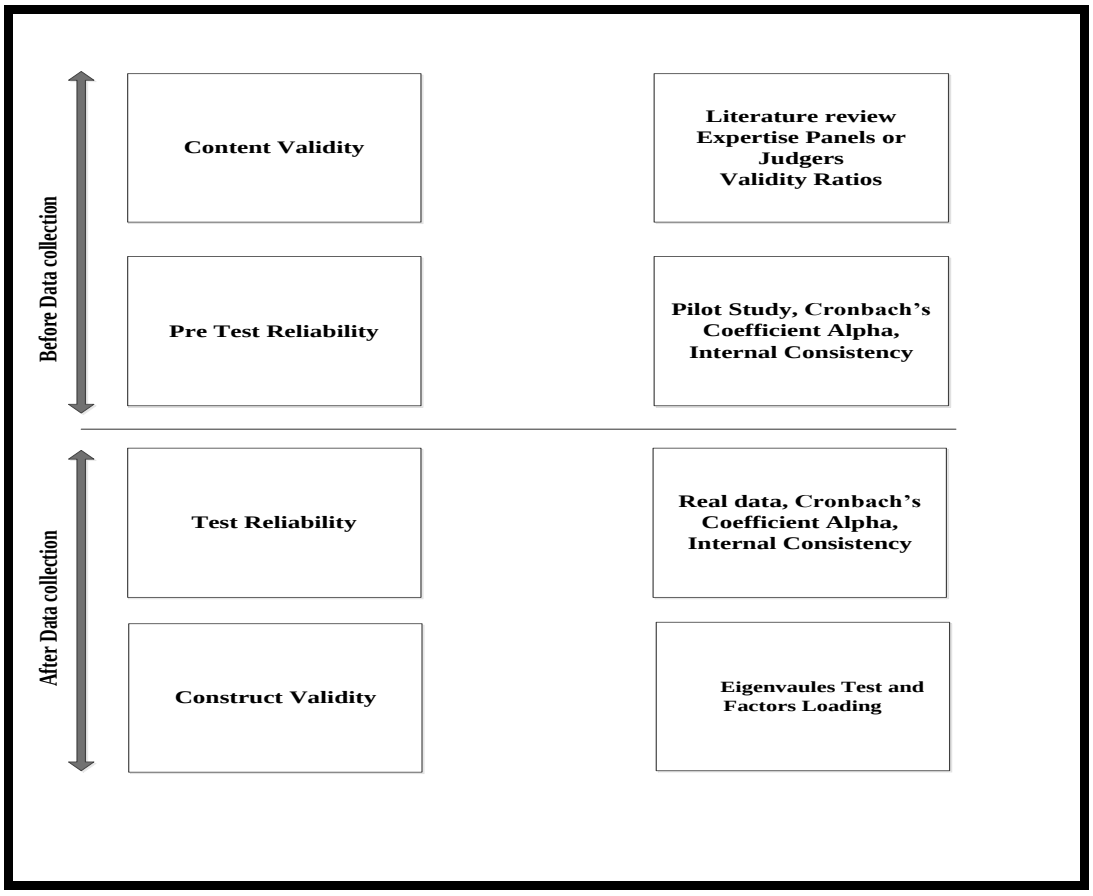


Figure 4.5: Instrument Validation Process

However, taking into account Straub et al.'s (2004) recommendations, researchers are advised to use previous validation instruments, if available, rather than develop their own validation process. This study has adopted items from other researches in technology adoption and then modified in order to meet the aim and objectives of this study (table 4.3) but some were built in accordance with the intermediary literature. Thus, it was essential for furthering the validation of items by content validity to employ a pre-testing valuation instrument for the new items that represent intermediary factors. The two validation processes used are explained in the following subsections. Table 4.3 presents the items (questions) that were adopted from others in order to understand e-government adoption in Saudi Arabia.

Constructs	Definition	Item Code	Items
Performance Expectancy (Venkatesh et al ., 2003; Davis,1989; Davis et al.,1989; Moore and Benbasat,1991)	In this research, performance expectancy refers to the degree to which an individual believes that using the e-government or intermediary's (e-office) system will help him or her to attain gains in personal performance	PE1	Using the Traffic department website will enable me to renew my driving license more quickly
		PE2	If I use the Traffic department website I will enhance my social status
		PE3	Traffic department website would enable me to access Traffic department information and services when I need them – 24 hours/day, 7 days/week
		PE4	If I use the Traffic department website I will spend less time processing my driving license renewal application
		PE5	I think interacting with the Traffic department face to face would be preferable rather than interacting online
		PE6	I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting face to face with traffic department officials
		PE7	I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting directly with the traffic department website
Effort Expectancy (Venkatesh et al ., 2003; Davis et al.,1989)	In this research, effort expectancy refers to the degree of ease associated with use of e-government services	EE1	My interaction with the Traffic department website would be clear and understandable
		EE2	It would be easy for me to become skilful at using the Traffic department website
		EE3	Learning to interact with Traffic department website would be easy for me
		EE4	I find it easy to get the Traffic department website to do what I want it to do
		EE5	It would helpful to use intermediary (e-offices) to interact with Traffic department online

		EE6	It would be helpful to interact online directly with Traffic department
Trust of Intermediary	The degree which individual (citizens) believes that intermediary is a reliable tool to be used to obtain e-government services	TOI1	I think I can trust intermediary organisations.
		TOI2	In my opinion, intermediary organisations are trustworthy
		TOI3	The intermediaries (e-offices) have enough safeguards (passwords, secure computers etc.) to make me feel comfortable using it to interact with the Traffic department online
		TOI4	I am not concerned that the information I submit through the intermediaries (e-offices) could be misused
Use Behaviour (Venkatesh et al ., 2003; Davis et al.,1989)	The actual use and associated behaviour of the e-government services.	UB	Have you ever completed a transaction with the Traffic department online?
Social Influence (Venkatesh et al ., 2003; Ajzen, 1991; Davis et al.,1989; Fishbein and Ajzen, 1975)	In the current study, social influence is defined as the important people pressure (family or friends) that influences the intentions to use e-government, and the influence of an intermediary in increasing the awareness and the social marketing to adopt e-government services	SI1	People who influence my behaviour think I should use the online Traffic department services
		SI2	I would use the e-government services if my friends use them
		SI3	My Friends think intermediaries (e-offices) are helpful for using the Traffic department online service
		SI4	The intermediaries (e-offices) encourage the use of online Traffic department services
		SI5	People who are important to me think that I should use the Traffic department website facilities
Facilitating Conditions (Venkatesh et al ., 2003; Ajzen, 1991)	The degree which citizens believe that organisational (intermediary) and technical infrastructure support in using	FC1	I have the computer devise necessary to use the Traffic department website
		FC2	I have access to the internet to use the Traffic department website
		FC3	I have the internet experience necessary to use the Traffic department

	e-government services and remove barriers in such relationships		website
		FC4	Given the resources, opportunities and knowledge it takes to use the Traffic department website, it would be easy for me to use the Traffic department website
		FC5	Guidance was available to me in the selection of the system
		FC6	A specific person (or group) is available for me in the intermediaries (e-offices) to provide assistance with Traffic department website difficulties
Trust In Internet (Carter and Belanger, 2005)	The degree which citizens believe that internet is reliable to be used in communicating with government online.	TI1	The internet has enough safeguards to make me feel comfortable interacting with the Traffic department website
		TI2	I feel assured that legal and technological structures adequately protect me from problems on the internet
		TI3	I feel secure sending sensitive information across the internet
		TI4	In general, the internet is now a robust and safe environment in which to transact with the Traffic department
Behavioural Intention (Venkatesh et al., 2003; Ajzen, 1991; Davis,1989)	In this study the behavioural intention is defined as the degree to which citizens intend to use the Internet or an intermediary for e-government services in the future.	BI1	I intend to use the Traffic website in future
		BI2	I intend to use the Traffic department website directly
		BI3	I intend to use the Traffic department website through intermediaries (e-offices) in the future

Table 4.3: Items from other Research in Technology Adoption

4.7.4.1 Content Validity

4.7.4.1.1 Pre-Test

After the questionnaire was compiled, a pre-test was carried out using six researchers and three practitioners (Appendix G) in order to improve the questions and enhance the comprehension of respondents before final distribution (Saunders et al., 2003). The main aim of the pre-test was to ensure that items added to help understand government adoption are: (a) short, unambiguous and easy to complete; (b) there is no need to reword, add or delete items; and (c) appropriate in length with the option to suggest any comments to improve the overall items of the survey (Fowler, 2002). There should not be open-ended questions. The reviewers should be asked to respond in a check box or by circling a number. The researcher was then able to modify the items according to reviews suggestion feedback, and the questionnaire survey was slightly edited in accordance to respondents' feedback and suggestions.

4.7.4.1.2 Pilot Study

After the pre-test instrument validation had been obtained, two pilot studies were employed. The main aim of the pilot study is to enhance the actual final version of the questionnaire before it is released for large scale studies. There were two pilot studies. One used ten researchers and four practitioners, with the researchers selected according to their publications, in which they had adopted one of the information system acceptance models. Thus, they have more experience in developing items related to the assessment of individual attitudes towards adoption of technologies. The participants in the pilot study were required to find any difficulties citizens might face while they completed the questionnaire survey, and whether the instructions given in the survey were comprehensive enough. The

other brief pilot study was distributed to 30 Saudi citizens in the real context in Saudi Arabia.

From the first pilot study not much has been changed, adding one question that reflects the usage of e-government services, (question 8 - Appendix E). The participants in the pilot study were also required to check if: (1) the final draft of questionnaire was understandable; (2) the length of the questionnaire was suitable; (3) the time taken to complete the questionnaire was appropriate; and (4) the layout of the survey was acceptable. The questionnaire used for this study consisted of 43 questions, divided into following categories: (1) multiple choice questions that reflect the age, gender, education level, computer experiences, internet experiences (questions 1-7); (2) Yes/No questions of a type that reflect the usage of e-government services (question 8); and (3) Likert scale type questions to explore the factors influencing e-government adoption (questions 9-15, which included 28 items). Appendix E demonstrates the last questionnaire survey that was used in this study. As mentioned, the pilot study was distributed to 30 Saudi citizens to ensure that validation of the questionnaire was obtained.

Therefore, before final survey distribution, reliability testing was carried out to ensure that each factor used obtained the desired level of internal consistency. In this regards, Hinton et al. (2004) suggest four different points of reliability: excellent ranges (0.90 and above), high (0.70- 0.90), high moderate (0.50-0.70) and low (0.50 and below). As shown in appendix i the initial reliability for this study varies between .885 and .649. Thus, this study is considered to reveal the appropriate level of internal consistency (Hinton et al., 2004; Straub et al, 2004). The main findings of the initial reliability test are: (1) in case of deleting question number PE5 for performance expectancy, the result of Cronbach's coefficient alpha will be 82% instead of 77.6%; and (2) in case of deleting question number BI2 for behavioural intention, the result of Cronbach's coefficient alpha will be 76.6 % instead of 64.9 %. However, the researcher decided to leave all changes as the results were found to be near the acceptable level of reliability.

4.7.5 Questionnaire Translation

As the questionnaire was designed in English (Appendix E) and the targeted research context is an Arabic country (Saudi Arabia), this study converted the questionnaire into Arabic (Appendix E) and validated the translation by sending the questionnaire translation to four academic staff in a large Saudi university. This study of this study considered highly the accuracy, fluency and facility of using "back-translation" approach (Saunders et al., 2003). According to Brislin (1970), this approach is able to further understand and enhance the written target language version. Therefore, in order to validate the translation, this study has followed two phases: (a) translated the English version into Arabic and (b) using an interpreter, the Arabic version was translated back again to English. Furthermore, the two versions (English and Arabic) were checked by sending both language versions to three professional people.

4.8 Data Analysis

This study has already discussed the first two parts of the empirical data: the strategy and design that were adopted, and the collection approach that was used to obtain data in this research. In this section, the third stage of empirical data will be discussed, illustrating the data analysis approach. Since this research is based on the quantitative approach, the research uses the Statistical Package for Social Science (SPSS) to obtain the output collected from the questionnaires.

This means the data that was collected through interviews and observations (qualitative data) are few in this thesis and do not cover all objectives (the output of these sections is summarised in chapter 5 in order to enhance the background of e-government in Saudi Arabia). To overcome this issue, the researcher has developed questionnaires to examine the factors that influence e-government

adoption and the roles of intermediaries in this relationship from the citizens' perspective. These questionnaires are considered to be an appropriate protocol for examining individual attitudes towards new e-government (Al-Shafi and Weerakkody, 2009; Alawadhi S. & Morris A. 2008; Carter and Weerakkody 2008; Carter and Belanger 2005). The data collection is driven from both approaches (qualitative and quantitative), however the conclusions are drawn from the statistical parts (quantitative). Therefore, the output of qualitative data is only used for exploring the current reality of e-government implementation in Saudi e-government devolvement and to understand the concept of the intermediary in an e-government setting. The quantitative approach is complementary to the qualitative one.

To check the responses to these questions, the first stage consisted of checking the responses and tagging them with a unique number. This study generated the descriptive statistics (percentage and tables) and used Linear Regression analysis by utilising SPSS (version 15.0). Descriptive data analysis provides the reader with an appreciation of the actual numbers and values, and hence the scale that the researchers are dealing with (Dwivedi and Weerakkody, 2007). Thus, as this study aims to determine factors that affect acceptance of e-government, regression analysis was important (Pallant, 2007). Furthermore, this study has set out to measure the effect of demographic variables in the adoption of e-government services. Therefore, correlation testing was also important. The results of these analyses will be listed in chapter six, section 6.5 and 6.6. The choice of the SPSS program for data analysis is due to the availability, user-friendly nature and the ease of learning in the short-term. The following subsections discuss in more details the analysis techniques used in this study.

4.8.1 Reliability and Validity Test

In the previous sections, the researcher has illustrated the pre-instrument validations that are used in this study (subsection 4.7.4). In this section, the

researcher shows the post-instrument validations conducted to ensure the validation of data collected. When data is collected using the survey instrument, researchers should test the data reliability and validity (Straub el al, 2004; and Pallant, 2007). A reliability test is an important check when selecting scales for a survey instrument (Pallant, 2007). Such a test stands to ensure the items degree of consistency (hanging together) reflects the same construct or confirms the internal consistency of measures (ibid). The data is considered consistently reliable when Cronbach's alpha is above 0.70. The factors analysis test is concerned with two techniques: clumping groups of scale items into one component or pattern, and reducing the number of variables (Pallant, 2007). In addition, the eigenvalue is equal to or above 1, with a loading of at least 0.40; and no cross loading of items above 0.40. The results of the reliability and validity test for this study are listed in chapter six, sections 6.3 and section 6.4 respectively.

4.8.2 Regression Analysis

Regression test is a statistical technique that explores the relationship between two things: the independent and dependent variables (Pallant, 2007). According to Pallant (2007), there are two kinds of regression analysis test: (1) simple regression, meaning that the study includes one independent variable; and (2) multiple regressions, meaning that the study includes more than one independent variable. In this study, the proposed model (e-government adoption model) will utilise multiple linear regression and logistics regression techniques. The main aim of multiple liner regression is to determining the relationship between independent constructs (performance expectancy; effort expectancy; social influence; trust of internet and trust of intermediary) and dependent (behavioural intentions). Liner regression is commonly appropriate when the independent and dependent constructs are ordinal or scale in nature (Pallant, 2007; Allison, 1999). However, when two constructs are not identical, for instance in the case when dependent variable is nominal, logistic regression is suitable (Pallant, 2007). In this study, all independent and dependent variables are continuous variables,

except one dependent (usage behavioural) variable which was represented by Yes and No. Logistic regression was used in this study to explain the relationship between independent variables (facilitating condition) and dependent variable (usage behavioural). Chapter 6 section 6.5 presents the results that were obtained from using the aforementioned multiple linear regressions and logistic regressions.

4.8.3 Testing Differences of Demographic Variables

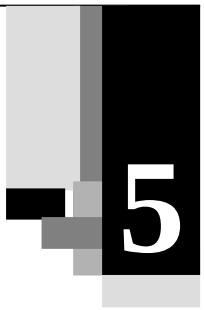
With the purpose of examining nominal variables such as demographic variables (age, education level and internet experiences) usage rate of the internet related to e-government adoption, an estimate of the response percentages and frequencies was made. Furthermore, to test these nominal variables, such as demographic variable differences of the adopters and non-adopters of e-government, the chi-square (X^2) test was found to be a suitable technique (Brace el al, 2003).

4.9 Summary and Conclusion

This chapter has set out to identify a suitable methodology for this thesis. It has argued that mixed methods were found to be an appropriate research approach that answers the questions highlighted by this thesis. The research methodology was designed to determine the effect of intermediaries on e-government adoption. First, this chapter justified why the positivism approach was appropriate for this study. Second, it highlighted the design that was followed by this research in order to meet the research aim and objectives. As mentioned above, this study collected data through different techniques, using interviews, observations (is referred as the triangulation approach) and questionnaires. However, the main conclusions of this thesis have been drawn from the questionnaire. As discussed in this chapter, the main goal is to model the intermediary which is considered to

be an important factor influencing citizens' intention behavioural towards e-government adoption.

Triangulation was appropriate due the nature of this research, as no studies were found that had investigated the intermediary in their natural setting in Saudi Arabia (initial contextual portrayal). The decision to choose this was based on the need to focus on intermediary roles in e-government adoption in Saudi Arabia. So far this literature has been given little attention and no literature was found to explain this relationship. After the literature review had been completed, this thesis divided the research methodology into three main sections: (a) design, (b) data collection, and (c) data analysis. The next chapter gives the background to Saudi Arabia and the contextual portrayal that was collected from the interview sessions and observations.



Chapter 5: Saudi Arabia Background and Exploratory Findings

Summary

This chapter focuses on presenting the review of the background of Saudi Arabia and some initial results that were obtained from interviews with Saudi e-government officials and managers of intermediaries, presenting the contextual analysis of this study. Therefore this chapter focuses mainly on: (a) a brief overview of Saudi Arabia location, size and distribution of population; (b) e-government initiatives in Saudi Arabia; and (c) a contextual analysis of the interviews and observations.

5.1 Introduction

As stated in chapters one and three, the aim of this research is to investigate the roles of intermediaries in the Saudi Arabian e-government context, describing relationships existed between the factors that affect e-government progression and implementation, and the natural roles of physical intermediaries in Saudi context at the present time. Therefore, this chapter is essential in providing a generic overview of the kingdom of Saudi Arabia. The principal concern of this overview is to provide the background to Saudi Arabia and some details about the country: population, location, level of education, rural-urban, constitution and economic climate. Also, this chapter aims to provide some background to the introduction of e-services, including availability and accessibility. Furthermore, a brief overview of intermediaries' background in Saudi Arabian history and services is provided and their relationship to public government services is discussed. This chapter is essential in establishing the contextual base (Orlikowski and Baroudi, 1991) in order to meet the research focus and objectives.

This chapter sets out to report the results of the qualitative data that were collected from the Saudi government official and intermediaries' managers in Saudi Arabia. The interviews were designed to explore the current state of e-government initiatives in Saudi Arabia and to identify the roles of intermediaries in e-government diffusion and adoption. The focus of this chapter is to investigate the role of e-offices (or intermediaries) in facilitating e-government services in Madinah City. This approach allowed this study to get a good understanding of e-government service delivery practices in a real-life context and offered a perspective on the challenges facing e-government progress in Madinah City and Saudi Arabia at large.

Therefore, this chapter is divided as follows. In section 5.2, this study gives the background of Saudi Arabian location, population, computer and internet access, education and economic status. Section 5.4 highlights the background of e-government in Madianh city, whilst section 5.5 presents the case study approach

conducted, with the empirical findings of the interviews carried out in Madinah City, and highlights the key issues influencing e-government, as seen by a specialist in e-government implementation and adoption. Then section 5.6 explains the concept of the intermediary (e-office) in the e-government context. After that the roles of the intermediary (e-office) in facilitating e-government services in Madinah City are laid out in Section 5.6. Finally, the chapter ends with the conclusions and presents a framework for further research in Section 5.7.

