Factors Influencing Citizens' Adoption of E-government in Saudi Arabia

BY

Moroj Mohammed A. Alsulaimani

Department of Management Science

University of Strathclyde

Declaration

‘This thesis is the result of the author’s original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.’

Signed: *Alsulaimani*

Date: 1/05/2018

Abstract

E-government adoption is one of the key factors for E-government success. The adoption of E-government is necessary to reap its benefits. The conducted literature review on citizens' adoption of E-government revealed that although there are studies on this subject conducted in the developed countries, only few studies examined E-government adoption in the developing countries, including Saudi Arabia. Moreover, the literature review revealed that the existing literature on citizens' adoption of E-government in Saudi Arabia failed to examine the effect of several constructs and associations which were considered crucial in many IS/IT adoption studies. This research aims to investigate the factors affecting citizens' adoption of E-government in Saudi Arabia. To achieve this aim, a primary objective was set, which is to propose and validate a model in order to find the salient factors in citizens' adoption of E-government in Saudi Arabia. This objective was fulfilled by proposing a model that integrates three well-known IS/IT adoption models and a cultural theory: Technology Adoption Model (TAM), Information System Success Model (ISSM), Trust and Risk Model, and Hofstede's national culture values. A deductive approach was followed throughout this study. The proposed model was validated quantitatively and the data was collected through online questionnaire which was developed using adapted measuring items. The sample was collected using a self-selection convenience sampling technique. The collected data consisted of 527 usable questionnaires, which was then analysed using PLS-SEM through using SmartPLS and SPSS. The analysis revealed that trust of the Internet does not have a significant influence on intention to use. Also, surprisingly, service quality was found to have significant positive influence on perceived risk, which is the opposite of the proposed hypothesis. Moreover, none of the espoused national culture values have significant moderating effect on the relationship between perceived usefulness and intention to use. On the other hand, perceived usefulness was confirmed having a significant positive effect on intention to use, while intention to use showed significant positive influence on usage behaviour. As for the three quality factors adopted from ISSM, system quality, information quality, and service quality proved

to have significant positive effect on perceived usefulness, while system quality and information quality were confirmed to have significant negative impact on perceived risk. When it came to the trust factors, both trust of the government and trust of the Internet had significant negative effect on perceived risk. In addition, trust of the government was found to have significant positive effect on intention to use. Finally, the data analysis confirmed that perceived risk has a significant negative influence on intention to use. The findings of this research provided theoretical contribution through developing and validating an integrated model for E-government adoption, investigating the effects of information quality, system quality, and service quality on perceived risk, and examining the moderating effect of the espoused national culture values. Moreover, this research proposed several guidelines for E-government managers based on the findings of this study to enhance and promote E-government in Saudi Arabia. Finally, several implications for future research were proposed based on the limitations of this study.

Acknowledgements

I would like to offer my sincerest appreciation and gratitude to my supervisors, Dr. Viktor Dörfler and Dr. Rebwar Gharib. I would like to thank Dr. Viktor Dörfler for his constant guidance, patience and encouragement throughout the time it took me to complete this dissertation. I, also, would like to thank Dr. Rebwar Gharib for providing invaluable support and insight, especially during the data analysis phase. My gratitude is also extended to my colleagues at the University of Strathclyde for providing me with their feedback in order to enhance my study.

I would like to thank my parents from the bottom of my heart, although no amount of words can express my sincerest appreciation for them for the sacrifices they have made in order to help me pursue my higher education degrees. My greatest thanks to my husband, Mohammed, for his encouragement and support. Finally, my thanks are extended to my brothers and sisters for their constant support and sincere prayers, and to my lovely children, Yazan, Qusai and Merna, for putting a smile on my face even during the stressful time.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

AVE	Average Variance Extracted
C-TAM-TPB	Combined Technology Acceptance mode and Theory of Planned Behaviour
CB-SEM	Covariance Based Structural Equation Modelling
CFA	Confirmatory Factor Analysis
DOI	Diffusion of Innovation
EFA	Exploratory Factor Analysis
G2B	Government-to-Business
G2C	Government-to-Citizen
G2E	Government-to-Employee
G2G	Government-to-Government
HTMT	Hetrotrait-Monotrait
IC	Individualism/Collectivism
ICT	Information and Communication Technology
IDT	Innovation Diffusion Theory
IQ	Information Quality
IS	Information Systems
ISSM	Information System Success Model
IT	Information Technology
IU	Intention to Use
LTO	Long-Term Orientation
MF	Masculinity/Femininity

MM	The Motivational Model
MPCU	The Model of Personal Computer Utilisation
PD	Power Distance
PLS-SEM	Partial Least Square Structural Equation Modelling
PR	Perceived Risk
PU	Perceived Usefulness
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
SQ	System Quality
SVQ	Service Quality
TAM	Technology Acceptance Model
TG	Trust of the Government
TI	Trust of the Internet
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UA	Uncertainty Avoidance
UB	Usage Behaviour
UN	United Nations
UTAUT	The Unified Theory of Acceptance and Use of Technology
VIF	Variance Inflation Factor

Chapter 1: Introduction

This chapter aims to present an overview of this research. First, a brief overview of the study will be presented, followed by an outline of the identified gap in the literature that is related to E-government adoption in Saudi Arabia. After that, the aims and objectives of the research will be presented. The research design and process will be also briefly discussed in this chapter. After that, some information regarding the study context will be presented, followed by a highlight of the research significance. Lastly, a brief description of each chapter in this research is provided.

1.1 Research Background

After recognising the success of E-commerce and the benefits gained by organisations and businesses who are using it, governments were inspired to incorporate the Information and Communications Technology (ICT) in managing the governmental operations and transactions in order to improve the provided services and enhance the communication between the government and its citizens, the government and businesses, and between the government's agencies (Sheridan and Riley, 2006, Al-Shehry, 2008). The main objective of E-government is to make services accessible 24/7 for citizens and businesses through a single Web portal (Altameem, 2007). In the literature, E-government is often referred to as the electronic government, E-government services, government E-services (Horst et al., 2007) and E-services. For consistency, the term 'E-government' will be used throughout this research instead of the other terminologies. E-government has been defined in various ways depending on the study context and the researcher's understanding and perspective. These definitions varied from being broad to narrow. Some researchers viewed it as providing regular government services to the public through ICT channels (UN, 2014), others expanded this view by emphasising on the availability and accessibility of these services 24/7 (Palvia and Sharma, 2007), while some researchers viewed it as a way to enhance the management and government-citizen relationship (Fang, 2002). In this research, E-government is defined as the utilisation of ICT to deliver government services to the citizens through multiple channels that allow 2-

way communication between the government and the citizens in order to enhance government-citizen relationship while improving the quality of the provided services.

E-government can be categorised into four types based on the interaction between the government and its stakeholders (McClure, 2001, Tan et al., 2005)s. These categories are government to business (G2B), government to citizen (G2C), government to government (G2G), and government to employee (G2E). G2B is concerned with exchanging information and services between the government and the private sector, while G2C is concerned with providing services to the citizens and communicating with them. G2G deals with the communication and interaction between different government agencies or departments or between different governments. Finally, G2E is concerned with the interaction between the government and its employees. E-government provides many benefits for each of these beneficiaries, however, previous studies showed that citizens form the group that receive the most benefits from using E-government (Jaeger, 2003). However, citizens' lack of adoption of E-government will not allow them to receive these benefits, and more importantly might lead to the failure of E-government because the resources that were spent to build E-government will be considered wasted. Many researchers have recognised citizens' adoption of E-government as a primary determinant of E-government success (Ozkan and Kanat, 2011, Hu et al., 1999). Due to the importance given to citizen's adoption of E-government and the limited number of research conducted in Saudi Arabia regarding citizens' adoption of E-government, this research will focus on the government to citizen dimension.

Previous research has studied E-government adoption in different countries in order to identify the factors influencing citizens' adoption of E-government. The conducted literature review on E-government adoption among citizens included different studies that were conducted in developing and developed countries. Among the reviewed studies in the developing countries, some research was conducted in Saudi Arabia. The study conducted by Al-Ghaith et al. (2010) concluded that compatibility, perceived complexity, privacy, quality of the Internet, and relative advantage have significant effects on the adoption of E-government. Weerakkody et

al. (2013) have conducted a study in Saudi Arabia to find the effect of intermediaries on E-government adoption, and they found that performance expectancy, effort expectance, and trust of the in intermediary have significant positive effect on behavioural intention, while facilitating condition has a significant positive influence on usage behaviour. In addition, the researchers found that trust of the Internet and social influence do not have significant effects on behavioural intention. Other studies conducted in Saudi Arabia aimed to identify the barriers to E-government adoption. Alshehri et al. (2012) examined these barriers from the perspectives of the citizens and IT staff. The researchers found that both groups agreed on four factors that hinder E-government adoption. First, the lack of technical support from the government's website support. Second, the lack of knowledge about the E-government services. Third, the availability and reliability of Internet connection, and finally, the fourth factor is IT infrastructural weakness of government public sector. On the other hand, Alateyah et al. (2014) explored the factors affecting E-government adoption from the perspectives of the government employees and experts. The researchers found multiple factors that can affect the adoption of E-government, including culture, usability, accessibility, relative advantage, service quality, information quality, speed of delivery and computer and information literacy. The literature review will be discussed in detail in Chapter 1:er 2 and will cover E-government studies that were conducted in developing and developed countries. All of the reviewed studies have recognised the importance of E-government adoption; however, each have used a different approach to identify the factors affecting it.

Based on the conducted literature review, this research also identifies citizens' adoption of E-government as a primary factor for the success of E-government, which without it, the benefits of E-government will not be reaped. Given the importance of E-government adoption, a limited number of research was conducted to identify the factors affecting citizens' adoption of E-government in the developing countries, especially Saudi Arabia. Moreover, the existing studies on Saudi Arabia have their own limitations that will be addressed in Chapter 2: 2. One might argue that it is possible to generalise the results of those studies conducted in other

developing countries or Gulf countries to Saudi Arabia as there are similarities in the characteristics these countries, however, there are also differences in multiple aspect. Despite the obvious similarities between any two countries, generalising the results of a study conducted in one country to another can lead to drawing false conclusions and providing recommendations that, if they were followed, might lead to wasting resources because what is significant in one country might not be significant in another. This situation was demonstrated in the study conducted by Carter et al. (2016) on the factors affecting E-government adoption in the US and UK. Despite the similarities between these two countries in being classified as developed countries, having advanced ICT infrastructure, and being among the first countries to implement and diffuse E-government, the findings revealed that there are still some differences in which factors are considered significant for the adoption of E-government in these countries. For these reasons, this research proposes that the factors affecting citizens' adoption of E-government in Saudi Arabia is an underexplored subject in the literature, thus this study will try to answer the following question:

What are some of the salient factors influencing citizens' adoption of the Saudi E-government?

1.2 Aims and Objectives of the Study

This research aims to identify the factors affecting citizens' adoption of E-government in Saudi Arabia. Multiple adoption models were analysed in this research, and the most appropriate models were integrated to create a conceptual model in order to determine the factors influencing the adoption of the Saudi E-government. The proposed conceptual model integrates three Information Systems (IS) adoption models and a cultural theory, which are: Technology Adoption Model (TAM), Information System Success Model (ISSM), trust and risk model, and Hofstede's national culture dimensions.

In order to achieve the aim of this study, the following objectives were defined:

- To explore the concept of E-government and understand the current state of E-government adoption in Saudi Arabia
- To propose a conceptual model consisting of factors influencing citizens' adoption of E-government in Saudi Arabia based on the literature review
- To evaluate the model through conducting a quantitative study in Saudi Arabia
- To contribute to the literature on citizens' adoption of E-government, especially Saudi Arabia
- To suggest some practical guidelines on how to enhance and promote E-government
- To provide implications for future research.

1.3 Research Design and Process

The deductive approach was selected to conduct this study because the proposed model of this study is based on previous IS adoption models which have been validated in previous studies. Also, selecting the deduction approach is in line with the views of the adopted research paradigm (Bryman, 2016). The quantitative research method was employed as it is best to use when intending to test hypotheses, which is one of the objectives of this study (Bryman, 2016, Saunders et al., 2012).

An in-depth literature review was conducted before proposing a conceptual model based on it. The model integrated three well-known IS adoption models and a cultural theory: TAM, ISSM, trust and risk model, and Hofstede's national culture dimensions. The measures of the constructs integrated in the model were adapted from previous studies. A non-probability self-selection convenience sampling technique was used to collect the data from Saudi citizens in order to validate the proposed model. The questionnaires were distributed through Qualtrics and they were available for 6 weeks. During these weeks, 1,127 attempts were made and only

527 questionnaires were usable. The collected data were analysed using the Structural Equation Modelling approach (SEM) through using SPSS and SmartPLS. Figure 1 presents the research process of this study.

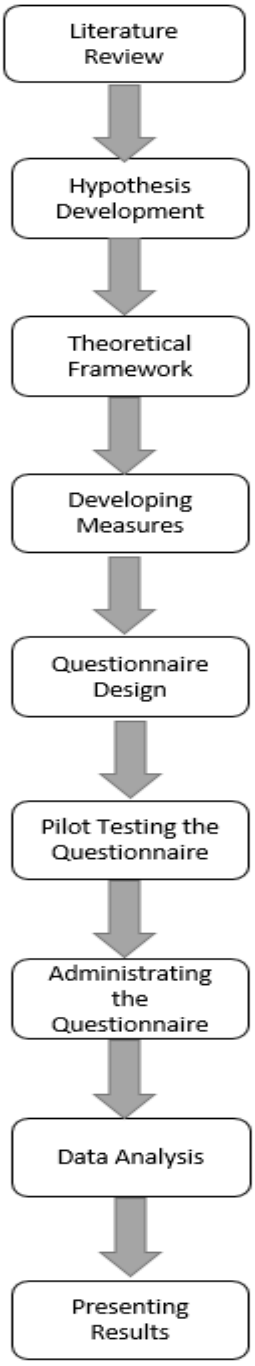


Figure 1: Research Process

1.4 Study Context: Saudi Arabia

The Kingdom of Saudi Arabia (KSA) is a country located in Southwest Asia among the Gulf Countries. The official religion is Islam, upon which the country's constitutions are based. Riyadh is the capital of Saudi Arabia, and the official language of the country is Arabic. The Kingdom of Saudi Arabia is a monarchy that is ruled by the descendants of King Abdulaziz Al Saud, the founder of the country (Portal, n.d.). The Council of Ministers, also known as The Cabinet, represents 22 government ministries. The Council of Ministers is responsible for the implementation of the policies and the general affair of the state. The final decision on financial, executive and administrative matters is concluded by a majority vote, and in case there is a tie, the prime minister, which is the King, will cast a tie-breaking vote (Royal Embassy of Saudi Arabia in Washington, n.d.). The Council of Ministers follow the Basic System of Governance and receives advice from Alshura Council. The consultation about various issues in the country is assigned to Alshura Council, which consists of a Chairman speaker and 150 members chosen by the King from adequate scholars, specialists, and other individuals of experience.

1.4.1 E-government

In order to follow the developed countries in the path of incorporating ICT to provide better government services to the public, a Royal Decree (7/B/2427) was issued in 2003 instructing the Ministry of Finance to establish an E-government program. On the same year, another Royal Decree (133) was issued to assign the responsibility of planning, management, and development of the Communication and Information Technology (CIT) sector, including launching E-government, to the Ministry of Communication and Information Technology (MCIT). In 2005, an E-government program named "Yesser" was established. The advisory committee of this program consists of the minister of finance, the minister of MCIT, and the governor of CIT commission (n.d.). The strategic vision of the Saudi E-government program between 2006 and 2010 states that "By the end of 2010, everyone in the Kingdom will be able to enjoy - from anywhere and at any time - world class government services offered in a seamless, user friendly and secure way by utilizing

a variety of electronic means" (Yesser, n.d.-a), while the objectives of the E-government program are:

- Raising the public sector's productivity and efficiency.
- Providing better and more easy-to-use services for individual and business customers.
- Increasing return on investment (ROI).
- Providing the required information in a timely and highly accurate fashion.

(n.d.)

Based on the achievements of Yesser's First Action Plan, a Second Action Plan for the period 2012-2016 was developed. The vision of the Second Action Plan aims for "Enabling everyone to use effective government services, in a secure integrated and easy way, through multiple electronic channels" (Yesser, n.d.-b). The objectives of the Second Action Plan were defined as:

- Drive out duplication of government ICT investment.
- Increase indirect value of government ICT investment.
- Contribute to the establishment of the Information society in KSA, including innovation and growth of the local ICT sector.

(Yesser, n.d.-b)

The progress of E-government implementation will be monitored by The Office of Strategy Management (OSM). The OSM was assigned several responsibilities including tracking the progress against defined milestones, assessing the alignment of E-government strategies, and developing a risk mitigation plan. Figure 2 shows the Saudi E-government strategy which illustrates the plan of actions and the desired results.

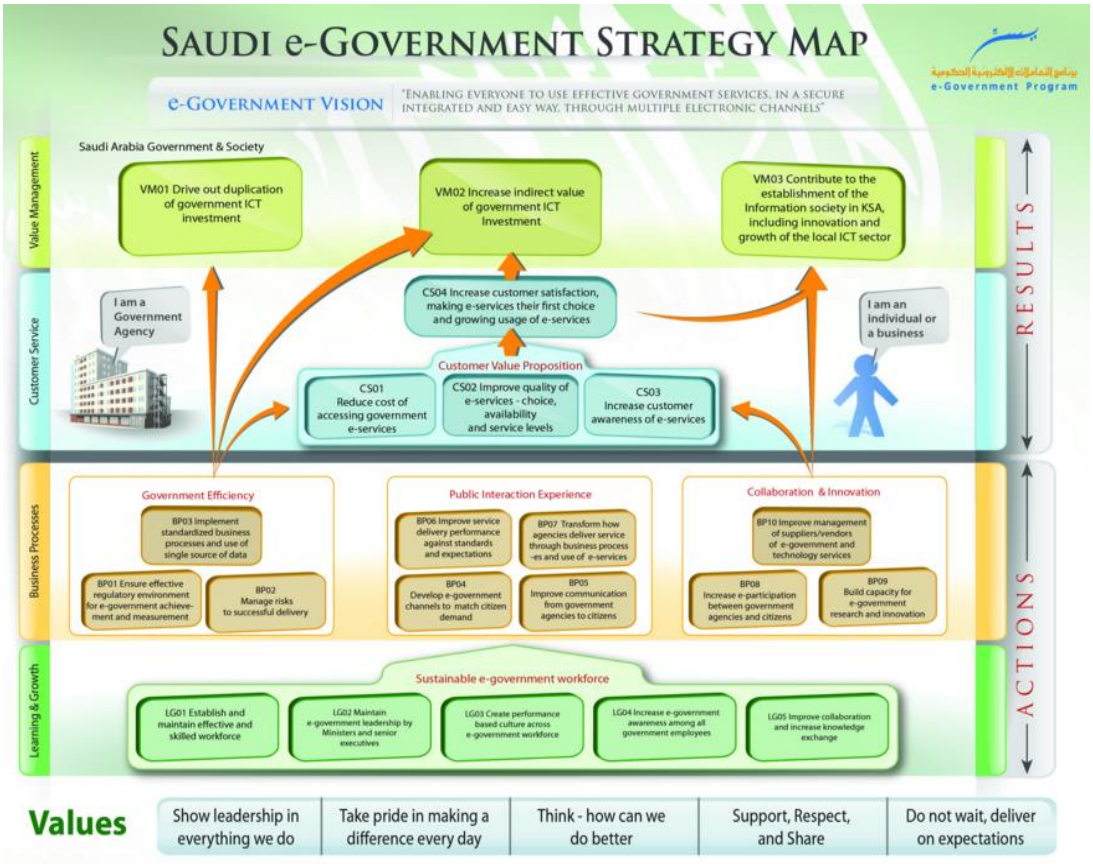


Figure 2: Saudi E-government Strategy Map

1.4.2 UN Reports

According to the United Nations' (UN) reports, the development of the Saudi E-government is constantly improving. The UN's E-government development report is issued every two years and it is aimed to report E-government diffusion around the world. The Saudi E-government managed to jump from being ranked the 90th in E-government development in 2004 to being ranked the 44th in 2016. In 2005, the Saudi E-government implementation was in its first phase. Several ministries had online presence. The Saudi E-government program was ranked the 10th among the Western Asia countries and the 80th worldwide, which means the Saudi E-government has improved by 10 ranks worldwide since 2004. Also, during the assessment of 2005, the Saudi E-government was ranked the 148th for the web measure assessment (UN, 2005). In 2008, the United Nations stated the Saudi E-government have progressed in its development by another 10 ranks, making it ranked the 70th worldwide. There

was also a big difference in the web assessment result as the Saudi E-government scored the 60th as oppose to being the 148th in 2005 (UN, 2008).

In 2010, although the Saudi E-government services were not provided through a single sign-in, it was easy to navigate through the 215 available E-services. In addition, the Saudi E-government system integrated an E-payment system called "SADAD" for bill payment. The Saudi E-government was ranked 58th for the worldwide E-government development, while being ranked the 20th for the top ranked developing countries (UN, 2010). In 2012, Saudi Arabia was named among the emerging leaders in E-government development in the world as well as being ranked the 9th E-government leader in Asia. It was also named among the top 20 countries in online service delivery. During this time, a single sign-in portal was created to allow easier access to E-services. In 2012, the Saudi E-government was ranked the 41st in E-government development (UN, 2012). The UN's E-government report that was published in 2014 stated that the Saudi E-government was placed in the 36th rank for E-government development worldwide, while holding its place among the top 20 countries in Asia and the top 20 countries in online service delivery (UN, 2014). However, it seems that the ranking of the E-government development in Saudi Arabia have regressed for the following period as the UN's E-government report for 2016 revealed that the new ranking of Saudi Arabia for E-government development is the 44th.

1.4.3 Yesser's Reports

During 2011, the Saudi E-government program (Yesser) surveyed 5000 citizens to measure citizens' awareness, use, satisfaction, and trust. The result showed that 82% of the participants are aware of the E-government services, while 92% of them trust the E-government system. Despite the somewhat high percentages of awareness and trust, the report stated that there are low levels of use and satisfaction, at 58% and 55% respectively (Yesser, 2011). This means only %58 of the citizens who are aware of E-government have actually used it, and only %55 of those who have used it were satisfied with it.

In 2003, another survey was conducted by Yesser (2011) using data collected from 5000 participants. The report stated that the level of awareness was 80.4%, which is slightly lower than the level of awareness in the first study. On the other hand, the level of use has increased to 69%, and the satisfaction level has also increased to 91%. To understand these results more, the report clarifies that if there was a population of 1000, only 527of them will end up being satisfied with the E-services, which makes up 53% of the population (Yesser, 2013). Although, the statistics showed a little improvement in the use and satisfaction levels, the actual system use of the Saudi E-government is still low, and thus, managers need to concentrate on how to increase it as the lack of uptake of E-government will cause loss of resources as it will be perceived that they were placed in a failed project.

Based on the United Nations' reports, the E-government implementation in Saudi Arabia is heading in the right direction although its ranking for the last report has decreased. However, the level of E-government adoption is different from its development. Since E-government adoption plays an important role in E-government success, it is crucial to understand which factors affect the adoption of E-government in order to determine which factors to focus on to increase the adoption and plan the resources accordingly. Therefore, studies on the adoption of E-government in Saudi Arabia is needed to identify the factors affecting the adoption and understand the relationships between them. Based on the conducted literature review, E-government adoption in Saudi Arabia was identified as a research gap, thus, this study aims to fulfil the need of identifying the factors affecting E-government adoption in Saudi Arabia by proposing and validating a conceptual model in order to identify the salient factors affecting citizens' adoption of E-government in Saudi Arabia.

1.5 Research Significance

This research focused on identifying some of the salient factors affecting citizens' adoption of E-government in Saudi Arabia, which is a topic that few have examined. Citizens seem to gain the most benefits from using E-government while they also form the largest group of E-government beneficiaries, which makes their

adoption of the system all the more essential for the success of E-government. Therefore, it is crucial to understand, from the citizens' perspective, which factors significantly affect their decision to adopt E-government as such information enables the E-government managers to formulate a strategy in order to increase the adoption rate and, therefore, gain the benefits associated with the use of E-government.

This research examined citizen's adoption of E-government through proposing and validating a model that integrated three theoretical models and a cultural theory which were selected based on the conducted in-depth literature review. Based on the results of the analysis, several recommendations were provided for E-government managers to help enhancing the adoption rate.

1.6 Thesis Structure

This research is presented in eight chapters:

1.6.1 Chapter One: Introduction

Chapter 1 provides an overview of the research. The research gap is briefly identified, while stating the research question and clarifying the research aim and objectives. Moreover, an overview of the research design and process is discussed, and a description of the research context was presented. After that, a brief explanation of the research significance is provided. Lastly, a brief summary of each chapter in this thesis is presented.

1.6.2 Chapter Two: Literature Review

Chapter 2 presents the conducted literature review. It also provides critique of the previous research and discusses their limitations. The chapter starts with comparing different 'E' concepts, and then it proceeds to provide the different definitions of E-government. After that, the four E-government categories are discussed, followed by a discussion of the benefits of E-government. The chapter also includes a brief comparison between E-government implementation and adoption and their barriers. Next, the most prominent Information Technology (IT) and Information Systems adoption models are discussed, followed by a review of previous studies conducted in the field of E-government adoption, which is sectioned by the

status of the country in which the study was conducted: developing or developed. Following this, the research gap is presented along with its justification.

1.6.3 Chapter Three: Conceptual Model Development

Chapter 3 introduces the proposed conceptual model and the IS adoption models underpinning it. Moreover, the hypotheses of this research are developed and presented in this chapter.

1.6.4 Chapter Four: Methodological Framing

Chapter 4 outlines the methodological framing followed to answer the research question and achieve the aim and objectives of the study. The chapter presents the discussions along with the justifications for selecting the research paradigm, research approach, research method, and research strategy. After that, the research population, sample, and sampling technique are presented. Next, the process of developing the instrument and examining the reliability and validity of the measures are discussed. Following this, the questionnaire design and translation process are explained besides clarifying the ethical and privacy issues associated with the study. Finally, the chapter presents discussions of the pilot testing and the data collection process.

1.6.5 Chapter Five: Data Analysis

Chapter 5 focuses on the different stages of data analysis which were followed in this study. First, the data coding and editing is presented, followed by a presentation of the respondents' demographics. Next, the different analysis methods are discussed and the selection of Structural Equation Modelling (SEM) is justified. After that, the exploratory factor analysis (EFA) is presented, followed by the process of testing SEM assumptions regarding missing data, normality, linearity/collinearity, and sample size. Finally, the chapter presents the application of Partial Least Square-Structural Equation Modelling (PLS-SEM) to test the proposed model.

1.6.6 Chapter Six: Discussion

Chapter 6 reports the results of the empirical data analysis in relation to the proposed hypotheses. The chapter presents which hypotheses were accepted and

which were rejected, besides providing discussions of the findings and comparisons between the findings of this study and of previous relative studies.

1.6.7 Chapter Seven: Conclusion

Chapter 7 concludes how this study have answered the research question, and how the aim and objectives of the study were met. The chapter also presents the study's theoretical and practical contributions. Finally, the limitations of this study and implications for future research are discussed. Figure 3 presents the thesis structure and its content.

Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6	Chapter 7
• Research background • Aim and objectives of the study • Research design and process • Study context • Research significance • Thesis structure	• Comparison of 'E' concepts • E-government definition from different perspectives • Defining E-government • E-government categories • Benefits of E-government • E-government implementation vs. adoption • IT/IS adoption models • Previous studies on E-government adoption • Critique and limitations of the previous studies	• Theories and models underpinning the study • The proposed research hypothesis • The proposed conceptual model and hypothesis	• Philosophical stance • Research approach • Research method • Research strategy • Population and sample • Sampling technique • Development of the research instrument • Reliability and validity of the measures • Online survey	• Data coding and editing • Respondent's demographics • Data analysis method • Exploratory factor analysis • SEM assumptions • Applying PLS-SEM	• Discussion of the hypotheses testing results and the relation to previous studies	• Overview of the research • Overview of the aim and objectives • Research outcomes • Theoretical contributions • Practical contributions • Limitations • Implications for future research

Figure 3: Thesis Structure and Content

Chapter 2: Literature Review

This chapter presents a review of the literature related to citizens' adoption of E-government. First, a comparison between E-government and other E-concepts will be presented, followed by a discussion of the different definitions of E-government. After that, an overview of the different E-government dimensions will be provided, followed by the benefits of E-government. This chapter will also provide a comparison between E-government implementation and adoption through discussing the barriers of each concept. An overview of the most dominant IT/IS adoption models will be presented in this chapter. Finally, a critical review of previous literature conducted on citizens' adoption of E-government will be provided along with the identified research gap in the literature.

2.1 Comparisons of 'E' Concepts

Lately, multiple concepts have emerged sharing the 'E' factor such as E-commerce, E-business, E-governance, and E-democracy. These concepts have a lot of similarities with E-government, which might easily result in using some of the terms interchangeably with E-government despite the different characteristics each concept has. In order to avoid any misconception, the differences between these concepts will be discussed before proceeding to define E-government.

2.1.1 E-Government and E-Governance

According to Palvia and Sharma (2007) Keohane and Nye defined governance as "… the processes and institutions, both formal and informal, that guide and restrain the collective activities of a group. Government is the subset that acts with authority and creates formal obligations. Governance need not necessarily be conducted exclusively by governments. Private firms, associations of firms, nongovernmental organisations (NGOs), and associations of NGOs all engage in it, often in association with governmental bodies, to create governance; sometimes without governmental authority" (p.2). This implies that governance concerns private and public sector alike (Palvia and Sharma, 2007, Bernhard Irene, 2013). The United Kingdom's (UK) Her Majesty's (HM) Treasury has stated that project governance aims

to ensure the successful implementation of a project through assigning responsibility and accountability, ensuring timely deliverable, and engaging the stakeholders in the decision making for project implementation or enhancement (Treasury, 2007). Langlands (2004) identified six characteristics of good governance, which are:

- focusing on the organisation's purpose and on outcomes for citizens and service users
- performing effectively in clearly defined functions and roles
- promoting values for the whole organisation and demonstrating the values of good governance through behaviour
- taking informed, transparent decisions and managing risk
- developing the capacity and capability of the governing body to be effective
- engaging stakeholders and making accountability real

Many scholars consider governance a broader concept than government, however government is a large and crucial component of governance (Bernhard Irene, 2013, Palvia and Sharma, 2007). Government is the organisation that enforces the rules and regulations and deliver services to the citizens (Hashim, 2014).

The 'E' in E-government and E-governance is an abbreviation for electronic infrastructure, a.k.a. ICT , which concludes the definition of E-governance as the use of ICT for communication between the government and citizens and businesses, and between the government agencies in order to provide efficient and effective services (Palvia and Sharma, 2007, Backus, 2001). Palvia and Sharma (2007) defined E-governance as how managers and supervisors use ICT to plan, organise, and complete their tasks efficiently and effectively, while defining E-government as the delivery of information and services through ICT to citizens, businesses, and between government agencies. Calista and Melitski (2007) has clarified that E-government provide governmental services electronically in order to increase the virtual customer transactions, while on the other hand E-governance is about using ICT to communicate with citizens in order to promote transparency and encourage citizen participation. Thus, E-government is about the transaction while E-governance is

about the interaction. Sheridan and Riley (2006) stated that "E-Government is an institutional approach to jurisdictional political operations. E-Governance is a procedural approach to co-operative administrative relations, i.e. the encompassing of basic and standard procedures within the confines of public administration" (p.1).

From these different definitions, it could be concluded that E-governance is focused on the interaction between managers and supervisors through ICT, ensuring accountability, and promoting transparency in order to guarantee an efficient and effective system deliveries. On the other hand, E-government is concerned about delivering the information and services to citizens and businesses.