5.2 Saudi Arabia Overview

5.2.1 Saudi Arabia Location, Size and Distribution of Population

Saudi Arabia is located in the Arabian Peninsula at the junction of three continents: Asia, Africa and Europe. It occupies an area of 2,240,000 square kilometres (about 865,000 square miles) in the southern-eastern region of Asia, occupying four-fifths of the Arabian Peninsula (MEP, 2008), ten times the size of the United Kingdom (244,820 sq km). It is the first country reached among those in the Gulf region when heading from Europe or the United States. It is next to Oman, United Arab Emirates, Qatar, Bahrain and Kuwait in the east; and Iraq and Jordan from the north. Saudi Arabia is bordered from the west by the Red Sea and on the south by Yemen. Thus, Saudi Arabia is at the core of the Middle East and has the biggest geographic area of any country in the Middle East and Asia.

Saudi Arabia is divided to 13 administrative regions: Riyadh, Makkah, Qasim, Eastern, Hail, Jizan, Asir, Al-Baha, Tabouk, Najran, Al-Jouf, Northern Border and the Madinah region, which is the focus of this study. Each of regions is divided into a number of different provinces and centres, each of them related to their Emirate in accordance of management and governance. Riyadh is the capital city

and lies in the central Najd region of Saudi Arabia. In the west of Saudi Arabia lies the Hijaz region, which is located parallel to the Red Sea. Saudi Arabia is the source of the Islam religion, and the Hijaz contains the two holy Islamic cities of Makkah and Madinah. As such, the regime of Saudi Arabia is based on the Islam religion, which shapes the legal systems of government. Figure 5.1 shows the exact location of the country and the different provinces. The first language spoken in Saudi Arabia is Arabic, with English as the second language. English language is widely used among educated people in the urban areas. The official name is the kingdom of Saudi Arabia.

Figure 5.1: Geographical Location of Saudi Arabia

According to a recent report by the Ministry of Economy and Planning (MEP, 2009), the total population in Saudi Arabia is around 25.37 million, including about 18.54 million Saudis and 6.83 million non-Saudi residents, with an annual increase of 2.3 percent. The distribution of gender among the Saudi population is almost equal, consisting of 55.3 percent males and 44.6 percent females (MEP,

2008). Furthermore, Saudi Arabia has a young population age as almost two-thirds of the population is under the age of 30, and almost half of them are under 15 years old, which accounts for 37.2 percent of the total population (MEP, 2008). Figure 5.2 illustrates the Saudi age and gender distribution for the year 2007.

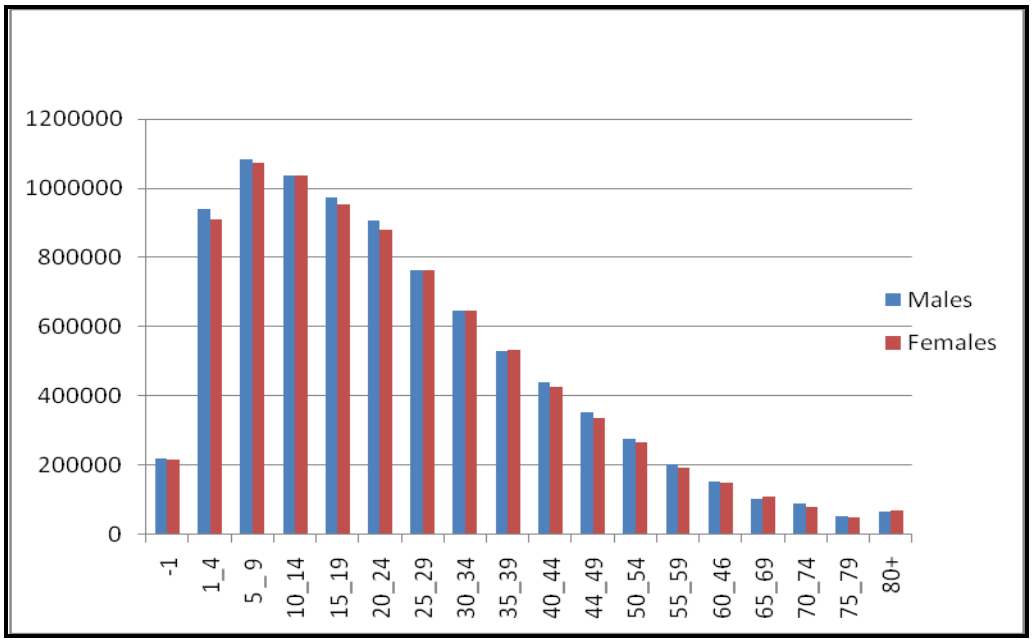


Figure 5.2: Saudi Population by Gender and Age Groups. (Source: MEP, 2007)

5.2.2 Computer and Internet Access

As discussed in chapter 2, the demographic variables have significantly affected e-government adoption and usage. The government should consider the other resources with regards to computer 'have and have not' issues alongside internet access in order to promote access and social inclusion. Saudi Arabia is considered to be slow in the dissemination of personal computer and internet access among citizens. According to a recent report of the Ministry of Economy and Planning, the number of personal computers for citizens is 9,020,091 and internet access is available to about 2,555,541. Although the provision of computers to citizens it's a fundamental stage for online communication, it is not working in isolation with

internet access. Saudi Arabia has taken a while to connect people online, and it could be seen as a relatively new approach. Figure 5.3 shows the distribution of computers and internet access in different area of Saudi Arabia.

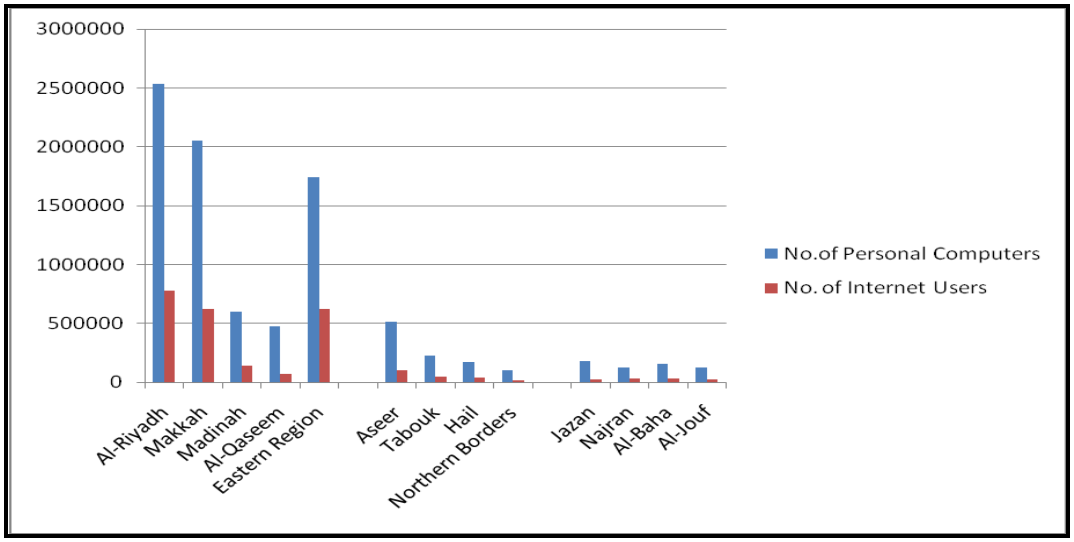


Figure 5.3: Saudi Citizens' Personal Computer and Internet Access (Source: MEP, 2007)

Table 5.4 illustrates the total numbers of computers and internet access in Saudi Arabia in different areas.

Table 5.1: Total Numbers of Computers and Internet Access in Saudi Arabia (Source: MEP, 2007)

Sequence	Saudi Area	Number of people with personal computers	No of people with internet access
1	Al-Riyadh	2,535,557	778,678
2	Makkah	2,051,499	621,261
3	Madinah	602,362	142,471
4	Al-Qaseem	472,282	74,008
5	Eastern Region	1,744,137	620,714
6	Aseer	516,767	101,709
7	Tabouk	229,761	47,396

8	Hail	175,502	39,325
9	Northern Borders	103,571	21,411
10	Jazan	182,440	24,319
11	Najran	123,404	30,238
12	Al-Baha	154,495	31,756
13	Al-Jouf	128,314	22,255
Total		**9,020,091**	**2,555,541**

While the distribution of computers amongst Saudi citizens has reached a superior level, the internet access performance is still lagging behind. Therefore, as result of low levels of internet access, Saudi citizens face a real problem in accessing e-government services and obtaining online services.

5.2.3 Level of Education

The kingdom of Saudi Arabia has made massive progress in increasing the level of education and expanding literacy. According to Saudis Ministry of Economy and Planning (2007), more than two-thirds (86.31 percent) of Saudis have different levels of education. The improvement of education among citizens is always the objective of the Saudi government as one main contribution towards the continuing enhancement of economic and social aspects. However, despite growing numbers of citizens that have some qualification at different levels, Saudi Arabia continues to face challenges in relation to literacy level, where the non-educated people account for 13.69 percent of the total population, with 19.73 percent attending secondary schools. The citizens that have gained qualifications higher than high school collectively account for 13.7 percent of the total population, as follows: Pre-University or Diploma is around 3.49 percent, University is approximately 9.69 percent, Master degree is around 0.39 percent, and 0.13 percent obtain PhDs. Figure 5.4 shows the level of education among the Saudi population.

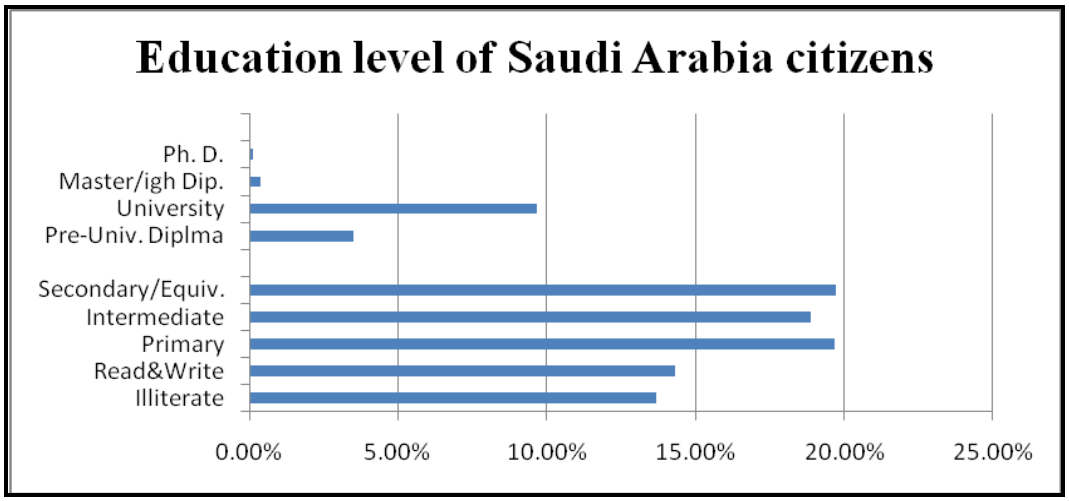


Figure 5.4: Education Level of Saudi Arabian Citizens (Source: MEP, 2007)

5.3 E-government and ICT Initiatives in Saudi Arabia

A number of initiatives have been achieved by the Saudi government to assist the adoption and diffusion of ICTs, in general, and e-government, in particular. The Prime Minster and King of KSA ordered an investment of 3 billion Saudi Arabian Riyals (SAR) in 2003 in order to support e-government readiness and a further 3 billion SAR in late 2006. The programme of e-government implementation is managed by 'Yasser', a collaborator company in KSA. This project is one of numerous initiatives that are dedicated to the development and enhancement of e-services for Saudi citizens. Nationally, in the KSA context, Yasser Company lists four reasons why e-government services have become so dominant. These are: "(1) raising the productivity and efficiency of the public sector; (2) providing better and more easy-to-use services for individual and business customers; (3) increasing return on investment (ROI); and (4) providing the required information in a timely and highly accurate fashion" (www.yesser.gov.sa). Generally, e-government initiatives in KSA are seen as a move into cooperation with private sectors to manage and support the e-readiness of e-government services and to

enhance Saudi society in order to be able to use the internet and e-government services at national and local levels (AlSobhi et al., 2009). In 2003, another project was established locally in Madinah City, where the e-government programme is a partnership between the KSA government and the private sector. Based on this partnership, electronic services are developed, managed and expanded. The initiative is a set of different projects operating in the Madinah region in order to develop a comprehensive e-government system. Those projects include government procurement, training, design, e-learning, e-commerce, digital economy and Khdamatec (which is the Arabic term used for services in the e-government context services offered by e-offices or intermediaries). However, all of these projects are still under development and only the Khdamatec (e-office) project has been established (ibid). The concept of e-government in Madinah is designed to cover 60 government bodies working in the region (Al-Sobhi et al., 2010).

5.3.1 Accessibility and Availability of Saudi E-Government Services

It is becoming increasingly difficult to ignore the value added by technologies in term of archiving a higher level of performance whilst reducing cost outcomes. E-government is at the heart of changing the way of doing things remotely, with less effort and faster services. However, e-government is still in its early stages in many countries, especially in developing nations. The case is the same for the state of Saudi e-government development. The numbers of Saudi ministries and public agencies are published on their websites for the public however; these websites are restricted by limited services and information, presenting the inefficiency of services and information that are provided to the general public and business.

5.4 E-government in Madinah Region

As stated in chapter 4 the roles of intermediaries in e-government adoption were studied in this thesis by interviewing government officials and owners of intermediary organisation, and complemented by measuring citizens' perspectives. As this thesis used several data collection approaches, all were focuses on investigating the roles of intermediaries (phenomenon) in diffusion and adoption. This section will list the result were obtained from interviews, observations and review government documents. This qualitative approach is very helpful to explore the current state of e-government implementation in the Saudi Arabian e-government context.

The e-government program in Madinah is a partnership between the government and the private sector. Based on this partnership, electronic services are developed, managed and expanded on an incremental basis in Madinah city. According to the BD, the e-government program in Madinah City is a set of different projects operating in the Madinah region in order to develop a comprehensive e-government system. Those projects are government procurement, training, design, e-learning, e-commerce, digital economy and Khdamatec. However, all of these projects are still under study only the Khdamatec (e-office) project has been established (ibid). The concept of e-government in Madinah is designed to cover 60 government bodies working in the region. This program includes three phases:

- *First phase* – strategic studies to determine the readiness of all government agencies operating in the region,
- *Second phase* – solutions and programs that will bridge the technical and human gaps and,
- *Third phase* – economic and social development in order to support the program in investigating feasibility and stability for the long term. This phase includes the development of civil investment companies that support the work environment and non-government organisations in the area of knowledge. The

overall e-government program is facilitated by a number of electronic offices (e-Offices) called 'Khdamatec' (Imaratalmadinah, 2008).

The overall vision of Khdamatec (or Madinah e-offices) involves the management and operations of electronic service delivery and related systems, and the training of management staff in different government agencies in the use and delivery of e-services. Khdamatec agencies are seen as an initial model of one of many multi-channel strategies that are identified in Madinah City for e-government service delivery. The main reason for developing this method is to establish a new and convenient way to deliver services to citizens and to assist those citizens who are less computer-savvy to adopt e-government systems. The motivation for establishing the e-offices was mainly influenced by the following:

- The difficulty of verifying the identity of stakeholders (e-Identification),
- The challenges that Madinah citizens faced using technology and accessing Internet (digital divide) and,
- The difficulty of finding reliable methods which citizens can follow in order to pay services that request a payment (e-Payment).

As already mentioned, Madinah has adopted a multi-channel system for citizens to interact with the government services using different methods. In this context, Madinah's strategy for developing e-government revolves around the use of multi-channel systems, particularly to reduce any digital divide that single channel (online-only) e-government may cause. Based on previous empirical findings by Sahraoui of (2006) in Saudi Arabia, the gap of the digital divide is very high - the rate of internet usage by citizens is 14.87 with illiteracy rate at an alarmingly high 30%. However, the interviewees in this case study argued that a high level of usage of Internet and electronic services has appeared within the last three years. The Communication and Information Technology Commission (2008) reported that 51% of the total population (average age between 15-60 years) use the Internet and electronic services in Saudi Arabia. According to the statistics report by the Ministry of Interior (2008), more than 80% of citizens in cities use the

Internet, as compared with less than 20% in the villages. This is regarded as a barrier related to the digital divide. To resolve this, a solution has been proposed involving private investors who would establish service centres (e-offices) in Madinah in order to assist citizens with electronic transactions. These e-offices follow government legislation and technical requirements in terms of security, data protection and electronic transactions. This statement was supported by e-business literature (e.g. section 2.8 and section 2.9), which found that a number of intermediaries emerged with added-value in the development of e-commerce.

5.5 Challenges Facing Adoption and Diffusion of E-Government Services in Saudi Arabia

While the overall implementation progress of e-government has been slow nationally, intermediaries were helping to improve e-government adoption and diffusion. There is very little published information, researches and data available about intermediaries. Therefore, as outlined in the research methodology (chapter 4), this interview is essential to provide initial information about implementing intermediaries within the e-government context. The interviews with e-office managers and other staff in Madinah government identified a number of challenges currently facing e-offices and e-government implementation. The main challenges are as illustrated bellow:

Challenge one: the main challenge facing the e-offices is concerned with funding issues in relation to marketing the concept and spreading the awareness of e-government among Madinah City citizens. The BD suggested that "the income generated from the e-offices is currently inadequate to support a media campaign" (i.e. using TV, mobile text messaging, news paper, etc.) to promote awareness among citizens.

Challenge two: The GD1 "some government departments in Madinah City did not implement e-government services in order to provide e-services to their

citizens". Consequently, only selected services were available online, resulting in a lack of consistency in promoting the idea of e-government in Saudi Arabia.

Challenge three: According to GD1, there are still concerns about the security issues in implementing e-government technologies. He stated that:

> "*... the e-service concept did not succeed in GCC countries. The reasons behind this failure are that: (a) user confidence and information security is still very weak through the use of Internet, and (b) resistance to change in government employees and requiring citizens to visit the government departments in order to get the services ...*"

However, in terms of promoting privacy among citizens to encourage them to use e-services, Madinah City places a high fine for using the e-government portal through e-offices. These strict regulations aim to maintain the use of the e-government portal, increase its credibility in front of citizens, and guarantee that the information submitted for government departments is correct. This has undoubtedly led to the adoption and diffusion of the e-office concept and e-government in the wider context.

Challenge four: The interview and observation sessions revealed that the services provided through the e-offices are not fully implemented yet. It was obvious that this was also having a negative influence on the adoption and diffusion of various e-services.

Challenge five: One of the negative impacts added by BD was the integration of different government departments:

> *"...To ensure effectiveness of e-government services and increase the acceptance by the Madinah citizens, the Madinah City departments must move towards integration of various technologies across the government agencies. In the Madinah e-government context, one of the most important*

challenge concerns in the current e-government model is the integration between different government agencies..."

Challenge six: As reported by the interviewees, ensuring that the services offered cater for the elderly citizens of Madinah City is another major challenge identified in the e-offices. As explained by MOI (2008), technologies such as mobile phones, computers and Internet are mostly adopted by young citizens between 16-35 years old. However, according to MEP (2003), although the population older than 15 years in Madinah City is reported to be around 750,737, only around 50,000 citizens are using e-government services. This indicates that only around 6.7 percent of citizens participate in e-services, either through e-offices or the Madinah e-government web portal. However, one of the positive aspects identified by the director of e-government services in GD2 related to the attitudes and culture of the Madinah citizens was that:

"*... culture may not affect the adoption of e-government services in Madinah City, i.e. when applying for the payment services for the first time in Madinah City, using the card, the process was considered as useful and successfully adopted by citizens ...*"

Challenge seven: The interview sessions highlighted another challenge, i.e. authentication – how to identify citizens using e-government services. This challenge arises due to a lack of trustworthy security systems, which is acting as a barrier and preventing the development of e-government services.

5.6 Intermediary (E-offices) Concept in Madinah E-government Strategy

The e-governmental network setting in Medinah City can be categorised into three main types of players (Figure 5.5): service providers (government departments), service requesters (citizens and other stakeholders), and intermediaries (e-offices).

Service providers can be any organisation involved in providing and delivering electronic government services. Service requesters, in this case, are citizens and other stakeholders who request public services, and an intermediary is defined as a private organisation, fully or partly information technology-based, that aims to bring together a government department and its citizens.