2.1.2 E-Government, E-Business, and E-Commerce

Some scholars have defined E-commerce as buying and selling goods, services, and information through computer networks, while others have limited the E-commerce transactions to the financial transactions only, such as the definition proposed by Carter and Bélanger (2004) that views E-commerce as using the Internet to buy and sell goods and services, while others have included financial and non-financial transactions in the definition. Another group of researchers decided to adopt the broadest definition, which is conducting business electronically (Tassabehji, 2003).

The differences between E-business and E-commerce have been identified in various ways. Byron et al. (1981) explained that E-commerce includes any online transaction that require exchanges and interactions among customers, business partners, and vendors. On the other hand, E-business includes the same features as E-commerce besides the intra-business operations, such as production, development, and product management. The aforementioned definition of E-commerce does not limit E-commerce to the financial transactions only, as it also includes the non-financial transactions such as exchanging information. Similarly, Chaffey (2008) stated that E-commerce refers to all electronic transactions between a business and its stakeholders whether they are financial or non-financial transactions, such as exchanging information and other services. This is the same E-commerce definition that Byron et al. (1981) adopted. On the other hand, Tassabehji

(2003) adopted a different perspective on differentiating between E-business and E-commerce. While the formerly mentioned scholars viewed E-commerce as the financial and non-financial exchanges between a company and its stakeholders via the Internet, Tassabehji (2003) believed that E-commerce is not limited to only that, but it also deals with the socio-economic and ICT at the macro-environmental level of a company, while E-business is concerned with utilising the Internet to run business processes and operations. These include marketing, sales, human resource management, and business process re-engineering. All of these processes are at the micro-environmental level. Using these definitions, Tassabehji (2003) views E-commerce and E-business as two totally different subjects that have slight integration and reliance on one another.

To conclude the relationship between E-business and E-commerce, there are three viewpoints:

- E-business and E-commerce are two separate concepts that have some degree of overlap
- E-commerce is broadly the same as E-business
- E-commerce is a part of E-business

Chaffey (2008) has evaluated each of these views and concluded that only two of these viewpoints are plausible. Stating that there is only little integration between E-commerce and E-business could not be accepted as there is evidence that there is a significant overlap between the concepts. However, adopting a unified broad definition for both concepts and referring to it using both terms interchangeably is accepted. Moreover, Chaffey (2008) stated that viewing E-commerce as a subset of E-business is the most realistic.

Since the main focus of this study is the adoption of E-government, any reference to E-business or E-commerce would be to compare the similarities between those concepts and the applicability of the methods used in studying E-business and E-commerce on exploring E-government. Also, in order to avoid the confusion between what falls under E-commerce and E-business, this study will adopt

a broad definition and refer to it by using the terms E-business and E-commerce interchangeably. So, in this study, E-business/E-commerce is the use of computer networks, including the Internet, to exchange financial and non-financial transactions between a company and its stakeholders and inside of the company, besides integrating the ICT to enhance the company's relationships with its stake holders and to improve the company's processes and operations.

E-government has several characteristics that are very similar to those of E-commerce which prompted some researchers to think of governments as businesses, and view E-government as E-commerce, however, such treatment is discouraged by scholars (Alsaif, 2014). Many scholars agree that E-government is originally derived from E-commerce, however, just as there are similarities between E-commerce and E-government, there are differences between the two concepts (Sheridan and Riley, 2006, Carter and Bélanger, 2004).

Carter and Bélanger (2004) have recognised two similarities between E-commerce and E-government. One of them resides in providing and exchanging goods, services, and data. The other similarity takes place in one dimension of E-commerce and one dimension of E-government, which are Business to Customer (B2C) and Government to Citizens. B2C is concerned with commerce conducted between businesses and consumers, while G2C is concerned with the transactions and services occurring between the government and its citizens. Comparing these two forms together, it seems that both are concerned with providing users with services, goods or information in the most efficient way, and that both are facing obstacles due to security and privacy issues (Alsaif, 2014).

The most obvious difference between E-commerce and E-government is that the former is mainly used to generate profits, while the latter is used to provide services to the citizens without expecting to make profits (Alsaif, 2014, Al-Shehry et al., 2006). Jorgensen and Cable (2002) identified three differences between E-commerce and E-government. They stated that the differences lie in the accountability, structure and access. For accountability, in democratic governments,

the public sector is required by laws and legislations to deliver services that serve the best interest of the public. The structure of the government offices is less centralised, unlike the structure of the businesses in the private sector. Lastly, E-government must provide services to all citizens despite their literacy, technological literacy, or income. The businesses in the private sector, on the other hand, can limit their consumers and choose who to serve when using E-commerce. Scholars have also identified the political influence on E-government as a distinguishable attribute for E-government from E-commerce, as well as the main objective from using E-government or E-commerce (Carter and Bélanger, 2004). The following table (Table 1) shows a comparison between the characteristics of E-government and E-commerce.

Table 1: Differences between E-Government and E-Commerce

Source: Al-Shehry et al. (2006)

E-Commerce	**E-Government**
Refers to the commercial use of Internet technology to sell and purchase goods or services	E-government focuses on delivering their services to citizens without expecting profit
E-commerce deals with private sector with more freedom for doing their own business	E-government deals with the public sector which has many features including roles limited by legislation and complex accountability. Also, actions must be justified and objectives and outputs are difficult to state or measure
E-commerce is allowed to choose its customers	E-government agencies are responsible for providing access to information and services to any citizen and the entire eligible population, including individuals with lower incomes and disabilities
Decision–making can be centralized and easy to make a decision than public sector	Decision-making authority is less centralized in government agencies than in businesses. This dispersal of authority impedes the development and implementation of new government services

It is designed to be accessible for whom able to achieve services	The digital divide makes E-government task of providing universally accessible online government services challenging
The commercial view is the main purpose for its adoption	The political nature of government agencies is a feature that distinguishes E-government from E- commerce
The goal is to obtain the profit and reduce the cost	In a democratic government, public sector agencies are constrained by the requirement to allocate resources and provide services that are "in the best interest of the public"

From this comparison, it is clear that there are many differences between E-government and E-commerce. However, the fact that many of the E-government research and models have incorporated some attributes that were found significant in former E-commerce studies could not be denied. When conducting E-government research, sometimes it is useful to observe the role of the attributes used in E-commerce studies and examine the effect of those attributes under the E-government concept, though the role of the adapted construct could be only determined after completing the E-government study in which the construct was used.

2.2 E-Government Definition from Different Perspectives

E-government is one of the concepts that does not have a universally accepted definition (Al-Shehry et al., 2006, Al-Shafi, 2009, Altameem, 2007, Yonazi, 2010). This mostly attributes to the different visions, goals, needs, cultures, and available resources of each country who wish to employ E-government (Alsaif, 2014). Scholars have defined E-government from different perspectives. These definitions vary from broad to narrow. The most common perspectives focus on the technological, managerial, or political side of E-government.

2.2.1 Technological Perspective

Under this perspective, E-government is viewed as using the ICT to improve the delivery of government services (Hashim, 2014). In the Global E-government Survey for 2014, the United Nations adopted the definition created in the Global E-

government Readiness Report which considers E-government to be “the use of ICT and its application by the government for the provision of information and public services to people” (as cited in UN, 2014, p.2). Similarly, Carter and Bélanger (2004) defined E-government as the use of IT, especially telecommunications, to increase the efficiency of the services provided by the government to the end-user, which includes citizens, employees, businesses, and government agencies. West (2004) and Norris et al. (2001) have also defined E-government in the same way while adding that E-government enables the end-user to take advantage of the services 24/7. Some researchers advised that using the innovative ICT to deliver government services should not be the sole focus of the researchers and that they should consider other components when defining E-government such as change of management, and service quality (Altameem et al., 2006, Hashim, 2014). Moreover, Altameem (2007) added more clarification to the E-government definition by stating that the government provides these electronic services to all businesses and citizens, regardless of their economic status or their health issues, through a single access portal that is available 24/7 with high quality and easy and fast access.

2.2.2 Managerial Perspective

This perspective focuses on the transformation of the public services and organisational processes enforced by using ICT, reducing bureaucracy, enhancing citizens’ accessibility to government services, and improving the efficiency of government service delivery (Hashim, 2014). Palvia and Sharma (2007) viewed E-government as “using information technology, and especially the Internet, to improve the delivery of government services to citizens, businesses, and other government agencies. E-government enables citizens to interact and receive services from the federal, state or local governments twenty-four hours a day, seven days a week” (p. 2). This definition focused on improving the quality of the services delivered to the public. Another definition by Teicher et al. (2002) focused on the operations of the government by stating that E-government is “… the application of information and communications technologies (ICT) to the organisation and operation of government” (pp. 384-385). The definition was taken a step further by Gartner who

defined E-government as “the transformation of public sector internal and external relationships through net-enabled operations, IT and communications, in order to improve government services delivery, constituency participation, and internal government operations” (as cited in Altameem, 2007, p. 2-4). Gartner’s definition links the use of ICT with three anticipated outcomes: improving the quality of government service, improving citizen participation, and improving government operations and processes (Fang, 2002).

2.2.3 Political Perspective

The political perspective is concerned with reducing corruption and spreading democracy through using ICT to enforce the government laws and regulations (Hashim, 2014). Scholars who have defined E-government from a political prospective usually add a technological or managerial perspective to their definitions as most of the E-government research are concerned with these two latter aspects. The Working Group on E-government in the Developing World defined E-government from the political perspective only as “…the use of information and communication technologies (ICTs) to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens” (as cited in Palvia and Sharma, 2007, p. 2).

On the other hand, Fang (2002) focused on the delivery of services to the citizens and businesses, the service quality, and citizen and business participation as he viewed 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, p. 1). This definition incorporates political and technological perspectives. On the other hand, the World Bank have created a definition that reflects the technological, managerial, and political perspectives. The World Bank defined E-government as “… the use of information technologies (such as the

Internet, the World Wide Web, and mobile computing) by government agencies that can transform their relationship with citizens, businesses, different areas of government, and other governments. The use of e-government can lead less corruption, increased transparency, greater convenience, revenue growth, and cost reduction" (The World Bank, n.d.).

2.3 Defining E-government

The definitions of E-government reviewed in the literature varied from being too broad to too narrow. Leaning toward one of those extremes is not a great practice as having a too broad definition will not provide a clear understanding of the concept and it might lead stakeholders to ignore essential elements of the concept. The definition adopted by the United Nations is a good example of a broad definition as it views E-government as "the use of ICT and its application by the government for the provision of information and public services to people" (as cited in UN, 2014). Gartner has created another definition for E-government which is also a suitable example for a broad definition. According to Fang (2002), Gartner has defined E-government as "… the continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media" (p. 3). These definitions view E-government as regular government services provided to the public through the ICT, however, they fail to acknowledge the effect of using the ICT on the government operations and processes in order to produce the aforementioned final result, or how the use of ICT will allow a better communication between the government and the beneficiaries. They also disregard how E-government will empower the citizens and allow them to participate in government decisions such as making new policies, thus increasing the democracy. Finally, the aforementioned definitions do not address the effect of E-government on the political relations of the country. On the other hand, having a too narrow definition might also lead stakeholders to dismiss valuable assets that could have been used to spread E-government and assist in its success. For example, limiting E-government to the use of the Internet to deliver government

services might cause the authorities to ignore the possibility of using other ICT means such as text messages.

As previously mentioned, E-government is not only about the use of technology, it also involves leadership, management, politics, government operations and processes, communication between government and beneficiaries, internal communication between government agencies, and citizen empowerment. Various definitions exist depending on the context of the research conducted and the perspective of the researcher. For the purpose of this research, E-government will be defined as the utilisation of ICT to deliver government services to the citizens through multiple channels that allow 2-way communication between the government and the citizens in order to enhance government-citizen relationship while improving the quality of the provided services.

2.4 E-government Categories

There are different categories of E-government identified by researchers based on the beneficiaries, such as, government to business, government to citizen, government to government, and government to employee. This section will briefly explain the four commonly identified dimensions of E-government.

2.4.1 Government to Business

Government to business describes the efficient processes and activities the government takes in order to provide services to the private sector (Palvia and Sharma, 2007). G2B E-government allows both the government and businesses to gain benefits as it supports exchanging information and commodities between the government and the businesses, which will aid in increasing the competition through decreasing cost, enhancing procurement practices, and compiling more information and data through collaboration (Fang, 2002, Jaeger, 2003). The Saudi National Portal (www.saudi.gov.sa) provides different services from different ministries to businesses. These services are organised under 14 categories: ICT, Economy and Business, Training Education and Culture, Islamic Affairs, Insurance and Pension, Housing and Municipal Services, Travel and Tourism, Labour and Employment, Social

Life, Health and Environment, Transportation, Utilities, Traffic and Safety, and Personal Documentation. One of the electronic services provided to businesses is the Medical Device Marketing Authorisation (MDMA), which is provided by the Saudi Drug and Food Authority.

2.4.2 Government to Citizen

Government to citizen involves the communication and interaction between the government and the citizens through enabling the citizens to access the services directly via ICT (Omari, 2013, Hashim, 2014, Al-Sobhi, 2011, Ali and Sunitha, 2007, Al-Shafi, 2009, Palvia and Sharma, 2007, Fang, 2002). This dimension is constantly concerned with simplifying the interaction process for the citizens and enhancing the speed of the service delivery (Al-Sobhi, 2011). Although E-government provides many advantages to all of its beneficiaries; citizens seem to get a larger share of them. In E-government, the citizens benefit from having a 24/7 access to the government services, participating in issuing new policies and regulations, and communicating directly with the government (Ali and Sunitha, 2007, Hashim, 2014), besides being more informed about government laws and regulations, and being able to connect with the government despite being in different geographical locations (Jaeger, 2003). The governments usually implement this dimension with several goals in mind, including, providing a one-stop access to all the services, increasing trust in the government, building a citizen-centric system, and removing the intermediation of the civil service workers (Al-Shafi, 2009). The Saudi E-government provides many G2C services such as 'Tawasol' program, which allows the citizens to submit complaints to the royal court regarding government services, and 'Eskan', which is a housing program.

Since the adoption of a system makes a significant difference in determining whether the system is successful or not, it is crucial to increase the number of E-government adopters in order to reap its benefits and not have all of the resources that were already spent on the E-government project go to waste. Out of the different beneficiaries of E-government, citizens make the largest group, and, as it will be discussed in section 2.5, many of the benefits of E-government are associated

with citizens' adoption. Therefore, achieving a high adoption rate among citizens can contribute largely to the success of E-government because most members of the largest beneficiary group, which is the citizens, have already adopted E-government. Given the important role of the citizens in E-government success, this study aims to focus on the G2C dimension of E-government.

2.4.3 Government to Government

Government to government deals with the interaction between the different government departments or between different governments (Ali and Sunitha, 2007, Carter and Bélanger, 2004, Omari, 2013, Al-Sobhi, 2011, Hashim, 2014, Al-Shafi, 2009). In this dimension, the government usually aims to enhance the efficiency and effectiveness of the government operations (Palvia and Sharma, 2007, Hashim, 2014), beside improving consistency and reducing the time required to complete a specific task (Jaeger, 2003). This is mostly achieved by the collaboration of the government departments and exchanging data and information to establish and share a large database, various resources and capabilities, and to create a one-stop access portal for the businesses and citizens in order to eliminate unnecessary transactions (Fang, 2002, Ali and Sunitha, 2007, Omari, 2013). The government's readiness affects this stage of department cooperation and information exchange. A government must have the appropriate technology, be open-minded to change the government structures, and to recreate public administration (Al-Sobhi, 2011). This type of E-government has a crucial role in the success of the G2C and G2B, as governments must focus on this dimension and organise the internal operations and processes before expecting the success of the G2C and G2B (Al-Shafi, 2009). The Saudi E-government has established specifications guidelines called 'Yefi' that aims to enable cross-governmental integration and assist in G2G transactions and data sharing.

2.4.4 Government to Employee (G2E)

Government to employee is concerned with the interaction between the government and its employees. The government employees can take advantage of E-learning opportunities, knowledge sharing, applying online for an annual leave,

checking the salary payment record, and accessing information about policies and regulations (Al-Shafi, 2009, Ali and Sunitha, 2007, Al-Sobhi, 2011, Omari, 2013). The aim of this dimension is to enhance productivity and human resource management (Carter and Bélanger, 2004) beside reducing the required internal government processes in order to provide efficient and effective services (Al-Sobhi, 2011). Currently, government employees at universities in Saudi Arabia can view their salary payment record through their university accounts.

2.5 Benefits of E-government

The success of E-government grants many benefits to the government, businesses, and citizens. Some scholars prefer categorising the advantages of E-government by its beneficiaries, while others categorised them as political, social, economic, and managerial, however, the benefits of E-government are intricate which means one benefit might be connected to another. So, regardless of the categorisation, here are the main advantages of E-government:

- **Service availability and accessibility:** E-government allows businesses and citizens to access the government services from anywhere without the need to visit the government offices and at any time at their convenience (Alsaif, 2014, Alzahrani, 2011, Al-Sobhi, 2011, Altameem, 2007, Al-Shafi, 2009, Yimbo, 2011, Jaeger, 2003). This is considered a huge advantage over the traditional system because government offices operate only during specific hours, usually the same working hours as other government facilities, which as a result forces working citizens to be absent from their jobs in order to apply for government services. Using E-government allows citizens to apply for government services and communicate with the government without the need to be absent from their jobs.
- **Cost reduction and efficiency:** E-government eliminates the need to be present at government offices in order to receive government services and the high probability of standing in long queues, thus saving cost and time for the citizens and businesses. Also, it supports a paperless process, which

means it will help in saving the paper cost and the time spent to process them (Altameem et al., 2006, Alsaif, 2014, Omari, 2013, Alzahrani, 2011, Al-Sobhi, 2011, Altameem, 2007, Al-Shafi, 2009, Ali and Sunitha, 2007, Al-Shehry et al., 2006, Yimbo, 2011). Moreover, E-government allows for reduction in the administrative cost and reduces the time spent by government employees on performing repetitive tasks (Jaeger, 2003).

- **Improving the quality of services:** government services is traditionally acquired by filling many paper forms, visiting many government offices in different locations, and dealing with government employees who might not have the knowledge of the required process for the requested service. Using E-government eliminates the need to fill-out and carry many paper forms, commuting between government offices and dealing with human intermediary, thus, improving the quality of the service by saving time, cost, and effort (Omari, 2013, UN, 2014, Ali and Sunitha, 2007, Al-Shehry et al., 2006). E-government also provide the public with new methods to communicate with the government other than visiting government offices, such as email, online forum, and online transaction (Jaeger, 2003).
- **Improving the quality of decision making:** it is suggested that citizens participation in E-government and the provision of their ideas and opinions has led to a better decision making (Alsaif, 2014, Omari, 2013, Altameem, 2007, Ali and Sunitha, 2007). As the citizens communicate their suggestions and requirements to the government through the E-government system, the project managers and government officials will have an overview of the citizens' needs and as a result, they will consider these requirements during their decisions making.
- **Building relationships:** E-government enhances the relationship between the government, businesses, and citizens. Since E-government empowers businesses and citizens, it will assist in establishing and strengthening the trust between the beneficiaries (Alsaif, 2014, Al-Shehry et al., 2006). Also, providing personalised services to the citizens will results in strengthening the

relationship between the government and the citizens (Weerakkody et al., 2011, Alzahrani, 2011, Al-Shafi, 2009, Ali and Sunitha, 2007, Al-Shehry et al., 2006). Moreover, providing various methods of communication between the government and citizens, and allowing citizens to participate in government decisions strengthens the relationship between the government and the citizens (Jaeger, 2003).

- **Facilitate citizen participation:** E-government encourages citizens' participation in making government decisions and values their opinion and inputs when issuing new policies. Facilitating citizen participation contributes in enhancing the government-citizen relationship (Alsaif, 2014, Al-Shehry et al., 2006, Weerakkody et al., 2011, Al-Shafi, 2009, Ali and Sunitha, 2007, Yimbo, 2011).
- **Creating a more participative form of government:** E-government presents the traditional government in a new form where democracy is much more enhanced through the participation of citizens and businesses in debates, votes, and exchange of information (Weerakkody et al., 2011).
- **Fostering economic development:** E-government facilitate in improving the economy by aiding local businesses to develop internationally (Weerakkody et al., 2011, Alzahrani, 2011, Altameem, 2007, Yonazi, 2010), creating new job opportunity (UN, 2014), and exchanging goods and services between the government and the private sector (Jaeger, 2003).
- **Citizen and business empowerment:** allowing businesses and citizens to access E-government system at any time and from anywhere, engaging the public in decision making, and satisfying the needs of all citizens regardless of their ethnicity, gender, or health will give the businesses and citizens a sense of control and power (Al-Shehry et al., 2006, Alsaif, 2014, Teicher et al., 2002, Al-Shafi, 2009), which will eventually lead to their satisfaction with the system and trust in the government.
- **Increase transparency and accountability:** E-government responds to the public demand of having a more transparent system (UN, 2014, Al-Sobhi,

2011, Al-Shafi, 2009, Ali and Sunitha, 2007, Al-Shehry et al., 2006, Yimbo, 2011).

- **Elimination of unfair methods to acquire government services:** E-government provides the government services to all beneficiaries fairly without favouring one group over another. Using E-government eliminates any use of unfair methods to receive government services (Nadi, 2012). Table 2 presents the benefits of E-government to the citizens and the government.

Table 2: Benefits of E-government

Benefits to Government	Shared Benefits	Benefits to Citizens
Cost reduction and efficiency	Improving the quality of decision making	Service availability and accessibility
Fostering economic development	Building relationships	Improving the quality of services
	Facilitate citizen participation	Citizen and business empowerment
	Creating a more participative form of government	Elimination of unfair methods to acquire government services
	Increase transparency and accountability	

2.6 E-government Implementation vs. Adoption

E-government implementation and adoption are two lengthy processes that require strategic planning and long-time commitment beside other monetary, technological, and human resources. Implementations means the process of putting a decision or plan into action, while adoption means taking up or following an idea or course of action. Therefore, E-government implementation could be defined as the actions the government takes in order to build the E-government system. On the other hand, E-government adoption could be defined as the public take up and use of the implemented E-government system. Therefore, the successful implementation of E-government does not equal a successful adoption of E-government. Moreover, the successful implementation of E-government does not guarantee a successful adoption of E-government as there is no causal relationship between them, however,

the successful implementation of E-government can contribute to the success of E-government adoption.

Each of the implementation and adoption processes faces a different set of obstacles due to the different variables and environments they deal with. However, due to some similar categorisation of these obstacles, a confusion could occur when thinking about which obstacle hinder which process. As this study focuses on the adoption of E-government, this section aims to differentiate between the obstacles hindering E-government implementation and those hindering E-government adoption in order to provide more definition of the research scope.

2.6.1 E-government Implementation Barriers

Recognising the benefits E-government presents to the implementing country, governments around the world are enthusiastically devising plans and assigning budgets and resources to implement E-government. Despite all the efforts to implement E-government, many countries are stuck in the early stages of the implementation (Alsaif, 2014). The Arab countries are among those whose implementation progress seem to have stopped or significantly slowed down after the access stage. According to Al-Khouri (2013), most of the E-governments in the Arab countries have failed or are stuck in the Access phase of Forrester's maturity model, while the remaining Arab countries are in the beginning of the Interaction phase. Forrester's maturity model consists of three stages for E-government implementation which are: access, interaction, and engagement. Due to the large scale of the E-government project, it affects many aspects in the implementing country, and vice versa. Through the various E-government implementation attempts, scholars have identified main barriers that affect the implementation of E-government. These barriers are categorised into four types and presented below:

1. Strategy Barriers:

   The *lack of good leadership* forms an implementation barrier as Rose and Grant (2010) have concluded. Ensuring to assign the implementation project to a capable leader will eventually help in overcoming multiple implementation barriers such as *the lack of shared E-government goals and*

objectives, having over-ambitious E-government milestones, and the lack of ownership and governance. Good project managers and leaders should define specific goals and objectives in order to steer the project's progress in the right path. The lack of common goals and objectives often lead to confusion and conflict between the team members (Al Nagi and Hamdan, 2009). However, *focusing too much on a specific objective or goal*, such as citizen-oriented approach can also lead to E-government failure. Part of E-government's aim is using technology to provide service to the citizens at any time. Managers sometimes tend to focus on the citizen part of the objective and forget the other aspect which is delivering better quality. Al-Khouri (2013) suggested using a hybrid approach to implement a one-stop access system with multiple delivery channels to allow the users more accessibility and achieve one of E-government's objective concerning providing a 24/7 access to the government services through various access media and devices.

Another important aspect concerning defining the objectives and milestones is that leaders and managers should refrain from setting over-ambitious milestones because the implementation of E-government is complex and requires a lot of adjustments in the operations and processes of the government. Therefore, setting over-ambitious milestones will only hinder the implementation as oppose to setting realistic ones. Leaders also must formally assign tasks and responsibilities to the team members in order to recognise who is accountable for which actions (Lam, 2005).

Other strategy barriers are the a*bsence of implementation guidance,* and *the lack of performance measurement method.* Governments usually have a vision about E-government; however, the crucial part in transforming the government's vision into specifications falls on the shoulders of the government departments who needs guidance on how to perform this action. These days, several governments have assigned the task of managing and implementing E-government to a separate organisational government structure (Lam, 2005). On the other hand, even if the implementing

government has an implementation guide, the progress of the implementation cannot be measured without a good consistent performance measurement method. *The lack of having a performance measurement method might form an obstacle for E-government implementation* (Rose and Grant, 2010) as the implementation team cannot measure how much the new system is better or worse than the old one. Thus, they cannot base their next decision on good information and evidence.

One of the E-government implementation barriers that could be easily overlooked is *ignoring process re-engineering*. Usually, what comes to mind when the word 'E-government' is heard is process automation, which means that most if not all of the processes that used to be handled manually will be dealt with automatically. However, the implementation of E-government also involves process re-engineering as much as process automation. It is crucial to address process re-engineering prior to automating the processes since many of the existing government operations are lengthy and/or complex, which will obstruct the timely delivery of the government services. Ignoring the government process transformation while only focusing on process automation does not provide any enhancement in the delivery of the government services since it is only conducting the same old procedures in an automated form (Al-Khouri, 2013).

Project Funding is another barrier to E-government implementation. No doubt that E-government is a huge and expensive project that affects different levels of the government and needs a proper amount of funding to achieve successful implementation. Obtaining financial support is a primary requirement for E-government implementation. The E-government budget is not a fixed number that is paid only one time to the implementing organisation. E-government is an infinite commitment that requires constant funds and support in order to correctly implement and maintain the system. That is why E-government is considered expensive to many of the developing countries since most of these countries lack the technology and human skills

the developed countries have. This causes the implementation of E-government to cost more for the developing countries. Governments are taking different approaches when issuing E-government funds. The lack of a proper planning and estimation might result in funding shortage, which will affects the progress of the implementation (Lam, 2005). As much as project funding is important, *human resources* is a critical aspect of E-government implementation. Human resources does not only refers to the tangible aspects, it also extends to the intangible ones such as time and energy (Rose and Grant, 2010).

2. Technology Barriers:

One of the mostly identified implementation barriers is the *lack of architecture interoperability.* E-government interoperability is broadly defined as the ability of two organisations to work together, while from a technological perspective, it is the ability of two or more government ICT systems to exchange information in order to improve governance (Lallana, 2008). Non-interoperable technological architectures form a major barrier for E-government implementation. Different government departments might have been using different systems before introducing E-government. During the implementation of E-government, the IT staff might face a huge challenge when trying to integrate these systems together since most of these systems are incompatible with each other (Lam, 2005, Ali and Sunitha, 2007). ICT infrastructure is an invaluable component of E-government since E-government's operations and processes rely on it. Chen et al. (2006) emphasised that governments should build a strong infrastructure before implementing E-government. Yonazi (2010) also identified the lack of ICT infrastructure as one of the barriers to E-government implementation in the developing countries.

Other technology barriers include *incompatible data standards, different security models, inflexibility of legacy systems,* and *incompatible technical standards.* These problems are not apparent when using the

traditional system, however, they come to light when the E-government implementation team start integrating the systems of different government departments or organisations. E-government is supposed to enable multiple government departments to exchange information and data in an efficient and effective way. To achieve this result, all government departments should follow a specific data standard. Some governments face the obstacle of having many different data standards used by their departments. These data standards and formats are usually not readable by the new E-government applications, which defeats the purpose of implementing E-government. Similarly, when several applications are integrated under one system, it is very difficult to define a single security administration function if each of these applications has its own security architecture. Moreover, many government departments are still using legacy systems, which were created 15-25 years ago. These applications are difficult to integrate due to their limitation in network connectivity, outdated file format, and lack of published application programming interface. Using different technical platforms of programming technologies in government departments can form a big obstacle for E-government implementation even if the previous system uses different versions of the same technology because integrating different methodologies and modelling standards takes a lot of effort due to the need to understand the design of each application before attempting to integrate them (Lam, 2005).

3. Policy Barriers:

Data privacy is one of the issues that every organisation wants to obtain. *Concerns over citizen privacy* and *data ownership* are two implementation barriers that are often faced when implementing E-government. E-government allows data exchange between government departments to be handled in a controlled and transparent manner in order to protect the data and the citizen's identity. The lack of having clear policies stating why the data is collected, where it should be stored, how it will be

secured, and how it will be exchanged between government departments, will form a huge barrier for E-government implementation. Another issue regarding exchanging the data is that not all government departments are keen on sharing their data as they see themselves the owners of it. This problem could be solved by defining who has the right to access which data and for what purpose. Also, issuing complete E-government policies can help in accelerating the process of E-government implementation by the government departments because they define the roles and responsibilities of each department during the implementation phase. The *lack of complete E-government policies* forms a hindrance for government departments to participate in the implementation (Lam, 2005, Ali and Sunitha, 2007).

4. Organisation Barriers:

To successfully implement E-government, the government agencies must be ready to take this step. Some government agencies are not ready yet for implementing E-government, especially because they view it as a new `culture`. Also, because E-government is a relatively new concept, many government agencies are still learning about E-government and how to implement it. The *lack of agency readiness* for E-government implementation forms an obstacle that slows the implementation process. Moreover, using *legacy government processes, the lack of relevant in-house management and technical expertise,* and *the absence of an E-government champion* forms more hindrance toward the implementation of E-government. Many of the employees in the government departments are reluctant to change the old processes with the new ones that were established to implement E-government because they are familiar with the old processes. The employees' skills and education level have an impact on their acceptance and willingness to learn new processes. The problem of having employees who are reluctant to let go of the legacy government processes and learning new ones is more prominent in the developing countries since the levels of education and human skills are lower than in the developed countries. Some of the countries

who face this problem usually hire external experts to aid them in the implementation of E-government. However, this might not be possible in some of the developing countries as the cost for outsourcing and hiring foreign experts is not feasible for them. Hiring foreign IT experts is not always of advantage as overtime it will create an over-dependence on external support for the maintenance of the system. Moreover, when the external experts leave the project, there will be loss of critical knowledge (Lam, 2005, Al Nagi and Hamdan, 2009, Yonazi, 2010).

Finally, the lack of assigning a leader for E-government implementation, who is responsible for ensuring the project has a sufficient funding, commitment, and resources, is one of the obstacles facing E-government implementation. Having such leader will give the implementation team the assurance that the project requirements, e.g. funding and resources, are always available, and will give the E-government stakeholders the assurance that the team is committed to creating a successful E-government system (Lam, 2005, Al Nagi and Hamdan, 2009, Rose and Grant, 2010).