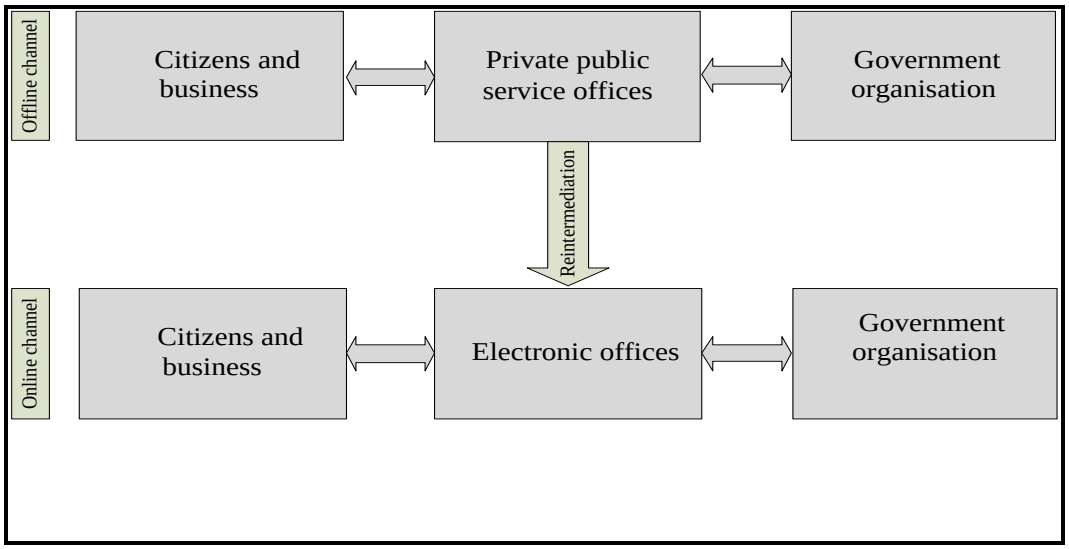


Figure 5.5: Reintermediation Strategy in Delivering E-Government Services in Saudi Arabia

The aim of using e-offices in Madinah's e-government strategy is to help citizens adopt e-services using a third party intermediary channel where citizens can enroll in and use e-government services with the assistance of an administrator, i.e. e-office workers. These workers access the central e-government portal and complete the online transactions (i.e. print required information from relevant government agencies or make payments to a government department) on behalf of citizens. The e-offices are the initial gateway for citizens to access different government services, and is done using a unique and secure gateway code that is offered to the citizen by the e-office. According to the interviewees, to connect to e-government systems, citizens are required to have the code (user name and password), which is given after they register with the e-office. These codes can be

only be given if the citizens present themselves physically at the e-office and show their national ID (identification). Using these secure codes, the e-officers are able to track citizens' transactions, applications for a service and/or request. Citizens' authentication is one of the main roles that the e-office performs in helping to validate citizens access to various services. In addition, government departments use mobile text messaging to confirm to the citizen that they have received the citizen's request from their e-office or from the citizens, and use the same method to inform them when the service/transaction request is complete.

Figure 5.6 summarises the way e-offices function in parallel to the other multi-methods that are offered for accessing public services in Madinah City.

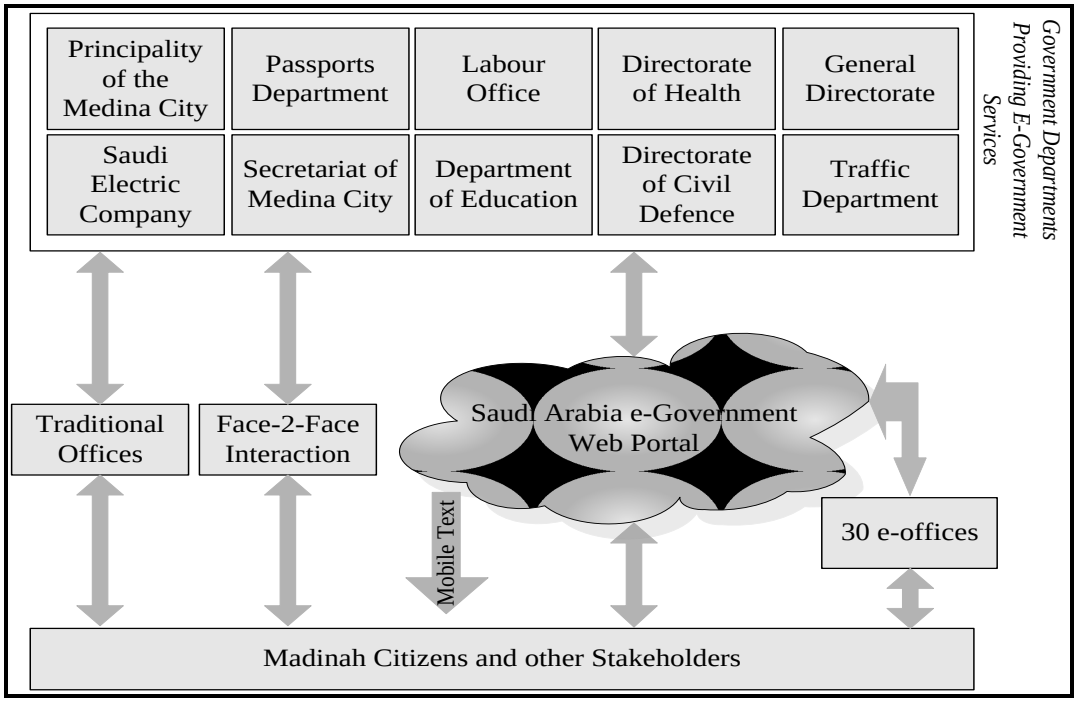


Figure 5.6: E-Government Concept in Madinah City

The traditional offices, as illustrated in Figure 5.6, work as intermediaries to deliver public services but use manual methods. In addition, these traditional offices work on behalf of citizens as a front-end of government agencies. Madinah's e-government strategy has evolved through many objectives. One of the main goals is to deliver e-services to citizens. To achieve this, it was crucial to

involve the traditional offices, which have been operating in the region for a long time between government and their citizens as intermediaries, who have enjoyed the trust of citizens and provided frequent face-to-face contact with them. In reality, in the Saudi context, there are many traditional offices that promise to facilitate public government services to citizens and different stakeholders. Therefore, the Saudi government authorised private sectors to be service providers for the physical intermediaries' offices, in order to help citizens achieve greater access to public services throughout the country without needing to visit government departments. While the role of traditional offices is to facilitate government services, it also aggregates public services in one office, where these offices promise to physically visit different government departments in order to complete services required by its citizens (manual integration). It is essential to state that these traditional service providers have been established for many years, and the experiences that they have widened their social network within governmental departments, making their work easier and faster. In Saudi Arabia, public offices form a third party that mediates the relationship between Saudi government departments and citizens. These public offices (intermediaries) act as channels for services and payment gateways offered by the Saudi government to citizens. Typically, these offices provide a potential added value to the two parties that is not achieved through direct connection. The number of public services offices in Saudi Arabia reaches around 22,759 in 2001, and they are distributed in different cities in Saudi Arabia (MOCI, 2001). As reported in chapter one, the main motivation of this study is to investigate the roles of intermediaries in adoption, therefore the potential roles of public services offices in adoption of e-government services is vital important.

In fact, the e-offices that provide government services electronically were originally traditional offices but in order to convert them to e-offices there are some standard requirements to be reached. For example: staff qualifications, commitment in formal attendance and some technical requirements for data security.

In Madinah City, 30 e-offices have been established offering services from different government departments. They stand as intermediaries in order to facilitate communication between citizens and government organisations. Ten government departments have participated thus far from a total of 60 in the region (Table 5.3). However, not all departments in the region have participated in the e-government projects. The participating departments were selected in accordance with the services that concern citizens' daily life and level of the departments' readiness in providing e-government services.

Figure 5.7: Transformation of Traditional Public Agencies into Electronic Offices

The infrastructure plans for the e-government projects in Madinah City include: PCs and software, networks, databases, emails, mobile computing and websites. These applications and equipment are provided by Madinah government for each department, and employees in each department are trained to use the new systems. According to the BD, " *we trained two employees in each government department and provided them high speed internet connections*". The interviewees explained that they strived to keep the e-services simple to understand and use for citizens in order to create a higher level of citizen satisfaction, the underlying principle being that the governments' website should be designed in a way that would be easy even for the elderly and non-qualified citizens to understand and use. The objective is to increase the level of e-literacy among citizens. This program will provide a basic password and username to the e-government portal; this will lead to an increase in the level of awareness and an increase in the usage of online government services.

In January 2008, Imaratalmadinah (2008) reported that the number of beneficiaries of e-government services in Madinah City was more than 50,000 citizens. The services that have been launched to date amount to 396, whereas the services that are remaining and planned to be released are around 76. Table 5.2 explores the various uses of electronic services in Madinah city.

Table 5.2: E-Government Services in Madinah City

Services	Request new services	Procedures	Information	Tracing Request	Request new services	Total
Launched	91	91	87	88	39	396
Planned for launch	22	17	18	19	0	67

Table 5.3 illustrates the types of e-government services that already exist in Madinah City.

Table 5.3 : E-enabled Services Currently Available at the Khdamatecs' Website

Sequence	Government Departments	Service Type	
		Queries	Tracking
1	Principality of the Madinah	19	44
2	Secretariat of Madinah	2	9
3	General Directorate of Water in Madinah	5	10
4	Department of Education	6	8
5	The Traffic Department Madinah Region	44	88
6	Madinah Passports Department Madinah area	5	10
7	Directorate of Civil Defence Madinah Region	2	4
8	Saudi Electricity Company	6	2
9	Madinah district police	12	24

Interviewees also suggested that the e-offices concept has reduced the waiting time for citizens' services and/or applications to be processed. While the traditional modes of government services and processing of various applications took anywhere between 24 to 48 hours, the new e-offices concept takes between 5 to 20 minutes. This represents a dramatic improvement in efficiency of the service level.

5.7 Role of Intermediaries (E-offices) In Facilitating E-Government Services

The focus of e-office centres in Madinah City was mainly on connecting Madinah government departments with their citizens. To complement the interviews with the government officials, interviews were conducted with managers of three e-offices in Madinah city. The manager of intermediary 1 stated that "… *the main reason to introduce intermediary e-offices in Madinah e-government strategy is to provide a link between government and citizens*". Therefore, the major focus of e-offices is the way in which citizens interact with e-government. While mentioning various roles of e-offices, training the citizens to use new technologies and services in relation to e-government initiatives with the help and support of e-offices was essential.

E-office agencies are a model of one of many multi-channel strategies identified in Madinah City for e-government service delivery. The main reason for developing this method is to establish a new and convenient way to deliver services to citizens and to assist those citizens who are less computer-savvy to adopt e-government systems.

The empirical research conducted in this study with managers who are responsible for running the intermediaries (e-offices) revealed that although overall e-government implementation and adoption was slow in Saudi Arabia, intermediaries were helping to improve e-government adoption and diffusion. However, interviews with managers identified a number of challenges currently facing e-offices and e-government implementation. These challenges are discussed below.

The e-offices were trained to provide help and support for Madinah citizens. As manager of intermediary 2 said, "*(it) is a very important role of our centre to support training and learning needs for using internet applications and*

computers. Our services are mainly limited to giving support for accessing e-government services on behalf of citizens; this is because of our limited resources and capabilities". As shown by manger of intermediary 1, training people in the self-usage of e-government services is a very important role in the Madinah e-government strategy. The training and support of new e-government services is crucial, as all interviews with e-offices managers clearly indicated a positive attitude from e-office centres to promote the training of Madinah citizens in relation to the e-services gateway.

In this study, intermediary e-offices were found to assist citizens to adopt e-government services. Madinah citizens were generally having difficulty using and accessing the internet to obtain e-government services. As manager of intermediary 3 said, "…*although we are here to help citizens to access e-government services, the visitors to our offices are usually having difficulty to use technology like the internet and some visitors do not have the internet at all*....". While a few interviewees agreed about promoting citizens' adoption rate towards e-government services, an essential role of e-offices is to help citizens to access e-government services. The manager of intermediary 2 argued that citizens need e-offices not because of the access issues but because of trust, information privacy and security issues. This manager stated, "…*visitors come to access the internet even though some citizens have a computer at home and have an internet connection; however, they visit us because they currently have a very low level of trust in e-services*… ".

The above comments suggest that a low trust in technology within the Madinah community has a negative impact on the take-up of e-government services. As shown by the literature, privacy and security inhibit citizens' adoption rate of e-government services. The manager of intermediary 1 pointed out that, "*we have record files for all our customers, so citizens can either come to our office to ask for new services or they can ask for services by phone and we can perform the services on their behalf".* Interviewees were asked what the additional roles of their third party e-offices centre were, and manger of intermediary 2 highlighted

that the role of e-offices is to build trust between government and citizens in relation to the e-services provided electronically. Thus, the role of the third party was to enhance the relationship between government and their citizens. From the government's perspective, their role was to authenticate citizens in some e-services that required citizens to be authenticated by e-offices centres. On top of that, e-offices' role was to control the transactions flow between government and citizens, in both directions.

Manger of intermediary 2 commented: "…*We have electronic authorisation in the e-government portal, so for each service required from citizens that needs our help and support, they can authorise us electronically. Therefore, we can take responsibility for all transactions without citizens needing to come to our place in order to start the work ...".* In respect of providing personal information or any financial transactions, intermediary e-offices centres have an important role to play. As manger of intermediary 1 pointed out, *"a number of citizens are confident to share personal information with us; we can also make payment on behalf of citizens from our bank account and they can pay us back by cash"*. Another interviewee, manger of intermediary 3 added that it is very important to realise that a number of their customers, as well as not having internet access, do not have a bank account to pay for e-government services.

Besides the findings mentioned above, manager of intermediary 2 stated that awareness of e-government services in the Madinah community is very low and people are not always happy with new technology gateways, especially older people with poor education. Manager of intermediary 3 suggested that if the citizens know about the benefits of e-government this is likely to promote the adoption rate of e-government services from the citizens' side. Another stated that 'manger of intermediary 1' awareness has to be raised either through e-offices centres or by using TV, newspapers, radio, etc, in order to gain the potential benefits of e-government services for society. The aforementioned challenges and the role of intermediaries in facilitating e-government adoption and diffusion in this context is summarised in Figure 5.7.

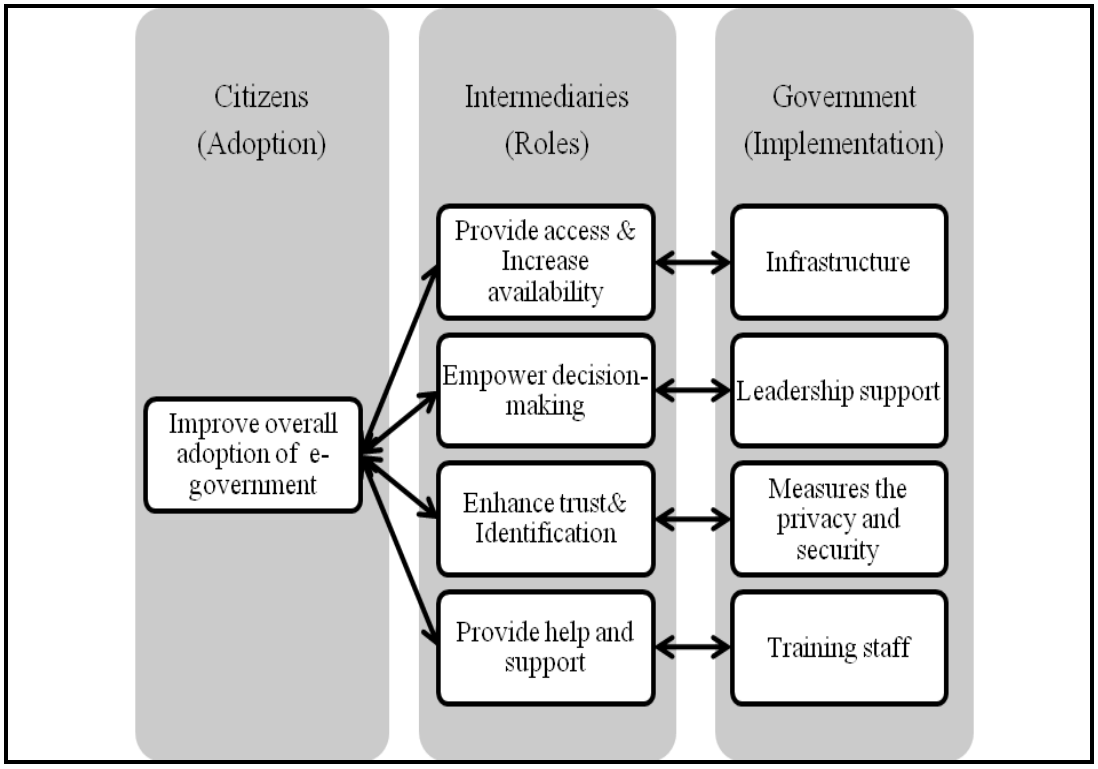


Figure 5.8: The Role of Intermediaries in E-Government Implementation in KSA

Therefore, intermediaries have many roles that related to dissemination and adoption of e-government services to society. As suggestion in the literature review chapter (chapter 3) and the two sets of interviews with government official and intermediary managers, many cross factors are near to further development of e-government services' adoption. Table 5.4 identifies the taxonomy of factors influencing the success of e-government adoption.

Factors Impending E-Government	Literature Sources	Intermediary Roles	Literature Sources	Interview Sessions (Intermediary)	Interview Sessions (Saudi government official)
Computer literacy (skills) is generally understood to mean the ability of people to use technology and computers in effective way (know-how).	Belanger & Carter, 2006; Fountain, 2003; Silcock, 2001	User support and help using new systems could be one of the hidden roles that may be provided by intermediaries. This role arises between the users' beliefs and their ability toward using the systems	Ehrlich & Cash, 1999	Visitors to the e-offices have difficulty using technology and always ask for help.	One of the main objectives of intermediary is to bridge digital divide issue
Access to technology is defined as the differences between people in terms of access to technology or computers. These barriers are age, level of education, income, and location.	Belanger & Carter, 2006; Fountain, 2003	Provides many channels and applications to access the information and personal data	Al-Sobhi et al.,2010	Some interviewees reported that citizens come to them because of Internet access and others come to them because of trust. Therefore, intermediary "e-offices" can be considered a medium of increasing the accessibility of e-services for citizens	Interviewee government official stated that ensuring that the services offered cater for the elderly citizens of Madinah City is another major challenge
Trust, increasing the citizens	Pavlou &	Intermediaries may enhance trust by	Datta &	Managers of the e-offices stated that	according to the interviewees "… the e-Service concept did not

confidence towards electronic services	Fygenson, 2006; Gefen et al., 2005	reducing the risk of transaction failure by ensuring that transactions between parties are completed, and by keeping all parties up to date (service providers and requesters) with the transaction processes.	Chatterjee, 2008; Chircu & Kauffman ,1999; Bailey & Bakos, 1997;	most of citizens come to e-offices because of trust. They highlighted trust from government as identification, authentication, and submitting the correct information to government.	succeed in GCC countries. The reasons behind this failure are that: (a) user confidence and information security is still very weak through the use of Internet and (b) resistance to change in government employees and requiring citizens to visit the government departments in order to get the services..” The interview sessions highlighted another challenge, i.e. authentication – how to identify citizens using e-government services
Awareness, defined as the awareness of citizens about e-government initiatives.	Weerakkody & Choudrie, 2005; Reffat, 2003	No literature found	No literature found	In an analysis of the interviews, e-office managers’ point out that awareness is very low among Medinah’s citizens, therefore the intermediary e-offices can be prompts campaigns	No statement found

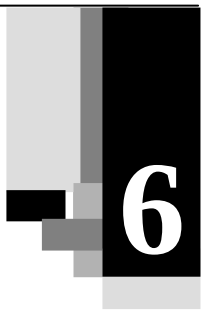
Availability of e-government services. The emergence of the government information and services at a universal level	Weerakkody et al.,2007; Jaeger & Thompson, 2003	No Literature Found	No Literature Found	Many managers interviewed said that there are exits in public service delivery and they are in the position of increasing government information and services to Medinah's citizens.	