2.6.2 E-government Adoption Barriers

Similar to the situation of E-government implementation, there are various aspects that act as barriers for E-government adoption. These barriers vary from one government to another as the surrounding environment of each E-government system is different. The following are some of the commonly identified barriers of E-government adoption:

1. **Technological Barriers:**

   Poor ICT infrastructure is always mentioned as the first technological barrier for E-government adoption. The E-government system heavily depends on the ICT infrastructure, thus, having a limited infrastructure will limit the diffusion of E-government (Al-Sobhi, 2011) because the users will not be able to access the E-government portal and benefit from it. This problem

is more prominent in the developing countries as their technological progress is usually slower due to some economic and human resources factors.

Availability and accessibility are two technological aspects that are crucial for E-government adoption. The lack of any of these aspects will decrease the probability of having a successful adoption and hinder the adoption of the system (Al-Sobhi, 2011). Availability is concerned with which government services the citizens can use at what time, while accessibility refers to the different ICT channels used to access the government services. The aim of E-government is to provide government services to the public for 24 hours, 7 days a week through various ICT channels. Limiting the availability of E-government services defies the objective of E-government, and as a result, discourages the public from adopting it since the availability of the services will be bound to a specific time just as in the traditional system. Likewise, limiting the service accessibility to one ICT channel will limit the adoption to only those who have access to that specific ICT channel. For example, limiting the accessibility to E-government services to the Internet will exclude those who do not have Internet access or do not know how to use it, while limiting the accessibility to the kiosk will exclude those who do not have easy access to the kiosk. For this reason, offering E-government services through multiple ICT channels is considered a good practice (Al-Sobhi, 2011).

2. **Organisational:**

E-government adoption in businesses is influenced by multiple factors such as *organisational structure and culture,* and *management and leadership support*. The organisational structure is concerned with assigning the tasks and responsibilities and defining the coordination and supervision within the organisation in order to achieve the defined organisational goals (Mattacks, 2009). Common organisational structures include the simple, bureaucracy, and matrix structure. The simple organisational structure has a centralised authority, a low degree of departmentalism, and no more than three levels.

On the other hand, the bureaucratic organisational structure is departmental, has a centralised authority with a narrow span of control, and has great emphases on following specific rules and regulations (Mattacks, 2009). The organisational culture is different from the organisational structure in that it is viewed as a collection of values and beliefs that are shared between the members of an organisation, which also distinguishes one organisation from the others (Mattacks, 2009). Scholars have identified four organisational cultures which have different characteristics. The identified organisational cultures are: developmental, rational, hierarchical, and group. A study by Brdesee et al. (2012) was conducted on Saudi businesses to explore the relations between the organisational culture and the willingness to adopt E-commerce. The results show that the organisations with developmental culture are most likely to adopt E-commerce, while the organisations with the hierarchical or group culture have some intention to adopt E-commerce, and finally, the organisations with the rational culture showed the least interest in adopting E-commerce.

The management and leadership support play an important role for organisations' adoption of E-government. Since the final decision lays on the hands of the top manager, it is vital that they have a positive attitude toward E-government adoption and provide the required support to successfully adopt the new system in the organisation. Having the management and leadership support will ensure placing E-government adoption at the top of the priority list and establish the necessary reforms for E-government adoption (Altameem et al., 2006). On the contrary, lacking the support of the managers and leaders will delay and hinder the adoption of E-government in the organisation.

3. **Cultural Barriers:**

Culture has a huge impact on E-government adoption that can lead the adoption to one side of the success/failure spectrum. Predicting the cultural impact on E-government adoption is not an easy process as cultures vary from

one country to another and even between different regions of the same country. There are various definitions of culture, however, generally, it could be defined as “a phenomenon which encompasses common behaviours of thinking and feelings, with shared ideas about the environment, all of which are borne out of people having a familiar background and experience” (Alsowoyegh, 2012, p. 60). Culture has multiple levels which are national, organisational, group, and individual. The national and organisational cultures are often used in IS/IT research. Scholars differentiate between these two cultures in that the national culture concerns the individuals in a society, while the organisational culture concerns individuals in a specific organisation (Alsowoyegh, 2012). There are many existing organisational models for E-government adoption. Researchers should be cautious when applying any of these models, especially in different countries, and pay a lot of attention to the changes that will occur in the cultural aspect because organisational culture do tend to be affected by the national culture. The organisational culture is affected by the national culture because, after all, the individuals working in the organisation belong to the national society before belonging to the organisation. Mattacks (2009) have stated that the employees of any organisation are more affected by the national culture than the organisational culture. Moreover, foreign employees, especially those in higher positions, might influence the organisation with their national culture, which is different than the national culture of the country where the organisation is operating (Alsowoyegh, 2012). It is clear that understanding and predicting the influence of the national and organisational culture on the adoption of E-government is a very difficult task.

Promoting the use of new technologies in countries, such as Saudi Arabia, that place a lot of importance on their cultural values have proven to be a difficult mission especially if the new technology conflicts with the cultural values. On the other hand, if the new technology is perceived as supportive of the cultural values, the diffusion of the technology will be easier

(Alsowoyegh, 2012, Nadi, 2012). Previous E-government and technology literature have emphasised the importance of the culture and human factor in the adoption of new technologies or, in this context, E-government. Some researchers suggest understanding the culture of the adopting country and adapt the new technology to the culture rather than forcing the technology on the culture as previous studies have proved the significant effect of the cultural beliefs and technological culturation on the IT adoption in the Arab countries (Loch et al., 2003).

4. **The Digital Divide:**

The *digital divide* is a common phrase used in E-government literature to describe the difference between the public who have access to the Internet and the required computer skills to use it, and those who do not have it (Carter and Weerakkody, 2008). Bélanger and Carter (2009) clarified that there are two types of the digital divide*: access divide* and *skills divide*. The access divide is described as the lack of access to the Internet. The access divide is influenced by multiple factors such as income, education and age. Moreover, poor ICT infrastructure also influences the access divide since having a limited ICT infrastructure will decrease the number of individuals who have Internet access, thus increasing the divide. On the other hand, having a well-built ICT infrastructure will offer the Internet access to more individuals and decrease the access divide. However, this does not necessarily means significantly decreasing the digital divide since there is another component of the digital divide, which is the skills divide.

The skills divide describes the lack of the required skills to communicate and interact with the government through the E-government portal. There are two components to the skills divide: technical competence and information literacy. Technical competence is defined as “the skills needed to operate hardware and software, such as typing, using a mouse, and giving instructions to the computer to sort records a certain way” (as cited in Bélanger and Carter, 2009, p. 133). While the information literacy refers to

"the ability to recognise when information can solve a problem or fill a need and to effectively employ information resources" (as cited in Bélanger and Carter, 2009, p. 133). In order to benefit from the E-government services, it is crucial for individuals to have some technical skills that enable them to access and navigate the E-government portal. In addition, the individuals need to be able to understand the meaning of the accessed information and recognise when they have found the information they were seeking.

5. **Trust:**

Trust plays a major role in E-government adoption that can either provide a great assistance in E-government adoption or form a huge barrier on its way. Trust has many definitions, however, the most cited definition was established by Rotter who perceived trust as "an expectancy that the promise of an individual or group can be relied upon" (Bélanger and Carter, 2008, p. 166). This factor mainly comprises four components: trust in the government, trust in the Internet, disposition of trust and perceived risk. Trust in the government and trust in the Internet form the dominant parts of trust. *Trust in the government* means trusting the government agencies who are providing the services through the E-government portal and believing that they have the required skills and knowledge to perform the requested tasks while ensuring the data privacy and security, and without having any intention of misusing the data in any form (Bélanger and Carter, 2008, Al-Shafi, 2009). Citizens are reluctant to adopt E-government if they do not trust the abilities of the government agencies especially because in E-government, the data are stored electronically, thus it will be easy to retrieve, distribute, and misuse. It is important for governments to gain their citizen's trust through emphasising on the positive feedbacks for E-government.

Trust in the Internet means trusting the security measures and performance of the Internet and believing that it is a reliable medium for delivering E-government services (Bélanger and Carter, 2008). Trust in the Internet is an important factor for E-government adoption since most E-

government services are provided via the Internet. The lack of trust in the Internet is more prominent in the developing countries since most of them lack or have limited ICT infrastructure. This means that a large number of the citizens in some of the developing countries do not have any access or do not have easy access to a reliable Internet. Therefore, the citizens who do not have any Internet connection will not trust the Internet since they do not know how to use it and how it functions, while the citizens who have an easy access to the Internet might not trust it due to its quality and unreliability. Governments of the developing countries must build a good ICT infrastructure in order to expose their citizens to the Internet and promote the use of E-government.

6. **Promotions and Awareness:**

Governments should promote the use of E-government systems through advertising and exposing the public to the benefits of using the new system because awareness does not only cover knowing that a specific technology exists, but also includes knowing the benefits of using this new technology (Alateyah et al., 2012). The lack of awareness of the new E-government services forms an obstacle for E-government adoption because if the public do not know about the existence of these services, they will not develop an interest in E-government and will not consider adopting it (Al-Shafi, 2009). However, many governments expect a huge increment in the adoption as soon as they start E-government awareness campaigns. Governments should understand that spreading awareness among the public does not guarantee the public's adoption of the system (Alsaif, 2014). The adoption of E-government relies on more factors other than awareness. If the public does not perceive any relative advantage from using E-government, they will most certainly continue to use the traditional system. Similarly, if the service quality is the same or any less than those provided in the traditional method, the public will most likely choose using the traditional method since

they are familiar with its procedures and since both methods have the same service quality.

7. **Demographics:**

Many previous studies have confirmed that demographic variables, such as *age, gender, literacy, computer-literacy, and income*, affect the adoption of technology. A study by Aleid (2011) concluded that income forms a hindrance to the diffusion of E-commerce in Saudi Arabia. Similarly, Elsheikh and Azzeh (2014) found that the level of income affects the delivery of citizen-centric E-government in the developing countries. It was also noted that younger people tend to adopt technologies more than older ones (Al-Shafi, 2009, Alsaif, 2014, Gilbert et al., 2004, Mattila et al., 2003).

As previously states, this research is concerned with the adoption of E-government, therefore, it will only focus on E-government adoption barriers. The following table (Table 3) summarises the previously discussed barriers of E-government implementation and adoption.

Table 3: Summary of E-government Implementation and Adoption Barriers

Implementation	Adoption
Lack of shared E-government goals and objectives	Poor ICT infrastructure
Over-ambitious E-government milestones	Service availability
Lack of ownership and governance	Organisational culture
Absence of implementation guidance	Management support
Funding issues	National culture
Lack of architecture interoperability	Digital divide
Incompatible data standards	Trust in the Internet
Different security models	Trust in the government
Inflexibility of legacy systems	Lack of promotions and awareness
Incompatible technical standards	Income
Concerns over citizen privacy	Literacy
Data ownership	Age
E-Government policy evolution	Gender
Lack of agency readiness	
Slow pace of government reform	
Absence of an e-Government champion	

Legacy government processes	
Lack of relevant in-house management and technical expertise	
Ignoring process re-engineering	
Focusing too much on a specific objective or goal	
The lack of good leadership	
Lack of human resources	

2.7 IT/IS Adoption Models

Information technology and information system adoption is a topic that has been explored for many years. Throughout these studies, the researchers aimed to locate the primary factors which have the greatest impact on the adoption. The results of the studies conducted in this field are ever so changing due to the rapid change of the values of each factor involved in predicting IT/IS adoption. These factors include economic, cultural, technological, and demographic aspects. The influence of these factors differs from one country to another and even for any two different technologies diffused in the same country. Many frameworks were constructed to explain how some factors affect the adoption of IT/IS and how to predict the change in the influence of these factors on the adoption.

Most of the frameworks created to study E-government adoption are based on several previous models that are well-known in the IT/IS adoption field. This section aims to introduce and discuss these models.

2.7.1 Diffusion of Innovations Theory

One of the well-known IS adoption theories is the Diffusion of Innovation Theory (DOI), which was developed by Rogers (1983). Rogers differentiated between the diffusion and adoption of innovations in that the former precedes the latter. The diffusion of innovation refers to the methods and channels used to spread a new technology over time among members of a specific community (Rogers, 1983). On the other hand, the adoption of innovations describes the continuous use of an innovation over time by the individuals or organisations of a specific community. The DOI theory consists of five innovation constructs that affect the rate of adoption.

These constructs are: relative advantage, compatibility, complexity, trialability, and observability. The relative advantage, compatibility, trialability, and observability have positive impacts on the adoption, which means the more relative advantage the new innovation has over the old one, the more likely the new innovation will be adopted, and so on with the other constructs. The only exception out of the five construct is the complexity, as it has a negative impact on the adoption. Whenever the users perceive the new technology as complex and hard, they tend to avoid using this technology, and vice versa.

Rogers (1983) classified the adopters into five categories: innovators, early adopters, early majority, late majority, and laggards. Each group is identified by a dominant characteristic and other generalised ones. The following table (Table 4) discusses these characteristics.

Table 4: Adopters Categories and Characteristics

Source: Rogers (1983)

Adopters Category	**Dominant Characteristic**	**Other Characteristics**
Innovators	Venturesome	Eager to try new ideas Usually they only have social relationships with other innovators Must deal with a high degree of uncertainty Must deal with occasional setbacks
Early Adopters	Respectable	More integrated into the social system than innovators Have the greatest influence on other potential adopters Decrease the uncertainty about innovations through evaluating them to other members of the society, usually near-peers Often sought for advice before adopting new innovations
Early Majority	Deliberate	Adopt new innovations barely before an average person in a given society Often interact with other peers, but rarely hold a leadership position Take longer time to decide whether to use the new innovation or not

		Not eager to be the first to try an innovation, and do not want to be the last to adopt it
Late Majority	Skeptical	Adopt new innovations barely after an average person in a given society Skeptical of new innovations and do not adopt them until most of their social circle have adopted it Motivated by peer pressure Dislike the presence of any uncertainty due to the relatively scarce resources
Laggards	Traditional	The very last to adopt innovations Have a more traditional orientation Very skeptical of innovations and do not like change

2.7.2 Theory of Reasoned Action

The theory of reasoned action (TRA) was proposed by Ajzen and Fishbein to predict users' actions toward a specific technology. This theory is considered the first theory that tries exploring and understanding the human behaviour (Al-Sobhi, 2011, Venkatesh et al., 2003). Ajzen and Fishbein identified four constructs, which are: behaviour, behavioural intention, attitude toward behaviour and subjective norms. There are three specifications that affect the relationship between the behavioural intention and the actual behaviour. These conditions are: "(a) the degree to which the measure of intention and the behavioural criterion correspond with respect to their levels of specificity, (b) the stability of intentions between time of measurement and performance of the behavior, and (c) the degree to which the carrying out the intention is under the volitional control of the individual" (Madden et al., 1992, p. 4). Figure 4 illustrates the theory of reasoned action model.

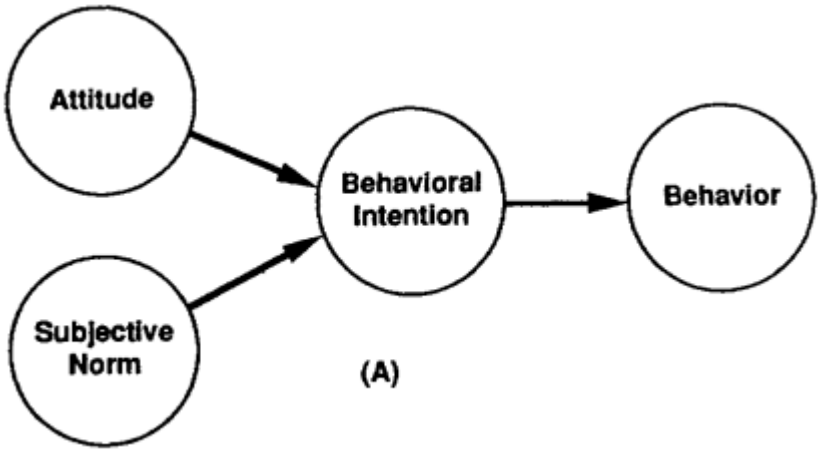


Figure 4: Theory of Reasoned Action (TRA)

Source: (Madden et al., 1992)

2.7.3 Technology Acceptance Model

The technology acceptance model was developed by Davis (1989) based on the theory of reasoned action (Taylor and Todd, 1995). TAM is a widely used model by many researchers (Al-Sobhi, 2011, Venkatesh and Bala, 2008). One of its advantages is that it can predict if a given system may not succeed besides providing reasons for the prediction (Davis et al., 1989). This model suggests that the perceived usefulness and perceived ease of use have major effects on the user's attitude toward using the new technology, which as a result will affect the user's behavioural intention. The model also integrates the influence of some external determinants on perceived usefulness and perceived ease of use. Figure 5 presents the technology acceptance model.

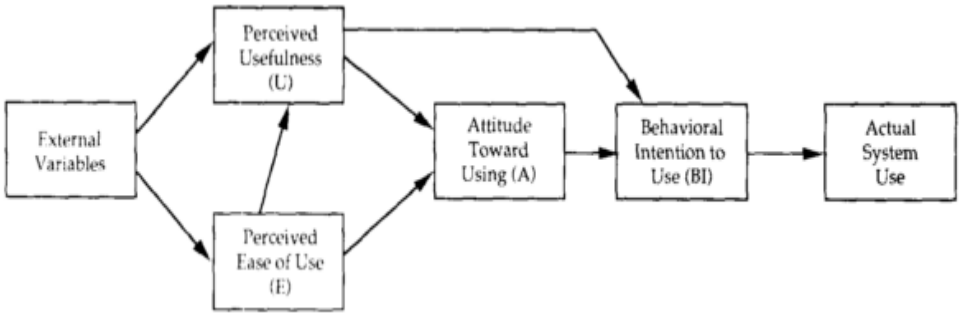


Figure 5: Technology Acceptance Model (TAM)

Source: (Davis et al., 1989)

An extension of TAM was proposed by Venkatesh and Davis (2000). The proposed extension, named TAM2, examines the effects of social influence factors, such as subjective norms, voluntariness, and image, and other cognitive factors, such as job relevance, output quality, result demonstrability, and perceived ease of use, on the perceived usefulness, the user's acceptance of the new technology and intention to use it.

2.7.4 Theory of Planned Behaviour

The theory of planned behaviour (TPB) was proposed by Ajzen as an extension for TRA to bridge the gap left by TRA that deals with the behavioural control (Ajzen, 1991). The theory of planned behaviour consists of five constructs: attitude toward the behaviour, perceived behavioural control, subjective norm, intention and behaviour. Figure 6 illustrates Ajzen's theory of planned behaviour.

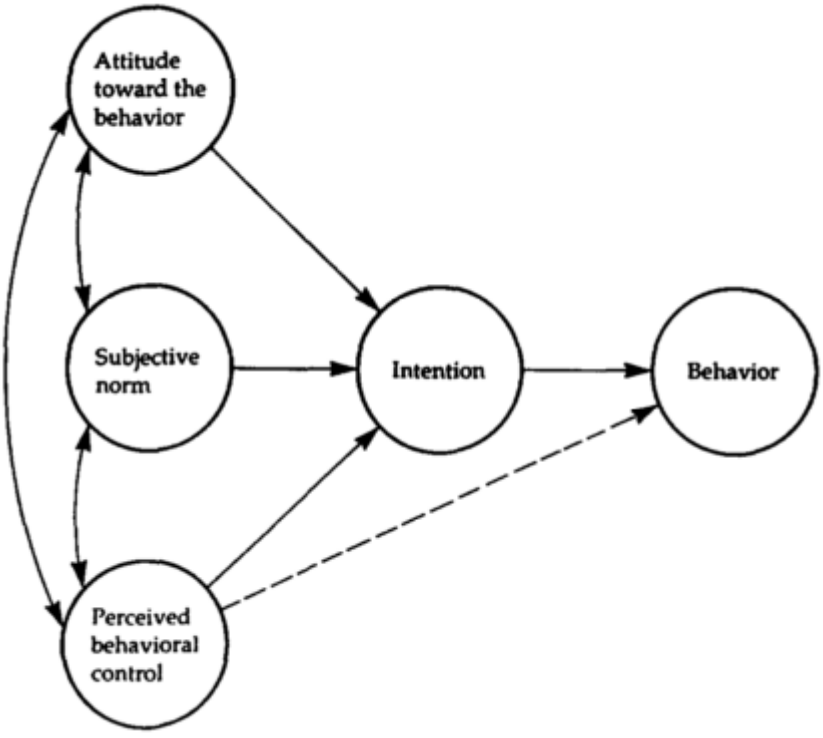


Figure 6:Theory of Planned Behaviour (TPB)

Source: (Ajzen, 1991)

The construct of the perceived behavioural control is the newly added contribution to TRA. Ajzen clarified that the perceived behavioural control refers to the users' " … perception of the ease or difficulty of performing the behavior of interest" (1991, p. 183). This newly proposed construct can affect the behaviour directly or indirectly through intention. The theory of planned behaviour claim that users' behaviour can be predicted from the perceived behavioural control and behavioural intention.

2.7.5 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) is considered the most recent IS model that is referenced frequently in literature that aim to predicts users' acceptance of new technology. It is also viewed as most predictive model in literature of technology acceptance (Al-Sobhi, 2011). This theory was developed by Venkatesh et al. (2003) and it is composed based on eight previous models that aimed to predict users' behaviour and use of new technology: Technology Acceptance Models, Theory of Reasoned Action, Theory of Planned Behaviour, 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 unified theory of acceptance and use of technology was created by finding the similarities between the constructs of each model and bridging the gap between them by establishing a unified definition for each group of similar constructs. The UTAUT model is illustrated in Figure 7.

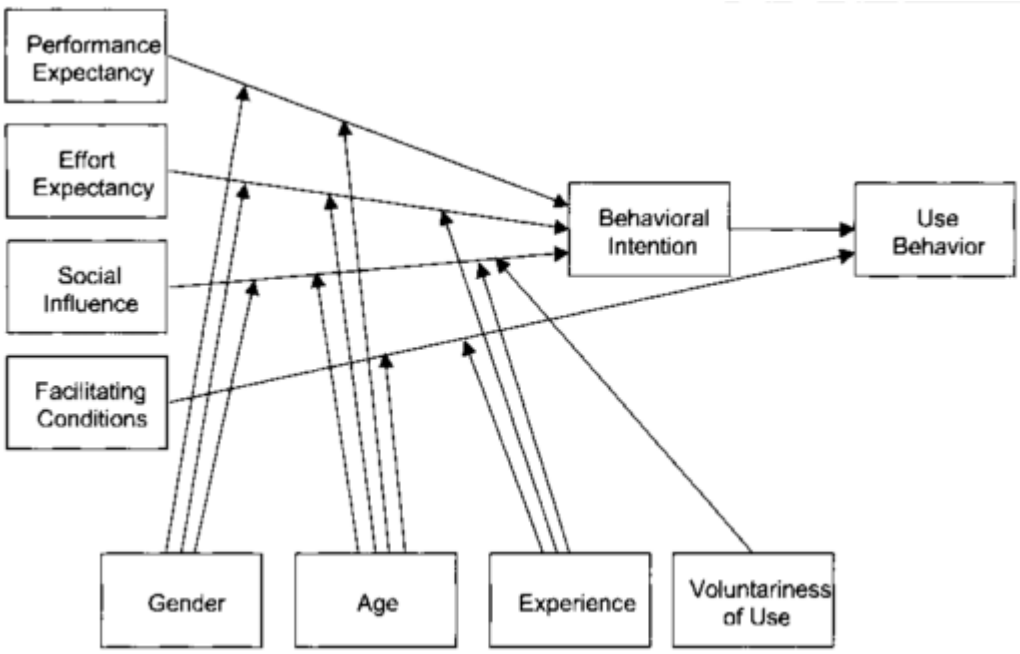


Figure 7: Unified Theory of Acceptance and Use of Technology (UTAUT)

Source: (Venkatesh et al., 2003)

The UTAUT model consists of six constructs and four moderating factors. The main constructs are: performance expectancy, effort expectance, social influence, facilitating condition, behavioural intention, and use behaviour. The moderators are: gender, age, experience, and voluntariness of use. The moderators affect the influence of the direct determinants of behavioural intention and use behaviour.

2.7.6 Information System Success Model

In 1992, Delone and McLean proposed the Information System Success Model after conducting an in-depth review of IS success literature in order to present an integrated view of the concept of IS success. The proposed model consisted of six constructs: system quality, information quality, use, satisfaction, individual impact, and organisational impact. Figure 8 shows the original IS Success Model.

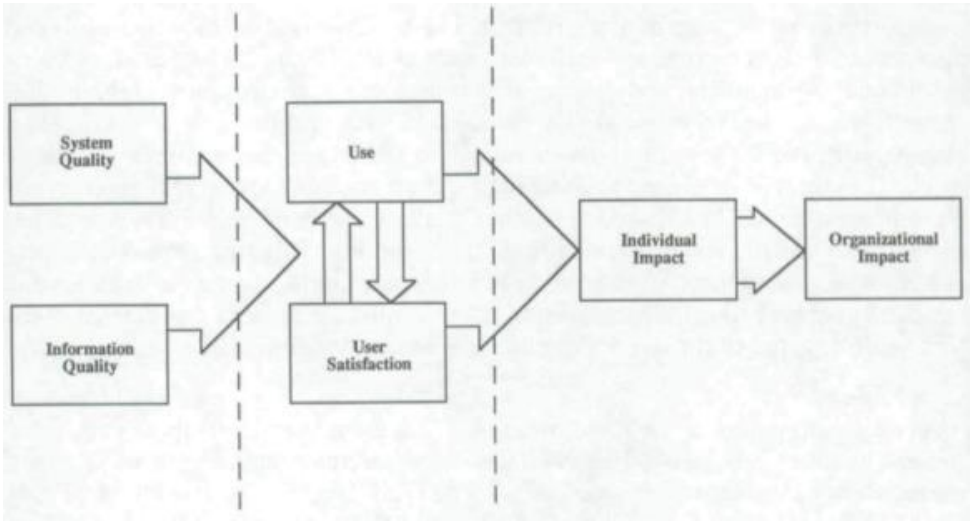


Figure 8: IS Success Model

Source: (DeLone and McLean, 1992)

The original IS Success Model was adopted and validated by many researchers. In 2003, DeLone and McLean published another paper to review the research that have adopted IS Success Model and propose an enhancement to the model. The studies reviewed by the researchers have recommended different modifications to the original model, such as the addition of new constructs and merging others. Delone and McLean (2003) have reviewed each of these studies and proposed an updated model. The updated model had three modifications from the original. First, a new construct called 'service quality' was added to the model. This construct is derived from the SERVQUAL scale, which was proposed by Parasuraman et al. (1988) to measure the perception of service quality in marketing. Pitt et al. (1995) have tested the applicability of this scale in the information systems field and proposed integrating it as a construct in DeLone and McLean's IS Success Model. The second modification in the updated model is replacing the individual impact and the organisational impact constructs with one construct called 'net benefits'. Delone and McLean (2003) stated that the literature review which they conducted brought to attention that IS benefits could affect other aspects than the individuals and organisations. In order to measure all these benefits, the individual and organisational impact constructs were replaced by the net benefits construct. The third modification in the updated model was more of a clarification of the

relationship between use and user satisfaction. Delone and McLean (2003) clarified that "'use' and 'user satisfaction' are closely interrelated. 'Use' must precede 'user satisfaction' in a process sense, but positive experience with 'use' will lead to greater 'user satisfaction' in a causal sense. Similarly, increased 'user satisfaction' will lead to increased 'intention to use', and thus 'use'" (p. 23). Figure 9 illustrates the updated IS Success Model.

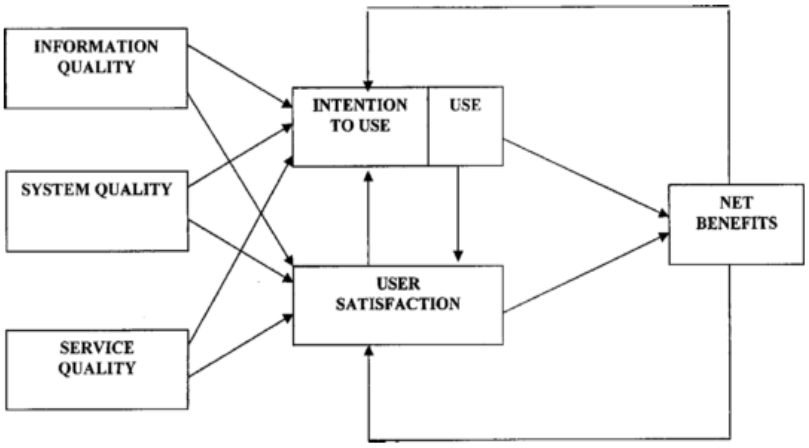


Figure 9: The Updated IS Success Model

Source:(Delone and McLean, 2003)

2.8 Previous Studies on E-government Adoption

The following subsections provide discussions of the previous research conducted on citizens' adoption of E-government. The studies are divided according to the country where they were conducted: developing countries and developed countries.

2.8.1 E-government Research in the Developing Countries

Despite the potential advantages of a given system, the lack of adoption of that system will not allow its effectiveness to shine nor its potential advantages to become reality (Hu et al., 1999), and E-government is not an exception. Previous studies in the E-government field have focused on understanding and predicting the adoption of E-government in different countries. Hamner and Al-Qahtani (2009)

investigated the willingness of the citizens in Saudi Arabia to adopt E-government if it was available. The data were collected through 900 questionnaires that were distributed in Riyadh (the capital of Saudi Arabia), and the researchers used the correlation analysis method. Out of 558 returned questionnaires, only 453 were valid. The analysis showed that 65% of the valid responses are willing to use E-government, have Internet and computer skills, have access to E-government, and they are confident in their security and privacy. Based on their research, Hamner and Al-Qahtani (2009) identified four factors that affect individual acceptance of E-government: age, education level, Internet knowledge, and security. However, this study was conducted using a hypothetical system. Therefore, the findings of the study could be only used as general guidance for future studies since the participants did not evaluate an existing E-government system.

Weerakkody et al. (2013) also conducted a study about citizen adoption of E-government in Saudi Arabia, which specifically focused on the role of intermediaries in the diffusion of E-government. UTAUT was adopted as the theoretical basis with the elimination of the moderating variables and addition of two constructs to the model: trust in the Internet, and trust in the intermediary. The researchers collected the data through questionnaires distributed in Madinah city. The valid responses were 502 which were used later in the analysis. Structural Equation Modelling was used to examine the relations between the constructs. The results of the study showed that intermediaries have positive influence on the diffusion of E-government. Respondents have shown positive attitude to communicating with the government through intermediaries. Weerakkody et al. (2013) suggested establishing intermediary offices in other cities as they increase citizens awareness and assist them in using E-government. Moreover, the researchers concluded that performance expectancy, effort expectancy, and trust of the intermediary have significant influences on the behavioural intention, however, trust in the Internet and social influence have non-significant effects on behavioural intention.

Two exploratory studies were conducted in Saudi Arabia by Alateyah et al. (2014) and Alshehri et al. (2012) to identify the factors that might influence citizen's

adoption of E-government. These studies have reflected the views of different groups. Alateyah et al. (2014) have followed the triangulation method and identified a number of factors that affect the adoption of E-government based on the existing literature. After that, the researchers have distributed questionnaires among government employees and experts in Saudi Arabia to find if they view the identified factors as important factors of E-government adoption or not. The researchers have analysed the data as a one-sample t-test, and the findings showed that all of the identified factors had statistical significance. The identified factors were: culture, usability, accessibility, relative advantage, compatibility, image, complexity, computer and information literacy, gender, education, age, technical infrastructure, lack of awareness, service quality, reliability, availability, speed of delivery, information quality, and multi-lingual. The multi-lingual factor was accepted as significant based on the literature review and the government employees' results, however, all of the other factors were accepted based on the results of the literature review, the government employees and the experts. Alateyah et al. (2014) have developed a model based on the literature review, which consists of the identified factors, however, the model has not been validated.