Table 5.4: Conceptual Frame of Reference for E-Government Diffusion and Adoption Factors and Roles of Intermediaries

5.8 Summary and Conclusion

This chapter has discussed the background of Saudi Arabia and the findings from the initial qualitative data of this study. The reason behind this approach is to explore the current status of e-government implementation in Saudi Arabia (Madinah city) and challenges related to it. Further, a qualitative approach was set out to further understand the roles of intermediaries in e-government services' delivery as there is a lack of studies in this area, particularly in Saudi Arabia. Therefore, this chapter has highlighted the central significance of intermediaries in the e-government context in developing countries, represented by the Kingdom of Saudi Arabia's e-government development. This study set out to link the impacts of intermediary organisations to the factors that impede e-government diffusion and adoption (e-government challenges in Saudi Arabia).

The results of this study show that e-government development in Saudi Arabia is no different from other countries where many challenges were found to slow down their progress. The challenges that were found in the literature and interview sessions are computer literacy, accessibility, availability, awareness and trust. Therefore, the intermediaries (e-offices) in Madinah have implemented under the e-government strategies to assist further development of e-government systems by minimizing the challenges that hinder e-government services. In summary, the present study adds to our understanding of the role of intermediaries in e-government diffusion and adoption. However, a limitation of this chapter is that it does not include citizens' perspectives with regard to intermediary's roles in e-government adoption. It will be very useful to know whether an intermediary influences Saudi citizens' intention by affecting their attitudes towards using e-government services or by simplify the usage of e-government services for a wider audience. As stated before in chapter 3, this is the motivational reason that led this study to model the intermediary as an important factor that may contribute positively in e-government usage and adoption at citizens' level.



Chapter 6: Survey Findings

Summary

The previous chapter presented the background of e-government implementation in Saudi Arabia and explained the establishment of intermediaries within e-government strategy. Chapter 4 discussed and justified the philosophical assumptions that were followed in this study, design of research methods, data collections and analysis methods. This chapter focuses presents the findings that were obtained from the questionnaire survey that was conducted to determine what factors influence adoption of e-government services, as well as the roles of intermediaries among Saudi citizens in the kingdom of Saudi Arabia.

6.1 Introduction

This chapter analyses the data that was collected using the quantitative approach (questionnaires). To assess the model of the roles of intermediaries in citizens' adoption of e-government services in Saudi Arabia, 626 questionnaire responses were used. The data were interpreted to understand the e-government adoption in the Saudi Arabia e-government context.

As mentioned in the research methodology chapter (chapter 4), four tests were selected to assess this research model: validity, principal factor analysis, regression, and logistic regression. T
he 35 items were distributed to the seven constructs: performance expectance (PE), effort expectance (EE), social influence (SI), facilitating conditions (FC), trust of internet (TI) and trust of intermediary (TOI), and behavioural intention (BI). The six constructs, PE, EE, SI, FC, TI and TOI, were independent variables and BI was dependent. These were adapted from Venkatesh et al.'s (2003) UTAUT model, reworked to be suitable for the context of this study, along with some items (TI) adopted from Carter and Belanger (2005). Some items (TOI) were collected from intermediary literature and some were self-developed. Appendix E and F shows the questionnaire survey in English and Arabia formats, respectively.

In order to realise the aim of this chapter, it is structured as follows. The next section presents the findings of descriptive statistics from the questionnaires that were distributed in Saudi Arabia. Factor analysis is used to explain constructs validity and is presented in section 6.3. In section 6.4, reliability analysis is provided. In section 6.5, this study presents the regression analysis obtained to test the correlation between the independent and dependent factors. In section 6.6, the relationship between demographic variables and the adoption of e-government services is discussed. Finally, the chapter concludes by summarising the key findings and outcomes of this analysis in section 6.7.

6.2 Descriptive Statistics

6.2.1 Respondents Profile

The descriptive statistics from the respondents are as follows. In terms of age, 40.4% were between the ages of 30 and 44, followed by 28.8% between 25 and 29. 22.0% were between 18 and 24 ages and 6.95% were between the age of 45 and 54. Additionally, 1.9% of respondents were younger than 18 or over 54 years old (Table 6.1 and Figure 6.1).

Gender Respondents	Frequency	Percent
Less than 18	8	1.3
18-24	138	22.0
25-29	180	28.8
30-44	253	40.4
45-54	43	6.9
Above 54	4	.6
Total	626	100 %

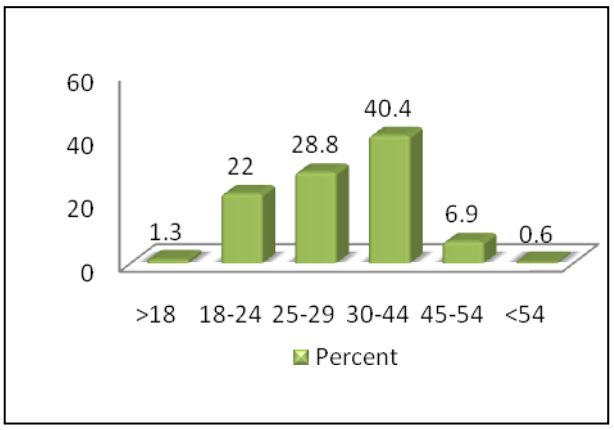


Table 6.1: Age of Respondents **Figure 6.1: Age of Respondents**

In terms of education level, almost half (51.6%) obtained high school qualifications, followed by 39.6% who held bachelor degrees. Respondents with postgraduate degrees (masters and PhD) constituted 4.3%, with the remaining 4.5% of respondents defined as "other" (Table 6.2 and Figure 6.2).

Qualification	Frequency	Percent
High school or Less	323	51.6
Bachelor	248	39.6
Master	17	2.7
PhD	10	1.6
other	28	4.5
Total	626	100 %

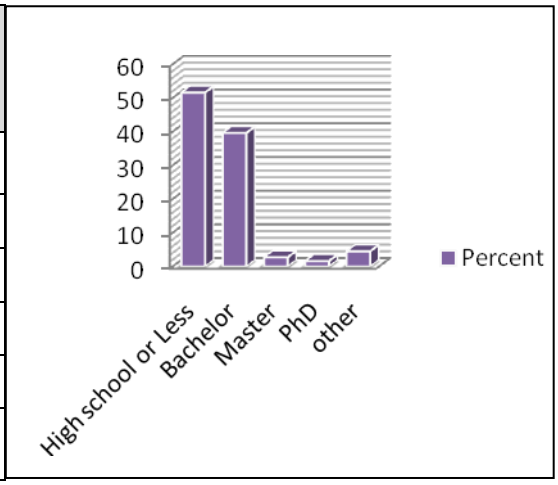


Table 6.2 : Education Level **Figure 6.2: Education Level**

With regard to issues of internet usage among Saudi citizens, the majority of respondents required the internet for their daily life activities, with 49% stating that they used the internet every day, and 26.4% reported several times a week. Other respondents (18.4%) reported that they used it several times a month or less, whilst the remaining 6.2% reported that they never use the internet at all (Table 6.3 and Figure 6.3).

Internet Usage	Frequency	Percent
Every day	307	49.0
Several times a week	165	26.4
Several times a month	70	11.2
Once a month	45	7.2
Never	39	6.2
Total	626	100.0

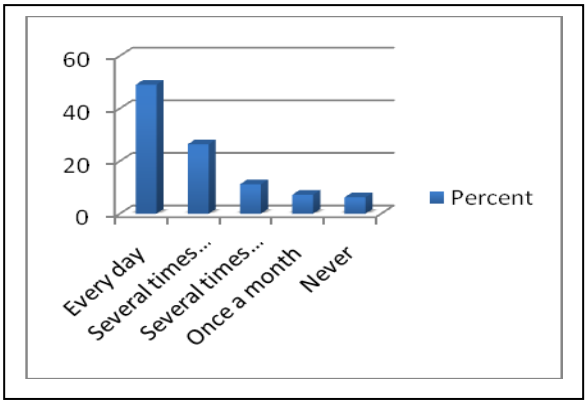


Table 6.3: Internet Usage **Figure 6.3: Education Level**

In terms of e-government usage, 57.0% of respondents had not utilised online government services, however 42.5% of citizens in this survey were found to have used online government services (Table 6.4 and Figure 6.4).

E-govnt Usage	Frequency	Percent
Yes	266	42.5
No	357	57.0
Total	626	99.5 %

Table 6.4: E-government Usage

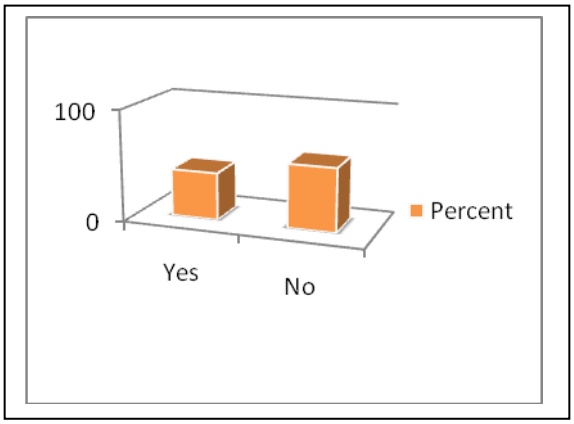


Figure 6.4: E-government Usage

Table 6.5 shows the respondents rate of the key factors that influence e-government adoption, these factors as follows: performance expectancy (PE), effort expectance (EE), social influence (SI), trust of internet (TI), trust of intermediary (TIO) and behavioural intention (BI).

Table 6.5: Survey Participants Respondents Percentage

Factors	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
PE1	8.0 %	7.3 %	10.9 %	39.0 %	34.7 %
PE2	9.7 %	13.9 %	25.7 %	30.8 %	19.6 %
PE3	5.0 %	9.1 %	13.9 %	37.5 %	34.3 %
PE4	6.7 %	6.7 %	14.9 %	36.3 %	35.3 %
PE5	19.6 %	19.0 %	20.3 %	23.5 %	17.4 %
PE6	14.2 %	15.5 %	18.7 %	29.2 %	22.2 %
PE7	16.3 %	17.4 %	24.1 %	25.2 %	16.8 %
EE1	5.4 %	7.3 %	23.0 %	42.3 %	21.9 %
EE2	4.2 %	8.9 %	16.8 %	42.3 %	27.8 %
EE3	6.1 %	6.2 %	17.4 %	43.0 %	27.3 %
EE4	7.0 %	9.9 %	17.1 %	40.6 %	25.4 %
EE5	12.1 %	11.8 %	18.5 %	36.6 %	20.9 %
EE6	4.5 %	11.3 %	14.5 %	38.3 %	31.3 %
SI1	4.2 %	10.4 %	21.9 %	42.2 %	21.4 %
SI2	5.0 %	11.3 %	21.2 %	40.7 %	21.7 %
SI3	7.8 %	13.3 %	23.2 %	36.7 %	19.0 %
SI4	8.3 %	11.0 %	20.0 %	38.3 %	22.4 %
SI5	9.1 %	13.9 %	23.0 %	34.0 %	20.0 %
FC1	8.5 %	14.2 %	15.3 %	36.3 %	25.7 %
FC2	7.0 %	16.0 %	15.7 %	36.7 %	24.6 %
FC3	6.5 %	8.1 %	15.7 %	39.6 %	30.0 %
FC4	4.6 %	8.5 %	13.3 %	40.1 %	33.5 %
FC5	6.1 %	13.6 %	20.9 %	39.0 %	20.4 %
FC6	9.7 %	14.4 %	22.2 %	35.0 %	18.7 %
BI1	8.3 %	9.4 %	12.6 %	40.4 %	29.2 %
BI2	6.7 %	8.3 %	13.7 %	40.4 %	30.8 %
BI3	12.8 %	13.1 %	20.3 %	35.0 %	18.8 %
TI1	6.5 %	12.6 %	22.4 %	35.8 %	22.7 %
TI2	7.0 %	13.7 %	21.7 %	37.2 %	20.3 %
TI3	8.0 %	17.7 %	25.1 %	32.3 %	16.9 %
TI4	6.7 %	12.8 %	21.9 %	36.6 %	22.0 %
TOI1	8.3 %	15.8 %	24.3 %	32.7 %	18.8 %
TOI2	8.9 %	13.4 %	26.0 %	33.7 %	17.9 %
TOI3	10.1 %	13.7 %	23.6 %	33.4 %	19.2 %
TOI4	12.5 %	14.5 %	24.0 %	30.0 %	19.0 %

6.2.2 Adoption of E-Government Services: Descriptive Statistics

As summarised in table 6.6, the average scores for respondents of performance expectance ranges from 3.01 to 3.88 (where 1 = minimum and 5 = maximum). Descriptive statistics show that these scores are high. For effort expectance, the score ranges from 3.42 and 3.81, which is also high. Concerning social influence, the result shows that the mean ranges from 3.42 to 3.66. According to the facilitating conditions construct, the score ranges between 3.38 and 3.89. The score for behaviour intention construct ranges between 3.34 and 3.80. For trust of internet construct the mean score ranges between 3.32 and 3.55. Finally, the trust of intermediary construct score ranges between 3.29 and 3.38.

Table 6.6: Descriptive Statistics

Factors	Mean	Std. Dev.	Factors	Mean	Std. Dev.
1- Performance Expectancy			**5- Behavioural Intention**		
PE1	3.86	1.210	BI1	3.73	1.213
PE2	3.37	1.229	BI2	3.80	1.160
PE3	3.88	1.138	BI3	3.34	1.278
PE4	3.87	1.172			
PE5	3.01	1.391			
PE6	3.30	1.357			
PE7	3.09	1.330			
2- Effort Expectancy			**6-Trust Of Internet**		
EE1	3.68	1.063	TI1	3.55	1.161
EE2	3.81	1.069	TI2	3.50	1.164
EE3	3.79	1.096	TI3	3.32	1.181
EE4	3.67	1.162	TI4	3.54	1.162
EE5	3.42	1.277			
EE6	3.81	1.131			
3-Social Influence			**7-Trust Of Intermediary**		
SI1	3.66	1.054	TOI1	3.38	1.196
SI2	3.63	1.093	TOI2	3.38	1.184
SI3	3.46	1.169	TOI3	3.38	1.225
SI4	3.55	1.190	TOI4	3.29	1.275
SI5	3.42	1.212			
4-Facilitating Condition					
FC1	3.57	1.247			
FC2	3.56	1.217			
FC3	3.78	1.152			
FC4	3.89	1.102			
FC5	3.54	1.138			
FC6	3.38	1.219			
Notes: Std.Dev. = Standard Deviation Scores Range from 1 to 5, where 1 = Strongly Disagree and 5= Strongly Agree.					

As presented in table 6.12, most of the respondents' scores are neutral. This is because the concept of e-government services in the Saudi Arabia context is quite new.

6.3 Factor Analysis to Explain Constructs Validity of TI and TOI

Two trust related constructs (namely, TI and TOI) were integrated with UTAUT model. It was deemed important to undertake factor analysis to confirm if both factors are distinct. Factor analysis is a test that is mainly concerned with data reduction in which a number of items are reduced and combined in a similar set of components or factors (Pallant, 2007). In another word, the main aim of the factor analysis test is to cluster all similar items and load them under one construct. In this study, two factors were added to the UTAUT model to measure the adoption of e-government services from citizens' perspective, using principal components analysis (PCA), and factors extraction as method of rotation (Pallant, 2007). However, before conducting factor analysis test, it was necessary to obtain Eigenvalues test as this test is an essential step before proceeding with factor analysis test (ibid).

6.3.1 Eigen Values Test

According to Hinton (2007), factors greater than one are included in the factor analysis test. As shown in table 6.7, all components emerged to be above one and their cumulative total is 73.798% of the variance for the data set.

Table 6.7: Eigenvaules and Total Variance Explained

C	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation
	Total	% of V	C %	Total	C %	C %	Total
1	4.318	53.976	53.976	4.318	53.976	53.976	3.058
2	1.586	19.822	73.798	1.586	19.822	73.798	2.845
3	.496	6.203	80.001				
4	.443	5.533	85.534				
5	.369	4.610	90.144				
6	.311	3.888	94.032				

Extraction Method: Principal Component Analysis. C=component; % of V = % of Variance;
C % = Cumulative %

6.3.2 Factors Loadings

The pattern matrix presented in table 6.8, illustrates the factor analysis loading for the two components in this study (namely TOI and TI). All the respective items for these components were loaded above 0.4 which is the minimum value suggested by information system research (Straub et al, 2004; Moore and Benbasat, 1991). Table 6.8 shows the result of factor analysis for two new independent factors (trust of internet and trust of intermediary) which is sorted by size as it is aimed at understanding the role of intermediaries in the adoption of e-government services.

Table 6.8: Pattern Matrix of Factor Analysis

Rotated Component Matrix[a]

ITEMS	Components	
	1 (TOI)	2 (TI)
TOI 2	.873	
TOI 1	.863	
TOI 3	.856	
TOI 4	.805	
TI2		.825
TI1		.824
TI3		.813
TI4		.807

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
[a] Rotation converged in 3 iterations. Trust of intermediary (TOI), Trust of internet (TI).

Furthermore, it was noticed that the items' coefficients varied across all components (table 6.8). For the first construct, trust of intermediary (TOI) varies between .805 and 0.873, whilst for the second construct, trust of internet (TI), the coefficient is between 0.807 and 0.825.

6.4 Reliability Analysis

Cronbach's coefficient alpha values were chosen to examine the internal consistency of the measure (Hinton et al., 2004). Hinton et al. (2004) have suggested four different points of reliability: excellent ranges (0.90 and above), high (0.70 - 0.90), high moderate (0.50 - 0.70) and low (0.50 and below). The reliability for each construct is illustrated in Table 6.9.

Table 6.9: Reliability Test of The Model

Model Constructs	Cronbach's Alpha	No Of Items	Result	Total Number Of Participants
Performance Expectance (PE)	.836	7	High Reliability	614
Effort Expectancy (EE)	.805	6	High Reliability	620
Social Influence (SI)	.763	5	High Reliability	601
Facilitating Conditions (FC)	.822	6	High Reliability	600
Behavioural Intention to Use (BI)	.797	3	High Reliability	598
Trust of Internet (TI)	796	4	High Reliability	605
Trust of Intermediary (TIO)	.803	4	High Reliability	615

The high Cronbach's Alpha value indicates that the constructs were internally consistent, and the reliability is measured of the same construct. The Cronbach's results varied between 0.836 for the performance expectance and 0.763 for the social influence constructs. According to this result (table 6.9), all six constructs represent high reliability in predicting intention behaviour toward e-government services. The Cronbach's value showed that the appropriate level of internal consistency of the model constructs is satisfied.

6.5 Regression Analysis

A regression analysis was used to measure the influence of independent variables on the behavioural intention to adopt e-government services promoted by the roles of intermediaries in a Saudi Arabian context. Five factors were proposed to predict behavioural intention: performance expectancy (PE), effort expectancy (EE), social influence (SI), trust of internet (TI), and trust of intermediary (TOI). The R square accounted for .451 (table 6.10), which means that independent variables of performance expectancy (PE), effort expectancy (EE), social influence (SI), trust of internet (TI), and trust of intermediary (TOI) explain an additional 45% (0.451 × 100) of the variance in behavioural intention to use e-government services; and this is a statistically significant contribution (Sig.= .000). Further, as is shown in table 6.11, the result showed that the model is statistically significant (F (50.819) = 101.968, P < 0.001).