On the other hand, Alshehri et al. (2012) have evaluated the importance of E-government adoption barriers based on the opinions of IT staff and Saudi citizens. The participants were required to rate the level of importance of each barrier from 'not important' to 'very important'. The findings showed some differences in the ranking of the barriers from the point of view of the IT staff and the Saudi citizens, however, the top two barriers from the perspectives of both groups were 'lack of technical support from government's websites support' and 'lack of knowledge about the e-government services'. As for the top third barrier, the IT staff perceived the 'IT Infrastructural weakness of government public sectors' as the top third barrier, while the Saudi citizens believed that 'the availability and reliability of Internet connection' forms the top third barrier. The top three barriers from the perspective of the IT staff which were reported in Alshehri et al.'s study (2012) are among the factors that were found important for E-government adoption in Alateyah et al.'s study (2014).

Alghamdi and Beloff (2014) developed a model for E-government adoption in Saudi Arabia. The model was developed based on literature review. The researchers have divided the factors affecting the adoption into four groups: personal factors, motivational factors, technical factors, and reliability factors. The personal factors consist of age, gender, education, location, and income. The motivational factors consist of perceived benefits, socio-cultural, awareness, functional quality of services, and previous experiences. The technical factor consists of simplicity, technical quality of services, and accessibility. Finally, the reliability factors consist of security and privacy, trustworthiness, and regulations and policies. The developed model was only validated in another study, (Alghamdi and Beloff, 2016), using businesses as the population, however, the model was never validated on citizens. On the other hand, Al-Ghaith et al. (2010) developed a model based on the DOI theory. The data were collected through questionnaires distributed among Saudi citizens. The findings showed that perceived complexity, privacy, and compatibility form the most influential factors in E-government adoption. Other factors such as quality of the Internet, relative advantage, and gender have also shown significance. More recently, two other studies were conducted on E-government adoption in Saudi Arabia. Alfalah et al. (2017) studied the diffusion of E-government among the older adults in Saudi Arabia. The researchers proposed and validated a model that integrated factors from the DOI theory, the Attitudinal Formation under Learning Theories, and Trustworthiness. The population of the study contained all Saudi citizens who are 50 years old or older; however, the sample was only gathered from one city in Saudi Arabia, called Hail. The findings of the study showed that perceived website assistance, compatibility, complexity, trust of the Internet, and perceived risk have significant effects on the intention to use; while the primary influence, perceived cyber risk, relative advantage, image, and trust of the government do not have significant effects on the intention to use. Also, the researchers found that disposition of trust has significant influence on trust of the Internet and trust of the government; while both trust factors have significant influences on perceived risk. The collection of the data from only one city is one of the limitations of the study conducted by

Alfalah et al. (2017) which is the same limitation of the previously discussed study that was conducted by Weerakkody et al. (2013) in Saudi Arabia. The effect of complexity on the adoption of E-government in Saudi Arabia seems to be consistently significant whether for older adults or younger ones as it was demonstrated in the findings of the studies conducted by Al-Ghaith et al. (2010), Weerakkody et al. (2013), and Alfalah et al. (2017). Moreover, compatibility is also a significant factor when studying elderly's adoption of E-government and the adoption of E-government by citizens in general. Interestingly, Alfalah et al. (2017) found that relative advantage does not have significant effect on the intention to use, which is contrary to the findings of other studies conducted on elderly's adoption of technology and the findings of other studies conducted in Saudi Arabia on citizens' adoption of E-government. The insignificance of this relationship could be attributed to the collection of the sample. While Alfalah et al. (2017) examined the influence of trust and risk, among other factors, on E-government adoption, Alharbi et al. (2017) focused their research on finding the influence of security and its antecedents on the intention to use E-government, which makes it different from the other studies that examined the adoption of E-government in Saudi Arabia. The researchers proposed an integrated model consisting of the extended version of the Unified Theory of Acceptance and Use of Technology (UTAUT2), trust, security, and privacy. The proposed model was validated using data that was collected through online questionnaires from Saudi citizens. The findings of the study revealed that user interface quality, cybersecurity law, and security culture have significant effects on security perception; while both security perception and privacy perception have significant influence on trust. Also, the data analysis showed that trust, habit, performance expectancy, social influence, and facilitating conditions are direct antecedents of the intention to use E-government. On the other hand, three of the proposed hypotheses in the study conducted by Alharbi et al. (2017) were rejected. General information security awareness was found to have nonsignificant effect on security perception while the factor identified as tangible security features was found to have significant negative effect on security perception which is the opposite of the

researchers' hypothesis. Moreover, effort expectancy was found to have nonsignificant effect on the intention to use E-government, which is opposite of the findings of Al-Ghaith et al. (2010), Weerakkody et al. (2013), and Alfalah et al. (2017) although these studies were also conducted in Saudi Arabia. The difference in the outcome regarding the effect of complexity could be because Alharbi et al. (2017) examined the factors affecting the intention of continuous use of E-government rather than the initial adoption, therefore, the participants have previously used the portal and are already used to interacting with it.

Five other studies were conducted in different Arabic countries by Fakhoury and Aubert (2015), Alomari et al. (2012), Al Khattab et al. (2015), Abu-Shanab (2015), and Al-Hujran et al. (2015). The first study was conducted by Fakhoury and Aubert (2015) took place in Lebanon to examine the roles of active citizenship and trustworthiness on the behavioural intention to use E-government. The data were collected via questionnaires distributed through multiple channels to generate more response rate. The data were analysed using linear regression, and the findings showed that active citizenship and trustworthiness have positive influence on the behavioural intention.

Four out of the five reviewed studies were conducted in Jordan. Alomari et al. (2012) identified the factors influencing citizens' adoption of E-government in Jordan using an integrated model consisting of constructs from TAM and DOI. The data were collected from Jordanian citizens through questionnaires, and the data were analysed using multiple regression analysis. The researchers concluded that trust in the government, beliefs, website design, complexity, and perceived usefulness are the significant determinants of citizens' intention to adopt E-government in Jordan. Other variables, namely trust in the Internet, relative advantage, compatibility and perceived ease of use proved to not having a significant influence on citizens' intention to use E-government. Similarly, Al Khattab et al. (2015) have developed an E-government adoption model based on TAM and collected the data from the Jordanian citizens using self-administered questionnaire. The study concluded that perceived usefulness, perceived ease of use, and trust in electronic channel, have

positive influence on the citizens' behavioural intention, while perceived risk has a negative impact on behavioural intention. Also, the study found that perceived ease of use has a positive impact on perceived usefulness, while trust in electronic channel has a negative impact on perceived risk. The study also rejected two hypotheses because trust in the government did not have a significant negative influence on neither perceived risk nor behavioural intention. The findings of Alomari et al.'s (2012) and Al Khattab et al.'s (2015) studies regarding the influence of trust in the government and trust in the Internet on behavioural intention are the opposite of each other. This could be due to the age characteristic of the samples since the majority of the participants in the first study were younger than 30, while the majority of the participants in the second study were between 46-55 years old.

Another research on the Jordanian E-government was conducted by Abu-Shanab (2015), who proposed a model to predict Jordanian's intention to use E-government websites. The data were collected via questionnaires from Jordanian citizens and analysed using regression analysis. The results showed that transparency, which includes information quality and information accessibility, accountability, collaboration, and empowerment are significant for predicting the intention to use E-government websites. Last but not least, Al-Hujran et al. (2015) proposed a framework consisting of constructs from TAM, trust, and Hofstede's national culture dimensions. The framework was validated in Jordan to study citizens' adoption and use of E-government in Jordan. The data were collected through questionnaires that were collected from Internet café users and university students. Structural Equation Modelling with Partial Least Square were used as analysis method. The results showed that perceived public value and attitude are significant predictors of usage intention. Perceived ease of use also showed a positive influence on usage intention and perceived public value. In addition, the study found that both perceived public value and perceived ease of use are significant predictors of attitude. Trust showed to have a significant influence on perceived public value and perceived ease of use. Finally, among Hofstede's five cultural values, only uncertainty

avoidance showed to have a significant positive effect on perceived public value and perceived ease of use.

Reviewing some of the literature conducted in the Arabic countries, it seems that most of the research are focused on the technological and social aspect. Al-Hujran et al. (2015) became an exception by examining the influence of the national culture values in their study. Moreover, most of the constructed frameworks to examine the factors affecting E-government adoption in the Arabic countries have no interdependent factors, meaning all factors are proposed to directly influence the intention to adopt. Some of these relationships were confirmed, while others were rejected. Finding the factors that influences the adoption of E-government is the primary objectives of most of these studies, however, it is important to understand that these factors might influence the adoption directly or indirectly. Some factors might not have a direct significant effect on the adoption of E-government, while they could be significant predictors of other factors.

Many other developing countries have implemented E-government; however, these E-governments are at different stages and various excellence levels due to the different financial, political, technological, demographical, and human resource aspects of each country. Several studies conducted in different developing countries were reviewed to gain insight on the factors commonly identified as salient in E-government adoption. The reviewed studies were conducted in India, Malaysia, China, Singapore, Gambia, and Ghana. Each of these countries is considered from the developing countries, however, some are at the lower half of the list while others are at the top and in a few years might be considered developed. Rana and Dwivedi (2015) investigated the factors affecting the adoption of E-government in India, specifically an E-government system called Online Public Grievance Redressal System (OPGRS) using the Social Cognitive Theory (SCT) as basis for their conceptual framework. The data were collected through questionnaires from different cities in India. All seven hypotheses of the study were supported. The study concluded that outcome expectation and self-efficacy have positive influence on affect; social influence and self-efficacy have positive influence on outcome expectation; affect

and social influence have positive influence on behavioural intention; and finally, anxiety has a negative influence on behavioural intention.

A more recent study was conducted by Sharma and Mishra (2017) in India to find the role of the intermediaries in the adoption of public access outlet that are specified for delivering E-government services in the rural areas. The researchers proposed a model based on an exploratory study that involved the stakeholders and an in-depth literature review on the subject. The proposed model was validated through analysing data that were collected via questionnaires that were distributed in 77 villages. The total number of usable quationnaires was 328. The analysis was carried out using Partial Least Square. The study concluded that the behaiour of the intermediaries operating the outlets, the reliability of the outlet, and the facilities available at the outlet have significant influences on the service quality of the outlet. Also, the service quality of the outlet has significant positive effect on the intention to using E-government services. In addition, ease of abtaining the services, usefulness, and positive word of mouth has significant effect on the intention to use.

In Malaysia, Lean et al. (2009) integrated TAM, DOI, and trust model to investigate the factors affecting citizens' intention to adopt E-government. The data were collected using questionnaires that were distributed to Malaysia citizens who work in the Northern region of Malaysia. The researchers identified two antecedents of trust with significant influence, namely: perceived strength of online privacy and perceived strength of online non-repudiation; while trust had a direct influence on the intention to use E-government. The perceived strength of authentication was found to have an insignificant influence on trust. The perceived usefulness construct, which was adapted from TAM, showed to have a direct positive relationship with the intention to use E-government. As for the complexity, relative advantage, and image constructs that were adapted from DOI, the latter two constructs showed to have direct positive influence on intention to use, while complexity showed to have a direct negative influence on the intention to use. Lean et al. (2009) also found that uncertainty avoidance did not have a moderating effect on the influences of the DOI constructs. The researchers attributed this finding to the age of the participants as

78% of them were under 40. Similar to Alomari et al.'s (2012) study, Lean et al. (2009) have adapted perceived usefulness from TAM and relative advantage from DOI although several researchers, including Venkatesh et al. (2003), have viewed these constructs as the same. The former have justified their integration of both constructs by stating that Carter and Bélanger (2005) have claimed that the overlap between these two constructs is not clear and that they also have integrated both constructs in their study. However, results of Carter and Bélanger's (2005) study showed no difference between the use of either construct as their analysis showed a very similar results for both factors, which is having a no significant influence on the intention to use. The researchers attributed their findings to users' expectation. Since their study was conducted in the United States, which is one of the E-government leading countries, and where citizens are used to communicating with family, friends, and businesses online, which means the citizens do not view communicating with the government online as a new benefit because they expect it to be available. On the other hand, Lean et al. (2009) found that both constructs have significant impact on the intention to use, while Alomari et al. (2012) found that only perceived usefulness has a significant influence on the intention to adopt while relative advantage was not included in the final analysis as it showed weak loading.

Similar to some of the abovemensioned studies, Lin et al. (2011) have integrated TAM in their framework while adopting the information quality and system quality constructs from the IS Success Model. The proposed framework was used to study citizens' adoption of E-government in Gambia. The data were collected via questionnaires distributed to Gambian E-governmnet users. Only 146 of the returned questionnaires were usable. The results of the study showed that information quality has a significant influence on perceived ease of use, while peceived ease of use significantly influences perceived usefulness and attitude, and finally, attitude significantly influences behavioural intention. One of the important findings is that perceived usefulness did not have significant influence on attitude or behavioural intention. Lin et al. (2011) stated that this finding might be attributed mainly to the poor ICT infrastructure in Gambia as many citizens prefer using the

traditional system to receive public services rather than dealing with the very slow and unstable Internet connection. System quality also did not have a significant impact due to the poor quality of most of the Gambian E-government portals. Although many researchers, including Delone and McLean (2003), have recognised the significance of service quality in previous IS research, Lin et al.'s (2011) study did not include this factor. This might be due to the status of E-government in Gambia and the poor ICT infrastructure. Also, the sample size used in the study is quite small. The researchers might have arrived to a better conclusion and understanding of citizens' adoption of E-government in Gambia if the sample size was larger.

Mensah and Mi (2017) conducted a study in Ghana to examine the moderating effect of age on the relationship between computer self-efficacy and E-government adoption. The researchers proposed a simple model consisting of two constructs: computer self-efficacy and intention to use, and one moderating factor: age. The proposed relationships were examined using data collected from 520 respodents to the questionnaires distributed in the capital city. The study concluded that age is a significant moderator of computer self-efficacy's effect on intention to use, however, age does not have a significant direct influence on the intention to use. Moreover, the researchers identified computer self-efficacy as a construct that has significant positive effect on citizens' intention to use E-government. Although the sample size of the study conducted by Mensah and Mi (2017) was of acceptable size, the proposed model of the study was very simple and only consisted of two predictors, which does not reflect the situation of E-government adoption in the real life as many studies have demostrated that much more factors are involved in this process. In addition, the data used in the study was collected only from the capital city of Ghana, and since the residents of the cities are usually more educated and usually has more knowledge about using technologies, the results of the research should be taken with caution as it does not necessarily apply to all of the citizens of Ghana.

Few research in the developing countries have integrated all of the three website quality aspects, which are part of Delone and McLean's (2003) updated IS

Success Model. Lin et al. (2011) have included information quality and system quality in their framework, while Teo et al. (2009) have adopted the whole model and integrated two dimensions of trust in E-government as direct antecedents of the three website quality constructs. The model was used to examine E-government adoption in Singapore. The data were gathered through questionnaires and focus groups. Partial Least Squares was used to analyse the data. The results of the analysis showed that only trust in the government has significant influence on the trust in E-government website, and that trust in E-government website has a significant relationship with system quality, information quality, and service quality. Also, the results indicated that out of the three website quality aspects, only information quality has a positive influence on the continuous intention, while only system quality and service quality have positive relationship with the satisfaction. Teo et al. (2009) conducted a post-hoc analysis to understand E-government usage by two different groups of users: passive and active. The researchers split the collected data into two groups according to the activities the user perform when using E-government websites. Users who only browse and download data are gathered under the passive group, and users who use E-government websites to send messages and make transactions are gathered under the active group. The post-hoc analysis showed that for the passive group, information quality is significantly related to satisfaction while system quality is not. On the other hand, for the active group, trust in technology has a significant influence on trust in E-government website, and none of the website quality aspects have significant relationship with the continuous intention to use E-government websites. In their study, Teo et al. (2009) examined trust only as an antecedent of the website quality aspects, although trust might have a direct influence on the intention to use. Moreover, whenever there is a need for trust, there is a risk to consider. When adopting a web system, users do not only evaluate the quality of the website, there is usually risk to consider when it comes to using online systems. The perceived risk can reduce the intention to use just as trust and website quality can increase that probability. Incorporating perceived risk factor might provide a more realistic prediction.

Lu and Nguyen (2016) have examined the effect of the three website quality factors on the intention to use E-government through proposing and validating a model that consisted of UTAUT and ISSM factors to examine the adoption of online tax filing in Vietnam. The researchers utilised 156 usable questionnaires that were collected from actual taxpayers to conduct the analysis. The study concluded that performance expectancy, effort expectancy, social influence, information quality, system quality, and service quality have significant effects on the intention to use E-government. Although the study conducted by Teo et al. (2009) in Singapore concluded that only information quality has a significant effect on the continuous use of E-government, the research conducted by Lu and Nguyen (2016) in Vietnam revealed that all three website quality aspects are significant antecedents of intention to use. This difference in the findings could be attributed to the advancement of the IT of the country since Singapore is considered one of the most technologically advanced countries in the world, therefore, the citizens are used to receiving high system and service qualities from the available online systems. However, the quality of the provided information varies from one system to another, thus, the level of information quality affects the citizens' intention to use or continue using E-government.

Jiang (2011) proposed five dimensions to evaluate E-government portal quality in China. These dimensions are: information quality, design and function, reliability, security and privacy, and responsive. These dimension were integrated with perceived usefulness and user satisfaction, which were adopted from IS Continuance Model that was proposed by Bhattacherjee (2001). The data were collected using questionnaires and with the assistance of a domestic agency. The results of the analyses revealed that information quality, design and function, and reliability have significant positive influences on perceived usefulness and user satisfaction, while security and privacy only have significant positive effect on perceived usefulness and not user satisfaction. Also, perceived usefulness has significant positive influence on both user satisfaction and continuous intention, while user satisfaction has significant positive impact on continuous intention.

Most of the sample used in the previously discussed studies consisted mainly of university students and some included middle aged citizens. Phang et al. (2006) have targeted a different age group in their research that was conducted in China. The researchers targeted senior citizens to understand what factors influence their acceptance in intention to use E-government services. A conceptual framework was developed based on the literature review conducted by the researchers, and the data were collected through administered questionnaires. The study focused on a service called the Central Provident Fund (CPF) E-withdrawal, which is specifically provided for senior citizens. Phang et al. (2006) concluded that perceived usefulness, perceived ease of use, and internet safety perception have direct positive influence on senior citizens' intention to use the CPF E-withdrawal. Moreover, self-actualisation and resource savings had positive influence on perceived usefulness, while computing support had a positive effect on perceived ease of use, and computer anxiety had negative effect on perceived ease of use. The factors used in Phang et al.'s (2006) study were technological, psychological and social. However, the technological factors only focused on users' perception of Internet safety, usefulness and ease of use. The researchers could have integrated the three website quality aspects to enhance the understanding of what features are prompting the senior citizens to adopt this specific website and what features preventing them. Users' opinion on a given system usually has some degree of reliance on the features of the system.

2.8.2 E-government Research in the Developed Countries

Carter and Bélanger have conducted two studies in the United States in 2004 and 2005 using an integrated model to identify the factors influencing citizens' adoption of E-government. The research model integrated constructs from TAM, DOI, and web trust model. Perceived usefulness and perceived ease of use were adapted from TAM; compatibility, relative advantage, and image were adapted from DOI; and trust in the Internet and trust in the government were used to measure trustworthiness. For their first study, the data were collected from undergraduate students via questionnaires, and analysed using multiple linear regression analysis. The results of the analysis showed that perceived usefulness has a direct positive

influence on the intention to use E-government. Also, relative advantage and compatibility proved to have a significant positive influence on the intention to use. On the other hand, perceived ease of use, image, trust in the government, and trust in the Internet did not have significant influence on citizens' intention to use. The researchers attributed the insignificant influence of trust to the previous experience of the participants and the type of government services the survey was about, which were tax filing and license renewal. Most of the participants had previously used the Internet and were confident in it, thus trust in the Internet did not have a significant influence on the intention to use. As for the trust in the government, since the questionnaires asked the participants about mandatory tasks and the participants have viewed E-government as useful because it is more efficient for them to use E-government services to complete the mandatory task than using the traditional method, thus trust in the government did not have influence on the intention to use.

The results of the second study conducted by Carter and Bélanger (2005) showed some contradiction to the results of their previous study. In their second study, the data were collected from citizens at a community concert via questionnaires. The age of the respondents is more diverse in this sample. Multiple regression analysis was used for hypothesis testing. The results showed that only perceived ease of use, compatibility, and perceived trustworthiness have significant influence on the intention to use, while both relative advantage and perceived usefulness, which were significant in the first study, did not have significant effect in the study conducted in 2005. The only construct that was significant in both studies was compatibility. Moreover, it was the most significant factor in both studies. The results of the second study could be more generalizable to the population where the study took place since the data were collected from citizens from different age groups and ethnicities, however, the sample size is considered small with only 105 participants, which is one of the limitations addressed by the researchers. In addition, Carter and Bélanger (2005) selected only two state agencies that participants can refer to when completing the survey. Therefore, the responses of the participants are affected by the quality and the available features of these E-government services. A

wider selection of E-government services, coupled with a larger sample size might generate better data that can provide a clearer understanding of which factors affect the intention to use E-government. Also, some factors might show significance for specific ethnicities or age group, thus such relationships could be examined when using large samples.

Carter and Weerakkody (2008) conducted a study in UK to examine the influence of the factors that were found to be salient in E-government adoption in the U.S. These factors were relative advantage, trust, Internet accessibility, and Internet skills. The data were collected via a questionnaire distributed in a local borough in Northwest London. The researchers used stepwise binary logistic regression to analyse the data. It was concluded that only two factors, namely trust and relative advantage, had significant influence on the adoption of E-government in UK, while the other two factors, namely Internet accessibility and Internet skills, seemed to be non-significant in E-government adoption in the UK. One of the limitations of Carter and Weerakkody's (2008) study is that the data were collected from one local Council in London. As the study's aim is to examine the effect of certain factors on the adoption of E-government in UK, collecting the sample from multiple locations in different cities or regions in UK might have generated a more representative data. One of the study's findings was that Internet accessibility and skills do not have significant influence on the adoption of E-governemnt, to which the researchers explained the finding by stating that the digital divide might be more promenant in the U.S. and it might also be present in the UK in a different form, such as the type of Internet access instead of the accessibility. On the other hand, if the sample was collected from various locations, the result for this construct might be different or it might be the same, however, the conclusion could be drawn more confidently since the sample is more representative of the population. The same limitation was present in other two studies conducted in the UK by Gilbert et al. (2004) and Kolsaker and Lee-Kelley (2008).

A more recent study by Carter et al. (2016) examined the factors affecting E-government adoption in the United States and the United Kingdom. The researchers

proposed and validated a model that combines trust and risk model with perceived ease of use and perceived usefulness from TAM. The data were collected via questionnaires distributed in London, UK, and at a community event in the southeastern region of the United States. The researchers collected 140 usable questionnaires from US and 105 usable questionnaires from the UK. The proposed model was examined for each sample seperately and was also examined again while combining the the samples. The findings revealed that for the United States sample, trust of the Internet, trust of the government, perceived usefulness, and perceived ease of use have significant effect on the intention to use E-government; while disposition of trust have significant influence on both trust constructs. In addition, perceived ease of use has significant effect on perceived usefulness. On the other hand, perceived risk proved to have no significant effect on the intention to use. Also, trust of the government did not have significant effect on perceived risk, while trust of the Internet had a significant effect on perceived risk. As for the UK sample, similar to the results of the US sample, trust of the Internet, perceived usefulness, and perceived ease of use have significant effects on the intention to use. Also, disposition of trust proved to have significant influence on both trust constructs; while perceived ease of use has significant influence on perceived usefulness, and finally, trust of the governemnt was discovered to have no significant effect on perceived risk, which is the same result as in the US sample. However, opposite of the findings regarding the US sample, the results for the UK sample revealed that trust of the government does not have significant effect on the intention to use; while perceived risk has significant effect on the intention to use. In addition, trust of the Internet does not have significant influence on perceived risk (Carter et al., 2016).

As for the results of examining the model using a combined sample, trust of the Internet, perceived usefulness, and perceived ease of use have significant relationships with the intention to use. Also, the effect of perceived ease of use on perceived usefulness was significant. Both of the trust constructs, again, were significantly influenced by the desposition of trust. Out of the two trust constructs, only trust of the Internet has significant effect on perceived risk. The effects of trust

of the government on perceived risk and intention to use were both insignificant. Finally, perceived risk does not have significant effect on the intention to use. Carter et al. (2016) attributed the nonsignificant effect of trust of the Internet on perceived risk in the UK sample to citizens' awareness of the available E-governmnet services and how to utilise them. On the other hand, since trust of the government did not have significant impact on the intention to use for the UK sample and for the combined sample while the relationship was significant for the US sample, the researchers stated that it seems that the citizens use some website specific criteria instead of using a government agency's offline reputation to evaluate the E-government services, therefore, the citizens might be satisfied with the E-government services provided although they are displeased with the actual government. The last difference in the findings between the two country-specific samples is the significance of the relationship between perceived risk and intention to use. This relationship was found significant for the UK sample while it was insignficant for the US sample. This finding was explained by stating that the insignificant relationship between these two constructs in the US sample indicates that citizens do not feel uneasy when using E-government, while the significant finding in the UK sample indicate the opposite. This explanation can be also supported by the explanation of the lack of significance for the relationship between trust of the Internet and perceived risk in the UK sample, which stated that UK citizens are not highly aware of the existing E-government services and how to utilise them. The study by Carter et al. (2016) provided an insight on the similarities and differences in the factors that affect the adoption of E-government in two developed western countries. The findings of the study confirms that researchers should be causious when applying the results of a study conducting in one country to another as there must be differences no matter how similar the characteristics of both countries.

Gilbert et al. (2004) combined attitude-based technology adoption models, namely DOI and TAM, and the service quality concept to identify benefits and barriers to E-government adoption in order to examine the factors that influences individuals

to use E-government over the traditional method to apply for and receive government services. The data were collected through questionnaires distributed in Guildford, UK. Exploratory factor analysis was used to identify the main factors affecting the attitude toward using E-government. Pearson Linear Correlation and Multiple Linear Regression were used during the analysis. At the end of the study, Gilbert et al. (2004) identified nine factors that affect individual's attitude toward using E-government, which are: saving time, saving cost, avoiding interaction, experience, information quality, financial security, low stress, trust, and visual appeal. All of the identified factors, except avoiding interaction, proved to have a significant relationship with the willingness to use E-government. Out of these factors, time, cost, financial security, trust, and information quality were the strongest predictors of usage. The finding about trust as a salient factor in E-government adoption is in agreement with the conclusion drawn by Carter and Weerakkody (2008).The study also found that the age of the citizens affects the willingness to adopt E-government in that younger citizens are more willing to adopt E-government than older citizens (Gilbert et al., 2004).

Another study was conducted in the UK by Kolsaker and Lee-Kelley (2008) to understand citizens' attitude toward E-government and E-governance. The researchers adapted the perceived usefulness and perceived ease of use from TAM and accessibility, willingness to listen to citizens, representing citizens' views, closeness to citizens, and approachability from a previous study conducted by Coleman (2005). The data were collected via questionnaires that were distributed in a moderate-sized town South-East England. The findings of the study showed that the ability to satisfy personal needs has the most influence on the intention to use E-government, followed by portal features, dialogue with the local and central government, ease of information retrieval, and lastly, portal reliability.

The Theory of Planned Behaviour is well-known theory that has been frequently applied in the field of E-government adoption. Warkentin et al. (2002) proposed an integrated framework consisting of perceived ease of use and perceived usefulness from TAM, perceived behavioural control from TPB, and uncertainty

avoidance and power distance from Hofstede's national culture dimensions, along with other trust and risk constructs. The framework was not empirically validated, however, Warkentin et al. (2002) proposed gathering the data from taxpaying citizens in different countries and asking them about their previous experiences with using E-filing. The proposed framework seems to have integrated variables that were salient in many E-government and non-E-government adoption studies, however, the researchers proposed to use the framework for conducting a cross country study. There are multiple different national culture dimensions identified by Hofstede, therefore, when conducting a study that involves examining the role of national culture, especially when it is a cross country study, including all dimensions of national culture might be of advantage because each dimension measures a different aspect in the culture and while some of the dimensions do not influence the adoption in one country, it might affect it in another.

A similar framework, which integrated TAM, TPB, and trust, was proposed and validated by Horst et al. (2007) to study the adoption of E-government services in the Netherlands. The data were collected via questionnaires that were distributed at different location in multiple cities in the Netherlands. Structural Equation Modelling (SEM) was used to analyse the data. The researchers split the data into two and used the first half to test and simplify the proposed model. The second half of the data were used to verify if the simplified model is applicable to other samples or not. The hypothesised relationships between different variables were either valid for both groups, valid for only one group, or rejected by both. The study concluded that perceived usefulness of E-services in general has a positive influence on the intention to adopt of E-government, while the perceived usefulness is predicted by subjective norms, perceived behavioural control, risk perception, and personal experience with E-services. The study also revealed that trust in the government affects trust in E-government, which in turns impact perceived usefulness of E-government and worry about E-government. Moreover, perceived behavioural control and risk perception have influence on trust in E-government, while personal experience affects risk perception, and perceived usefulness of E-services affects the perceived usefulness

of E-government. Although Horst et al. (2007) aimed to design a theoretical model to predict citizens' intention to adopt E-government services based on data collected from citizens, the sample size of the study was small to begin with. In addition, the researchers split the data into two groups which made the sample used for designing the model even smaller. Moreover, the researchers have integrated two constructs of perceived usefulness in their proposed model: one to measure the perceived usefulness of E-service in general (using nine measuring items), while the other measures the perceived usefulness of E-government services (using four measuring items). The researchers might have intented to do that in order to find if the citizens' perception of E-service usefulness in general differs from their perception of the usefulness of E-government services, however, by including these two similar constructs, the participants might have answered the questionnaires with bias or confusion. In addition, the final construct that the research aimed to predict was the intention to adopt E-government services. Measuring the perceived usefulness of E-service can deter from focusing on the constructs affecting the adoption of E-government, especially since the usefulness of E-government service could be measured individually, and citizens' adoption of other E-services could have been measured in a more simple way. Moreover, the proposed model suggested there is a significant relationship between trust in E-government and perceived usefulness of E-governmnet services, while perceievd usefulness of E-service was not proposed to have a general trust construct as an antecedent. Many previous studies have found that trust can influence adoption positively or negatively. Therefore, if Horst et al. (2007) have integrated a general trust factor as an antecedent to the perceived usefulness of E-service, the findings might be different and perceived usefulness of E-service might have a stronger or a less promenant influence on the adoption. Intrestingly, the study finds that perceived usefulness of E-service has a significant influence on the intention to adopt E-government services, while perceived usefulness of E-government service does not have any relation to the intention to adopt. These findings of Horst et al. (2007) study could have been more clearly drawn and stated if citizens' adoption of other E-services was measured in a different way,

such as including a general trust construct as an antecedent of perceived usefulness of E-service. Also, having the final construct to measure adoption of E-government/E-service could have been another solution, however, as the adoption of E-government is linked with a specific organisation, the participants can answer the questions related to that with a specific referal point (a.k.a. the government). The same thing could not be said about E-service because there are many E-services which are managed by different organisation and produce different values, thus the participants will not have a specific referal point when answering the questionnaires.

A more recent study was conducted in the Netherlands by Seo and Bernsen (2016) to compare the attitudes of E-government users and non-users in a rural and urban municipality toward E-government. The researchers proposed and validated a model to examine the differences between the four defined groups using factors based on previous IS acceptance theories. The proposed model included enabling factors, consisting of perceived behavioural control, perceived usefulness, perceived ease of use and subjective norm, inhibiting factors, consisting of perceived risk and resistance to change, trust as an antecedent of perceived risk, and an environmental factor which is the geographical closeness between citizen's house and his/her city hall. The data used to validate the proposed model were collected through questionnaires from 337 participants. The proposed hypotheses were evaluated for each of the four defined groups. Seven of the proposed hypotheses were supported for all groups: perceived usefulness has significant positive effect on intention to use, distance has a significant negative effect on perceived usefulness, perceived ease of use has significant positive effect on perceived usefulness, perceived behavioural control has significant positive effect on intention to use, perceived ease of use has a significant positive effect on perceived behavioural control, perceived necessary knowledge has significant positive effect on perceived behavioural control, and trust has a significant negtive effect on perceived risk. The remaining hypotheses were supported for some of the groups without the others. Distance has significant negative influence on the intention to use for both rural groups. For the rural and urban user groups, perceived ease of use has significant positive effect on intention

to use, while for the non-user groups, this hypothesis was not significant. The effect of perceived facilitating conditions on perceived behavioural control was only significant for the rural non-user group. On the other hand, perceived risk showed to have significant negative effect on intention to use for all groups except urban users. Finally, the subjective norms has significant positive effect on intention to use for the rural users only. Seo and Bernsen (2016) concluded that rural residents change their attitude towards E-government more often than urban residents between the pre-adoption and post-adoption periods. Moreover, the changed attitudes of the rural residents still remain different from the attitude of the urban residents. In addition, the researchers revealed that it is crucial to understand the characteristics of each municipality and its residents when studying E-government.

In Turkey, Ozkan and Kanat (2011) proposed and validated an extended TPB model to predict citizens' intention to use E-government. The data were collected through online questionnaires completed by university students. The study focused on the adoption of the student loan services in Turkey. The analysed data proved that perceived behavioural control, trust, and attitude are the main factors influencing citizens' Intention. The perceived behavioural control showed to have the second largest direct effect on intention, while attitude had the most direct influence on intention. Trust had a direct and indirect influence on intention through attitude. The study also revealed that each of the main factors had two antecedents. For trust, it was trust in the Internet and trust in the government. For attitude, it was perceived usefulness and perceived ease of use. Finally, for perceived behavioural control, it was perceived ease of use and beliefs on local factors. Also, there was a direct effect from perceived ease of use on perceived usefulness. Although the sample was representative of the population since the study focused on one E-government service that only targets university students, the results of the study cannot be generalised to other E-government services since, as previously mentioned, the target of each E-government service is different. The researchers also have stated that one of the limitations of their study is that the influence of trust on the perceived behavioural control could not be examined due to non-significant path loading.

Kurfalı et al. (2017) have also investigated the factors affecting E-government adoption in Turkey. The researchers adopted the UTAUT model to conduct their research and integrated two additional factors: trust in the Internet and trust in the government. The researchers collected 529 useable questionnaires from different regions of Turkey using purposive sampling, and analysed the data using SEM. The research concluded that performance expectancy, social influence, facilitating conditions and trust of the Internet have positive influence on behavioural intention to use E-government services. In addition, the researchers examined the influence of the two trust factors on performance expectancy and found that both factors have positive influence. The findings also showed that effort expectancy and trust of the government do not have significant influence on behavioural intention. Interestingly, Ozkan and Kanat (2011) concluded that perceived ease of use and trust of the government have significant roles in users' intention to use E-government, while Kurfalı et al. (2017) found that effort expectancy and trust of the government do not have a significant impact on users' behavioural intention. These differences could be a result of the different demographics of the samples used in the studies. The former study collected the sample from university students whose age varied between 18 and 32 years old, and most of the participants were female. On the other hand, the participants of the latter research were of older age group, and mostly consisted of males. In addition, part of the participants of the latter research are members of the Informatics Association of Turkey who have high educational level.

The UTAUT model was also validated in a study conducted by Voutinioti (2013) to identify the factors that determine citizens' adoption of E-government and investigate the role of Citizen Service Centres in Greece. The data were collected using questionnaires. The results of the analyses concluded that social influence, performance expectancy, and trust of the Internet have significant positive influence on behavioural intention. These findings are similar to the findings of Kurfalı et al.'s (2017) study. However, Voutinioti (2013) found that trust in the government and effort expectancy also have significant effects on behavioural intention, which is unlike the conclusion drawn by Kurfalı et al. (2017). On the other hand, when

Weerakkody et al. (2013) validated UTAUT in Saudi Arabia, they found that trust in the Internet and social influence do not have significant influence on the behavioural intention. These differences in the findings could be attributed to the different cultures of these countries, the difference in the maturity level of the evaluated E-government system, or the demographic aspect of the sample. Voutinioti (2013) also found that trust in the Citizen Service Centres and social influence have significant positive impact on the behavioural intention, while behavioural intention and facilitating conditions have significant positive influence on use behaviour.

In 2005, Welch et al. conducted a study to investigate the relationships between Internet use, citizen satisfaction with E-government, and trust in government. The researchers used a secondary data obtained from the Council for Excellence in Government in U.S. Because the data were originally collected for other purposes than their study, Welch et al. (2005) selected and customised the measures for the identified constructs. The data analysis showed that website use has a positive relationship with E-government and website satisfaction. Also, E-government and website satisfaction have positive relationship with trust in the government. However, it was noted that citizens who had bad experience when using the E-government website, they were dissatisfied with the E-government and the website, and as a result their trust in the government is affected.

Bélanger and Carter (2008) conducted a study to analyse the influence of trust and risk on the intention to use E-government. The researchers proposed a model consisting of five variables: disposition of trust, trust of the government, trust of the Internet, perceived risk, and intention to use. The data were collected via paper-based questionnaires from two different locations: a community concert and an undergraduate class. SEM was used to analyse the data. Bélanger and Carter (2008) concluded that disposition of trust has a positive impact on trust of the government and trust of the Internet, while trust of the government and trust of the Internet have direct positive influence on the intention to use. Also, they found that only trust of the government has a negative impact on perceived risk, and interestingly, perceived risk was found to be positively influencing the intention to use, which is the opposite

of what was hypothesised. However, perceived risk showed to have a significant negative impact on the intention to use in E-commerce literature. This finding was justified by stating that it might have to do with the differences between E-commerce and E-government such as the reason of existence. Studying the impact of trust on the adoption of E-government had been examined in many research, however, these studies rarely included perceived risk as a factor that affect the adoption. Bélanger and Carter (2008) proposed a mediation for the relationship between trust and intention to use perceived, in which perceived risk is the mediator. Furthermore, a direct relationship between trust and intention to use was proposed. On the other hand, Horst et al. (2007) proposed a mediating relationship in which trust mediates the influence of perceived risk on perceived usefulness. In the former study, the direct relationships between trust and intention to use were significant while only one of the mediated relationships was significant, which was between trust of the government and perceived risk. As for the latter study, the proposed mediated relationship was significant. Gefen et al. (2003) conducted a literature review to investigate the relationship between trust and perceived risk. The researchers clarified that in the IT/IS literature, many studies have proposed a mediating relationship in which trust affects perceived risk which as a result impacts the intention to use, while there is very limited research where trust is suggested to mediate the relationship between perceived risk and intention to use.

Shareef et al. (2011) conducted a study that focused on identifying the factors affecting the adoption of E-government at different stages of service maturity. The researchers proposed a new model to achieve this objective. The framework consisted of eleven constructs that were direct antecedents of E-government adoption, namely: perceived compatibility, perceived awareness, availability of resources, computer self-efficacy, perceived ability to use, multilingual option, perceived information quality, perceived trust, perceived functional benefits, perceived image, and perceived service response. The data were collected through self-administered questionnaires distributed in four cities in Ontario, Canada. The researchers have split E-government adoption into two categories: adoption of the

static phase, and adoption of the interactive phase. The former is concerned with the adoption of E-government when it is in its early implementation phase and can only offer information through static pages. During this stage, the citizens adopt E-government to retrieve some information through the E-government website. The adoption of the interactive phase refers to adopting E-government when it is more developed to interact with the government and conduct transactions. Shareef et al. (2011) analysed the collected data to determine the main factors affecting the adoption of E-government in each stage. The analysis showed that during the static phase, perceived awareness, perceived ability to use, and perceived functional benefits were the most influential factors to affect the adoption of E-government. On the other hand, during the interactive phase, perceived awareness, perceived ability to use, perceived image, perceived trust, and perceived information quality were the significant predictors of E-government adoption. Surprisingly, the perceived information quality showed to have a negative relationship with the adoption of E-government in the interactive stage. The researchers explained this finding by stating that if the information provided in the E-government website were perceived as complete, up-to-date, effective and sufficient to answer citizens' questions, then the citizen will not send queries through E-government because the required information is clearly provided. A summary of the reviewed literature on citizens' adoption of E-government is provided in Table 5.

Table 5: Summary of Reviewed Literature on Citizens' E-government Adoption

Authors	Journal	Focus of the Study	Summary of Findings
Citizens' Adoption of E-government in the Developing Countries			
Hamner and Al-Qahtani (2009)	Government Information Quarterly	Willingness of citizens to adopt E-government in Saudi Arabia	Age $\rightarrow^{(-)}$ E-government Acceptance Internet Knowledge $\rightarrow$ E-government Acceptance Security $\rightarrow$ E-government Acceptance Education Level $\rightarrow^{NS}$ E-government Acceptance
Weerakkody et al. (2013)	International Journal of Information Management	Examining the role of intermediaries on the diffusion of E-government in Saudi Arabia using the UTAUT model	Performance Expectance $\rightarrow$ Behavioural Intention Effort Expectancy $\rightarrow^{(-)}$ Behavioural Intention Trust of the Intermediary $\rightarrow$ Behavioural Intention Facilitating Conditions $\rightarrow$ Usage Behaviour Trust in the Internet $\rightarrow^{NS}$ Behavioural Intention Social Influence $\rightarrow^{NS}$ Behavioural Intention
Alateyah et al. (2014)	International Journal of Innovation, Management and Technology	Identifying factors affecting E-government adoption from the perspective of government employees and experts	Culture Usability Accessibility Relative Advantage Compatibility Image Complexity Computer and Information Literacy Gender Age Technical Infrastructure Lack of Awareness Service Quality Reliability Availability Speed of Delivery Information Quality Multi-lingual Education
Alshehri et al. (2012)	International Journal of Advanced Computer Science and Applications	Identifying the barriers of E-government adoption in Saudi Arabia from the perspectives of the citizens and IT staff	Common barriers identified by the citizens and IT staff: Lack of technical support from government's websites support Lack of knowledge about the E-government services The availability and reliability of Internet connection IT Infrastructural weakness of government public sectors

Alghamdi and Beloff (2014)	Proceedings of the 2014 Federated Conference on Computer Science and Information Systems	Proposing a model to identify the factors affecting E-government adoption in Saudi Arabia	The model is not validated.
Al-Ghaith et al. (2010)	The Electronic Journal on Information Systems in Developing Countries	Investigating the factors influencing the adoption and usage of E-service in Saudi Arabia	Perceived Complexity $\rightarrow^{(-)}$ E-service Adoption Privacy $\rightarrow$ E-service Adoption Compatibility $\rightarrow$ E-service Adoption Quality of the Internet $\rightarrow$ E-service Adoption Relative Advantage $\rightarrow$ E-service Adoption Gender $\rightarrow$ E-service Adoption
Alfalah et al. (2017)	Hawaii International Conference on System Sciences	Use and diffusion of E-government among older adults in Saudi Arabia	Perceived Website Assistance $\rightarrow$ Intention to Use Compatibility $\rightarrow$ Intention to Use Complexity $\rightarrow^{(-)}$ Intention to Use Trust of the Internet $\rightarrow$ Intention to Use Perceived Risk $\rightarrow^{(-)}$ Intention to Use Disposition of Trust $\rightarrow$ Trust of the Government Disposition of Trust $\rightarrow$ Trust of the Internet Trust of the Internet $\rightarrow^{(-)}$ Perceived Risk Trust of the Government $\rightarrow^{(-)}$ Perceived Risk Primary Influence $\rightarrow^{NS}$ Intention to Use Perceived Cyber Risk $\rightarrow^{NS}$ Intention to Use Relative Advantage $\rightarrow^{NS}$ Intention to Use Image $\rightarrow^{NS}$ Intention to Use Trust of the Government $\rightarrow^{NS}$ Intention to Use

Alharbi et al. (2017)	Behaviour and Information Technology	The effect of security and its antecedents on the intention to use E-government services	User Interface Quality → Security Perception Security Culture → Security Perception Cybersecurity Law → Security Perception Security Perception → Trust Privacy Perception → Trust Trust → Intention to Use Performance Expectancy → Intention to Use Habit → Intention to Use Facilitating Conditions → Intention to Use Social Influence → Intention to Use Tangible Security Features →(-) Security Perception General Information Security Awareness →NS Security Perception Effort Expectancy →NS Intention to Use
Fakhoury and Aubert (2015)	International Journal of Information Management	Examining the roles of active citizenship and trustworthiness on the behavioural intention to adopt E-government in Lebanon	Active citizenship → Behavioural Intention Trustworthiness → Behavioural Intention
Alomari et al. (2012)	Information Technology & People	Identifying the factors influencing citizens' intention to adopt E-government in Jordan using an integrated framework consisting of constructs from TAM and DOI	Trust in the Government → Intention to Adopt Beliefs →(-) Intention to Adopt Website Design → Intention to Adopt Complexity → Intention to Adopt Perceived Usefulness → Intention to Adopt Trust in the Internet →NS Intention to Adopt
Al Khattab et al. (2015)	Journal of Service	The effects of Trust and Risk on user's Intention	Perceived Usefulness → Intention to Use E-government Perceived Ease of Use → Intention to Use E-government Perceived Risk →(-) Intention to Use E-government

	Science and Management	to adopt E-government in Jordan	Trust in the Internet → Intention to Use E-government Perceived Ease of Use → Perceived Usefulness Trust in the Internet →(-) Perceived Risk Trust in the Government →(-) Perceived Risk Trust in the Government →NS Intention to Use E-government
Abu-Shanab (2015)	Government Information Quarterly	Factors affecting citizens' intention to use E-government websites in Jordan	Information Quality → Intention to Use E-government Websites Information Accessibility → Intention to Use E-government Websites Accountability → Intention to Use E-government Websites Collaboration → Intention to Use E-government Websites Empowerment → Intention to Use E-government Websites
Al-Hujran et al. (2015)	Computers in Human Behavior	Factors influencing citizens' attitude to adopt E-government in Jordan	Perceived Public Value → Attitude Perceived Ease of Use → Attitude Attitude → Behavioural Intention Perceived Ease of Use → Perceived Public Value Perceived Public Value →NS Behavioural Intention Trust → Perceived Public Value Trust → Perceived Ease of Use Uncertainty Avoidance → Perceived Public Value Power Distance →(-) Perceived Public Value Masculinity/Femininity →NS Perceived Public Value Individualism/Collectivism →NS Perceived Public Value Long Term Orientation →NS Perceived Public Value Uncertainty Avoidance → Perceived Ease of Use Power Distance → Perceived Ease of Use Masculinity/Femininity →NS Perceived Ease of Use Individualism/Collectivism →NS Perceived Ease of Use Long Term Orientation →NS Perceived Ease of Use
Rana and Dwivedi (2015)	Government Information Quarterly	Examining the factors affecting the intention to adopt an Indian E-	Outcome Expectation → Affect Self-efficacy → Affect Social influence → Outcome expectation

		government system called online public grievance redressal system (OPGRS)	Self-efficacy → Outcome expectation Affect → Behavioural intention Social Influence → Behavioural intention Anxiety →(-) Behavioural intention
Sharma and Mishra (2017)	Government Information Quarterly	The role of intermediaries in the adoption of public access outlet for delivery of E-government services in developing countries	Accessibility → Intention to Use Usefulness → Intention to Use Service Quality → Intention to Use Reliability → Service Quality Positive Word of Mouth → Intention to Use Ease of obtaining services → Intention to Use Behaviour of the Intermediary → Service Quality Presence of Physical Facilities → Service Quality One-stop Shop Feature →NS Intention to Use Social Influence →NS Intention to Use Trusting Beliefs →NS Intention to Use Awareness →NS Intention to Use Accessibility →NS Intention to Use Usefulness mediates the effect of Ease of Use on the Intention to Use
Lean et al. (2009)	International Journal of Information Management	Investigating the factors influencing citizens' intention to use E-government in Malaysia	Perceived Strength of Online Privacy → Trust Perceived Strength of Online non-Repudiation → Trust Perceived Strength of Authentication →NS Trust Trust → Intention to Use E-government Perceived Usefulness → Intention to Use E-government Complexity →(-) Intention to Use E-government Relative Advantage → Intention to Use E-government Image → Intention to Use E-government
Lin et al. (2011)	Government Information Quarterly	Identifying the factors affecting citizens' adoption of E-government in Gambia	Attitude → Behavioural Intention Perceived Ease of Use → Attitude Perceived Ease of Use → Perceived Usefulness Information Quality → Perceived Usefulness

Mensah and Mi (2017)	International Journal of Public Administration	Examining the moderating effect of age on the influence of computer self-efficacy on the intention to use E-government in Ghana	Computer Self-efficacy → Intention to Use Age →^{NS} Intention to use Age moderates the positive relationship between Computer Self-efficacy and Intention to Use.
Teo et al. (2009)	Journal of Management Information Systems	Examining the role of trust using the updated IS Success Model as the theoretical framework	Trust in the Government → Trust in E-government Website Trust in the Technology →^{NS} Trust in E-government Website Trust in E-government Website → System Quality Trust in E-government Website → Information Quality Trust in E-government Website → Service Quality Information Quality → Continuous Intention Information Quality →^{NS} Satisfaction System Quality →^{NS} Continuous Intention System Quality → Satisfaction Service Quality →^{NS} Continuous Intention Service Quality → Satisfaction Satisfaction → Continuous Intention Passive Group: Information Quality → Satisfaction System quality is not significantly related to Satisfaction Active Group: Trust in Technology → Trust in E-government Website None of the website quality aspects have significant relationship with the Continuous Intention to use E-government websites
Lu and Nguyen (2016)	Modern Economy	Exploring the factors affecting the adoption of online tax filing in Vietnam	Performance Expectancy → Intention to Use Effort Expectancy → Intention to Use Social Influence → Intention to Use Information Quality → Intention to Use System Quality → Intention to Use

			Service Quality	→	Intention to Use
Jiang (2011)	International Conference on Management and Service Science	Proposing an E-government adoption model from the perspective of the users	Information Quality	→	User Satisfaction
			Information Quality	→	Perceived Usefulness
			Design and Function	→	User Satisfaction
			Design and Function	→	Perceived Usefulness
			Reliability	→	User Satisfaction
			Reliability	→	Perceived Usefulness
			Security and Privacy	→ NS	User Satisfaction
			Security and Privacy	→	Perceived Usefulness
			Perceived Usefulness	→	User Satisfaction
			Perceived Usefulness	→	Continuous Intention
			User Satisfaction	→	Continuous Intention
Phang et al. (2006)	IEEE Transactions on Engineering Management	Identifying the factors affecting senior citizens' acceptance and intention to use E-government services	Perceived Usefulness	→	Intention to Use
			Perceived Ease of Use	→	Intention to Use
			Internet Safety Perception	→	Intention to Use
			Self-actualisation	→	Perceived Usefulness
			Resource Savings	→	Perceived Usefulness
			Preference for Human Contact	→ NS	Perceived Usefulness
			Computing Support	→	Perceived Ease of Use
			Computer Anxiety	→(-)	Perceived Ease of Use
			Declining Physiological Condition	→ NS	Perceived Ease of Use
			Perceived Ease of Use	→	Perceived Usefulness
			Education	→	Intention to Use
			Gender	→ NS	Intention to Use
			Age	→ NS	Intention to Use
			Internet Experience	→ NS	Intention to Use
Citizens' Adoption of E-government in the Developed Countries					
Carter and Bélanger (2004)	Proceedings of the 37th Annual Hawaii	Identifying the primary factors affecting E-government adoption	Perceived Usefulness	→	Intention to Use
			Relative Advantage	→	Intention to Use
			Compatibility	→	Intention to Use

	International Conference on System Sciences	using an integrated framework	Perceived Ease of Use Image Trust in the Government Trust in the Internet	→ NS → NS → NS → NS	Intention to Use Intention to Use Intention to Use Intention to Use
Carter and Bélanger (2005)	Information Systems Journal	Examining the factors affecting the adoption of E-government using a TAM, DOI, and trust integrated framework	Compatibility Perceived Ease of Use Perceived Trustworthiness Perceived Usefulness Relative Advantage Image	→ → → → NS → NS → NS	Intention to Use Intention to Use Intention to Use Intention to Use Intention to Use Intention to Use
Carter and Weerakkody (2008)	Information Systems Frontiers	Examining the influence of salient factors in U.S. E-government adoption on the adoption of E-government in UK	Trust Relative Advantage Internet Accessibility Internet Skill	→ → → NS → NS	Intention to Use Intention to Use Intention to Use Intention to Use
Carter et al. (2016)	Information Systems Management	Citizen adoption of E-government services in the US and UK	US sample: Trust of the Internet Trust of the Government Perceived Usefulness Perceived Ease of Use Perceived Ease of Use Disposition to Trust Disposition to Trust Trust of the Internet Trust of the Government Perceived Risk UK sample: Trust of the Internet Trust of the Government Perceived Usefulness	 → → → → → → → → (-) → NS → NS → → NS →	 Intention to Use Intention to Use Intention to Use Intention to Use Perceived Usefulness Trust of the Internet Trust of the Government Perceived Risk Perceived Risk Intention to Use Intention to Use Intention to Use Intention to Use

			Perceived Ease of Use → Intention to Use Perceived Ease of Use → Perceived Usefulness Disposition to Trust → Trust of the Internet Disposition to Trust → Trust of the Government Trust of the Internet →^{NS} Perceived Risk Trust of the Government →^{NS} Perceived Risk Perceived Risk →$^{(-)}$ Intention to Use Combined sample: Trust of the Internet → Intention to Use Trust of the Government →^{NS} Intention to Use Perceived Usefulness → Intention to Use Perceived Ease of Use → Intention to Use Perceived Ease of Use → Perceived Usefulness Disposition to Trust → Trust of the Internet Disposition to Trust → Trust of the Government Trust of the Internet →$^{(-)}$ Perceived Risk Trust of the Government →^{NS} Perceived Risk Perceived Risk →^{NS} Intention to Use
Gilbert et al. (2004)	International Journal of Public Sector Management	Identifying factors affecting citizens' willingness to use E-government over the traditional method to receive government services	Saving Time → Willingness to Use E-government Saving Cost → Willingness to Use E-government Experience → Willingness to Use E-government Information Quality → Willingness to Use E-government Financial Security → Willingness to Use E-government Low Stress → Willingness to Use E-government Trust → Willingness to Use E-government Visual Appeal → Willingness to Use E-government
Kolsaker and Lee-Kelley (2008)	International Journal of Public Sector Management	Understanding citizens' attitude toward E-government and E-governance	Ability to Satisfy Personal Needs → Intention to Adopt E-government Portal Features → Intention to Adopt E-government Dialogue with the Local and Central Government → Intention to Adopt E-government

			Ease of Information Retrieval → Intention to Adopt E-government Portal Reliability → Intention to Adopt E-government
Warkentin et al. (2002)	Electronic Markets	Proposing an E-government adoption model that incorporates multiple trust aspects and other constructs from TAM, TPB, and Hofstede's national culture values	The proposed model was not validated empirically.
Horst et al. (2007)	Computers in Human Behavior	Understanding the role of risk perception and trust in the intention to adopt E-government	Significant paths in both samples: Perceived Usefulness of E-services → Intention to Adoption of E-government Personal Experience with E-services → Perceived Usefulness of E-services Trust in E-government → Perceived Usefulness of E-government Risk Perception →(-) Trust in E-government Trust in E-government →(-) Worry about E-government Non-significant paths: Personal Experience with E-services → NS Perceived Usefulness of E-government Personal Experience with E-services → NS Perceived Behavioural Control Perceived Behavioural Control →NS Intention to Adoption of E-government Perceived Behavioural Control → NS Perceived Usefulness of E-government Paths significant in one sample: Subjective Norms → Perceived Usefulness of E-services Risk Perception →(-) Perceived Usefulness of E-services Perceived Behavioural Control → Perceived Usefulness of E-services Perceived Behavioural Control → Trust in E-government Personal Experience → Risk Perception

			Perceived Usefulness of E-services → Perceived Usefulness of E-government
Seo and Bernsen (2016)	Government Information Quarterly	Comparison between the attitudes of E-government users and non-users in a rural and urban municipality towards E-government	Rural non-users: Perceived Usefulness → Intention to Use Distance →(-) Perceived Usefulness Perceived Ease of Use → Perceived Usefulness Perceived Ease of Use → Perceived Behavioural Control Trust →(-) Perceived Risk Perceived Necessary Knowledge → Perceived Behavioural Control Perceived Behavioural Control → Intention to Use Distance →(-) Intention to Use Perceived Ease of Use →NS Intention to Use Perceived Facilitating Conditions → Perceived Behavioural Control Perceived Risk →(-) Intention to Use Subjective Norms →NS Intention to Use Urban non-users: Perceived Usefulness → Intention to Use Distance →(-) Perceived Usefulness Perceived Ease of Use → Perceived Usefulness Perceived Ease of Use → Perceived Behavioural Control Trust →(-) Perceived Risk Perceived Necessary Knowledge → Perceived Behavioural Control Perceived Behavioural Control → Intention to Use Distance →NS Intention to Use Perceived Ease of Use →NS Intention to Use Perceived Facilitating Conditions →NS Perceived Behavioural Control Perceived Risk →(-) Intention to Use Subjective Norms →NS Intention to Use

			Rural users: Perceived Usefulness → Intention to Use Distance →(-) Perceived Usefulness Perceived Ease of Use → Perceived Usefulness Perceived Ease of Use → Perceived Behavioural Control Trust →(-) Perceived Risk Perceived Necessary Knowledge → Perceived Behavioural Control Perceived Behavioural Control → Intention to Use Distance →(-) Intention to Use Perceived Ease of Use → Intention to Use Perceived Facilitating Conditions →NS Perceived Behavioural Control Perceived Risk →(-) Intention to Use Subjective Norms → Intention to Use Urban users: Perceived Usefulness → Intention to Use Distance →(-) Perceived Usefulness Perceived Ease of Use → Perceived Usefulness Perceived Ease of Use → Perceived Behavioural Control Trust →(-) Perceived Risk Perceived Necessary Knowledge → Perceived Behavioural Control Perceived Behavioural Control → Intention to Use Distance →NS Intention to Use Perceived Ease of Use → Intention to Use Perceived Facilitating Conditions →NS Perceived Behavioural Control Perceived Risk →NS Intention to Use Subjective Norms →NS Intention to Use
Ozkan and Kanat (2011)	Government Information Quarterly	Proposing and validating an extended TPB model to predict citizens'	Perceived Behavioural Control → Intention Trust → Intention Attitude → Intention

		intention to adopt E-government	Trust → Attitude Trust in the Internet → Trust Trust in the Government → Trust Perceived Usefulness → Attitude Perceived Ease of Use →(-) Attitude Perceived Ease of Use → Perceived Behavioural Control Beliefs on Local Factors → Perceived Behavioural Control Perceived Ease of Use → Perceived Usefulness
Kurfalı et al. (2017)	Computers in Human Behavior	Investigating the factors affecting E-government adoption in Turkey through utilising UTAUT model and integrating two trust factors	Performance Expectancy → Behavioural Intention Social Influence → Behavioural Intention Facilitating Conditions → Behavioural Intention Trust of the Internet → Behavioural Intention Trust of the Internet → Performance Expectancy Trust of the Government →NS Behavioural Intention Trust of the Government → Performance Expectancy Effort Expectancy →NS Behavioural Intention
Voutinioti (2013)	Procedia Technology	Identifying the factors affecting E-government adoption in Greece through utilising UTAUT model in Greece and investigating the role of Citizen Service Centre	Behavioural Intention → Use Behaviour Facilitating Conditions → Use Behaviour Performance Expectancy → Behavioural Intention Effort Expectancy → Behavioural Intention Social Influence → Behavioural Intention Trust of the Internet → Behavioural Intention Trust of the Government → Behavioural Intention Trust of the Citizen Service Centre → Behavioural Intention
Welch et al. (2005)	Journal of Public Administration Research and Theory	Investigating the relationships between Internet use, citizen satisfaction with E-government, and trust in government	Website use → E-government Satisfaction Website use → Website Satisfaction E-government Satisfaction → Trust in the Government Website Satisfaction → Trust in the Government

Bélanger and Carter (2008)	The Journal of Strategic Information Systems	Examining the role of trust and risk in the intention to use E-government	Disposition of Trust	→	Trust of the Government
			Disposition of Trust	→	Trust of the Internet
			Trust of the Government	→	Intention to Use
			Trust of the Internet	→	Intention to Use
			Trust of the Government	→(-)	Perceived Risk
			Trust of the Internet	→ NS	Perceived Risk
			Perceived risk	→ NS	Intention to Use
Shareef et al. (2011)	Government Information Quarterly	Identifying the factors affecting the adoption of E-government in two different maturity levels using a proposed E-government adoption framework	During Static Phase:		
			Perceived Awareness	→	E-government Adoption
			Perceived Ability to Use	→	E-government Adoption
			Perceived Functional Benefits	→	E-government Adoption
			During Interactive Phase:		
			Perceived Awareness	→	E-government Adoption
			Perceived Ability to Use	→	E-government Adoption
			Perceived Image	→	E-government Adoption
			Perceived Trust	→	E-government Adoption
			Perceived Information Quality	→(-)	E-government Adoption

((-) negative relationship, NS insignificant relationship)

2.9 Critique and Limitations of Previous Research

Based on the conducted literature review, it can be concluded that the factors affecting E-government adoption in Saudi Arabia is a gap in the literature that needs further research. Although the conducted literature review revealed that the subject of E-government adoption was examined in different studies, the number of studies that have examined the factors affecting E-government in Saudi Arabia is very limited and the existing studies in this context are not without limitations. The study conducted by Weerakkody et al. (2013) in Saudi Arabia focused on understanding the role of intermediaries in the adoption of E-government. The research was only concerned with adoption of a specific E-government service, which is the traffic services. Moreover, the sample was only limited to males who live in Madinah city. Generalising the results of this study to the adoption of the Saudi E-government is not possible since it only focused on one E-government service and the data were collected only from males who live in a specific city. Even the applicability of the concluded results on other Saudi cities may not be possible due to economic, social and cultural factors (Weerakkody et al., 2013). Although the researchers have justified their decision of sampling only male citizens by stating that the target population of the traffic services is the male citizens and that this service is very commonly adopted among citizens, the limitations of not including female citizens in their study, focusing only on one E-government service, and collecting the data from only one city could not be declined. The Saudi E-government provides various services to the citizens. Some of these services, such as the traffic services, are expected to be used primarily by males due to the gender roles enforced in Saudi Arabia, however, there are other E-government services that are targeted toward both male and female citizens, such as the E-employment service which is known as 'Jadara', and the application for social security. In order to gain more understanding about the role of intermediaries in the adoption of E-government, Weerakkody et al. (2013) could have used one of the services that target both genders as a referral point in their survey, or they could have referred to an additional service that is used by the female citizens beside the traffic service. This might have resulted in clearer

results regarding how frequently the intermediaries' assistance is needed to make E-government applications for males and for females. Also, it would be interesting to find the level of trust that female citizens place in the intermediaries since the intermediaries in Saudi Arabia are males, especially knowing that in Saudi Arabia, due to some religious and cultural reasons, the extent of interaction between both genders and the personal information exchanged between them is very constricted. Similarly, Alfalah et al. (2017) collected their data only from one city in Saudi Arabia although their population includes all citizens who are 50 years old or older in Saudi Arabia. Therefore, the results of their study might not be applicable to all of their population since the citizens in other parts of the country might perceived relative advantage as an important factor because they do not have a government office near them. Moreover, the study conducted by Alfalah et al. (2017) only focused on older adults, therefore, the results of their study cannot be applied to E-government adoption by the citizens of different age groups.