Table 6.10: Regression Analysis Test (Model Summary)

Model Summary (a)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.672 (a)	.451	.447	.70596

a Predictors: (Constant), Performance Expectance, Effort Expectance, Social Influence, Trust of Internet, Trust of Intermediary
b Dependent Variable: Behavioural Intention

Table 6.11: Regression Analysis Test (ANOVA)

Anova (b)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	254.093	5	50.819	101.968	.000(a)
Residual	308.994	620	.498		
Total	563.086	625			

a Predictors: (Constant), Social Influence, Performance Expectance, Facilitating Conditions, Trust of Internet, Effort Expectance, Trust of Intermediary
b Dependent Variable: Behavioural Intention

Table 6.12: Regression Analysis Coefficients (Coefficients)

Coefficients (c)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta (β)		
Constant	.405	.147		2.760	.006
PE	.108	.040	.110	2.710	.007
EE	.262	.046	.244	5.678	.000
SI	.134	.042	.126	3.224	.001
TI	.200	.044	.195	4.566	.000
TOI	.197	.040	.200	4.978	.000

a Predictors: (Constant), Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Trust of Internet (TI), Trust of Intermediary (TOI).
b Dependent Variable: Behavioural Intention (BI)

Five predictors of the current model were found to be significant. According to the above results (table 6.12), the significant variables are as follows: performance expectancy (β=.108, p=.007), effort expectancy (β=.262, p=.000), social influence (β=.134, p=.001), trust of internet (β=.200, p=.000), and trust of intermediary (β=.197, p=.000). Further, in this study, the beta (β) size showed that the most important factor influencing the behaviour intention to adopt e-government services is effort expectancy (β= .244). The second influential factor that impacts the explanation of the behaviour intention is trust of intermediary (β= .200), then the third influential factor trust of internet (β= .195), followed by social influence (β= .126), and performance expectancy (β=.110). These factors make unique significant contributions to the prediction of behaviour intention in adoption of the e-government services in the Saudi Arabia context.

6.5.1 Logistics Regressions

In this study, a logistics regressions analysis test was used to predict the relationship between e-government adoption as a targeted factor (dependent), and behavioural intention and facilitating condition as predictor factors (independent). Nonetheless, when dependent variables of the study are categorised (e.g. usage

behaviour construct in this study represented by Yes/No), logistic regression was found to be suitable (Pallant, 2007). In this research the dependent variable (usage behaviour) was coded as 1= Yes and 0= No. As shown in table 6.13, facilitating conditions contribute significantly to the usage behaviour of e-government services ($p = .009 < .05$). However, behaviour intention is shown to have no significant contribution in usage behaviour of e-government ($p = .552 > .05$). Further, for odds ratios Exp (B) obtained from the results indicates that the more facilitating conditions units government have, the more usage of e-government can be obtained. Using a total of 626 cases, the result show that the model is seen to be significantly reliable, (X^2 (2, N= 626) = 12.012, $p < .05$) (table 6.14).

Table 6.13: Logistic Regression of Saudi E-government Model

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1a	BI	.52	.087	.354	1	.552	1.053
	FC	.246	.094	6.908	1	.009	1.279
	Constant	-1.394	.351	15.761	1	.000	.248
Variable(s) entered on step 1: Behaviour intention (BI), Facilitating Condition (FC)							

Table 6.14: Logistic Regression: Omnibus Tests of Model Coefficients

Omnibus Tests of Model Coefficients				
		Chi-square	**df**	**Sig.**
Step 1	Step	12.012	2	.002
	Block	12.012	2	.002
	Model	12.012	2	.002

Furthermore, the variance in e-government adoption in this model accounted for between 19% and 26% (table 6.15).

Table 6.15 : Logistic Regression: Model Summary

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	842.239a	.019	.026

a Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

As shown in table (table 6.16), only 21.0% of the e-government adopters were successfully adopted, and 85.5% of the predictions for non-e-government adopters were accurate (table 6.16). Overall, the predications were accurate, at 58.0% (table 6.16).

Table 6.16 : Logistic Regression: Classification Table (a)

Classification Table(a)					
			Predicted		
			E-government Usage		**Percentage Correct**
	Observed		**No**	**Yes**	
Step 1	Have you ever completed a transaction with traffic department online	No	307	52	85.5
		Yes	211	56	21.0
	Overall percentage				58.0

a The cut value is .500

6.5.1.1 Logistic Regression: Influence of Behavioural Intention on Adoption

While from the obtained results in the principle logistic regression indicated that FC significantly impact the adoption of e-government services, BI showed no significant impact on e-government adoption. Hence, further analysis was required to investigate why behavioural intention was not mapping to adoption of e-government. In this study different items were set out to build behavioural intention constructs (appendix E). As shown in table 6.17, B3 contributed significantly to usage behaviour ($p = .018 < .05$), indicating that interaction with

government (in this case traffic department) through intermediaries was considered valuable by citizens. However, other items of behavioural intention B1 (p = .952 > .05) and B2 (p = .281> .05) showed very little significant impact on usage behaviour of e-government. This clearly indicates that if the government works closely with intermediaries, e-government usage will increase in Saudi Arabia. Further, for other behavioural intention items used in the study, it can be concluded that e-government websites alone do not influence citizens to adopt e-government as citizens are likely to seek help (from an intermediary) to interact e with government online.

Table 6.17: Logistic Regression of Behavioural Intention in Saudi E-government Model

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1a	BI1	.006	.097	.004	1	.952	1.006
	BI2	.111	.103	1.162	1	.281	1.117
	BI3	.160	.067	5.626	1	.018	1.174
	Constant	-1.279	.336	14.500	1	.000	.278
Variable(s) entered on step 1: Behaviour intention (BI1,BI2,BI3)							

6.6 Demographic Variables and E-government Adoption

6.6.1 Age and E-government Adoption

Table 6.17 shows that the difference between e-government adopter and non-adopter crossing by age group. The result illustrates that there is increased adoption as age is increased. Nevertheless, the adoption of e-government has decreased again beyond the 30-44 age group. This suggests that the most adopters

of e-government were between 18 and 54. People above 54 reported as non-adopters of e-government services. Further, Pearson's chi-square test (Table 6.17) indicates that there is a difference between adopter and non-adopter of e-government services crossing by age (χ^2 (5, N=626) = 11.768, p=.006).

Table 6.18: Frequency of Age and E-government Adoption

Frequency of Age	E-government Usage			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Less than 18	8	2.2	0	0
18-24	79	22	59	22.1
25-29	109	30.4	71	26.6
30-44	138	38.4	115	43.1
45-54	21	5.8	22	8.2
More than 54	4	1.1	0	0
Total	**359**		**267**	

Pearson Chi-Square Test (N= 626) Age X E-Government Adoption			
	Value	**df**	**P (2-sided)**
Pearson Chi-Square	**11.768a**	**5**	**.006**

A correlation test was applied to explore if there is a relationship between age and e-government adoption. The result, shown in table 6.18, suggests that there is a significant positive relationship between age and e-government adoption.

Table 6.19: Spearman's Rho Correlations beween Age and E-Goverment Adoption

		E-government adoption
Age	Correlations Coefficient	.056 (*)
	Sig (2-tailed)	.161
	N	626
** Correlation is significant at the 0.01 level (2-tailed)		

6.6.2 Education Level And E-government Adoption

Based to education level, table 6.19 shows that adoption and non-adoption of e-government services is influenced by education level. The level of most adopters of e-government are high school or less (47.2%), followed by people holding bachelor degrees (43.1%), with postgraduates (master and PhD) having the lowest levels of adoption (6%). This indicates that the most likely adopters of e-government were reported to be in people with less education, which means adoption of e-government decreases as education level increases. Furthermore, Pearson's chi-square test (table 6.19) indicates that there is no difference between adopters and non-adopters of e-government services crossing by education level (χ^2 (5, N=626) = 7.307, p=.121).

Table 6.20: Frequency Of Education Level and E-government Adoption

Frequency of Education Level	E-government Usage			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
High school or Less	197	54.9	126	47.2
Bachelor	133	37	115	43.1
Master	6	1.7	11	4.1
PhD	5	1.4	5	1.9
Other	18	5	10	3.7
Total				

Pearson Chi-Square Test (N= 626) Education Level X E-Government Adoption			
	Value	**Df**	***P* (2-sided)**
Pearson Chi-Square	**7.307a**	**4**	**.121**

A correlation test was applied to explore if there is a relationship between education level and e-government adoption. The result, shown in table 6.20, suggests that there is a significant positive relationship between education level and e-government adoption.

Table 6.21: Spearman's Rho Correlations beween Education Level and E-Goverment Adoption

		E-government adoption
Education Level	Correlations Coefficient	.073 (*)
	Sig (2-tailed)	.069
	N	626
** Correlation is significant at the 0.01 level (2-tailed)		

6.6.3 Internet Experiences and E-Government Adoption

In terms of internet access, table 6.21 shows that adopters and non-adopters of e-government are influenced by internet experiences. The results indicates that the majority of e-government adopter use the internet every day (55.1%), followed by people using internet several times a week (25.1%). Finally, the internet access once a month or less had the lowest level of e-government adoption (15.7%). In this regard, the non-adopters of e-government were reported to have lower access to the internet application. Furthermore, Pearson's chi-square test (table 6.21) indicates that there is a significant difference between adopters and non-adopters of e-government services crossing by internet experiences (χ^2 (4, N=626) = 11.747, *p*=.019).

Table 6.22: Frequency of Internet Access and E-Government Adoption

Frequency of internet access	E-government Usage			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Every day	160	44.6	147	55.1
Several times a week	98	27.3	67	25.1
Several times a month	40	11.1	30	11.2

Once a month	33	9.2	12	4.5
Never	28	7.8	11	4.1
Total	**359**		**267**	

X2 Test (N= 626) Internet Access X E-Government Adoption			
	Value	**df**	***P* (2-sided)**
Pearson Chi-Square	11.747a	4	.019

A correlation test was applied to explore if there is a relationship between internet experiences and e-government adoption. The result, shown in table 6.22, suggest that there is a significant positive relationship between internet experiences and e-government adoption.

Table 6.23: Spearman's Rho Correlations beween Internet Experiences and E-Goverment Adoption

		E-government adoption
Internet Experiences	Correlations Coefficient	.120 (**)
	Sig (2-tailed)	.003
	N	626
** Correlation is significant at the 0.01 level (2-tailed)		

After factors analyses were obtained, all items regarding new factors were loaded strongly to their components; trust of internet (TI) and trust of intermediary (TOI). Thereafter, multiple regression tests were carried out to explore the ability of independents variables (PE, EE, SI, TI and TOI) on the predictive dependent variable, behavioural intention (BI). Further, logistic regression tests were obtained to explore the ability of independent variables (FC, BI) on predictive dependent variable Usage behavioural (UB). In regards to demographic variables, Pearson' chi-square test was carried out to explore association relationship

between age, education level, internet experiences and e-government adoption. All results of the regressions, logistic regression and binary correlation which were used to test the hypotheses are summarised in table 6.23.

Table 6.24: Summary of Hypotheses Results

HN	Hypothesis Proposed	Results
H1	Performance expectancy will have a significant influence on behavioural intentions to use e-government services.	Supported
H2	Effort expectancy will have a significant influence on behavioural intentions to use e-government services.	Supported
H3	Social influence will have a significant influence on behavioural intentions to use e-government services.	Supported
H4	Trust on the internet will have a significant influence on behavioural intentions to use e-government services.	Supported
H5	Trust on the intermediary will have a significant influence on behavioural intentions to use e-government services	Supported
H6	Facilitating conditions will have a significant influence on e-government usage behaviour.	Supported
H7	Behavioural intention will have a significant influence on e-government usage behaviour.	Not Supported
H8	There will be a difference between adopter and non-adopters of e-government of various age groups.	Supported
H9	There will be a difference between adopter and non-adopters of e-government in different levels of education.	Not Supported
H10	There will be differences between adopter and non-adopters of e-government in different levels of internet experience.	Supported

Further, figure 6.5 illustrates the results of factors that effects adoption of e-government services in Saudi Arabia.

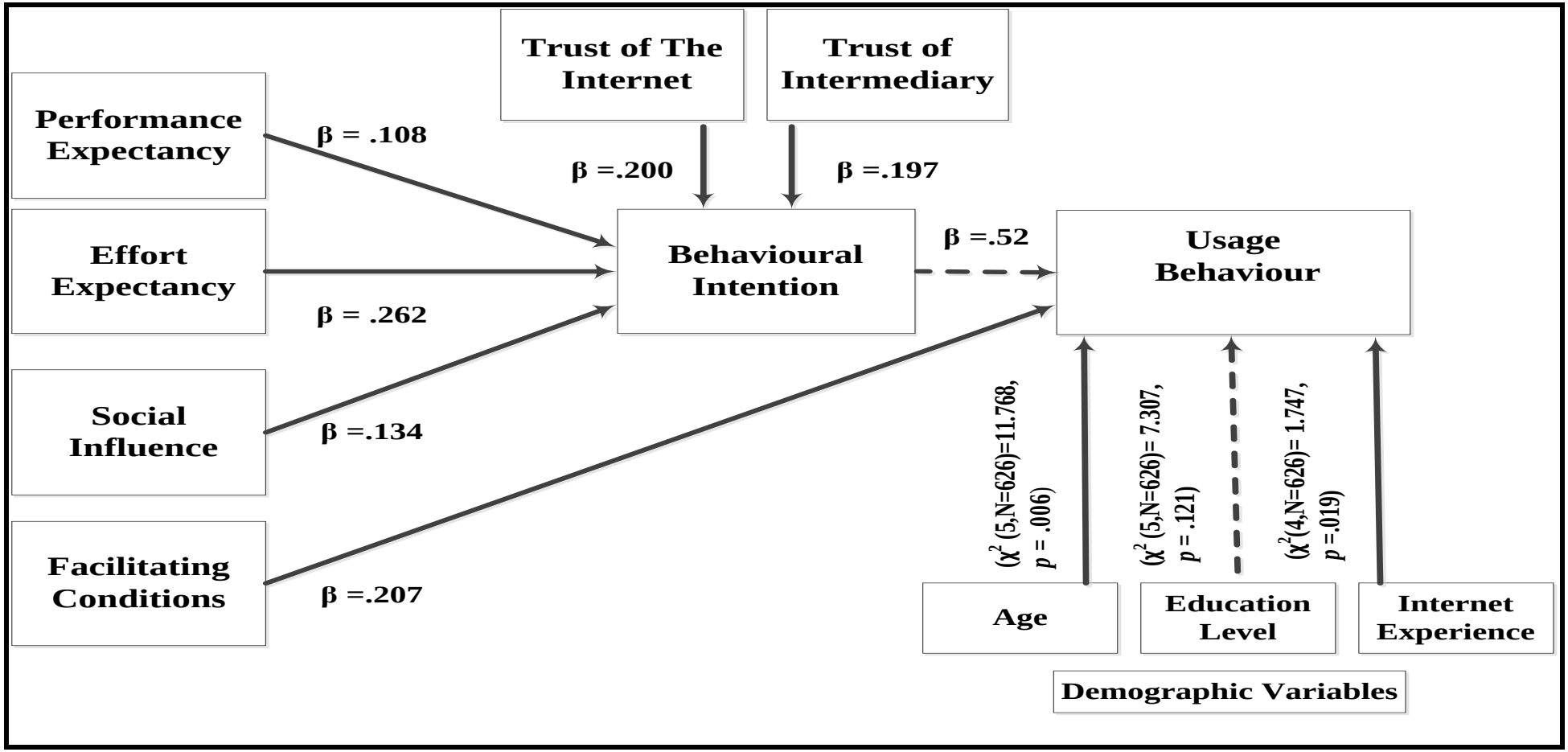


Figure 6.5: Research Model and Factors Influencing Adoption of E-Government Services in Saudi Arabia [Adapted from Venkatesh *et al.*, (2003)]

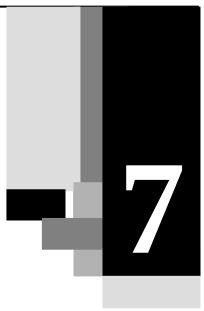
6.7 Summary and Conclusion

This chapter has set out to show that data was collected to understand the factors that impact on Saudi citizens to use e-government services and the roles of intermediaries in this relationship. The findings are listed above in a number of sections. The first test was to obtain the validity utilising principal components analysis (PCA). These components consist of a number of independent factors in Saudi e-government conceptual model, all of which are seen to be above (1) in Eigenvalues.

Multiple regression analysis suggested that the performance expectancy (PE), effort expectancy (EE), social influence (SI), trust of internet (TI) and trust of intermediary (TOI) significantly explain the behavioural intention (BI) to use e-government services in the Saudi Arabia context. In terms of e-government usage, logistic regression analysis suggests that facilitating conditions (FC) significantly explain usage behaviour (UB), however, behavioural intention does not. All constructs were found to explain behavioural intention and e-government adoption. Furthermore, adjusted R^2 shows that this study obtained the level for the conceptual models that were used to understand individual behaviour towards technology.

This study then compared the result instrument with the standard of information system research. This comparison shows that this study instrument in terms of validity reliability obtained the level of information system research.

Next chapter (chapter 7) is about discussing or comment the results that were obtained above, considering the results of the research and, literature review that were listed in chapter 2.



Chapter 7: Discussion of Key Finding

Summary

The literature review in chapter 3 highlighted the lack of studies of theoretical models concerning the roles of intermediaries in e-government adoption. Chapter 3 conceptualised the intermediary with adoption using the UTAUT model as a theoretical framework. Chapter 6 presented the results of the data collected to assess this conceptual model. This chapter focuses mainly on the discussion or comment of the results that were shown in chapter six. As a result, this chapter is going to revise the conceptual model according to the primary data that was collected. This model will help to enhance the decision making processes in relation to e-government diffusion and adoption.

7.1 Introduction

This chapter discusses the results that have been reported in chapter 6. It starts by answering the research objectives of this thesis which used an appropriate methodology approach (quantitative approach). The main objective of this study was to investigate factors affecting behaviour intention and usage towards e-government, and the roles of intermediaries in such a relationship. The main objectives that were listed in this study are: to empirically validate UTAUT in the Saudi Arabia e-government context; to extend the UTAUT with trust of internet and intermediary (conceptualised the intermediary within UTAUT model); and to explore the most important factors influencing Saudi citizens towards e-government adoption. Therefore, this study has employed interviews to further understand the concept of intermediaries in e-government diffusion and adoption and, then use UTAUT as a base model to further generate the result for this study. The literature review and the sessions with a government official and intermediary manager showed that the intermediary will have a positive impact in e-government diffusion and adoption, and will contribute significantly to the usage of e-government services. This led this study to incorporate and conceptualise the intermediary as an important factor into the model of this study (UTAUT). Modelling the intermediary into UTAUT will help measure citizens' acceptance towards e-government adoption and explore their perspectives in e-government services.

As stated before in chapter 4 section 4.5, data was collected using interviews with government officials, an owner of an intermediary, observation of how intermediaries function and a questionnaire survey that was administrated to citizens in Saudi Arabia. However, interviews and observation was only used to understand the concept of the intermediary in e-government adoption and diffusion and role played by intermediaries in e-government development. Therefore, the main output of this thesis comes from the quantitative approach, using the questionnaire. As presented in chapter 6, six different tests were

performed to analysis data of this study; descriptive statistics, factors analysis, reliability analysis, regression, logistic regression and correlation.

As will be shown in this chapter, the findings of this study are very useful for theoretical literature as well as the practical side as the Saudi Arabia context and other countries have similar environment conditions. Thus, the results of this study will help strategy makers to further enhance delivery of e-government services to citizens through multi-channel services delivery, and give direction for future research. Indeed, this study emphasises the most important channel (intermediary) other than the internet to communicate with citizens online and to act as a trusted gateway towards e-government. The current thesis makes further contribution to e-government literature by exploring the most important factors influencing the adoption of e-government services in the Saudi e-government context and investigating the role of intermediaries in e-government adoption.

This chapter is structured as follows. Section 7.2 reports the response rate of the questionnaire. In section 7.3, the study discuses the results of the instrument validation process that were obtained in the research. This is followed by discussion of the hypotheses test in section 7.4. In section 7.5, summarise the research model of e-government adoption. The last section (7.6) summarises the overall chapter.

7.2 Response Rates

As shown in chapter 4, the response rate of the questionnaire survey distributed in this study is 83.4%, which can be considered to be very good (Mangione, 1995). Furthermore, Fowler (2002) considers that response rate is acceptable if it falls between 5 % at the lower end and 95 % at the higher end. Therefore, according to above suggestions, the response rate of this study, which has been conducted to understand the adoption of e-government, is very acceptable and satisfactory.

7.3 Instrument Validation

In order to validate the findings of the study, instrument validation is important before and after data collection (Straub el al, 2004). Therefore, this study has established many instrument validations, including content validity, construct validity and reliability. In order to obtain prior validity, pre-test and pilot study processes are used in this research, along with interviews as pre-data collection validity. Thus, the confidence of the findings will be increased and the research obtained post-data collection constructs validity and reliability. In information system research, these validity techniques are considered as standard (Straub et al, 2004). In this study, Cronbach's coefficient alpha values were chosen to examine the internal consistency of the measure (Hinton et al., 2004). Hinton et al. (2004) have suggested four different points of reliability: excellent ranges (0.90 and above), high (0.70 - 0.90), high moderate (0.50 - 0.70) and low (0.50 and below). The reliability for this study varies between .836 and .763. Thus, this study is considered to be at the appropriate level of internal consistency (Hinton et al., 2004; Straub et al, 2004).

7.4 Response Hypotheses

This section discusses the results of the structural model presented in chapter 3 and the respective tests in chapter 6. These hypotheses were developed to explore the regression analysis between independent factors and their significance in explain dependent factors towards e-government usage and adoption. This section discusses the results of the main independent factors in explaining dependent factors, and then turns to the results of the demographic variables in e-government adoption. Thus, this section will report whether these hypotheses are confirmed by data collected or not. This study proposed seven hypotheses which were tested to examine the relationship between independent and dependent factors. In this study, all the six hypotheses performance expectancy (PE), effort expectancy (EE), social influence (SI), trust of internet (TI), trust of intermediary (TOI) and

facilitating condition (FC) are found supported by data obtained from the research which significantly explained the adoption of e-government services, except behavioural intention (BI). Furthermore, in order to determine the demographic variables differences in adoption and non-adoption of e-government services, three hypotheses were developed. This study found that all hypotheses are supported by data collection (age and internet experiences) except education level. The hypotheses results will be discussed in detail in the following subsections.

7.4.1 Performance Expectancy and Behavioural Intention

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

As reviewed in chapter 3, a strong association between performance expectancy and behavioural intention has been listed in literature (Carlsson et al 2006; Venkatesh et al., 2003). The statistical results of this study indicate that there is a significant relationship between the performance expectance and behavioural intention (β=.110, $p < .05$) towards e-government adoption. This means the findings of this factor support the prior study and reports (Carlsson et al 2006; Venkatesh et al., 2003) which claimed that performance expectance will explain behaviour intention towards technologies. Therefore, the results of this study have supported hypothesis one. This study finds that citizens are willing to adopt e-government and apply for e-services with the purpose of saving time and money and for personal social status. Thus, it is expected that the more benefits (saving time and money, social status), the greater e-government adoption will obtained.

7.4.2 Effort Expectancy and Behavioural Intention

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

Previous studies have mentioned the importance of effort expectancy in explaining behaviour intention to use systems (Carlsson et al., 2006; Venkatesh et al., 2003). This study found that there is a significant relationship between effort expectancy (EE) and behavioural intention (BI) towards e-government adoption (β=.224, $p < .01$). This means that this construct in the model of e-government has strong implications towards influencing attitude using e-government services at individual level citizen.

7.4.3 Social Influence and Behavioural Intention

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

A strong relationship between social influence and intuition has been reported in the acceptance literature (Venkatesh and Brown, 2001; Fulk and Boyd, 1991; Fulk et al., 1987). Social influence, represented by friends and families, is a very important factor in influencing others' (citizens) attitudes towards adoption of new e-services. This study finds that social influence will have significant effects on behavioural intention of e-government services (β=.126, $p <.001$). This result shows that the hypothesis is fairly supported, which means this study argues that friends and families affect each other in using e-government, and are found to be positive pressures for furthering acceptance of e-government. This suggests that awareness programmes designed to increase citizens' knowledge about e-government services could help to diffuse e-services throughout society. Government should benefit from individual influences as well as benefiting from media and intermediaries to advertise and market e-government services. The influence of an intermediary is critical in promoting e-government adoption. Also,

this study suggests that intermediaries are important for the marketing and increased awareness of e-government services.

7.4.4 Facilitating Conditions and Adoption of E-Government

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

As mentioned in the literature review, there is a strong relationship proposed between facilitating conditions and usage behaviour towards technologies (Venkatesh et al. 2003; Venkatesh and Davis, 2000). As suggested by Venkatesh et al (2003), facilitating conditions are the technical and organisations infrastructure that exists to remove barriers from using systems. That refers to the factors in the environment that may obstruct further usage of the systems. This study found that there is a significant relationship between the facilitating conditions construct and usage of e-government services (β=.207, $p > .05$), and this is consistent with prior studies into this area of the research which links facilitating conditions to further usage of technology. This clearly indicates that the more facilitating conditions the Saudi e-government has, the more barriers that will be removed, thus furthering the citizens' engagement with e-government.

7.4.5 Trust of Internet and Behavioural Intention

H5. Trust on the internet will have a significant influence on behavioural intentions to use e-government services.

The current study was designed to determine the influence of trust in internet on behavioural intention towards e-government adoption. According to the prior study (Belanger and Carter, 2008; Carter and Belanger, 2005), trust in the internet

was found to have a positive impact on behavioural intention to use e-government. This study sets out the hypothesis of the importance of trust in the internet to bring intention to e-government adoption. The results of this study show that, the trust of internet construct (β= .195, p<.05) is significant, explaining behavioural intention to use e-government services, and is consistent with those of Belanger and Carter (2008) and Carter and Belanger (2005), who found that trust of the internet is a very important factor that determines intention to use e-government services. Attitude to use e-government services is influenced by citizens' beliefs that the internet is a safe place to communicate with government online, and is related to the legal and technological structures in the country. Beliefs that the internet is a robust and safe environment highly influence e-government adoption and usage. Increased citizen trust leads to increased e-government usage. As an assumption upon which the model is based, making the online environment safe leads citizens to use e-government services.

7.4.6 Trust of Intermediary and Behavioural Intention

H6. Trust on the intermediary e-offices will have a significant influence on behavioural intentions to use e-government services.

In reviewing the prior studies, no statistical data was found on the association between the intermediary and e-government adoption. This study found that there is a significant relationship between trust of intermediary (TOI) and e-government adoption behaviour, showing that there is strong support for the hypothesis proposed in this study (β=.200, p<.05). The resulting implication is that having this construct plays a strong role in determining e-government adoption, which means an intermediary will build trust between citizens and services provider (government) in the Saudi Arabia's e-government context. Consistent with prior studies in e-commerce context (Howells, 2008; Bailey and Bakos, 1997; Resnick et al., 1995), this study found that the intermediary (e-office) is a very important gateway to build trust between the government department and citizens in services providers online. The possible explanations for this trust in e-intermediary

gateway might be the citizens' lack of confidence and trust in the security features of Saudi Arabia's e-government systems. These finding suggests that the intermediary is a very useful channel gateway in improving trust and facilitating e-government adoption and diffusion. These findings suggest that the Saudi government should further exploit the intermediary (e-offices) concept in order to enhance trust in their e-government services. The Saudi government should benefit from the intermediary (e-offices) in order to enhance trust in the e-services. Such positive attitude of citizen to communicate with government online through intermediary shows that e-government adoption could increase with the use intermediaries. As the literature has showed trust would be an issue in a non physical environment like the Internet, such uncertain situations may force citizens toward using intermediary (e-offices) as a gateway to adopting e-government services.

Further, the present study adds to our understanding of the role of intermediaries in working in parallel with different constructs to explain behavioural intentions to adopt e-government and confirms previous findings (Chatterjee, 2008; Bailey & Bakos, 1997). Intermediary theory suggests that the most important roles of intermediaries are to enhance trust between two parties (Bailey & Bakos, 1997). This is confirmed by empirical findings in this study. Furthermore, literature stated that trust is an important factor affecting citizens' adoption of e-government services (Carter and Belanger, 2005; Warkentin et al., 2002). Also, this study suggests that intermediaries are essential, particularly for developing countries, as they develop the infrastructure to bridge technical gaps and the digital divide. The major theoretical implications of these research findings are that citizens' adoption and usage of e-government can be explained by trust of intermediaries, who can enhance trust between government and citizens and increase adoption.

7.4.7 Behavioural Intention

H7. Behavioural intention will have a significant influence on e-government usage behaviour.

Previous studies have mentioned the importance of behavioural intention in explaining behaviour technology adoption (Venkatesh et al., 2003). This study found that there is no relationship between behavioural intention (BI) and e-government usage behaviour (UB). This means that this construct has no impact on influencing e-government adoption at the individual level of citizens. However, as showed in chapter six further analysis was obtained in order to explain why behavioural intention was not mapping to adoption of e-government. In this study three different items represent the behavioural intention construct (appendix E). Two of them B1, B2 indicating the interaction with government (in this case traffic department) through website only and one of the items showed the interaction with government through intermediaries. The first two items 'through website only' show no impact toward e-government adoption. However, the third item B3 showed significant impact toward adoption of e-government ($p = .018 < .05$). This clearly indicates that if the government works closely with intermediaries, e-government usage will increase in Saudi Arabia. Further, for other behavioural intention items used in the study, it can be concluded that e-government websites alone do not influence citizens to adopt e-government as citizens are likely to seek help (from an intermediary) to interact e with government online.

7.4.8 Demographic Variables and Adoption of E-Government

7.4.8.1.1 Age and E-Government Adoption

Previous studies suggested that older people are always considered as non-adopters of technology (Al-Ghaith et al 2010; Venkatesh et al., 2003, Venkatesh et al., 2000; Morris and Venkatesh, 2000), and this was supported by this study. While a strong relationship between age differences and e-government adoption has been reported in the literature, the statistical analysis of this study shows that

the people most adopting e-government in Saudi Arabia are between 18 and 44 years of age. This shows that older people can be categorised as non-adopters of e-government, and may therefore need further help and support towards e-government adoption. The e-government adoption sharply drops after 44 years old. In this study, all people in the age group of more than 54 years of age were found to be non-adopters of e-government services. This clearly indicates that members of this group do not have any skills in using e-government services, or maybe they do not have computers or/and the internet at their homes to communicate with government online. E-government adoption have a direct relationship with age, the most adopting people belong to the 30 - 44 years of age. This age group might have been employed well and have obtained internet experiences. Thus e-government adoption is more likely to diffuse between younger people than older ones.

7.4.8.1.2 Education Level and E-government Adoption

As previously reported in the literature in chapter 3, education level has been found to have a strong impact on technology adoption and usage (Akman et al., 2005; Mahmood et al., 2001; Venkatesh et al., 2000; Rogers, 1995; Burgess, 1986). This study considered that education level is insignificant to explain usage of e-government services. This finding suggests that government officials have to consider some education and training programs that can help individual citizens to use ICT to communicate with government online.

7.4.8.1.3 Internet Experiences and E-government Adoption

Internet experiences were found to have a positive effect on attitude of using online services (Jaruwachirathanakul and Fink, 2005; Karjaluoto et al., 2002; Schumacher and Morahan-Martin, 2001; Trocchia and Janda 2000). Literature suggests that people with good internet experiences expected to have a positive attitude towards adoption (ibid). This is confirmed by this study. Citizens using the internet once a month belong to be non-adopter group of e-government services. Internet experiences were hypothesised to affect the adoption of e-

government. In this research context, the more people have frequent internet experiences (using the internet everyday), the more likely they are to adopt e-government. This is followed by citizens' using internet several times a week and several times a month, respectively. This result clearly shows that government should consider a comprehensive strategy for non-users of the internet (Trocchia and Janda 2000) in relation to e-government adoption.

7.5 Research Model of E-government Adoption

The author discussed the hypotheses test and its reflection in accordance to the model proposed in this study. In this section, the author discusses the research model predictability (adjusted R^2) compared to the other researchers' models that have been obtained in the information system field (Dwivedi, 2005; Gefen et al., 2000; Davis et al., 1989). The R^2 in this study is found to be 0.451 (table 6.10 in chapter 6 section 6.5). This result is shown to be very acceptable and satisfactory and coincide with previous study (Dwivedi, 2005; Gefen et al., 2000; Davis et al., 1989).

This result indicates that the independent factors proposed in this research are considered very important to understand citizens' behavioural intention towards adopting e-government services and thus to the usage of e-government services.
Table 7.1 summarises the analysis results of above mentioned factors that influence e-government adoption.

Table 7.1: Summary Research Hypotheses Results

HN	Hypotheses proposed	Results
H1	Performance expectancy will have a positive influence on behavioural intentions to use e-government services.	Supported
H2	Effort expectancy will have a positive influence on behavioural intentions to use e-government services.	Supported
H3	Social influence will have a positive influence on	Supported

	behavioural intentions to use e-government services.	
H4	Trust on the internet will have a positive influence on behavioural intentions to use e-government services.	Supported
H5	Trust on the intermediary will have a positive influence on behavioural intentions to use e-government services	Supported
H6	Facilitating conditions will have a positive influence on e-government usage behaviour.	Supported
H7	Behavioural intention will have a positive influence on e-government usage behaviour.	Not Supported
H8	There will be a difference between adopter and non-adopters of e-government of various age groups.	Supported
H9	There will be a difference between adopter and non-adopters of e-government in different levels of education.	Not Supported
H10	There will be differences between adopter and non-adopters of e-government in different levels of internet experience.	Supported

Further, figure 7.1 illustrates the results of factors that effects adoption of e-government services in Saudi Arabia.

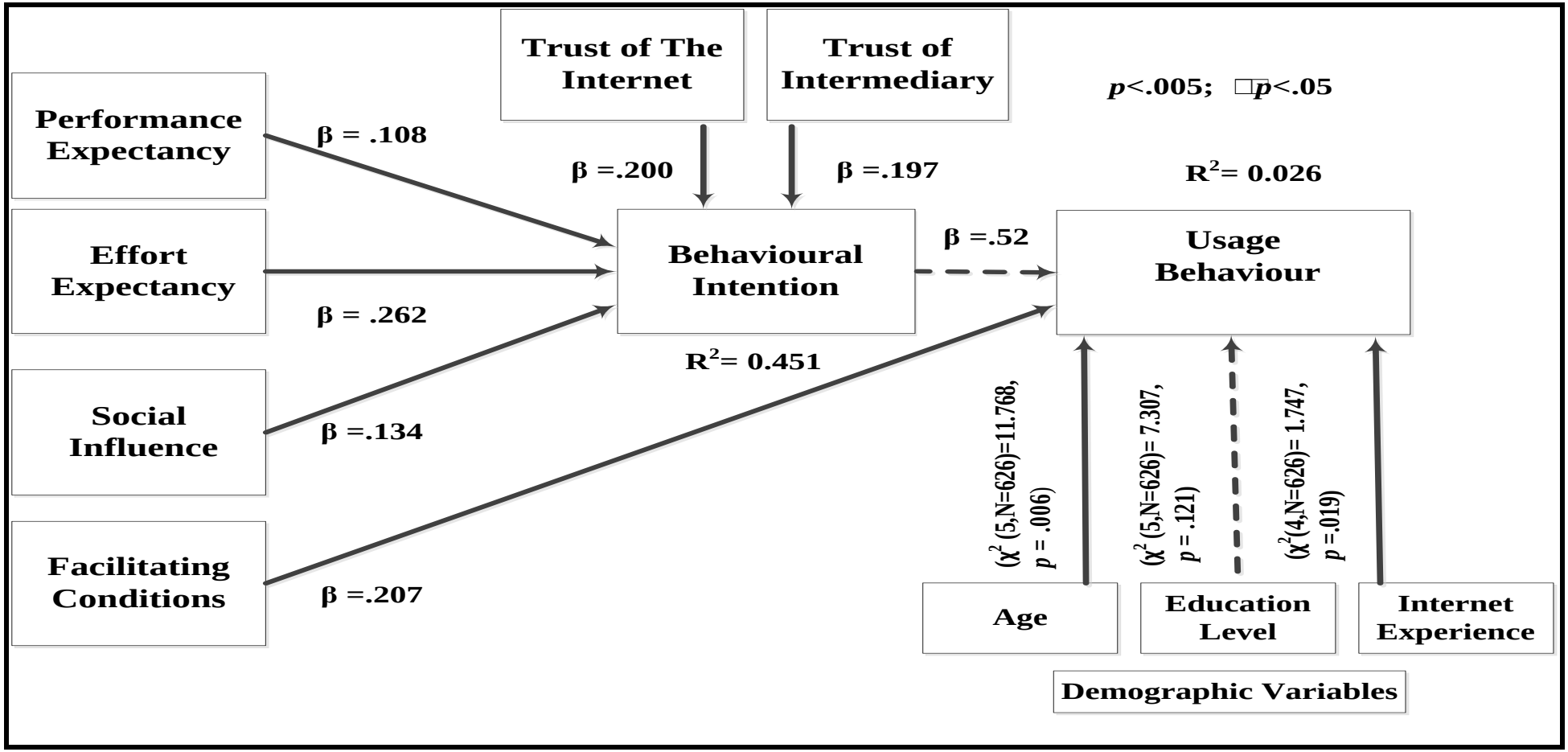
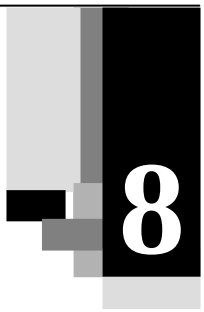


Figure 7.1: Research Model and Factors Influencing Adoption of E-Government Services in Saudi Arabia [Adapted from Venkatesh et al., (2003)]

7.6 Summary and Conclusion

This chapter considered the theoretical background and the findings of this study. It set out to determine factors affecting e-government adoption. It started by discussing the response rate and the effect of demographic variables in e-government adoption. Thereafter, the chapter discussed findings of factors affecting e-government adoption, revising the e-government adoption model. Therefore, based on the research gap which was presented in chapter 3 and 5 respectively, this chapter has revised the research model proposed in the study. It takes into account a new factor emerging from this study that influences e-government adoption (trust of intermediary), further explaining behavioural intention to use e-government, in addition to the validation of research hypotheses presented in chapter 3 and 6. Thus, this chapter is essential to discuss the factors affecting e-government adoption, furthering literature of e-government. The revised model, presented in chapter 6, conceptualised trust of trust of intermediary, into the UTAUT model and is a novel contribution to e-government adoption. The theory in this study offers an integration model that considers the roles of intermediaries in e-government adoption. This study is the first to attempt to understand citizens' perspectives towards e-government adoption through an intermediary channel. Further, this study confirms the factors that affect adoption in another e-government context (Saudi e-government). This study also offers to theorise the roles of demographic variables, such as age, education level and internet experiences in influencing actual usage of e-government. This study is based on the influence of these factors on adoption. Therefore, this study concludes that age and internet experiences contribute significantly to e-government adoption, yet education level does not. This will lead to the exclusion of some citizens from benefiting from e-government services.



Chapter 8: Conclusion

This chapter mainly aims to (a) draw conclusions of the research reported in the study; (b) give a brief research overview of this study; (c) provide a summary of the novelty that is claimed in this research; (d) discuss the theoretical and practical implications of the findings; (e) outline possible limitations of this study; and (f) suggest future research recommendations and directions in the area of e-government adoption.

8.1 Introduction

This chapter offers a conclusion to the output of the discussions that have been presented in this thesis. Therefore, this chapter starts with an overview of the research, in section 8.2. This is followed by the main research findings which are presented in section 8.3 and details of research contributions in section 8.4. In section 8.5, implications to theory are discussed, with section 8.6 providing a summary of practical implications. Then, in section 8.7, limitations of the study are listed. A review of the future research directions in the e-government adoption and intermediary roles is provided in section 8.8, and finally a summary of this chapter is provided in section 8.8.

8.2 Research overview

Prior research shows that the adoption rate among citizens for e-government services determines its success or failure (Heeks, 2005; Pinto and Mantel, 1990; Succi and Walter, 1999). Studies in this area have indicated that there is an increased emphasis on e-government adoption, exploring a number of significant factors affecting individual (citizens) adoption of e-government (Al-Shafi and Weerakkody, 2010; Alawadhi and Morris, 2008; Carter and Weerakkody 2008; Carter and Belanger, 2005). In particular, interest has grown in developing user friendly and interactive e-government systems in order to achieve its full potential as a effective public sector service delivery channel.