On the other hand, the study conducted by Hamner and Al-Qahtani (2009) was not conducted on an existing E-government system. The research aimed to find if there was an E-government system, would the citizens adopt it? The research did not only examine the adoption of a hypothetical system, but the sample was only drawn from citizens living in the capital city of Saudi Arabia, Riyadh. Many variables that proved to be of great influence in other E-government adoption research were not examined in the study conducted by Hamner and Al-Qahtani (2009) because it could not be measured in a hypothetical system. Therefore, the results of the study conducted by Hamner and Al-Qahtani (2009) could not be used to identify the factors affecting the adoption of E-government since there are much more variables involved in the adoption of E-government that were not used in their study, while the variables they have used did not measure the citizens' answers based on a real E-government system. While Hamner and Al-Qahtani (2009) only integrated few factors in their study, Alshehri et al. (2012) and Alateyah et al. (2014) provided an insight on what might affect E-government adoption from the perspective of different groups. Although the latter two studies have identified various factors as salient in E-

government adoption, the effects of these identified factors were not examined empirically.

Based on the literature review, the most integrated IS adoption models are TAM, DOI, UTAUT, and TPB. Multiple studies conducted in the developing and developed countries have integrated both TAM and DOI into their framework (Lean et al., 2009, Alomari et al., 2012, Carter and Bélanger, 2004, Carter and Bélanger, 2005). Relative advantage, complexity, perceived usefulness, and perceived ease of use were the common salient factors in these studies. Compatibility also showed to have an important role in the adoption in the developed countries. On the other hand, the UTAUT model was validated in in three countries, Saudi Arabia, Turkey, and Greece, in order to examine the factors affecting E-government adoption. Three factors were found to be salient in the three studies, which are: performance expectancy, social influence, and facilitating conditions. Also, out of the reviewed literature, two studies that were conducted in different countries: the Netherlands and Turkey, have integrated TPB in their frameworks. The perceived behavioural control was found significant in both studies.

Although the finding of the previous research conducted on E-government adoption can provide some useful input on which factors might be salient in E-government adoption, however, the results of these studies cannot be applied to citizens' adoption of E-government in Saudi Arabia for multiple reasons:

1. Some studies had a small sample size which affected the strength and generalisability of their findings (e.g. Lin et al., 2011, Horst et al., 2007)
2. Most of the studies were conducted in countries other than Saudi Arabia, which have different characteristics from Saudi Arabia, such as in the ICT infrastructure, literacy, and the availability of human skills. The study conducted by Carter et al. (2016) showed how even in countries that have similar characteristics, there are difference in the factors affecting E-government adoption in these countries. Moreover, many of these studies have focused on a specific E-government service provided in these countries

(e.g. Ozkan and Kanat, 2011, Phang et al., 2006, Rana and Dwivedi, 2015). Therefore, the findings of these studies are affected by the quality of these E-government services beside other aspects such as self-efficacy, literacy, computer literacy, resource availability, and many other factors that vary in significance from one country to another.

3. The sample in some studies were not representative of the population. For example, Carter and Bélanger (2004) have collected their data from undergrad students, although their study aimed to find citizens' adoption of E-government. Teo et al. (2009) have also collected their data primarily from university students. Although they have conducted several interviews with working professionals, still there is a possibility that the student sample might not be entirely representative of the E-government users.
4. Some of the studies did not empirically validate their proposed framework (e.g. Warkentin et al., 2002, Alghamdi and Beloff, 2014) or have conducted their studies based on a hypothetical system (e.g. Hamner and Al-Qahtani, 2009).
5. Most of the reviewed studies have focused on the technological and social aspects. Only few of them considered examining the cultural effect through incorporating one or two of Hofstede's national culture values as cultural aspects (e.g. Lean et al., 2009, Warkentin et al., 2002), while even fewer studies have integrated all dimensions of Hofstede's national culture (Al-Hujran et al., 2015). However, previous research in the IS field have acknowledged the importance of including the cultural aspects when studying the adoption of IS. Erumban and De Jong (2006) conducted a cross-country study to examine the effect of national culture values on the adoption of ICT using Hofstede's national culture dimensions. The findings showed that there is a significant relationship between these dimensions and ICT adoption. Similarly, Bagchi et al. (2004) studied the impact of these dimensions on the adoption of six information technologies in a cross-country study. The researchers concluded that national culture dimensions are significant

predictors of most IT product adoption. Srite and Karahanna (2006) have incorporated four of the dimensions in their study and found that the espoused national culture affects individual's behaviour. A similar conclusion was drawn by Hoehle et al. (2015) in their study about users' intention to use mobile application.

6. In any given situation, when there is some degree of risk, trust is needed to alleviate the risk. Scholars have acknowledged the relationship between trust and risk (Bélanger and Carter, 2008, Warkentin et al., 2002). However, in the E-government adoption studies, limited number of research have incorporated perceived risk when examining trust (Horst et al., 2007, Bélanger and Carter, 2008), while many of the research have focused on examining the role of trust only.
7. The constructs of perceived usefulness, relative advantage, outcome expectation, and performance expectancy refer to the degree of advantage the user will gain from using the new system over the old one (Venkatesh et al., 2003). Multiple technological factors contribute to increasing perceived usefulness, such as having better security and privacy, providing accurate information, and providing good customer service. Many of these salient technological factors are included in information quality, system quality, and service quality, which are part of the IS Success Model. Among the reviewed research, only few have examined some of these factors (e.g. Abu-Shanab, 2015, Gilbert et al., 2004, Shareef et al., 2011, Lin et al., 2011), and even fewer research included all three constructs (e.g. Teo et al., 2009). On the other hand, the IS Success Model was adopted and validated by many researchers in the IS study field. For example, Pai and Huang (2011) have adopted these three construct to understand the variables affecting users' intention to use healthcare information systems, while Wang and Lai (2014) used the same constructs to examine the adoption of knowledge management systems. Wang (2008) have also examined the influence of these factors on the

intention to use E-commerce. The findings of these studies showed significance to the influence of system, service, and information quality.

8. Through conducting this literature review, it was apparent that the set of factors affecting E-government adoption in each country is unique. For example, Teo et al. (2009) and Shareef et al. (2011) have integrated information quality in their studies, which were conducted in a developing country and a developed country, respectively. The results showed that in Teo et al.'s (2009) research, information quality has a significant influence for user who are interested in using E-government to browse and read information, while Shareef et al.'s (2011) research showed that information quality has a significant influence for users who use E-government to submit requests and download forms, a.k.a. interactive users. Other studies have proved that even when conducting two studies in the same country using different samples, the results might be different. For example, Carter and Bélanger (2004) and Carter and Bélanger (2005) have conducted two studies in the United States using the same model. The data in the first study were collected from undergraduate university students, while the data for the second study were collected from citizens at a community concert. The results of these studies were different in that factors that were salient in the first study showed to be insignificant in the second research, and vice versa. Therefore, the findings of the reviewed literature cannot be applied to the context of Saudi Arabia.

Based on the previous discussion, it is suggested that identifying the factors influencing citizens' adoption of the Saudi E-government is an underexplored subject in the literature. This study aims to propose and validate a model to identify the salient factors affecting citizens' adoption of E-government in Saudi Arabia. The aforementioned eight limitations of the previous studies will be revisited in section 7.3 in order to clarify which of these limitations were overcome by this research and how they were overcome. In order to achieve the research goal, the following chapter will include a model that is proposed to study citizens' adoption of E-government in Saudi Arabia.

2.10 Summary

This chapter presented a review of the literature related to citizens' adoption of E-government. A comparison between multiple 'E' concepts was provided first, followed by a discussion of the different definitions of E-government. Next, a brief overview for each dimension of E-government was provided, followed by the benefits of E-government. After that, the chapter presented a comparison between E-government implementation and adoption through discussing the barriers of each concept. Then, an overview of the most dominant IT/IS adoption models was presented. Finally, the chapter presented a critical review of the past research conducted in the E-government adoption field, and the identified research gap was provided and justified. The following chapter is concerned with the development of the conceptual model to identify the factors affecting citizens' adoption of E-government in Saudi Arabia.

Chapter 3: Conceptual Model Development

This chapter will present the proposed conceptual model for the factors affecting the adoption of E-government based on three prominent IT/IS adoption theories: TAM, IS Success Model, and Bélanger and Carter's trust and risk model, combined with Hofstede's national culture dimensions. The integrated constructs will be introduced based on the adoption model from which they were adopted. This chapter will also provide the research hypotheses and their justifications.

3.1 Theories and Models Underpinning the Study

Citizens' adoption of E-government is affected by various factors that belong to different categories, such as technological, social, cultural, and demographical. Incorporating factors from these different perspectives in a conceptual framework can provide better understanding of the factors affecting citizens' adoption of E-government, however, the feasibility of integrating such factors from multiple perspectives in a single framework depends on the focus of the study. This research aims to identify the factors affecting citizens' adoption of E-government in Saudi Arabia, specifically adopting E-government websites for browsing, downloading information, applying/receiving government services, and/or communicating with the government. The literature review which was discussed in Chapter 1:ter 2 revealed that TAM, UTAUT, and DOI were the most commonly adapted models in studying E-government adoption, which also, according to Khan and Woosley (2011), these models are the most commonly used to study IS/IT adoption. Khan and Woosley (2011) conducted a comparison between TAM, DOI, and UTAUT. TAM was created in the field of information systems and technology adoption, while UTAUT was developed in the information technology field. Both of these models could be used to predict the adoption at the individual level. On the other hand, DOI originates from the anthropology, education, sociology, communication, and marketing fields. Also, DOI could be used to predict the adoption at the individual and organisation level. Khan and Woosley (2011) stated that DOI was the second most popular model in the IT field. Based on the conducted literature review, DOI seems to be the second most popular model used in studying E-government adoption, however, it was noted

that whenever DOI was integrated in a framework to study E-government adoption, it was mostly, if not always, coupled with another adoption model. In most cases, that other adoption model was TAM.

Despite the popularity of these adoption models, they are not without criticisms. The Diffusion of Innovation has four criticisms that were identified by Rogers (1983): pro-innovation bias, the individual blame bias, recall problem, and the issue of equality. The pro-innovation bias is the implication that an innovation must be adopted by all members of a society, and that the innovation must be diffused quickly. Also, it implies that the innovation cannot be reinvented or rejected. This bias affects the results of research adopting DOI by allowing the researcher to be more informed of fast diffusing innovations than slowly diffusing one. Also, it forces the study to focus on the adoption without paying attention to the rejection. Lastly, the pro-innovation bias allows the researcher to know more about the continued use than discontinuance (Rogers, 1983). The second criticism of DOI is the individual blame bias, which is making the individuals responsible for their own problems instead of blaming the system. For example, if an individual was a late adopter or laggard, then there must be something wrong with the individual for not adopting the innovation earlier, however, no fault can be placed on the innovation that is being diffused. The individual blame orientation can also be clearly explained as Rogers (1983) stated that it implies “if the shoe doesn't fit, there's something wrong with your foot" (p. 103). The variables used to predict innovativeness in the DOI are conceptualised in a way to measure the success and failure of the individual *within the system*, not the success or failure *of the system* itself (Rogers, 1983). The third criticism of DOI concerns the time recall. The time variable is crucial in the DOI as the diffusion occurs overtime. In order to determine when the participants have adopted the innovation, the researcher using DOI usually asks them about the date of their adoption of the innovation. The problem with this approach is that it can generate inaccurate data because there are a number of variables that affect the participant’s ability to remember accurately such as the basis of the innovation salience, education, memory, and so on (Rogers, 1983). The fourth criticism of DOI is the issue

of equality. It is important to understand that the socioeconomic inequality of a social system can increase as a result of innovation diffusion, which results in questioning whether or not the innovation diffusion has really caused any development (Rogers, 1983). These four criticisms are the most prominent ones associated with DOI.

On the other hand, the Technology Acceptance Model was criticised for its parsimony, which is also viewed as the main strength of the model by some researchers. Bagozzi (2007) explained that TAM focuses only on few constructs and expects them to predict the adoption of different technologies and explain the outcomes. Moreover, TAM does not have human and social factors, and researchers have suggested integrating other factors with TAM to improve its predictability (Taylor and Todd, 1995, Al-Hujran et al., 2015). While the TAM only focuses on the technological factors of technology adoption, the model's sole focus on the perceived benefits while failing to consider the perceived risks was viewed as a weakness (Horst et al., 2007). Besides criticising the oversimplification of TAM, the model was also criticised for leaving out other crucial factors and processes (Bagozzi, 2007). For example, TAM focuses on users' perception of the system, e.g. perceived usefulness and perceived ease of use, without trying to identify the factors that affect users' perception. Therefore, Bagozzi (2007) argued that with such a simple model, it is unreasonable to expect and believe that this simple model would explain and predict users' behaviours in various situations. Although this statement is true, it is important to note that when TAM was first proposed, Davis (1989) called for further investigation about the antecedents of perceived usefulness in order to increase its prediction and explanation of users' behaviour, which means it is not expected to use this model to predict various technology adoptions without integrating additional constructs.

The Unified Theory of Acceptance and Use of Technology is considered a more recent model that was developed based on analysing multiple previous IS/IT adoption models. The UTAUT is often described as superior to previous adoption models as the previous ones can only explain 30-40% of the variance while UTAUT can explain 70% of the variance. However, UTAUT was criticised for being overly complex (Sharma and

Mishra, 2014, Van Raaij and Schepers, 2008). Also, the high variance explanation in UTAUT is achieved by moderating the important relationships by up to four moderators: age, gender, voluntariness, and experience, which makes the UTAUT not parsimonious (Van Raaij and Schepers, 2008). Moreover, Van Raaij and Schepers (2008) have also found a problem in the grouping and labelling of the items and constructs, especially the facilitating condition construct and the social influence construct. The facilitating condition construct combines items that measure the fit between the technology and the participant's work style, the availability of assistance, and the availability of the required resources. Van Raaij and Schepers (2008) stated that they fail to see how these various items can be used to reflect one psychometric construct. Similarly, the construct of social influence includes items that measure the participant's perception on whether or not other people think he/she should use the technology, whether or not other are supportive of using the technology, and finally, the perception that those who use the technology have higher social status. Again, these different items make it hard to see how they all reflect the same latent construct (Van Raaij and Schepers, 2008).

Based on the presented discussion of the three prominent adoption models in the IT/IS field, it appears that TAM is the best model to use as a basis for the conceptual model of this research. One of the objectives of this study is to suggest some practical guidelines on how to enhance and promote E-government. This implies that the E-government examined in this research is not without fault and it could be enhanced. This implication does not agree with the usual assumption of the diffusion research which was criticised and defined as the pro-innovation bias. Moreover, in order to suggest these guidelines for E-government enhancement, it is important to understand that some of the barriers to E-government adoption might be caused by an attribute of the E-government itself, such as having a low system quality or low service quality. Therefore, the blame for the low adoption of E-government can be placed on the individual or the system. This also does not agree with the perspective of the innovation diffusion research that views any cause for lack of adoption as the individual's fault and never the innovation's. This bias was

identified as the individual blame bias, and it is one of the main criticisms of DOI. As some perspectives of the DOI does not agree with the objectives of this study, the DOI will not be used as a basis for the conceptual model of this research.

Similarly, the UTAUT will not be used as a basis for the conceptual model due to its aforementioned criticisms. This study aims to identify the factors affecting citizens' adoption of E-government. In order to identify these factors, the proposed model must only integrate clearly defined constructs, in addition to defined groups of measuring items with each group reflecting a specific latent construct. Due to the UTAUT's problem of grouping and labelling of the items and constructs which was identified by Van Raaij and Schepers (2008), this model will not be used as a basis for the conceptual model as the problem with grouping and labelling can affect attaining the aim of the study. When several measuring items are grouped together but they do not reflect the same latent construct, the results related to this latent construct will not be interpreted properly. Interpreting the results of such a construct can produce false results.

Although the selected adoption model (TAM) is not without criticism, it is easy to deal with its weakness through integrating constructs that act as antecedents to perceived usefulness in order to find what factors affect the perceived usefulness construct. The integration of such antecedents was also recommended by Davis (1989). Moreover, the criticism of TAM regarding only focusing on the technological aspect and ignoring the social aspect can be addressed by integrating social constructs in the model. The purpose of integrating other constructs in the model is not to only address the weaknesses of TAM, but because the conducted literature review revealed the importance of specific technological, social and cultural constructs, which some of them, to best of knowledge, were either seldom or never examined in the context of E-government adoption in Saudi Arabia. The technological aspect of E-government adoption will be further examined using system quality, information quality, and service quality constructs from the ISSM. These three constructs examine different characteristics of the E-government portal. One of the crucial social factors in IS/IT adoption is trust. Since this study will evaluate the

adoption of E-government online portals, which require using the Internet to access them, and since the government is the provider of the E-government services, two trust constructs will be integrated in the proposed model: trust of the Internet and trust of the government. Integrating these two constructs is a way of addressing the limitation of TAM which is concerned with its sole focus on the technological factors. Although in situations where there trust is required, there must be some degree of risk involved (Warkentin et al., 2002), the conducted literature review revealed that the effect of perceived risk is seldom examined alongside the effect of trust in studies conducted in the E-government adoption field. Perceived risk will measure how much risk the participants perceive in the current Saudi E-government. Moreover, one of the criticisms of TAM is only focusing on the perceived benefits without considering the perceived risks (Horst et al., 2007), so by integrating the perceived risk construct in the proposed conceptual model, this criticism will be addressed and the assessment of the perceived usefulness will be balanced by assessing the perceived risk. Finally, based on the conducted literature review, the cultural factor has an important role in the acceptance and use of technology. As individuals do not live in total separation from the social and cultural factors, their decisions are usually not taken in isolation of external influences. Most of the time, the decision of adopting new innovations are affected by how it will fit in with or impact other people (Bagozzi, 2007). Despite the significant role of culture in the acceptance and use of technology, the espoused cultural values on the adoption of E-government was seldom examined. Therefore, the espoused cultural values will be integrated in the proposed model to examine their effect on citizens' adoption of E-government in Saudi Arabia. These factors are based on Hofstede's national culture dimensions. After integrating the aforementioned constructs, the proposed conceptual model will be used to examine the effects of technological, social, and cultural constructs on citizens' adoption of E-government. The following paragraphs will discuss the theories and adoption models integrated in the proposed conceptual model.

The Technology Acceptance Model, which is used as the basis of the proposed conceptual model in this study, is an intention-based model proposed by Davis (1989)

to explain and/or predict the acceptance of computer technology. It is considered a widely adopted model which have proved to produce high predictions of IT adoption and use (Davis et al., 1989, Venkatesh and Davis, 2000). TAM is the dominant model that has been used in many IT and IS acceptance and adoption studies (Ozkan and Kanat, 2011). It is considered to have "… advantages in parsimony, IT specificity, strong theoretical basis, and ample empirical support" (Hu et al., 1999, p. 93) compared to other models. Researchers have analysed many previous IT/IS acceptance research and found that TAM was used in most of these studies as it was also the most influential (Hu et al., 1999). Hu et al. (1999) also stated that many previous studies, which have used TAM as a theoretical basis, have provided an empirical support for the model. Moreover, the applicability of the Technology Acceptance Model across different cultures was validated through multiple studies (Van Raaij and Schepers, 2008, Ong et al., 2004, Phang et al., 2006). Also, TAM has been used to predict the behavioural intention of different end-user groups, such as students, professionals, and organisations.

Davis et al. (1989) conducted a longitudinal study to validate TAM and TRA in predicting the acceptance of a word processor application by MBA students. While a study by Taylor and Todd (1995) examined the validity of TAM and TPB in predicting and explaining college students' use of a computer resource centre. Mathieson (1991) also compared TPB with TAM in his study to predict students' intention to use PC-based spreadsheet application. Szajna (1996) applied TAM to predict the acceptance of an e-mail system by graduate college students. Phang et al. (2006) have studies senior citizens' acceptance of E-government services using TAM as a theoretical foundation. TAM was also applied to predict Chinese students' acceptance and adoption of an E-learning system (Van Raaij and Schepers, 2008). Al-Hujran et al. (2015) integrated TAM in their model to examine the Jordanian citizens' intention to adopt E-government services in Jordan. The Technology Acceptance Model was even used to understand the online consumer behaviour in a study conducted by Koufaris (2002).The results of these studies show that TAM can provide sufficient explanation and prediction of users' acceptance of various information

technologies, as well as in different cultural settings. All studies who have incorporated TAM found that perceived usefulness has a major impact on users' behavioural intention, while the studies had different results regarding the impact of perceived ease of use on the behavioural intention as some of them found it to have a significant impact while others found it to be non-significant. These results were also observed by Hu et al. (1999).

While TAM was developed to predict IS adoption based on users' perception and attitude, the IS Success Model was developed by DeLone and McLean (1992) in order to understand the value of an information system through evaluating multiple dependent variables. DeLone and McLean (1992) proposed an IS success model which suggested that system quality and information quality impact the use and user satisfaction, and both of them lead to individual impact and organisational impact. However, in 2003, Delone and McLean updated their original IS success model taking into consideration the service quality construct which is defined as "the overall support delivered by the service provider, applies regardless of whether this support is delivered by the IS department, a new organisational unit, or outsourced to an Internet service provider (ISP)" (p. 25). Further, Delone and McLean (2003) suggested that service quality could be measured as a construct made by assurance, empathy, and responsiveness. Initially, Parasuraman et al. (1988) proposed the SERVQUAL model which consists of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy.

Seddon and Kiew (1996) have partially examined the IS Success Model while substituting the use construct in the original model with the perceived usefulness. The researchers explained that use is not equivalent of usefulness. Thus, it is not rational to think that if a system is not used, it means it is not useful. The lack of use could be attributed to other factors such as users' habit or the presence of other more urgent matters that they need to take care of. Moreover, as DeLone and McLean (1992) have stated, system use, whether perceived or actual, can measure a system's success only if the use is voluntary, because in mandatory use, the users have to use the system no matter if it is useful or not. However, in situations where

the use is voluntary and the examined system is recently introduced as an alternative of another system which has been adopted for many years, such as the case of E-government, it could be argued that perceived usefulness will be of importance as it will reflect users' perception of the electronic system's usefulness compared to the traditional system. Moreover, if there happens to be a lack of use, the perceived usefulness construct will aid in explaining whether it is caused by the perceived usefulness of the system or other factors. For example, in the case of E-government adoption, there could be a lack of adoption due to the lack of resource availability, lack of self-efficacy, or habit. Therefore, integrating information quality, system quality, and service quality as antecedents of perceived usefulness in TAM will allow the participants to conduct better evaluations of these qualities and have a clearer perception of the system's usefulness, besides allowing to draw better conclusion regarding the reasons behind the lack of use.

Previous research have validated the IS Success Model in different study contexts. Chen and Cheng (2009) adopted the IS success model to predict user intention to carry out online shopping. Teo et al. (2009) integrated trust and the IS success model to examine electronic government success. Moreover, many researchers have successfully integrated constructs from TAM and IS Success Model into one model which proves the compatibility of these two models and helps in overcoming the parsimony limitation of TAM. Lin et al. (2011) also proposed and validated a framework consisting of constructs from TAM and IS Success Model to examine citizens' adoption of E-government services in Gambia. In another study, Pai and Huang (2011) adapted the three quality factors from IS Success Model and perceived usefulness, perceived ease of use, and intention to use from TAM. The integrated framework was used to examine the intention to use healthcare information systems in Taiwan. Gao and Bai (2014) integrated the perceived usefulness construct into their proposed framework as it previous research have proved it to be a stable factor in predicting the behavioural intention whether in initial adoption or post-adoption. They also adapted system quality and information quality constructs from IS Success Model along with other factors from the network

externalities and flow theory. The integrated model proposed by Gao and Bai (2014) was used to investigate the factors affecting the continuous intention of using mobile social networking services in China.

The aforementioned literatures confirm the compatibility of TAM and IS Success Model. Therefore, this study proposes incorporating the system quality, information quality, and service quality constructs from Delone and McLean's IS Success Model in the conceptual framework in order to have more detailed understanding of the influence of the technological aspects on the adoption of E-government.

Previous studies on E-government adoption have often integrated trust in their models, which were based on TAM, in order to overcome its limitation concerning focusing only on the technological aspect of IT/IS adoption (Belanche et al., 2012). Trust forms an important part of IS adoption because the success of E-government relies heavily on citizens' adoption of the system, and citizens' adoption requires their trust in the governing organisation that collects and utilises citizens' information and data, besides requiring their trust in the Internet through which their data and information will be exchanged. There are many definitions of trust depending on the disciplinary of the researcher. From the psychologists' view, it could be defined as the inclination to trust others. On the other hand, social psychologists view trust as "a cognition about the trustee", while sociologists understand trust as "a characteristic of the institutional environment". Trust could be generally defined as "an expectancy that the promise of an individual or group can be relied upon" (as cited in Bélanger and Carter, 2008, p. 166). Trust could be divided into multiple components such as disposition of trust, institution-based trust, and perception of trust worthiness. Researchers have proposed that there are two main components of trust: trust of the entity providing the service, and trust in the medium through which the service is provided. Therefore, trust in E-government combines trusting a specific entity, which is the government in this case, and trusting the reliability of the technology that is delivering the services, which is the Internet (Bélanger and Carter, 2008).

Trust have been examined in different literature in the E-government adoption field, however, when Bélanger and Carter (2008) conducted their study, they did not only examine the role of trust but they also examined the effect of perceived risk in the adoption of E-government. The perceived risk construct is seldom examined alongside trust, although in situations where trust is required, there must be risk involved (Warkentin et al., 2002). In addition, the more severe the risk, the more salient the trust (McKnight et al., 2002). However, regardless of the level of perceived risk, if the user trusts the other entities that are involved in the transaction, the level of perceived risk will decrease (Horst et al., 2007). Despite the importance of measuring the level of perceived risk in IS/IT adoption studies, researchers conducting E-government research have seldom integrated this crucial construct. Bélanger and Carter (2008) have examined the role of trust and risk in their study in the context of E-government. Their findings showed that, similar to other studies in the E-commerce field, trust and risk are closely related and that they both have influence on users' intention to adopt E-government. Since the proposed model in this study is based on TAM, the importance of integrating the perceived risk construct in the proposed model increases due to the criticism of TAM, which declares that it only focuses on the perceived benefits (Horst et al., 2007).

Since perceived risk is often viewed as the opposite of perceived usefulness, because the former focuses on the negative aspects while the latter focuses on the positive ones, integrating the perceived risk construct in the proposed model will allow the model to measure the negative aspects beside the positive ones. Based on the importance placed on the role of trust and risk in the IS adoption field and based on the importance of integrating these factors in the proposed model, this study proposes to adopt trust of the government, trust of the Internet, and perceived risk constructs from Bélanger and Carter's trust and risk model, which was developed to examine the role of these constructs in the context of E-government adoption.

The conducted literature review revealed the importance of the cultural factors in IS/IT adoption. As TAM only focuses on the technological aspect, it is important to integrate constructs that evaluate different aspects other than the

technological in order to examine their effect on E-government adoption. Most of individual's decisions are not taken in isolation of external influences, because individuals do not live in total separation from the social and cultural factors. On the contrary, the decision of adopting new innovations are, more often than not, affected by how it will fit in with or impact other people (Bagozzi, 2007). Some might argue that the impact of the national culture values should only be included in cross-country studies since the national culture of each country is different. However, the impact of the espoused national culture values can be examined in studies conducted in one country, such as this study, because each individual espouses the national culture values to various levels. An individual living in a certain country does not have to embrace all of its cultural values. On the contrary, this individual might espouse some cultural values of another country where he/she have stayed for a short while. In Saudi Arabia, the Ministry of Education has been offering government scholarships to Saudi students who have met specific criteria in order to study undergraduate and graduate degrees in countries such as US, UK, Australia, Japan, and many other countries who have excelled in various fields. This government scholarship program has been running since 2005. Many Saudi students have benefited from this program and studied in different countries that have different national culture values. These students have been exposed to different national cultures and one could assume that through that exposure they might have consciously or sub-consciously espoused some of national culture values of the country where they have studied for several years. Therefore, integrating the espoused national culture in studying E-government adoption in Saudi Arabia could provide better understanding of what cultural values the citizens mostly espouse and how the managers can target and appeal to each group.

There are various dimensions and definitions for the term 'culture' depending on the discipline from which a scholar is perceiving this phrase. The most cited definition is Hofstede's which views culture as "the collective mental programming of the people in an environment" (Hofstede, 1980, p. 43). Hofstede has originally identified four cultural dimensions: masculinity/feminisms (MF),

individualism/collectivism (IC), power distance (PD), and uncertainty avoidance (UA). Later on, a fifth dimension was added, that was identified as long-term orientation (LTO) (Hofstede and Bond, 1988). Hofstede (1980) stated that the characterisation of a national culture does not imply that all of the individuals within this nation share all of these exact characteristics, and as for the cultural evolution, he stated that culture as a collective mental programming does change, however, this change is usually very difficult to occur, and if it did, the change will occur very slowly. Previous research have suggested that national culture has an effect on technology acceptance and adoption. However, the acceptance and use of technology is related to the individual-level, while the national culture is on a macro-level, thus, predicting individual behaviour using the country scores on the cultural dimensions is inappropriate (Srite and Karahanna, 2006). Even Hofstede (1994) cautioned against using the country scores of his national culture dimensions to predict the behaviour of the individuals within a nation as the two issues fall under different levels. Straub et al. (2002) clarified that many of the definitions of culture assume that because an individual is part of a specific culture, thus this individual believes and supports all of these cultural values. Because there are many cultural levels and each social group has its own culture, such as religious group, organisational group, and ethnic group, which results in the individual espousing various values from each social group he/she belongs to. "To generalize cultural characteristics across an entire nation of people is to flirt dangerously with what Robinson (1950) calls the 'ecological fallacy,' where stereotypes are substituted for individualistic and idiosyncratic traits. Therefore, an in situ measurement of culture is appropriate" (Straub et al., 2002, p. 20).

As the researchers realised that the individuals do not espouse all of the cultural values of their national culture, and even if they do, there is a difference in the level of how much each individual espouses, therefore, many studies have worked on modifying and validating Hofstede's national culture measurement items to be suitable for measuring the espoused national culture values in order to predict user behaviour. Srite and Karahanna (2006) modified and validated Hofstede's index scales for measuring the original four national culture values. The study shows that

the espoused national culture values affects technology acceptance. These modified index scales were validated by Hoehle et al. (2015) in their study on the factors affecting user's continuous intention to use mobile applications. The fifth cultural dimension: long-term orientation was added in the aforementioned research using the same approach used by Srite and Karahanna (2006) to adapt the measuring scales. The results of the research showed that the espoused national culture values moderate the influence of mobile application usability on the continuous intention to use. In a study by Bagchi et al. (2004), in which the impact of national culture on the adoption of information technology products was tested, the results showed that national cultures with scores higher in cultural femininity, higher in individualism, and lower in power distance have better diffusion of information technology than others. Udo et al. (2012) conducted a cross-country study to compare the moderating influence of espoused cultural values on the adoption of E-services between the US and Nigeria. The researchers concluded that the moderating influence of cultural values are more pronounced in Nigeria than the US because of the different espoused national culture values.