Governments worldwide have introduced various initiatives towards enhancing the effectiveness and efficiency of government services. Among these was the introduction of intermediary organisations within their e-government strategies (Al-Sobhi et al., 2010; Bovaird, 2004; Janssen and Klievink, 2009; Johnston and Gudergan, 2007; Teicher et al, 2006; Wettenhall, 2003). Nevertheless, although the concept of intermediary organisations adoption was introduced in other

different contexts, such as e-commerce, to date there has been little argument on the adoption of intermediary organisations in the e-government realm (Al-Sobhi et al., 2010; Janssen and Klievink, 2009). While e-government services offer a number of benefits that fulfil its potential through engaging all relevant stakeholders, others who lack technology skills and have low levels of education were often left out and have been excluded from these benefits. Consequently, this has created a significant gap and inequality in accessing e-government services (Margetts and Dunleavy, 2002). In this respect, many countries worldwide have established strategies to minimize the digital divide and increase citizens' engagement with new e-government services that are implemented in their countries (Al-Sobhi et al., 2010; Cabinet Office, 2005). This research examines the role of intermediaries in e-government adoption to develop a better understanding of factors that affect adoption of e-government and the roles of intermediaries in this relationship. Therefore, the overview of this study is as follows:

Chapter 1 identified the research background and outlined motivation for encouraging this research. The slow progress rate of e-government adoption in Saudi Arabia together with the use of intermediary organisations in the country and the limited research on understanding the role of intermediaries in e-government adoption motivated this research. The extant literature has identified various factors that affect citizens adoption of e-government services. Recent studies of e-government adoption in the Arab gulf area (Al-Shafi and Weerakkody, 2010; Alawadhi and Morris, 2008) have made initial efforts to explore factors that affect adoption of e-government services. Nevertheless, these studies have not explored the role of intermediaries in e-government adoption and the impact of culture and trust. The previous studies did not examine the impact of intermediaries in influencing behavioural intention (BI) and usage adoption of e-government. This creates limited information for policy makers to understand various factors and the intermediaries in explaining the adoption of e-government. Thus, this study will bridge previous gaps, and aims to identify factors that influence Saudi citizens in the adoption of e-government and the roles of

intermediaries. This overview supports the objectives of this study (chapter 1, section 1.3) to develop a conceptual model that helps to analyse factors that affect citizens' adoption of e-government services.

Chapter 2 reviews the emergence of e-government at local and international levels and describes the purpose of establishing online government, providing a description of e-government and e-government characteristics. This was followed by a discussion of e-government benefits and challenges. Finally, the roles of intermediaries in e-services and the motivation for establishing intermediaries under the e-services concept were reviewed. Therefore, chapter 3 presents the development of the conceptual model to meet the aim and objectives of this research.

Chapter 3 reviewed literature in diffusion and adoption, and associated models and theories including the following: theory of reasoned action (TRA), technology acceptance models (TAM), theory of planned behaviour (TPB) diffusion of innovation (DOI), and, finally, the most recent model which was adopted by this study, the Unified Theory of Acceptance and Use of Technology (UTAUT). This model provides a number of constructs, which were utilised as a basis for this research. This study has also added some constructs or factors from social trust (namely trust of internet and trust of intermediary) which were proposed to determine adoption of e-government services. In addition, chapter 3 proposed that the rate of adoption of e-government differs according on demographic variables, such as age, education level and internet experiences.

The selected factors were hypothesised to explain behavioural intention and usage of e-government. The proposed e-government model has assumed that performance expectancy, effort expectancy, social influence, trust of internet and trust of intermediary influence behavioural intention to adopt e-government services. Further, this study also assumed that facilitating condition and behavioural intention will explain usage behaviour to use e-government services. Also, this study hypothesised that demographic variables have an impact on the

usage of e-government. Thus chapter 3 aimed to meet the first objective of this study in developing a conceptual model to understand factors affecting the adoption of e-government and the roles of intermediaries in this relationship.

Chapter 4 set out to find the appropriate research approach (qualitative and quantitative) to validate the research model. This study was able to validate the model's quantitative approach using questionnaire survey as suitable approach. This survey allowed data collection from a wide range of participants (Saudi citizens). It set out to determine the constructs' impact on adoption and usage of e-government. Therefore, a set of statistic analysis techniques was obtained, such as factors analysis, reliability analysis, regression, logistic regression, and correlation. However, before obtaining statistic data (quantitative), it was essential to understand the current state of e-government implementation in Saudi Arabia and the roles of intermediaries in e-government development. Thus, a qualitative approach was selected to create a picture using initial interviews and observations. Again, as highlighted in chapter three and in chapter six respectively, the main conclusions of this study have been drawn from a quantitative (questionnaire survey) approach, with qualitative (interview, observations, review government documents) work to assist due to the lack of literature available on the roles of intermediaries and e-government implementation in Saudi Arabia e-government context.

Chapter 5 provided the background about Saudi Arabia. This chapter started by giving an overview of Saudi Arabia's location, size and population, then the digital divide and related issues like computer and internet access were provided. Details of the level of education and economic states were also listed. Then, this chapter discussed the evolution of ICTs and e-government development in Saudi Arabia. In particular, this chapter investigated the roles of intermediaries in facilitating the diffusion and adoption of e-government in Saudi Arabia. As articulated in chapter 4, the main conclusion of this study was drawn from the quantitative approach using questionnaires, and no studies were found reviewing intermediaries in e-government implementation, diffusion and adoption.

Therefore, this study interviewed a government official and owner of an intermediary (office) to build an initial overview of intermediaries in e-government implementation. This chapter has listed the output of qualitative sessions.

Chapter 6 merely presented the results from the output of analysis that were collected from the questionnaires survey, conducted in Saudi Arabia, which determined the factors impacting adoption of e-government in Saudi Arabia. The results were obtained through many stages of data analysis, and began by obtaining validity and reliability tests. In term of validity, this study obtained principle component analysis (PCA) test, and Eigenvaules test the two trust factors (trust of internet and trust of intermediary), found to be greater than 1 and where the cumulative total is 73.798% of the variance for the data set. Factors analysis of this study indicated that factors were loaded above 0.40, which is the minimum acceptable value in information system research, also no cross loadings above 0.40 were found in this study. In terms of reliability tests, Cronbach's alpha value indicated that all constructs were internally consistent and reliability was shown to be above 0.70, which was considered to be high (Hinton et al., 2004).

Regression analysis test was used to measure the relationship between independent (performance expectancy, effort expectancy, social influence, trust of internet and trust of intermediary) and dependent factors (behavioural intention). Further logistic regression was used to measure the relationship between independent facilitating condition and adoption of e-government. The results concluded that all constructs contribute significantly to explain adoption and usage of e-government. Finally, correlation analysis was carried out between demographic variables factors of age, education level, internet experiences and adoption of e-government services to show the differences between adopters and non-adopters of e-government, based on the above variables.

Chapter 7 considered both literature and data analysis within this study. Therefore, this chapter mainly discussed the results from the theoretical background

presented in chapter 3 and results that were obtained from data analysis in chapter 6. This chapter showed the main contributions in confirming theoretical perspectives in factors that impact on e-government adoption.

8.3 Main Findings

The main conclusions drawn from this study based on the questions which were highlighted in introduction of this study (chapter 1) are as follows:

1. The regressions analysis supports that performance expectancy, effort expectancy, social influence, trust of internet and trust of intermediary contribute significantly to e-government acceptance. Therefore, this result suggests that the above factors help to explain e-government adoption and acceptance. Further logistic regression results supports that facilitating conditions and behavioural intention are important factors which contribute significantly to e-government usage, and further promote the relationship with e-government usage. Furthermore, in reviewing the prior studies, no statistical data was found on the association between intermediary and e-government adoption. This study found that there is a significant relationship between five constructs (performance expectancy, effort expectance, social influence, trust of internet and trust of intermediary) and e-government adoption behaviour, showing that there is strong support for the hypotheses proposed in this study; performance expectancy (β=.110, <.01), effort expectancy (β=.244, <.05) social influence (β=.126, <.01), trust of Internet (β=.195, p <.05), and trust of intermediary (β=.200, p<.05). The resulting implication is that, having these six constructs plays a strong role in determining e-government adoption.

2. The most important constructs that affect adoption of e-government in Saudi Arabia, based on meta size, is effort expectancy (β = .244), followed by trust of intermediary (β = .200), the third strongest construct is trust of internet (β =.195), then social influence (β=.126) and finally performance expectancy (β =.110), representing less impact on behavioural intention to e-government adoption.

3. In terms of constructs related to adoption (facilitating condition and behavioural intention) that were related to adoption of e-government (usage behaviour). The facilitating conditions (Exp (B) = 1.23) are shown to have strongest impact on e-government adoption and followed by behavioural intention, BI (Exp (B) = 1.18) in impacting e-government adoption.

4. According to the three demographic variables that were proposed in this study, all factors (e.g. age and internet experiences) were found to associate with the adoption of e-government in Saudi Arabia, except for the education level.

5. Internet users show significantly more e-government adoption than non-internet users.

8.4 Research Contribution

Despite the research that has already been carried out to explore factors influencing adoption of e-government services, this study argues that no study exists that has explored factors affecting citizens' adoption of e-government in the Saudi Arabia context, using the UTAUT model. Furthermore, this study argues that studying intermediaries in the context of e-government adoption is also a novel contribution of this thesis. Citizens' acceptance and adoption of e-government services is considered as a primary condition for successful

implementation and progression of any e-government project as citizens' attitudes to use and adopt new e-government services are an important factor that may determine the success or failure of any e-government project. Therefore, the outcomes and knowledge of this research is very important for diffusion and adoption of e-government. This contributes to different aspects of the e-government area. For example, from the contextual knowledge presented in chapter 1, 2 and 3; the design, collection and analysis of data that were reported in chapter 4; analysis of data in chapter 6; and, finally, discussion of the data and revision of the research model and hypotheses for e-government adoption in chapter 7 all contribute to the field of e-government. Therefore, this study contributes significantly to the area of e-government diffusion and adoption as follows.

- **Contribution 1:** The proposed model in chapter 2, which was revised in chapter 7, offers a contribution by conceptualising trust of intermediaries to the Unified Theory of Acceptance and Use of Technology (UTAUT) model. It argues that currently no such independent factors related to intermediaries and e-government adoption has been found. Therefore, this study contributes to the body of knowledge by identifying six factors that influence citizens in the adoption of e-government services in the Saudi Arabian context: performance expectancy, effort expectancy, social influence, facilitating conditions, trust of internet and trust of intermediary. Further this study found that behavioural intention has no impact in explaining e-government adoption. However, behavioural intention constructs consist of three items; two of them presents the interaction with government (e.g traffic department in this study) using internet only, and one item represents the interaction with government through intermediaries. The result showed very little significant impact on usage behaviour of e-government through the first two items (internet only). This clearly indicates that if the government works closely with intermediaries, e-government usage will increase in Saudi Arabia. Further, for other behavioural intention items used in the study, it can be

concluded that e-government websites alone do not influence citizens to adopt e-government as citizens are likely to seek help (from an intermediary) to interact e with government online.

- **Contribution 2:** Among others, this study contributes to e-government practitioners and decision makers by offering a conceptual model that help in overcoming barriers that may be faced when designing and diffusing e-government services.

- **Contribution 3:** The study identifies that there is a lack of a theoretical model for analysing the different factors affecting e-government adoption from citizens' perspective (specifically understating intermediary in adoption of e-government). This assumption was based on the review of e-government literature and interviews with government officials. Therefore, chapter 3 was conceptualised to overcome this gap in knowledge. A new model was proposed and explored in Saudi Arabia and analysed in chapter 6. Thus, the most important considerations of this thesis are the development of a comprehensive new model for studying the factors influencing citizens' adoption of e-government services, and thus furthering e-government adoption in the Saudi Arabian context.

An issue for any research is how to generalise findings in different contexts. While political, cultural, economic and social differences can act as a major obstacle, it is argued that the findings in this research can be generalised in terms of understanding the role of intermediaries in e-government adoption irrespective of context. Moreover, the influence of trust on e-government adoption has been previously acknowledged in different contexts and this study found that intermediaries play a key role in establishing trust between citizens and government.

8.5 Implications for Practice

Around the world, various initiatives have been established in the public sector to spread the usage of e-government services and among these efforts is the use of intermediary organisations. This study is aimed at assessing the influence of intermediaries in citizens' adoption of e-government services. As such, this study offered an approach towards modelling factors that explain citizens' behavioural intention towards the adoption of e-government services. The findings of this study were found to be significant at the operational level for management and policy making processes in the context of Saudi Arabia in which it will facilitate the diffusion of e-services among citizens. While the Madinah region in Saudi Arabia has established intermediaries under their local e-government strategy, there are still several regions that have yet to adapt the concept of intermediaries. Therefore, this study offers many lessons for practitioners, researchers and policy makers involved in e-government.

The findings of this study have a numbers of important implications for future practice. Increasing the availability and accessibility of e-government services and bridging the digital divide are significant indicators for citizens' willingness to adopt, accept and use e-government models that will help the government to diffuse e-services in society. There are many ways that governments bridge the digital divide and help citizens to cope with the new technologies, such as using the media (TV, newspapers, government websites, mobile text messages, intermediary etc.) to increase the awareness of e-government services by educating people on how to use online services and increase awareness about the benefits and advantages (e.g. saving time, saving money and reducing physical contact with government employees) that they can gain through adopting e-services. A low awareness of e-government services is a negative factor that excludes citizens from the adoption and acceptance of e-government services. The Madinah government needs to encourage its citizens using the aforementioned types of advertising. Doing so may result in the widespread promotion of e-

services to many citizens. Literature indicates that citizens who know of e-government services are more likely to adopt and accept them. Carter and Weerakkody (2008) suggested that, in terms of relative advantages, governments that offer additional benefits, such as easy and fast access to government services, will better diffuse e-government services into society. Furthermore, governments should provide a budget to support media campaigns and government infrastructure readiness. Reliable and integrated infrastructure may be the most difficult part of e-government development and implementation, especially in developing countries, in obtaining a higher level of e-government diffusion and facilitate the adoption for all citizens alike. Currently, Madinah's infrastructure has a negative impact on the adoption and diffusion rate of e-government services.

Also, the Madinah government should be concerned with government employees, ensuring that staff can effectively use a new technology and providing employees with the correct training facilities to be able to use e-government services. Moreover, it is vital to increase awareness in order to reduce resistance to change caused by the belief that employees will lose their jobs after e-government is established. Also, the Madinah government may need to retrain workers in e-offices with appropriate qualifications to help citizens to use e-government services and to ensure that citizens are able to use an e-services gate. The Madinah government may be able to gain benefits from training workers in traditional offices that already exist around the country to increase internet access and improve e-literacy in Saudi villages that have less internet access and low technological skills. In the Saudi context, young citizens are more likely to use new technologies, thus the government should implement user-friendly applications that meet the citizens' future expectations and provide young and elderly citizens alike with computer literacy education. Furthermore, to attract citizens to adopt e-government services, as well as to ensure the successful implementation of e-government, the Madinah City departments need to cooperate in order to allow two-way communication between different government departments on the one hand and with the public (citizens) on the other, all through a single portal. Government departments should actively

participate to provide online services in e-government portals, as this may lead to a rapid increase in the adoption of e-government services. The Madinah government need to highlight the reasons behind the low rate of e-government adoption in general, and the low rate of adoption of e-offices in particular.

This study found that all proposed hypotheses were supported by data collection, including performance expectancy, effort expectancy, social influence, and trust of internet, trust of intermediary and facilitating condition significantly influence behavioural intention and usage of e-government services. This study also found that the most important construct influencing citizens' behavioural intention to adopt e-government services is effort expectancy. The second most influential factor impacts the explanation of the behaviour intention is trust of intermediary, then the third influential factor is trust of internet, followed by social influence, and performance expectancy. These factors are making significant contributions to the prediction of behaviour intention in the adoption of e-government services in the Saudi Arabia context. Thus, the above results offer many suggestions for practitioners and e-government policy-makers.

As mentioned above, e-government service providers will face two kinds of challenges. First, not all government organisations provide e-government services and this will create a gap in offering integrated services to the public. Second, some citizens cannot access available e-government services and this is related to digital divide (skills and access) and conversely, citizens with high skills and access to e-government services may also be obstruct due to the lack of trust. Thus, the intermediary may overcome the above challenges by offering the skills needed to use the e-government services, considering society segmentation, and lack of confidence in using online services.

8.6 Implications for Research

Besides studying the factors influencing acceptance of e-government, this study offers a first attempt to determine the role of intermediaries in e-government adoption. The following comment illustrates the importance of carrying out a study that aims to examine the intermediaries' impacts on the e-government adoption context.

> *"….while some roles of traditional intermediaries may be diminished in electronic markets, new roles for intermediaries are emerging. While our informal data gathering cannot be used for formal hypothesis testing, the insights we gained may be helpful to other researchers in this area. Indeed, in a majority of the markets we surveyed we found that new roles emerge for electronic intermediaries that seem to outweigh any trend towards disintermediation. This finding suggests the need for theory development, rigorous data collection and formal empirical analysis to research the emerging role of electronic intermediaries"* (Bailey and Bakos, 1997 p 1).

Therefore, there are a number of implications for this study. This research extends previous acceptance literature in the e-government context. The results of this study supports that citizens trusting intermediaries will bring their attention to use e-government services. This finding is not different than previous findings on the affect of performance expectancy, effort expectancy, social influence and trust of internet in an e-government context. This study shows that citizens trust can build through intermediaries to communicate with government online. Further, this study contributes to literature by understating two different trusts, which is trust in technology (internet) and trust of intermediaries. Logically this result outcome is similar to the studies conducted by Teo et al (2008) and Carter and Belanger (2005); however instead of measuring the 'trust in government' factor, this study replaced it with 'trust of intermediary'. This is due to the fact that intermediaries can work as a hub for governments to diffuse public services to citizens, and was found to build trust in e-commerce contexts (Bailey and Bakos, 1997). This study

makes a first statistical attempt to measure citizens' trust on intermediary towards e-government usage. However, it's important to note that, this study only measured the government to citizen (G2C) e-government relationship. Therefore, it will be helpful to do more research on intermediaries' influence to build trust of government to business (G2B) relationships in an e-government context. Further, to the author's knowledge this research is the first attempt to update and integrate trust of intermediary into the UTAUT model in the context of investigating e-government adoption. As this assumption was developed based on e-commerce literature, the results of this study should also be helpful to other information system researchers beyond the e-government realm.

The study is an attempt to understand the most success factors that affect e-government adoption and diffusion rates in Saudi Arabia. To date, few studies have attempted to explore these factors in the same context, however, not with the same model and hypotheses. Therefore, this study has made a novel contribution in examining the role of local government intermediary e-offices as a facilitator between the government and citizens in adopting e-government services. It also extends previous research by highlighting the most salient factors affecting adoption of e-government. Further, this study can serve as an initial point for future research in citizens' adoption of e-government in Saudi Arabia. This study has contributed to a gap in literature covering the role of intermediary in an e-government context.

8.7 Research Limitations and Future Research Recommendation and Directions

As this study draws its conclusions by utilising a quantitative approach, this may limit its ability to obtain an in-depth view of factors that affect e-government implementation and the roles of intermediaries in this relationship. This study used initial qualitative (interviews) for the reason that they gave an overview

picture of current state of e-government implementation in Saudi Arabia, and established intermediaries under e-government strategy. However, as stated above, the main conclusions have been drawn from the quantitative (questionnaire) approach.

The adoption factors were measure using the case of the traffic department as an example of an e-government service in Saudi Arabia. Therefore, this study was mainly focused on Saudi males as females are not allowed to drive in Saudi Arabia. Furthermore, the empirical work can be further extended to cover other e-government services beyond the traffic department example used in this study which only considered males. Moreover, previous studies have highlighted gender as having a moderating affect on the main constructs presented in this study; therefore, considering gender issues would provide further explanation of the influence of intermediaries in e-government adoption.

Another limitation of this study is that research is based on one city in Saudi Arabia, which has adopted the intermediary concept under their local e-government strategy. However, as stated before, the findings of this study can be extended to cities in Saudi Arabia, or even other countries that have similar economical, social and cultural situations. Future research could target other cities in Saudi Arabia to examine the willingness of other traditional offices to shift to an intermediary e-offices gateway which is vitally important.

This research has thrown up many questions in need of further investigation. Therefore, in order to overcome the previous limitations, further work needs to be done to establish a qualitative enquiry that uses a combination of interviews, observation and questionnaires. This will allow an in-depth understanding of factors that impact on e-government adoption and intermediary roles in this relationship.

This study has used UTAUT as a theoretical basis, considering all factors listed in the theory (performance expectancy, effort expectancy, social influence, trust of

internet, facilitating condition, behavioural intention) which influence e-government adoption, and the influence of variables (age, education level, internet experiences) in adoption. Also, this study adds trust of intermediary in explaining behavioural intention towards adoption. This factor is only explored in the Saudi Arabia e-government context. Therefore, further research could target other neighbouring GCC countries.

Finally, this research is based on considering positive factors that affect adoption of e-government and ignores the negative ones, such as the impact of e-services cost on adoption of intermediaries. The most obvious result of this study is the cost of e-services. In e-government literature, the cost factor negatively affected citizens' adoption of e-government services. However, Madinah's intermediary is serving citizens within a commercial setting (i.e. citizens pay a fee for using the intermediary services). Therefore, in this respect, the cost factor needs further investigation from a citizen's perspective. For example, with e-commerce intermediaries, such as PayPal or eBay, the e-service costs come from the service providers not from the requesters (customers). These intermediaries have been successful in re-establishing themselves in e-market transactions and in building trust between the two parties. Therefore, an implication of this study is that both e-government factors and intermediary roles should be taken into account to further position private intermediaries in the realm of e-government services.

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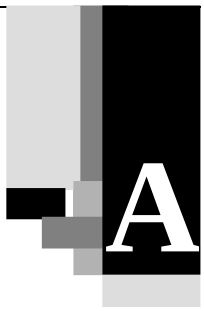


Appendix A

E-GOVERNMENT PRACTICE INTERVIEWS

School of Information System, Computing and Mathematics

Information System and Computing Department

Brunel University

UK

Faris Alsobhi

NewRoute Ph.D Researcher

Interview of E-Government Practice

Formal conversations and interviews with those responsible for e-government implementation in Madinah City is conducted to realize a better understanding of the context of 'e-Madinah'. The information which will be gathered from these interviews will be collected and analyzed for research purposes only.

Questions asked from Government Officials and during meeting in Saudi Arabia

E-Madinah (Interview with Director of steering committee, E-government)

E-government Plans and Strategy

1. The e-government strategy was established on 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 Madinah e-government strategy according to vision 2020?

3. Where do you see Madinah 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 Madinah?

5. What is your assessment of e-government in Madinah compared with other Saudi City? Are we moving slowly / Mediatory / rapidly?

6. Is there any law(s) (legal framework) established in Madinah 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 Madinah?

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

9. When can Madinah establish Madinah 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?

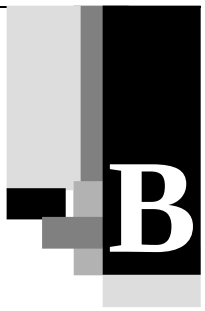
11. What other challenges are expected to be faced in implementing e-government in the next three years?

12. According to the report of ministry of interior the internet users in the cities reached 80% compared to less than 20% in villages, what are the suggestion solutions in this matter?

13. Almost 75% from internet users are in between 16-35 old, what are strategic planed to serve to serve others age groups?

14. What are the systems used to verify the indentations of e-government users?

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



Appendix B

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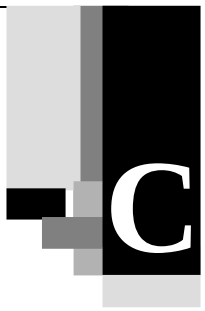

Appendix C

E-GOVERNMENT PRACTICE INTERVIEWS

School of Information System, Computing and Mathematics
Information System and Computing Department
Brunel University
UK

Faris Alsobhi
Ph.D Researcher

Interview with E-Government practitioners:

Formal conversations and interviews with officials responsible for e-government implementation in Madinah city were used to realize a better understanding of the concept of intermediary ‘e-Office’ in facilitating electronic government services.

The information which will be gathered from this interview will be collected and analyzed for research purposes only.

The following questions were used as a guide during interviews with e-government intermediary managers. The interviews were semi-structured and the following provided a guide to the key issues to cover during interviews.

Background, overview, type of services, challenges, and benefits offered to citizens from e-e-government:

1. How many citizens (approximately) registered with the e-government portal ? ☐

2. How many citizens (approximately) actually served by this e-Office? ☐

3. What is the total number of the employees in this e-Office?
   - ☐ < 5
   - ☐ 5 – 10
   - ☐ 11 or more

4. What is the education level of the employees?

No of employee	High School	Undergraduate	Post Graduate	PhD	Other

5. On average, how many transactions your e-Office processes and handles per day? | |

6. On average, how many transactions your e-Office processes and handles per citizen per day? | |

7. On average, how many citizens your e-Office served per day? | |

8. Literature categorizes the stage of e-government services in four types: Catalogue, transactions, vertical integrations and horizontal integrations as table below. How could you best categorize the type of services offered by this e-Office?

Type of Services	Description	Tick
Catalogue	Online presence, catalogue presentation, downloadable	
Transactions	Services and forms on-line, working database supporting database	
Vertical integrations	Local systems linked to higher level systems within similar functionalities	
Horizontal integrations	Systems integrated across different functions real one stop shopping for citizens	

What is the percentage of the cataloging services handled by this e-Office per day? | |

What is the percentage of the transactional services handled by this e-Office per day? | |

What is the percentage of the vertical integrations services handled by this e-Office per day? | |

What is the percentage of the informational service handled by this e-Office per day? | |

What do you think are the benefits provided after e-government adoption? Literature indicates that e-government provides a number of benefits to citizens and government as illustrated in following table. Please highlight the benefits e-government provided to citizens after adoption?

Benefits	Less Important	Moderate	More Important
Enable different stakeholders to access government services around the clock			
Reduces government expenditures			
Public services in a single web portal			
Increases public expectations and improves the services			
Offer more transparent and accessible services to users			
Create public-private sector collaboration			
Reduce time			
Reduction in the physical contact between citizens and government employees			
Achieves citizen satisfaction			

Increases flexibility			

What other benefits do you think were provided to citizens and government after e-government adoption?

Benefits	Less Important	Moderate	More Important
Other:			
Other:			
Other:			
Other:			

What barriers do you think citizens face while adopting e-government? Literature indicates that due to e-government adoption citizens and government faced several barriers as illustrated in the following table. Please highlight which barriers your citizens and government faced?

Barriers	Less Important	Moderate	More Important
Privacy and security			
integrated e-Government infrastructure			
trust			
computer literacy			
risks			
usability			
accessibility			
availability			
citizens' lack of IT knowledge			
Lack of awareness			
Resistance to change			
Cultural issues			

What other barriers do you think citizens and government faced while adopting e-government?

Barriers	Less Important	Moderate	More Important
Other:			
Other:			
Other:			
Other:			

In your perspectives, what is the value offered to citizens with regard "e-offices" services? Literature indicates electronic intermediary provides a numbers of

added-value to the all parties? Please highlight the benefits electronic intermediary provided to citizens and government after adoption?

Benefits	Less Important	Moderate	More Important
Matching government departments and citizens			
Aggregation services			
Introducing an environment of trust			
filling cost of internet connections			
Encouraged the growth of availability			
facilitate access to a product or service			
help increase the adoption of public service delivery from the government's perspective			
Supports the training and education needs of citizens by facilitating the assisted use of technology			

What other benefits do you think were provided to citizens and government after intermediary e-Offices adoption?

Benefits	Less Important	Moderate	More Important
Other:			
Other:			
Other:			
Other:			

In your opinion, what are the mine barriers in developing e-offices? for accessing e-government services?

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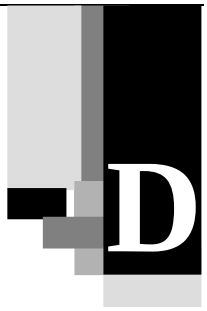

Appendix D

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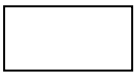

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Or
Farisalsubhi@yahoo.co.uk

Appendix E

Questionnaire Survey (English Version)

The survey was used to identify factors that may influence citizens' adoption of e-government services in Saudi e-government context.

Dear Sir/Madam

I am a PhD student in information system and computing at Brunel University UK, conducting a survey on citizens' perspectives about electronic government services in Saudi Arabia. An example of an electronic government transaction would be renewing your driving license with the Traffic department online or through an intermediaries (e-offices) organisation. I would be grateful if you could help me by completing this survey.

Please note that this research is purely for academic purposes. Your responses will be treated confidentially and no information that is provided in the questionnaire will be used outside the purpose of this academic research. I would like to let you know that your participation in this survey is completely voluntary.

This questionnaire takes less than 10 minutes to complete!

Instruction

I am interested in your opinions and perceptions of using the internet to provide information to and complete transactions with a government department, for example renew driving license using the internet or an e-offices organisation. For each of the following questions please circle the most appropriate response. Your participation in this study is much appreciated.

Please complete the survey and return to:

Faris Al-Sobhi, Kingdom of Saudi Arabia, Madinah Al Menorah region, Bader Hanen, King Fasial Street, Box No 1.

Or

School of Information System and Computing, Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom.

Thank you for your assistance
Faris Al-Sobhi

Please circle the appropriate response.

1	What is your Gender?	1- Male 2- Female
2	What is your Age?	under 18 18-24 25-29 30-44 45-54 55 and above
3	What Education Level do you have?	High school or less Bachelor Master PhD

		Other please specify ( )
4	How many years have you been using a computer?	1-3 years 3-6 years 6-9 years 10 years or more Never used
5	How often do you use the Internet?	Everyday Several times a week Several times a month Once a month Never
6	How often do you use the Internet to gather information about or from the government?	Everyday Several times a week Several times a month Once a month Never
7	How often do you use the Internet to complete a government transaction (renew your driving license, pay required fees, etc.)?	Everyday Several times a week Several times a month Once a month Never
8	Have you ever completed a transaction with the Traffic department online?	Yes No

Please rate the following statements on a scale of 1 – 5:

1 = strongly disagree **4 = agree**
2 = disagree **5 = strongly agree**
3 = neutral

9		
PE 1	Using the Traffic department website will enable me to renew my driving license more quickly	1 2 3 4 5
PE 2	If I use the Traffic department website I will enhance my social status	1 2 3 4 5
PE 3	Traffic department website would enable me to access Traffic department information and services when I need them – 24 hours/day, 7 days/week	1 2 3 4 5
PE 4	If I use the Traffic department website I will spend less time processing my driving license renewal application	1 2 3 4 5
PE 5	I think interacting with the Traffic department face to face would be preferable rather than interacting online	1 2 3 4 5

PE 6	I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting face to face with traffic department officials	1 2 3 4 5
PE 7	I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting directly with the traffic department website	1 2 3 4 5
10		
EE 1	My interaction with the Traffic department website would be clear and understandable	1 2 3 4 5
EE2	It would be easy for me to become skilful at using the Traffic department website	1 2 3 4 5
EE 3	Learning to interact with Traffic department website would be easy for me	1 2 3 4 5
EE 4	I find it easy to get the Traffic department website to do what I want it to do	1 2 3 4 5
EE 5	It would helpful to use intermediary (e-offices) to interact with Traffic department online	1 2 3 4 5
EE 6	It would be helpful to interact online directly with Traffic department	1 2 3 4 5
11		
SI 1	People who are important to me think that I should use the Traffic department website facilities	1 2 3 4 5
SI 2	People who influence my behaviour think I should use the online Traffic department services	1 2 3 4 5
SI 3	I would use the e-government services if my friends used them	1 2 3 4 5
SI 4	My Friends think intermediaries (e-offices) are helpful for using the Traffic department online service	1 2 3 4 5
SI 5	The intermediaries (e-offices) encourage the use of online Traffic department services	1 2 3 4 5
12		
FC 1	I have the computer devise necessary to use Traffic department website	1 2 3 4 5
FC 2	I have access to the internet to use the Traffic department website	1 2 3 4 5
FC 3	I have the internet experience necessary to use the Traffic department website	1 2 3 4 5
FC 4	Given the resources, opportunities and knowledge it takes to use the Traffic department website, it would be easy for me to use the Traffic department website	1 2 3 4 5
FC 5	Guidance was available to me in the selection of the system	1 2 3 4 5
FC 6	A specific person (or group) is available for me in the intermediaries (e-offices) to provide assistance with Traffic department website difficulties	1 2 3 4 5

13		
BI 1	I intend to use the Traffic website in future	1 2 3 4 5
BI 2	I intend to use the Traffic department website directly	1 2 3 4 5
BI 3	I intend to use the Traffic department website through intermediaries (e-offices) in the future	1 2 3 4 5
14		
TI 1	The internet has enough safeguards to make me feel comfortable interacting with the Traffic department website	1 2 3 4 5
TI 2	I feel assured that legal and technological structures adequately protect me from problems on the internet	1 2 3 4 5
TI 3	I would feel secure sending sensitive information across the e-internet	
TI 4	In general, the internet is now a robust and safe environment in which to transact with the Traffic department	1 2 3 4 5
15		
TOI1	I think I can trust intermediary organisations.	1 2 3 4 5
TOI2	In my opinion, intermediary organisations are trustworthy.	1 2 3 4 5
TOI3	The intermediaries (e-offices) have enough safeguards (passwords, secure computers etc.) to make me feel comfortable using it to interact with the Traffic department online	1 2 3 4 5
TOI4	I am not concerned that the information I submit through the intermediaries (e-offices) could be misused	1 2 3 4 5

You have completed the survey. Thank you for your participation

Appendix F

Questionnaire Survey (Arabic version)

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Faris.Alsobhi@Brunel.ac.uk

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http://www.khdamatec.com

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Appendix G

Pre-Test Letter

Dear Sir/Madam

I am a PhD research student at Brunel University, investigating citizen adoption of e-government systems and the role of intermediaries in facilitating adoption and usage. I am currently in the process of developing a questionnaire to examine the citizens' perspective of such systems. As part of this process I am required to run a pre-test of this questionnaire to explore the validity of its content.

Since the research profiles in adoption realm has shown you as an expert in quantitative research, I would like to know if it is possible for you to spend a few minutes aiding me with this pre-test, to make sure the questionnaire is:

(1) Short, unambiguous and easy to complete.

(2) There is no need to reword, add or delete items

(3) Appropriate in length.

(4) Please feel free to suggest any comments to improve the overall items of the survey.

Following is the brief descriptions about the intermediary I wish to investigate. Also, items for each construct are presented.

Intermediary:

An intermediary (also referred to as E-office) is a private organisation where services are transferred and passed onto others. It is established under e-government strategy in order to enhance trust, provide access, increase awareness, and provide training-support to citizens to help self-usage of the e-government systems. My study is concerned on citizens' perspectives regarding the role of intermediaries in facilitating the use of e-government services by citizens. Between three-point scales in the following table please carefully rate each item presented below.

Items	1- Not necessary	2- Useful but not essential	3- Essential	Comments
1. I feel assured that intermediary (e-offices) adequately protect me from problems on the internet.				
2. I feel assured that legal and technological structures are adequately implemented in e-offices to protect me from problems on the internet.				
3. The e-offices have enough safeguards to make me feel comfortable using it to interact with the government online.				
4. I am not concerned that the information I submit through the e-offices could be misused				
5. I would find the e-government system easy to use if I got suitable training.				
6. I would find the e-government system easy to use if I got suitable support.				
7. A specific person (or group) is available for me in the e-offices to assistance with e-government system difficulties.				
8. Intermediary advertising encourages me to try e-government services.				
9. I think I can trust intermediary organisations.				
10. In my opinion, intermediary organisations are trustworthy.				
11.The intermediaries (e-offices) have enough safeguards (passwords, secure computers etc.) to make me feel comfortable using it to interact with the Traffic department online				
12. I am not concerned that the information I submit through the intermediaries (e-offices) could be misused				

Appendix H

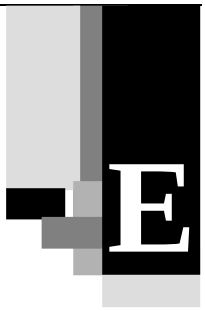

Table for Determining Sample Size from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.

Adapted from Krejcie (1970)

Appendix I

Reliability Statistics

A. Performance Expectancy

Cronbach's Alpha	N of Items
.776	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
9PE1.Using the Traffic department website will enable me to renew my driving license more quickly	22.14	19.534	.647	.722
9PE2. If I use the Traffic department website I will enhance my social status	22.71	20.286	.438	.761
9PE3. Traffic department website would enable me to access Traffic department information and services when I need them – 24 hours/day, 7 days/week	22.11	19.136	.622	.723
9PE4. If I use the Traffic department website I will spend less time processing my driving license renewal application	22.14	19.979	.535	.741

9PE5. I think interacting with the Traffic department face to face would be preferable rather than interacting online	22.79	22.026	.185	.822
9PE6. I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting face to face with traffic department officials	22.29	19.471	.607	.727
9PE7. I think interacting with the Traffic department through intermediaries (e-offices) would be preferable to interacting directly with the traffic department website	22.46	19.591	.588	.731

B. Effort Expectancy

Cronbach's Alpha	N of Items
.826	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
10EE1. My interaction with the Traffic department website would be clear and understandable	19.39	15.803	.640	.789
10EE2 . It would be easy for me to become skilful at using the Traffic department website	19.14	16.201	.668	.785
10EE3. Learning to interact with Traffic department website would be easy for me	19.46	16.332	.502	.819

10EE4. I find it easy to get the Traffic department website to do what I want it to do	19.39	16.025	.639	.790
10EE5. It would helpful to use intermediary (e-offices) to interact with Traffic department online	19.39	15.951	.542	.811
10EE6. It would be helpful to interact online directly with Traffic department	19.64	16.090	.604	.797

C. Social Influence

Cronbach's Alpha	N of Items
.776	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
11SI1. People who are important to me think that I should use the Traffic department website facilities	14.57	10.402	.585	.730
11SI2. People who influence my behaviour think I should use the online Traffic department services	14.50	10.259	.704	.706
11SI3.I would use the e-government services if my friends used them	14.82	9.485	.519	.746
11SI4. My Friends think intermediaries (e-offices) are helpful for using the Traffic department online service	14.64	9.127	.497	.759
11SI5. The intermediaries (e-offices) encourage the use of online Traffic department services	14.89	8.840	.554	.737

D. Facilitating Condition

Cronbach's Alpha	N of Items
.740	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
12FC1. I have the computer devise necessary to use Traffic department website	18.93	12.587	.440	.714
12FC2. I have access to the internet to use the Traffic department website	18.82	13.560	.347	.739
12FC3. I have the internet experience necessary to use the Traffic department website	18.46	13.665	.445	.712
12FC4. Given the resources, opportunities and knowledge it takes to use the Traffic department website, it would be easy for me to use the Traffic department website	18.61	11.136	.634	.652
12FC5. Guidance was available to me in the selection of the system	18.57	12.328	.511	.692
12FC6. A specific person (or group) is available for me in the intermediaries (e-offices) to provide assistance with Traffic department website difficulties	18.57	13.143	.496	.699

E. Behavioral intention

Cronbach's Alpha	N of Items
.649	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
13BI1. I intend to use the Traffic website in future	7.07	3.254	.526	.455
13BI2.I intend to use the Traffic department website directly	7.29	4.730	.358	.676
13BI3. I intend to use the Traffic department website through intermediaries (e-offices) in the future	7.21	3.434	.513	.475

F. Trust of Internet

Cronbach's Alpha	N of Items
.885	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
14TI1. The internet has enough safeguards to make me feel comfortable interacting with the Traffic department website	7.46	5.517	.848	.781
14TI2. I feel assured that legal and technological structures adequately protect me from problems on the internet	7.36	5.571	.725	.880

14TI3. In general, the internet is now a robust and safe environment in which to transact with the Traffic department	7.46	5.073	.766	.849

G. Trust of intermediary

Cronbach's Alpha	N of Items
.793	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
14TOI1. I think I can trust intermediary organisations.	12.43	4.921	.693	.696
14TOI2. In my opinion, intermediary organisations are trustworthy	12.46	5.295	.685	.698
15TOI3.The intermediaries (e-offices) have enough safeguards (passwords, secure computers etc.) to make me feel comfortable using it to interact with the Traffic department online	12.18	5.560	.705	.691
15TOI4.I am not concerned that the information I submit through the intermediaries (e-offices) could be misused	12.00	7.778	.363	.838