Hofstede's national culture dimensions is the most cited research on culture, however, despite its popularity, his study was not free of criticism (Jones, 2007). Hofstede (1980) have identified four culture dimensions through which the cultural values of different nations could be compared. Hofstede's research provided business organisations with basis to build their strategic plan on in order to expand their branches to other countries. Since the publication of Hofstede's cultural dimensions, many studies have referenced and supported his work. However, his work was also criticised for various reasons, such as relevancy, cultural homogeneity, being out dated, and having too few dimensions. Jones (2007) have analysed many research that oppose or support Hofstede's research on culture. The common criticism toward Hofstede's work were:

- Relevancy: researchers viewed survey as an inappropriate instrument to measure the cultural differences. However, Hofstede have clarified that surveys were only one of the methods used in his research.

- Cultural homogeneity: researchers have criticised the work of Hofstede for implying that all individuals in a nation espouse the same national culture values.
- National divisions: critics have stated that culture is not bounded by boarders, thus, using countries as units to analyse and compare cultures is not appropriate.
- Political influences: researchers have stated that the survey collection for Hofstede's study occurred during the cold war in Europe. Moreover, the data were not collected from many socialist countries nor from the less wealthy third world countries. These political influences are seen to have affected the measurements of masculinity and uncertainty avoidance.
- One company approach: researchers have argued that conducting a study on a single multinational company cannot perfectly reflect the whole cultural system of a country.
- Out-dated: some researchers have claimed that Hofstede's study on culture is no longer of value as the cultural values have changed, especially with the globalisation.
- Too few dimensions: some researchers have criticised the number of cultural dimensions in Hofstede's study by stating that they are too few to allow the collection of sufficient information to reflect cultural differences.

Most of the criticisms targeted towards Hofstede's research on culture are concerned with the Hofstede's data collection method, country scores calculation, and the generalisability of the calculated scores. Since this study does not plan on using these calculated country scores, these criticisms will not affect the integration of Hofstede's national culture dimensions in this study. Moreover, this study does not assume that all citizens of Saudi Arabia espouse the same cultural values to the same extent. The espoused cultural values will be measured using measuring items that were developed and validated in previous studies that aim to only measure how much the individual espouses their national culture values and not aiming to measure and identify the national culture values of a country. In addition, regarding the

criticisms toward Hofstede's work, Jones (2007) have concluded that although there are many criticisms surrounding Hofstede's work on culture, it still remains the most valuable research conducted on culture for scholars and practitioners alike. Moreover, as there is a lack of more robust research and framework on culture, Hofstede's work will still hold value until a better alternative emerges.

This section has discussed the models and theories underpinning the proposed conceptual mode. The following section will discuss the proposed research hypotheses.

3.2 The Proposed Research Hypotheses

3.2.1 TAM

3.2.1.1 Perceived Usefulness

Perceived usefulness (PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). The construct of perceived usefulness was also identified in other models as performance expectancy, extrinsic motivation, job fit, relative advantage, and outcome expectation. Although, this construct is identified differently, there is a big similarity between the definitions that have been acknowledged by scholars (Venkatesh et al., 2003). Perceived usefulness and perceived ease of use are considered two major predictors of behavioural intention. Moreover, Davis (1989) have suggested that these two constructs can predict the actual use of a system.

Perceived usefulness is concerned with how the new system or method will benefit the users in the future. The amount of advantages anticipated by the users from using a specific system affects their intention to use the system. For example, when the user perceived that E-government has many advantages over the traditional method because it saves efforts and time, the user is more likely to use E-government. On the other hand, if the user, for any reason, perceived that E-government does not have an advantage over the traditional method, then the user is less likely to use the system. However, although system use could be used as an indicator of system success in voluntary settings, the lack of use should not be directly

interpreted as a lack of usefulness because while some users might view the system as useful, they do not use it due to having to attend to more pressing matters (Seddon and Kiew, 1996).

The positive relationship between perceived usefulness and intention to use was examined in many studies in the field of E-government. A study conducted by Carter and Bélanger (2004) on citizen adoption of E-government revealed a strong positive relationship between the perceived usefulness and citizen's intention to use the E-government system. They also recommended that government officials should focus on methods to increase the perceived usefulness in order to encourage the citizens to adopt the new system. Lean et al. (2009) studied the factors affecting the intention to use E-government services among the Malaysian citizens. The findings stated that higher level of perceived usefulness leads to a higher level of behavioural intention. Another study was conducted in the E-government adoption field by Phang et al. (2006) who examined the factors affecting E-government adoption in China. One of the findings of their study confirmed that PU has a significant positive effect on IU. Similar findings were drawn from other research that were conducted in different countries on the subject of E-government such as the study conducted by Lu and Nguyen (2016) in Vietnam, Sharma and Mishra (2017) in India, and Xie et al. (2017) in China. Perceived usefulness was also integrated in other studies in the information technology adoption field, such as Taylor and Todd (1995), Venkatesh and Davis (2000), Venkatesh et al. (2012), Carter and Weerakkody (2008), Venkatesh and Bala (2008), Davis et al. (1989), and Venkatesh et al. (2003). The results of these studies proved that perceived usefulness has a significant positive influence on the intention to use the system.

The perceived usefulness factor is especially important when studying E-government adoption in Saudi Arabia since it is not mandatory for the citizens to get government services through the E-government portal only. Citizens still have the choice to either use the traditional method or the electronic method to apply for and receive public services. In order to assess the impact of perceived usefulness on the

intention to use in the context of E-government adoption in Saudi Arabia, the following hypothesis is proposed:

H1: Perceived usefulness has a positive influence on intention to use.

3.2.1.2 Intention to Use

Lean et al. (2009) defined the intention to use (IU) as "a measure of the strength of one's intention to perform a specified behaviour" (p. 461). Davis et al. (1989) proposed the intention to use to be a direct antecedent of usage behaviour (UB) and the main predictor of it. Moreover, the researchers stated that only the intention to use could influence the usage behaviour directly, and any other factor can influence it indirectly through the intention to use. In the literature, the usage behaviour construct is also referred to as actual use, use behaviour, usage, and actual usage behaviour (Venkatesh et al., 2003). For the sake of consistency, in this study, the term usage behaviour will be used to refer to the construct that measures the degree to which an individual utilises the capabilities of an E-government portal. Previous studies have confirmed that intention to use has a significant positive influence on usage behaviour. Taylor and Todd (1995) have conducted a study to examine three technology adoption models in order to find which model is the most helpful to understand information technology usage. Among the examined model, the researchers tested TAM, and found that intention to use has a significant positive effect on usage behaviour. Venkatesh and Davis (2000) proposed and validated an extension to TAM. Among the examined relationships, the researchers tested the influence of IU on UB and found that, in agreement with the conclusion of the original TAM, IU has a significant positive effect on UB. Venkatesh et al. (2003) have proposed and validated UTAUT based on previous technology adoption models. The results of the analysis carried by Venkatesh et al. (2003) showed that intention to use has a significant positive effect on usage behaviour. Moreover, an extension of UTAUT was proposed and validated by Venkatesh et al. (2012), in which the same conclusion was drawn.

When it comes to E-government adoption in Saudi Arabia, few studies have also examined the influence of intention to use on the usage behaviour. Alsaif (2014) have examined E-government adoption in Saudi Arabia using an integrated model that includes UTAUT. The researcher found that behavioural intention has a significant positive influence on usage behaviour. Al-Sobhi (2011) also conducted a study in Saudi Arabia to examine the role of the intermediaries in citizens' adoption of E-government. Interestingly, the researcher found that behavioural intention does not have significant effect on usage behaviour. The researcher explained that the behavioural intention construct used in his study was measured using three items, two of which indicating direct interaction with the government through the website without using intermediaries, and the last item indicated utilizing intermediaries to get E-government services. When analysing the effect of behavioural intention on usage behaviour using only the first two items, the results showed insignificant effect, however, when running the analysis using only the third item, which is related to utilising intermediaries, the results show significant positive effect. Al-Sobhi (2011) recommended that the government work with the intermediaries as their presence has significant positive influence on citizens' adoption of E-government. The previous studies have provided a strong basis to understand the relationship between intention to use and usage behaviour. However, these studies are not without limitations that prevent the application of their findings to the context of citizens' adoption of E-government in Saudi Arabia. Therefore, this study proposes examining the effect of the intention to use on usage behaviour in order to confirm if the same finding from the previous studies still applies to the current context. This study proposes the following hypothesis:

H2: Intention to use has a positive influence on usage behaviour.

3.2.2 ISSM

3.2.2.1 System Quality

System quality (SQ) reflects the technical components of a system. Users evaluate the quality of a system through the presence of desired characteristics (Delone and McLean, 2003) such as ease-of-use, functionality, reliability, flexibility,

data quality, portability, and integration. DeLone and McLean (1992) have reviewed many previous studies that used system quality as a measure for system success. DeLone and McLean (1992) have integrated this construct in their Information System Success Model after evaluating and re-designing its measuring items based on their literature review. Their study concluded that system quality influences the use of information system and user satisfaction.

System quality is considered the interface that connects the users and the government (Osman et al., 2014). If the user found the system reliable, easy to navigate, and has fast responses among other positive aspects, the user's perception of the system's usefulness will increase. On the contrary, when the user deals with a system that is difficult to use, unreliable, or has slow responses, the user's perception of the system's usefulness will decrease (Gao and Bai, 2014, Zhou, 2011).

Gao and Bai (2014) incorporated the system quality factor from the IS Success Model to examine the factors affecting the continuous intention to use mobile social networking services. The findings shows a significant positive relationship between system quality and the perceived usefulness, and also, between system quality and user satisfaction. Chen and Cheng (2009) have confirmed that system quality affects behavioural intention through a study they conducted to understand consumers' intention in online shopping. In the context of E-government adoption in Saudi Arabia, Almalki (2014) examined the effect of SQ on PU, user satisfaction, and perceived ease of use. The researcher found all of these relationships are positively significant, which confirms the importance of the SQ construct in the adoption of E-government.

Although the use of E-government is voluntary in the context of Saudi Arabia, it still acts as a replacement for the traditional system. Citizens who opt to use E-government to apply for a service, do not need to visit a government office to apply for the same service. Since system quality is an evaluation of the desired system characteristics such as ease-of-use, functionality, reliability, flexibility, data quality, portability, and integration, and since the use of E-government acts as a replacement

for the traditional system, citizens will compare the quality of the E-government system against the traditional one in order to decide whether the quality of the E-government system is better and therefore is more useful, or if the quality of the traditional system is better, which means using E-government is less useful. The effect of system quality on perceived usefulness will be examined using the following hypothesis:

H3a: System quality has a positive influence on the perceived usefulness.

On the other hand, when it comes to the relationship between system quality and perceived risk, system quality is expected to have a negative influence on perceived risk. Kim and Lennon (2013) have conducted a study to identify the factors affecting users' online purchase intention. The data used in the research was collected from students at Midwestern University in the United States. Kim and Lennon's (2013) study have concluded that website quality has significant negative influence on perceived risk. On the other hand, Hsieh and Tsao (2014) have also conducted a study to examine the factors affecting online shopping, however, their data was collected from Taiwan. Hsieh and Tsao (2014) found that system quality does not have a significant influence in reducing perceived risk. The researchers explained their finding by stating that system quality lacked having a significant effect on perceived risk because at the time the study was conducted, most of the shopping websites already have high system quality, for example, the fast download time, quick response, and good operational functions are considered basic attributes of these websites. Based on the results of these studies, system quality seems to have negative effect on perceived risk. However, when a website already has a high system quality, which means most or all of the desired characteristics in the system are met, the effect of SQ on PR can be insignificant.

The effect of system quality on perceived risk is rarely examined in the context of E-government adoption although the quality of a system affects risk perception because a system that is unreliable and difficult to use and has poor integration will affect the performance of the user by making him/her miss deadlines, or can impact

the user's time because he/she is wasting a lot of time to learn how to use a difficult system and so on. The aforementioned findings regarding the effect of system quality of perceived risk were concluded from studies conducted on online shopping adoption, which also has similarities to E-government adoption as both systems are online, the user does not have physical interaction with the service/product provider and the service/product provider aim to increase the number of adopters. Despite the differences between E-commerce and E-government, previous researchers in E-government have proposed and validated their models based on E-commerce studies (e.g.Bélanger and Carter, 2008). Therefore, this study proposes examining the effect of SQ on PR to determine the significance of the relationship between these two constructs. Since the Saudi E-government is still in the early stages, its SQ is expected to not be very high, therefore, based on the aforementioned discussion, SQ in expected to have a significant negative effect on PR. In order to find whether system quality has significant influence on perceived risk in citizens' adoption of E-government in Saudi Arabia, this study will test the following hypothesis:

H3b: System quality has a negative influence on perceived risk.

3.2.2.2 Information Quality

Information quality (IQ) regards the accuracy, currency, ease of understanding, completeness, timeliness, relevance, and consistency of the information provided in a website (Delone and McLean, 2003). The information quality factor was added to the IS Success Model as it showed a significant influence on the actual use of the system. When a system provides information with high quality that is up-to-date, accurate, comprehendible, relevant, and complete, among other positive characteristics, the user will more likely attach a higher perception of usefulness to the system. On the other hand, when a system provides information with low quality, the user will more likely perceive the system to have low usefulness, because low information quality can result in the user having to spend much more time and effort to understand the provided information, determine its relevancy and completeness, and then decide on the next action (Gao and Bai, 2014).

Previous studies have examined the influence of information quality on other factors. Chen and Cheng (2009) have confirmed a positive relationship between information quality and intention to use, while Jiang (2011) have tested the influence of information quality, design and function, reliability, and safety and privacy on the continuous intention to use E-government portal. The findings showed that out of these factors, information quality has the most influence. The positive influence of information quality on perceived usefulness was confirmed by other researchers such as Gao and Bai (2014) in their study about users' continuous intention of using mobile social networking service, and also by Zhou (2011) in his research on the adoption of mobile website, in which he concluded that information quality is the main factor when it comes to influencing perceived usefulness. On the other hand, Shareef et al. (2011) found that information quality provides a positive influence on E-government adoption during the static phase, however, this factor has a significant negative influence on E-government adoption during the interaction phase. The researchers explained this finding by stating that during the static phase, high information quality will lead more users to visit the government's website to acquire information. On the other hand, during the interaction phase, when the users perceive the information to have high quality and that it does not leave any questions unanswered, then they will less likely contact the government agencies through the E-government portal (Shareef et al., 2011).

Providing high quality information enables the citizen to retrieve the required information in an efficient way without the need to visit a government office like in the traditional system. The efficiency in completing the task online rather than visiting a government office is considered a perceived usefulness of using E-government over the traditional system. The following hypothesis is proposed to examine the effect of the quality of the current information provided in the Saudi E-government portals on the perceived usefulness:

H4a: Information quality has a positive influence on perceived usefulness.

Using a new system, especially an online one, is associated with some degree of risks as well as advantages. Different research has been conducted in the past to understand how to mitigate risks and uncertainties in using online systems to conduct transactions or retrieve information. In online systems, the user can only decide whether to use the system or not by relying on the perceivable aspects of the system, such as system performance, information accuracy, and interaction with the online customer service. Previous studies have concluded that information quality has a significant negative effect on perceived risk (Yi et al., 2013, Nicolaou and McKnight, 2006). Nicolaou and McKnight (2006) conducted a study to examine the effects of perceived information quality on trust, perceived risk and intention to use in the context of data exchange. The researchers found that perceived information quality has a significant positive effect on trust while it has a significant negative influence on perceived risk. The effect of perceived information quality on the intention to use was found to be indirect, through trust and perceived risk. On the other hand, Yi et al. (2013) conducted a study to find the antecedents of the initial trust in web-based health information. The researchers concluded that perceived information quality has a significant negative effect on perceived risk. Both studies confirmed that providing high quality information helps in reducing the uncertainties and risks associated using online systems. When the user finds that the information provided in the website has many positive characteristics such as being accurate, current, comprehendible, relevant and complete, the user will view the system as more legitimate which will result in decreasing the perceived risks associated with using the system.

Despite the need to mitigate the perceived risk associated with E-government adoption, and despite the conclusions drawn in other studies conducted on online system adoption which recognised information quality as a crucial factor in reducing perceived risk, studies conducted in the context of E-government adoption has rarely examined the effect of information quality on perceived risk. Since perceived risk is viewed as the opposite of perceived usefulness, identifying the antecedents of perceived risk is as much crucial as identifying the antecedents of perceived

usefulness. This study proposes to examine the effect of information quality on perceived risk using the following hypothesis:

H4b: Information quality has a negative influence on perceived risk.

3.2.2.3 Service Quality

Delone and McLean (2003) shortly defined service quality (SVQ) as the overall support provided by the service provider, while Parasuraman et al. (1988) defines the measurement of service quality as "the degree and direction of discrepancy between consumer's perceptions and expectations" (p. 17). Delone and McLean (2003) added this factor in their updated model as its importance was brought to attention through researchers who have validated the first proposed IS Success Model. According to Delone and McLean (2003), Pitt, Watson, and Kavan stated that "commonly used measures of IS effectiveness focus on the products rather than the services of the IS function. Thus, there is a danger that IS researchers will mismeasure IS effectiveness if they do not include in their assessment package a measure of IS service quality" (p. 18). Many researchers recommended the addition of this construct especially after testing the SERVQUAL measurement instrument which was developed by Parasuraman et al. (1988). Delone and McLean (2003) agreed that service quality should be treated as a separate dimension from system quality, however, they advised to revise the SERVQUAL measurements.

Jayawardhena (2004) proposed a measurement of service quality using both qualitative and quantitative research methods. These factor measurement items were validated by Chen and Cheng (2009) while studying consumer intention in online shopping. In their study, they concluded that service quality has significant positive influence on behavioural intention. Ahn et al. (2007) examined the roles of the three types of website quality in the acceptance of online retailing in Korea. The researchers hypothesised that service quality has a positive effect on perceived usefulness and confirmed their hypothesis after analysing the data. The influence of SVQ on PU was also studied in the context of healthcare information systems by Pai and Huang (2011). The study concluded that there is a significant positive relationship

between these two constructs. While in the context of E-government adoption, Almalki (2014) examined the effect of service quality on perceived usefulness, user satisfaction, and perceived ease of use. The researcher found that while service quality has a significant influence on user satisfaction and perceived ease of use, the construct has a nonsignificant effect on perceived usefulness. The researcher explained the reason for the lack of significant effect on perceived usefulness as the dissatisfaction of the participants with the quality of the service provided online at the time of the study. On the contrary, Chen et al. (2015) identified the factors affecting citizens' adoption of online tax filing in Philippine through utilising the ISSM and integrating other attributes in the model such as trust prior experience with the E-government services. The researchers concluded that SVQ has a significant positive influence on PU. The different findings regarding the effect of SVQ on PU in the studies conducted by Almalki (2014) and Chen et al. (2015) could be attributed to the evaluated E-government portal, because in the study conducted in Saudi Arabia, the researcher allowed the participants to choose any E-government portal that they have prior experience with, while the study conducted in Philippine only focused on the online tax filing system. Therefore, the scores in the first study are based on evaluating different portals that can have various maturity levels, while the scores in the later study only reflect the citizens' evaluation of the online tax filing system.

Service quality evaluates the assurance, empathy, and responsiveness of the service providers who are providing the services online. Despite the important role of service quality in IS/IT adoption, the effect of SVQ on PU was seldom examined in the context of E-government adoption. This study proposes to examine the effect on SVQ on PU to determine the significance of the service quality on the adoption of E-government. Although the literature review revealed that one study in Saudi Arabia have examined the relationship between SVQ and PU, which was conducted by Almalki (2014), no other studies in Saudi Arabia have examined this effect, therefore, the conclusion drawn by the researcher might be only true for the sample used in the study or might be based on the characteristics of the evaluated E-government portal at the time of the study. Thus, the examination of the effect of SVQ on PU in this

study will help in providing clearer understanding of the role of service quality in E-government adoption in general, and in Saudi Arabia more specifically. The following hypothesis is proposed to study the relationship between service quality and perceived usefulness:

H5a: Service quality has a positive influence on perceived usefulness.

Previous studies have concluded that service quality has a significant negative effect on perceived risk. Clow et al. (1996) conducted an exploratory study on the importance of the service quality construct in advertising professional services. The researchers examined whether the presence of specific cues in the advertisement will reduce the perceived risk. These cues belong to the five dimensions of service quality: tangibility, reliability, responsiveness, assurance and empathy. Clow et al. (1996) found that all of the dimensions of service quality have significant negative effect on perceived risk. Another study was conducted in the marketing field by Garretson and Clow (1999) to find the effect of coupon face value on service quality, perceived risk and purchase intention. The researchers hypothesised that service quality has a significant negative effect on perceived risk. The result of the analysis confirmed this hypothesis, which means that, indeed, higher service quality results in relieving some of the perceived risk. The same conclusion was also drawn in a study conducted in the E-commerce field by Hsieh and Tsao (2014). The researchers examined the effects of the three website quality constructs on reducing perceived risk of online shopping. The researchers concluded that e-service quality significantly reduces perceived risk.

Despite being a part of the three website qualities, which proved to have significant effects on both perceived usefulness and perceived risk, and despite the existence of some literature that have highlighted the significance of service quality in decreasing perceived risk, studies in the IT/IS adoption field have rarely examined this relationship. The aforementioned studies have confirmed that high service quality can aid in decreasing the perceived risk because the user will be assured through the service quality that the people working to deliver the services are

professionals who have the required knowledge and skills to deliver his/her requests, and vice versa. Since enhancing citizens' adoption of E-government is a priority for many governments in order to reap its benefits, and since perceived risk is often found to have a significant negative effect on IT/IS adoption (e.g. Hung et al., 2006, Dwivedi et al., 2017), it is crucial to decrease the level of perceived risk in order to increase the probability of E-government adoption. Therefore, this research proposes the following hypothesis to examine the effect of service quality on perceived risk:

H5b: Service quality has a negative influence on perceived risk.

3.2.3 Trust and Risk

3.2.3.1 Trust of the Government

Bélanger and Carter (2008) defined trust of the government (TG) as "one's perceptions regarding the integrity and ability of the agency providing the service" (p. 167). Several researchers have integrated both trust and TAM in single model, such as Warkentin et al. (2002) and Horst et al. (2007). Warkentin et al. (2002), proposed a conceptual model to increase the adoption of E-government through enhancing citizens' trust. The researchers stated that trust has a significant effect on purchase intentions, inquiry intentions and sharing personal information. When users contemplate using an online service, they usually assess the agency providing the service, e.g. seller or government, in order to determine whether they are trustworthy or not. If the users deemed the service provider as untrustworthy, they will most likely not intend to use the online service despite the amount of benefits associated with it. For example, if the citizen does not trust the government to keep his/her personal information safe and suspects that his/her personal data will be misused, it is very less likely that the citizen will use E-government even though the perceived usefulness of E-government might be high. This scenario is more likely to occur in voluntary situation where the use of E-government is not mandatory because the citizen can still receive the same service through the traditional channel. On the other hand, if the citizen view the government as trustworthy, it is more likely that he/she will intend to use E-government (Carter and Bélanger, 2005).

The impact of trust of the government was examined in previous literature. Horst et al. (2007) have proposed and validated a model to predict the adoption of E-government services in the Netherlands. The findings of their study showed there is a significant relationship between trust in E-government and perceived usefulness of E-government. Bélanger and Carter (2008) studied the impact of trust and risk perceptions on E-government adoption. One of the hypothesis of their study stated that trust of the government has significant influence on perceived usefulness. The researchers accepted this hypothesis after conducting the data analysis. In another research by Carter and Bélanger (2005) on E-government adoption, the researchers examined the factors affecting citizens' adoption of E-government using an integrated model based on TAM, DOI and trustworthiness. The researchers found that trust of the government has a significant positive effect on the intention to use E-government. Interestingly, when Carter and Bélanger conducted their study on citizens' adoption of E-government in (2004), they concluded that trust in government does not have a significant impact on the adoption. The researchers explained that trust in the government is not necessary when the E-government system is considered useful and the services provided are mandatory for the citizens, such as tax filing and license renewal. In addition, one of the attributes that could have affected the outcomes of the studies conducted by Carter and Bélanger (2004), and Carter and Bélanger (2005) is the demographics of the participants. In the study conducted in 2004, the participants were undergraduates, while the participants of the study conducted in 2005 were more diverse in age and occupation. The demographic difference between both groups might have been the reason behind the different outcomes.

The Saudi E-government is still in its infancy, thus, not many of its benefits are known to the citizens. Moreover, the use of E-government services is voluntary in Saudi Arabia. Therefore, examining the effect of trust of the government in the proposed model is necessary. The following hypothesis is proposed to examine the effect of trust of the government on the intention to use E-government:

H6a: Trust of the government has a positive influence on intention to use.

Trust and risk are two factors that are associated with each other. Whenever a situation requires trust, there must be a degree of risk involved (Warkentin et al., 2002). The effect of trust of the government on perceived risk was investigated by Bélanger and Carter (2008) in their research on the roles of trust and risk in E-government adoption. The researchers found that trust of the government has a significant negative effect on perceived risk. This means when the citizen perceives the government agency as trustworthy, his/her perception of the risk associated with using E-government will decrease. The trustworthiness of the government agency is measured by evaluating the abilities of the agency to process online applications reliably, the agency's faithfulness in carrying out the transaction, and the availability of sufficient experience and resources with government agency that enables it to provide and maintain the E-government services. If the government agency lacks in some of these aspects, the citizen's trust will decrease, which will result in increasing the perceived risk of using E-government. In Saudi Arabia, Alfalah et al. (2017) conducted a study on the factors affecting older adults adoption of E-government. The researchers found that trust of the government is a significant factor in reducing citizens' risk perception.

However, other studies showed that trust of the government does not always have significant negative effect on perceived risk. Al Khattab et al. (2015) conducted a study on the roles of trust and risk in E-government adoption in Jordan, and they found that trust of the government does not have a significant effect on perceived risk. Also, in a study conducted by Carter et al. (2016) to compare the factors affecting E-government adoption in USA and UK, trust of the government had insignificant effect on perceived risk for both samples. While both studies conducted by Bélanger and Carter (2008) and Carter et al. (2016) included samples from the United States, the first study confirmed the significance of trust of the government in decreasing perceived risk, while the second research found the effect insignificant for the US sample. These outcomes might be attributed to the time these studies were conducted. During the earlier study, the concept of using E-government was less common, therefore, citizens relied on their trust in the government agency that is

providing the E-government services in order to reduce their uncertainties and risk perception. Later, when the latter study was conducted, the concept of E-government was much more common among the citizens and they felt more at ease when using E-government (Carter et al., 2016). Thus, the citizens did not need to trust the government agency as the citizens were already comfortable with using E-government.

Similarly, although both studies conducted by Al Khattab et al. (2015) and Alfalah et al. (2017) focused on identifying E-government adoption factors in Arabic countries, which are often perceived to have similar settings, each study came to a different conclusion regarding the significance of TG on PR. The research conducted in Jordan revealed that TG does not have a significant effect on PR, while the study conducted in Saudi Arabia concluded that TG has a significant negative effect on PR. The difference between these findings can be attributed to the samples or the location of the research. The study conducted in Saudi Arabia only focused on older adults, which means the sample consisted of more mature citizens, while the data used in the study conducted in Jordan were collected from individuals between 25 and above 56 years old. In addition, each of these studies were conducted in a country with a different government and a different maturity level of E-government, which can affect citizen's trust of the government.

The previous discussion highlighted the importance of TG in alleviating the perceived risk associated with using E-government. Moreover, the discussion noted the effect of the different research settings on the outcome regarding the influence of TG on PR. Although the effect of trust of the government was examined by Alfalah et al. (2017) in the context of Saudi Arabia, the researchers' study only focused on the older adults in Saudi Arabia, which means the result of their study does not reflect the perspective of the general Saudi citizens whom will be the subject of this research. Therefore, the following hypothesis is proposed to examine the effect of trust of the government on perceived risk:

H6b: Trust of the government has a negative influence on perceived risk.

3.2.3.2 Trust of the Internet

Trust of the Internet (TI) is defined as "an individual's perceptions of the institutional environment, including the structures and regulations that make an environment feel safe" (Bélanger and Carter, 2008, p. 167). The influence of trust of the Internet on the behavioural intention was examined in previous studies. Some scholars view it as a key predictor of E-service adoption (Warkentin et al., 2002, Bélanger and Carter, 2008).

The influence of trust of the Internet on the intention to use varies from one study setting to another. In the study conducted by Bélanger and Carter (2008) trust of the Internet showed to have a significant influence on the intention to use, while another study by Carter and Bélanger (2004) concluded that trust of the Internet has an insignificant effect on the intention to use. Carter and Bélanger (2004) explained that this outcome might be due to the age and experience of the participants, since they were college students who are familiar with the Internet and confident in using it. This explanation was further confirmed in a study by Carter et al. (2016) that compared the salient factors in E-government adoption between USA and UK. The sample of each country consisted of citizens in different age groups and who have different Internet experience levels. The findings of the study confirmed that for both samples, trust of the Internet has a significant positive effect on citizen's intention to use E-government. The same conclusion regarding the significant effect of TI on IU was drawn by a study that was conducted in Saudi Arabia by Alfalah et al. (2017). However, the data used in their study was collected only from older adults. Other studies were conducted on E-government adoption in different countries, such as Greece (Voutinioti, 2013), Turkey (Kurfalı et al., 2017), and Jordan (Al Khattab et al., 2015). The data used in these studies were collected from citizens in different age groups and with different Internet experiences. All of the three aforementioned studies concluded that TI has a significant positive effect on IU.

On the other hand, the analysis of the literature revealed that, similar to the study conducted by Carter and Bélanger (2004), there are other studies on E-government adoption which have concluded that trust of the Internet does not have

a significant effect on intention to use. One of these studies was conducted by Alomari et al. (2012) on the predictors of E-government adoption in Jordan. The researchers collected data from Jordanian citizens of different age groups, however, the majority of the participants (about 70%) were undergraduate students. The insignificant relationship between TI and IU which was concluded by Alomari et al. (2012) is opposite of the finding of the study conducted by Al Khattab et al. (2015) which also focused on the adoption of the Jordanian E-government. Although Al Khattab et al. (2015) have also collected their data from Jordanian citizens in different age groups, most of the participants (37%) belonged to the age group between 46 and 55, followed by 31% belonging to the 36-45 age group. Therefore, the majority of the participants in Alomari et al. (2012)'s study were younger than the majority of the participants in Al Khattab et al. (2015)'s study. The comparison between the age groups of the samples of these studies and their results supports the conclusion drawn by Carter and Bélanger (2004) which stated that since younger adults are usually more familiar with the Internet and more comfortable with using it, their trust of the Internet does not have significant effect on the intention to use E-government because they already use the Internet in many other situations. Another study that have found the effect of trust of the Internet on intention to use to be insignificant was conducted by Weerakkody et al. (2013) in Saudi Arabia. The study aimed to examine the role of intermediary in the adoption of E-government in Saudi Arabia. The researchers included two trust constructs in their model: trust of the Internet and trust of the intermediary. Although the sample of the study consisted of citizens in different age groups, the researchers found TI to have insignificant effect on behavioural intention, which does not agree with the conclusion drawn from the aforementioned studies. However, the researchers explained that both trust constructs have overlapping variance on behavioural intention, which means since trust of the intermediary became a significant predictor of behavioural intention, TI became insignificant although some of its variance on behavioural intention is already explained by trust of the intermediary.

Since E-government services are provided via the Internet, citizens need to trust the Internet in order to adopt E-government. Previous studies in the E-government adoption field showed that generally, TI has a significant positive effect on citizen's intention to use E-government, however, it seems that among younger adults, the effect of trust of the Internet on intention to use is not significant. The results of the aforementioned studies conducted in Saudi Arabia regarding the effect of TI on the intention to use cannot be used to identify whether or not TI is a significant factor of citizens' adoption Saudi E-government because each of these studies have limitations. The data used in each of these two studies were collected from a single city in Saudi Arabia, thus, the samples might not be representative of the adult citizens population. Moreover, the study conducted by Weerakkody et al. (2013) examined the influence of intermediaries on E-government adoption. The researchers stated that since they have included a construct to measure trust of the intermediary, there was an overlap in the variances of trust of the Internet and trust of the intermediary on behavioural intention, which resulted in finding the influence of trust of the intermediary significant while finding the effect of TI insignificant, although some of the TI variance on behavioural intention was explained through the other trust construct. Since this study will not examine the role of intermediaries on E-government adoption, however, it aims to identify the factors affecting citizens' adoption of E-government. Therefore, it is crucial to examine whether or not TI has a significant effect on the intention to use. On the other hand, the study conducted by Alfalah et al. (2017) focused only on the older adults in Saudi Arabia, which means the result of their study does not apply to the adult citizens of a different age group, such as young adults. Thus, this increases the need to examine the effect of TI on IU in the context of citizens' adoption of E-government in Saudi Arabia to determine its significance. The following hypothesis is proposed to examine the effect of TI on IU:

H7a: Trust of the Internet has a positive influence on intention to use.

Trust of the Internet is one of the constructs that are usually hypothesised to have significant negative effect on perceived risk. The relationship between trust of the Internet and perceived risk have been examined in some E-government adoption

studies. The results of the studies regarding the significance of this relationship were various. Bélanger and Carter (2008) conducted a study in the United States to examine the effects of trust and risk on E-government adoption. The researchers hypothesised that trust of the Internet has a significant negative effect on perceived risk. The data used in the study was a combination of two samples: one consisting of undergraduate student and the other consisting of citizens in different ages. The analysis of their study rejected the proposed hypothesis. The same hypothesis was examined by Carter et al. (2016) and it was concluded that in the UK, trust of the Internet has insignificant effect on perceived risk. The researchers stated that this finding might be due to the lack of awareness of E-government services and how to utilise them.

Al Khattab et al. (2015) examined the factors affecting E-government adoption in Jordan. The data used in the study were collected from Jordanian citizens aged 26 and above. The influence of TI on perceived risk was examined in the research, and the data analysis revealed that trust of the Internet has a significant negative effect on perceived risk. The same conclusion was drawn by Alfalah et al. (2017) in their study on the factors affecting older adults' adoption of E-government in Saudi Arabia. The sample of the study consisted of Saudi citizens aged 50 years old and above. The findings of these two studies come in line with the conclusion that the influence of TI on perceived risk for the adults of younger age is insignificant, while the effect for the more mature citizens is significant. Although the results of the study conducted by Alfalah et al. (2017) enriches the literature on the subject of citizens' adoption of E-government, the results of their study can only be applied, with caution, to older adults in Saudi Arabia since the study focused on this population. However, the results cannot be used to identify whether TI has a significant negative effect on perceived risk for the average adults in Saudi Arabia. Since the population of this study is different from the population of Alfalah et al. (2017)'s study, and since there is still lack of research on the effects of trust and risk on E-government adoption despite the existence of studies that explore citizens'

adoption of E-government (Carter et al., 2016), this study proposes the following hypothesis to examine the effect of trust of the Internet on perceived risk:

H7b: Trust of the Internet has a negative influence on perceived risk.

3.2.3.3 Perceived Risk

When considering using a new technology, the potential users usually assess the risk they will encounter as a result of using the new technology. Electronic transactions, no matter who provide them, always involve some degree of risk, and E-government services are no exception. Therefore, gaining insight on users' risk perception might enable project managers to devise a plan that alleviates some of the perceived risk and, as a result, enhance the probability that the potential user will intend to use the system. Since risk is very difficult to measure objectively, scholars substituted that with measuring the perception of risk. The perception of risk is "the citizen's subjective expectation of suffering a loss in pursuit of a desired outcome" (Warkentin et al., 2002, p. 160). As perceived risk negatively influences the intention to use E-commerce, Warkentin et al. (2002) expected the same effect to occur in E-government. However, when Bélanger and Carter (2008) hypothesised perceived risk to have a negative influence on the intention to use, the findings did not support this hypothesis. The researchers explained that there are differences between E-government and E-commerce and how users perceive each of them. Also, they stated that perceived risk might have more influence in E-commerce than in E-government. According to Lee (2009) integrating perceived risk in the research model as a single construct fails to reflect the construct's real characteristics and explain the lack of uptake of the online service. Measuring perceived risk in a broad general sense prevents the researcher from capturing users' perception of the different aspects of risk and therefore, might impact the findings of the study as the construct of perceived risk was not sufficiently measured in the first place.

According to Featherman and Pavlou (2003), Cunningham (1967) have identified six dimensions for perceived risk, which are: performance, financial, time/opportunity, safety, social, and psychological loss. As Featherman and Pavlou's

(2003) study was concerned with E-services which does not impose any physical threat to human, the safety dimension was subsituted with privacy. This study will model perceived risk as a single construct, however, it will measure these six dimenstions instead of generallly measuring percieved risk as in the study conducted by Bélanger and Carter (2008). Measuring each of the six dimenstions of perceived risk will allow the participants to focus on one aspect of risk at a time and reflect their perception more precisely.

As formerly mentioned, perceived risk is seldom examined in the E-government adoption literature along with trust, and although Bélanger and Carter (2008) have concluded that perceived risk does not have a significant negative impact on the intention to use, other studies in the E-government field such as the study conducted by Hung et al. (2006) have confirmed that perceived risk has a negative impact on users' attitude. Moreover, this study will be conducted in Saudi Arabia, an Arabic country that is very different technologically, socially, and culturally from the Western country where Bélanger and Carter (2008) conducted their study. Therefore, risk perception might be different and might have more influence in Saudi Arabia. This research proposes the following hypothesis to examine the effect of perceived risk on intention to use:

H8: Perceived risk has a negative influence on intention to use.

3.2.4 Hofstede's National Culture Values

In this study, the espoused national culture dimensions will be examined as moderators of the relationship between perceived usefulness and intention to use. Many researchers have emphasised on the importance of perceived usefulness and have stated that intention to use could be mainly predicted by this construct (Davis, 1989). The proposed hypotheses of effects of the national culture values were developed based on the conducted literature review:

3.2.4.1 Uncertainty Avoidance

Hofstede (1980) defined uncertainty avoidance as "the extent to which a society feels threatened by uncertain and ambiguous situations and tries to

avoid these situations by providing greater career stability, establishing more formal rules, not tolerating deviant ideas and behaviours, and believing in absolute truths and the attainment of expertise" (p. 45). The effect of uncertainty avoidance on technology adoption is perceived differently from one researcher to another, and each perspective is supported by different reasons. Researchers who hypothesise that high UA is associated with high adoption base their argument on that when a certain technology is perceived as a way to reduce uncertainty, such as using Fax machines and e-mails, individuals with high uncertainty levels tend to adopt that technology more than those with low uncertainty levels as the technology will help in removing some of their uncertainty (Bagchi et al., 2004, Hoehle et al., 2015). On the other hand, new technologies are mostly associated with some degree of risk, and thus, requires the adopters to accept taking that risk in order to use and adopt the technology. The literature also revealed that countries with low UA scores adopt new technology faster than the ones with high UA (Bagchi et al., 2004). Since this study does not focus on the speed of E-government adoption, but on the factors affecting the adoption, it will be proposed that:

H9: The influence of PU on IU increases for individuals who espouse high degree of uncertainty avoidance.

3.2.4.2 Individualism/Collectivism

Hofstede (1980) stated that individualism "implies a loosely knit social framework in which people are supposed to take care of themselves and of their immediate families only, while collectivism is characterized by a tight social framework in which people distinguish between in-groups and out-groups; they expect their in-group (relatives, clan, organisations) to look after them, and in exchange for that they feel they owe absolute loyalty to it" (p.45). Previous research and analysis found that collective societies have higher level of conformity than the individualistic ones. On the other hand, individualistic societies focus more on individual initiatives (Srite and Karahanna, 2006). Individuals who espouses more collectivist characteristics mostly value living in closely-knitted interdependent societies where decisions are made after group discussions, while individuals who

espouses more of the individualist characteristics prefer depending on themselves and making decisions by themselves only. Previous studies have also characterised the collectivist societies by using less technology and depending on social network as a source of information. On the other hand, the individualistic societies are more likely to use technologies and that they use media as their source of information (Hofstede, 2001, Bagchi et al., 2004). Using E-government allows the individuals to apply for and receive different government services by themselves without the need to visit government offices or directly interacting with government employees. These characteristics seem to be more suitable for individuals who espouse more of the individualistic characteristics because they can adopt the system and benefit from it independently without the need to rely on someone to submit the applications. Therefore, this study proposes that:

H10: The influence of PU on IU increases for individuals who espouse higher degree of individualism.

3.2.4.3 Masculinity/Femininity

The masculinity dimension is defined as "the extent to which the dominant values in society are 'masculine'- that is, assertiveness, the acquisition of money and things, and not caring for others, the quality of life, or people" (Hofstede, 1980, p. 46). Feminism is the opposite of masculinity. It is important to understand that this dimension does not refer to the biological gender. This dimension actually refers to the psychological gender, as in how much the society or an individual espouses masculine or feminine values (Srite and Karahanna, 2006). Individuals espousing more of the masculine characteristics pay more attention to success, performance, competition, and assertiveness, while individuals who espouses more of the feminine characteristics focus of the quality of life and caring for the weak. There are different speculations regarding whether high masculinity indicates higher adoption rate or that low masculinity is related to higher adoption rate. Bagchi et al. (2004) explained that when the technology is related to personal life rather than business, more adoption is expected in higher levels of femininity. On the other hand, when the technology is business related and promotes better cost or success opportunity, the

masculine society is expected to adopt it more quickly, while if the business technology promotes collaboration and communication, the feminine societies are expected to adopt the technology more quickly. As E-government, from the citizens' perspective, is aimed to enhance the citizens' experience in applying and receiving government services and is promoted for its ease of use and usefulness, this study proposes the following hypothesis:

H11: The influence of PU on IU increases for individuals who espouse higher degree of femininity.

3.2.4.4 Power Distance

Hofstede defined power distance as "the extent to which a society accepts the fact that power in institutions and organisations is distributed unequally" (1980, p. 45). Individuals espousing higher degrees of power distance mostly prefer having a centralised decision structure, a defined and static order and structure, and less need of technology. On the other hand, individuals espousing lower levels of power distance prefer having a decentralised decision structure, does not mind technological change, and have more need for technology (Bagchi et al., 2004). Since E-government in Saudi Arabia is still considered a new concept, and since it promotes the decentralisation of decision structure, E-government is expected to be more compatible with individuals who have lower scores of power distance. Therefore, this study proposes the following hypothesis:

H12: The influence of PU on IU increases for individuals who espouse lower degree of power distance.

3.2.4.5 Long-Term Orientation

Long-term orientation is concerned with people's values in life, whether they are more oriented toward the future or toward the past and present (Hofstede and Bond, 1988). Individuals with lower LTO scores tend to prefer maintaining traditions and norms and approaching new changes with doubts. On the other hand, individuals espousing a higher LTO scores prefer thrifting and exceling in education in order to prepare for the future (Hoehle et al., 2015). Since E-government is still considered a

new concept in Saudi Arabia, and its adoption requires trusting this new system and letting go of some of the previous traditions and norms regarding the application and reception of government services in order to have a better future for government service, the adoption of E-government is expected to be more compatible with the individuals espousing higher scores of LTO. Therefore, this study proposes the following hypothesis:

H13: The influence of PU on IU increases for individuals who espouse higher degree of long-term orientation.

3.3 Proposed Conceptual Model and Hypotheses

Multiple different definitions exist in the literature for each variable integrated in the proposed model. In order to eliminate misunderstandings and clarify what is meant by each construct, the following table (Table 6) contains the factors used in the proposed framework and their adopted definitions.

Table 6: Factors and Definitions

Factor	Definition	Reference
Perceived Usefulness	The degree to which an individual believes that using E-government portals would enhance his or her reception of government information and services	Proposed by the author
Intention to Use	"A measure of the strength of one's intention to perform a specified behaviour"	(Lean et al., 2009, p. 461)
Usage Behaviour	The degree to which an individual utilises the capabilities of an E-government portal	Proposed by the author
System Quality	A measure of "the desired characteristics of the information system itself"	(DeLone and McLean, 1992, p. 24)

Service Quality	the overall support provided by the service provider	(Delone and McLean, 2003)
Information Quality	The characteristics of the information provided, such as accuracy, meaningful ness, and timeliness	(DeLone and McLean, 1992)
Trust of the Government	"one's perceptions regarding the integrity and ability of the agency providing the service"	(Bélanger and Carter, 2008, p. 167)
Trust of the Internet	"an individual's perceptions of the institutional environment, including the structures and regulations that make an environment feel safe"	(Bélanger and Carter, 2008, p. 167)
Perceived Risk	"the citizen's subjective expectation of suffering a loss in pursuit of a desired outcome"	(Bélanger and Carter, 2008, p. 168)
Masculinity/Femininity	"The degree to which gender inequalities are espoused by an individual. Individuals who espouse masculine values emphasize work goals such as earnings, advancement, competitiveness, performance, and assertiveness. On the other hand, individuals who espouse feminine values tend to emphasize personal goals such as a friendly atmosphere, comfortable work environment, quality of life, and warm personal relationships"	(Srite and Karahanna, 2006, p. 682)

Individualism/Collectivism	"Degree to which the individual emphasizes his/her own needs as opposed to the group needs and prefer to act as individual rather than as a member of a group."	(Srite and Karahanna, 2006, p. 682)
Power Distance	"Degree to which large differentials of power and inequality are accepted as normal by the individual. Power distance will condition the extent to which the employee accepts that his/her superiors have more power."	(Srite and Karahanna, 2006, p. 682)
Uncertainty Avoidance	"Uncertainty avoidance is the level of risk accepted by the individual, which can be gleaned by his/her emphasis on rule obedience, ritual behavior, and labor mobility. This dimension examines the extent to which one feels threatened by ambiguous situations."	(Srite and Karahanna, 2006, p. 682)
Long-term Orientation	"long-term orientation refers to people's consideration for the future"	(Hoehle et al., 2015, p. 5)

The proposed framework, illustrated in Figure 10, integrates constructs from three well-known models in the IT/IS adoption field which have been validated in previous studies: TAM, IS Success Model, and Bélanger and Carter's Trust and Risk Model, in addition to Hofstede's national culture dimensions. When integrating two or more models, some issues such as redundancy of the factors might occur. These issues should be addressed in order to provide valid results. In this study, several models were integrated. When comparing the measuring items of these integrated

models, it is clear that IS Success Model measures some of the aspects of TAM, specifically, perceived ease of use and perceived usefulness. Perceived ease of use is measured as a part of system quality. Therefore, TAM's perceived ease of use construct was omitted from the proposed model. While when evaluating the measuring items of information quality, one of its items appear to evaluate perceived usefulness. However, this measurement concerns the information only, as in evaluating whether the presented information is perceived by the user as useful or not, while the perceived usefulness used in TAM evaluates the perceived usefulness of the whole system. Therefore, TAM's perceived usefulness was integrated in the proposed framework as a separate factor and not as a component of the information quality factor.

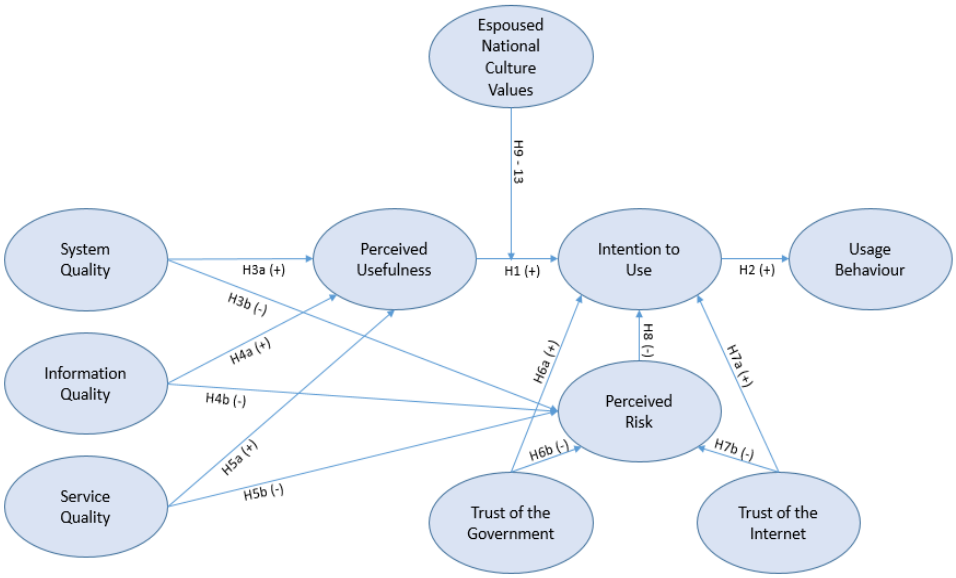


Figure 10: Proposed Conceptual Model

The following table (Table 7) summarises the hypotheses that will be tested in this research:

Table 7: Research Hypotheses

H1	Perceived usefulness has a positive influence on intention to use.
H2	Intention to use has a positive influence on usage behaviour.
H3a	System quality has a positive influence on perceived usefulness.
H3b	System quality has a negative influence on perceived risk.

H4a	Information quality has a positive influence on perceived usefulness.
H4b	Information quality has a negative influence on perceived risk.
H5a	Service quality has a positive influence on perceived usefulness.
H5b	Service quality has a negative influence on perceived risk.
H6a	Trust of the government has a positive influence on intention to use.
H6b	Trust of the government has a negative influence on perceived risk.
H7a	Trust of the Internet has a positive influence on intention to use.
H7b	Trust of the Internet has a negative influence on perceived risk.
H8	Perceived risk has a negative influence on intention to use.
H9	The influence of PU on IU increases for individuals who espouse higher degree of UA.
H10	The influence of PU on IU increases for individuals who espouse higher degree of individualism.
H11	The influence of PU on IU increases for individuals who espouse higher degree of Femininity.
H12	The influence of PU on IU increases for individuals who espouse lower degree of Power distance.
H13	The influence of PU on IU increases for individuals who espouse higher degree of Long-term orientation.

3.4 Summary

This chapter introduced the proposed conceptual model for the factors affecting the adoption of E-government. The proposed model integrated three well-known IT/IS adoption models in addition to Hofstede's national culture dimensions. This chapter also presented the research hypotheses. The following chapter will discuss the research design that will be followed to achieve the research aim and objectives, and to answer the research question.

Chapter 4: Methodological Framing

This chapter will outline the methodological framing of this research. First, a discussion of the selected philosophical stance and the justification for the choice will be presented. Second, the chapter will introduce the adopted research approach. Third, the selected research method will be presented. Fourth, the research strategy will be discussed. After that, a discussion of the research population, sample, and sampling technique will be presented. This chapter will also provide a discussion regarding the development of the research instrument. Following that, the reliability and validity of the measures will be introduced. Lastly, this chapter will present a discussion of the different elements of conducting online survey, including survey design, survey translation, the ethical and privacy issue, survey piloting, and finally data collection.

4.1 Layers of Methodological Framing

The methodological framing has several crucial elements that researchers should understand and select carefully as it determines how to answer the research question and achieve the research aim and objectives. To clarify how the elements of the methodological framing are related to each other, Saunders et al. (2012) have developed a metaphor called the 'Research Onion', which is illustrated in Figure 11. The 'Research Onion' shows the multiple elements of research design. A good understanding of the outer layers elements and their inter-relationship can aid in selecting the most appropriate and rational data collection technique and analysis. The methodological framing of this study will be constructed using the 'Research Onion' metaphor and the terminology used in it.

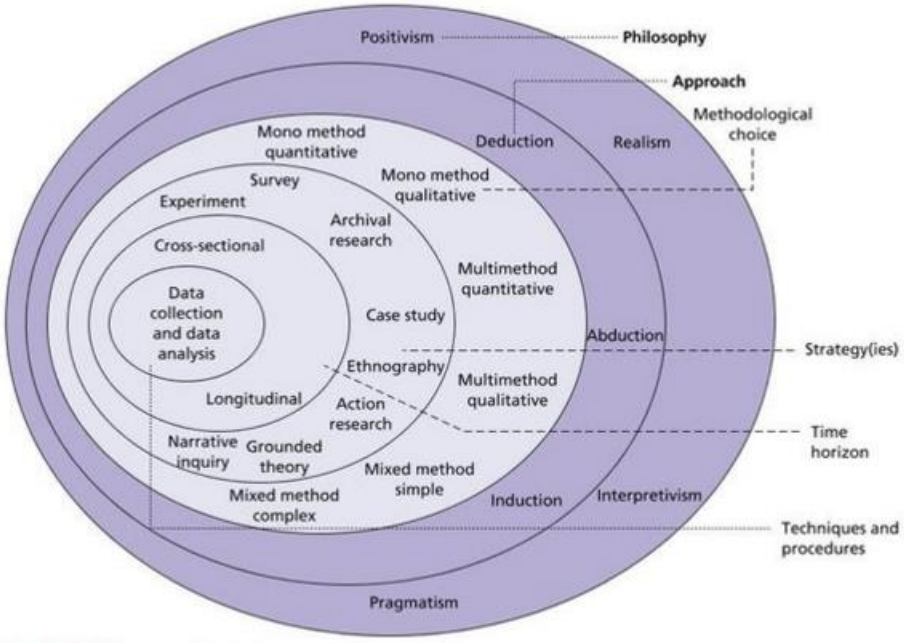


Figure 11:Research Onion

Source: Saunders et al. (2012)

4.2 Philosophical Stance

The philosophical stance of a study determines the set of assumptions that underpins the research and acts as a guidance for the researcher to select the appropriate research approach and method in order to conduct a better study on the research topic (Saunders et al., 2012). It is important to define the research's philosophical assumptions in order to enable the readers to understand the perception from which the study was designed and executed (Krauss, 2005). In the social science, a philosophical stance is often referred to as 'research paradigm' that acts as a framework that organises the research and guides the researcher through forming the basic assumptions, identify the key problems, and select the best approach and method to seek the answers (Neuman, 2013). Saunders et al. (2012) defined the research paradigm as "a way of examining social phenomena from which particular understandings of these phenomena can be gained and explanations attempted" (pp. 140-141), while Krauss (2005) has simply defined it as "the identification of the underlying basis that is used to construct a scientific investigation" (p. 759).

There are many different research paradigms that are adopted by researchers. Positivism and interpretivism are the most commonly adopted research paradigms in the IS field (Orlikowski and Baroudi, 1991, Fitzgerald and Howcroft, 1998), and are usually compared against each other as these paradigms have very different set of characteristics that set them apart. While positivism and interpretivism are polar opposites, critical realism lies somewhere between the two and it espouses characteristics from both paradigms to a degree.

Each research paradigm consists of an epistemological and an ontological approach. The epistemological approach is concerned with how the knowledge is acquired and what is considered acceptable knowledge (Walliman, 2006). On the other hand, the ontological approach is concerned with what exists and its nature (Neuman, 2013, Walliman, 2006, Saunders et al., 2012). Saunders et al. (2012) have discussed two aspects of ontology in their book, which are objectivism and subjectivism. Objectivism states that reality exist separately from the researcher. They are treated as facts with independent existence (Walliman, 2006), which means there is no relationship between what exists and social actors. Neuman (2013) identified objectivism as realism. He stated that realists have an objective view on reality. They believe that reality exists independently of the social actors and their interpretations, and that reality is already "out there" in pre-existing classifications that just need to be discovered.

On the other hand, subjectivism asserts that reality exists as a result of the social actor's actions and perceptions. Therefore, reality is constantly changing depending on how the social actor perceives it. This emphasises the importance of studying the details when attempting to understand what is happening and the reasons behind it in a certain situation (Saunders et al., 2012). Subjectivism is often associated with the term constructionism, which believes that reality is socially constructed (Saunders et al., 2012, Walliman, 2006). Subjectivism was also referred to as nominalism by Neuman (2013). Nominalists believe that reality is very closely connected and intertwined with the social actors' interpretations, subjectivity, and cultural beliefs. It is impossible to view reality without any influence from these

factors, and therefore, reality is always limited by how far the researchers "… can reach beyond [their] inner thoughts, cultural background, and subjectivity" (Neuman, 2013, p. 94).

Objectivism and subjectivism form the two extreme ends of the ontological continuum. Between these extreme ends, there are multiple other ontological approaches that inherit characteristics from both ends to various degrees. One of these ontological approaches is critical realism. In critical realism, reality still exists independently of the social actors, however, researchers cannot capture reality as it is. Whenever the researchers attempt to do so, their pre-existing subjectivity, cultural interpretations, and/or ideas affects and blurs their vision of the reality to some degree, and therefore they cannot capture it as it is.

Similar to the categorisation of the ontological approach, the epistemological approach of research paradigms is categorised as objectivism, subjectivism, or something in between. A paradigm might have a purely objectivist epistemology, which states that knowledge can be gathered through careful observations to gather empirical evidence in order to test the existing ideas about reality. These ideas are then either verified or not depending on the empirical evidence. On the other hand, subjectivist epistemological approach requires acquiring knowledge through constant cycles of interpretations in a specific location and time, because for subjectivist, "it is impossible to separate an objective 'out there' reality from interpretations or effects of the time/place in which it occurs" (Neuman, 2013, p. 95).

The aim and objectives of this study was discussed in section 1.2, which states that this study intends to identify the factors affecting citizens' adoption of E-government in Saudi Arabia and provide practical guidelines on how to enhance and promote E-government. Moreover, the factors affecting adoption of IS are constantly changing and varies depending on the group under study and the amount of information that could be collected from them to provide insight on the subject.

4.3 Research Approach

There are different approaches that can be adopted when conducting a study, such as deduction, induction, and abduction. Each approach has different characteristics. This research will be conducted while primarily following the deductive approach. One of the objectives of this research is to propose and validate a model for E-government adoption. To achieve this objective, a literature review was conducted and discussed in Chapter 2. Although the literature review revealed that there are many studies conducted in the E-government adoption field, there is a lack of studies that focus on this subject in the context of Saudi Arabia. Moreover, the existing literature on E-government adoption reveal that although there are constructs that are more often significant than others, the significance of these factors varies from the adoption in one country to another. Despite the importance of specific factors and relationships which were highlighted in the literature, some of these factors and relationships were not examined in the context of Saudi Arabia to determine if they are still significant and therefore, some recommendations to enhance E-government and improve the adoption rate should be based on them. Since there are many studies on E-government adoption and IS/IT adoption that are sufficient to be used as a basis to propose a model for the factors affecting E-government adoption and achieve the aim of this study, which is to identify the significant factors affecting the adoption of E-government in Saudi Arabia, thus, this research will be based on the adoption literature of E-government and IS/IT. This sequence is in line with the deductive approach, where the researcher conducts a literature review on the domain of the research in order to learn about the existing theories, and then constructs a model and draws hypotheses based on these theories. After that, the researcher collects the data and analyse it. The findings are used to confirm or reject the hypotheses, which would lead to either confirm or revise the theory from which the hypotheses were derived (Saunders et al., 2012, Bryman, 2016).

The deductive approach mostly deals with collecting quantitative data, but it does not mean that it could not be used with qualitative data. As the validation of the

proposed model will be achieved through examining several proposed hypotheses regarding the relationships between the constructs in the proposed mode, and since testing hypotheses are best done when utilizing the quantitative method (Bryman, 2016), adopting the deductive approach is appropriate because it is mostly adopted when the research requires collecting quantitative data. The collection of the data, under the deductive approach, usually occurs over a short period of time, which makes it easier for the researcher to predict the time required for data collection. This characteristic of the deductive approach is compatible with the timeframe specified for this study. Bryman (2016) stated that there are six stages in the process on deduction, which are: theory, hypothesis, data collection, findings, hypotheses confirmation or rejection, and finally, revision of theory. Bryman (2016) mentioned that it is possible that the researcher, under the deduction approach, does not follow these stages in a very linear way, because the researcher's view of a theory might change as new theories and findings might get published while he/she is in the process of conducting the research. One more character of the deductive approach is generalisation. In order to produce a generalisable outcome, the data should be collected from a carefully selected sample of a sufficient size (Saunders et al., 2012).

The aim of this research is to identify the factors influencing citizens' adoption of E-government in Saudi Arabia. Since there are various studies in the E-government adoption research field that were conducted in countries other than Saudi Arabia, the existing literature in this field can provide sufficient basis for building and proposing a conceptual model, which is one of objectives of this research. In order to achieve this objective, this study has started with conducting a literature review and then proceeded to propose a model and hypotheses that will be empirically tested to either confirm or reject them. This sequence of research process and the characteristics of this study are in line with those of the deductive approach (Bryman, 2016). In addition, this approach is in line with the critical realist stance adopted in this study, therefore, this research will primarily follow the deductive approach.

4.4 Research Method

The next layer in the 'Research Onion' is the methodological choice. When conducting a study, researchers decide whether to adopt a qualitative, quantitative, or a mixed method, depending on the aims and objectives of the research. A general differentiation between the qualitative and quantitative methods is that the latter deals with numeric data while the former does not. However, there are many characteristics that differentiate these two methods. The quantitative method is used to statistically examine the associations between specific variables. On the other hand, the qualitative method is used to gain in-depth understanding of a specific phenomenon through placing emphasis on words instead of numbers (Saunders et al., 2012, Bryman, 2016).

As the quantitative method focuses on objectively drawing conclusions based on mathematical and statistical calculations of empirical quantitative data, this method is associated with positivism. On the contrary, as the qualitative method focuses on gaining in-depth understanding of a specific topic through interpreting the meanings of non-quantitative data, this method is associated with the interpretivist philosophical stance (Saunders et al., 2012).

Another characteristic that differentiate between the quantitative and qualitative method is the main focus. Generalisation of the findings is the main focus of the quantitative method, and in order to achieve that, a statistical analysis is performed to ensure that the selected sample is representative of the population (Bryman, 2016, Saunders et al., 2012). Also, in order to increase the probability of selecting a representative sample and providing generalisable results, the sample size in the quantitative method tend to be large. The data collection strategy used in the quantitative method are highly structured with close-ended questions, which allows the participants to complete them in a short time (Walliman, 2006). On the other hand, the qualitative method is not concerned with generalising the results, therefore, no statistical analysis is needed to ensure having a representative sample. Moreover, the sample size in the qualitative method is usually smaller than sample size in the quantitative method as representativeness and generalisation are not a

primary concern (Saunders et al., 2012, Bryman, 2016). Since the qualitative method is concerned with gaining more insight on a specific case, the data collection strategy under the qualitative method are flexible allowing to collect more data, however, it usually takes a longer time to complete than the strategies of the quantitative method. Despite the different characteristics of the quantitative and qualitative methods, some researchers, such as Bryman (2016), have warned against strictly defining and separating these two methods as there are research that incorporate both methods to different degrees, thus, the strict characterisation and differentiation most likely do not apply to them.

Selecting a research method depends on the research question, aim, and objectives. The question of this research is 'What are some of the salient factors influencing citizens' adoption of the Saudi E-government?'. In order to address this question, a conceptual model was proposed based on a literature review, and several hypotheses were deduced. Using the quantitative method is the best when it comes to testing hypotheses and theories (Bryman, 2016). Therefore, adopting the quantitative method is ideal for this research since one of the objectives of this study is to empirically validate the proposed model and test the hypotheses.

Moreover, the cultural and religious aspects of the country where the study is conducted have an influence on the selection of the appropriate research method. The society in Saudi Arabia is conservative and places great emphasis on gender segregation. Therefore, direct contact should be avoided during data collection; otherwise the research will be gender biased. The data collection strategies of the qualitative method mostly involve direct interaction with participants, while the data collection strategies of the quantitative method do not require direct interaction, which further makes it suitable for this research.

4.5 Research Strategy

Research strategy is a plan for how the researcher will answer the research questions. Research strategies include survey, experiment, case study, and ethnography (Saunders et al., 2012). Experiment and survey are two different

strategies of data collection under the quantitative method. Experimental research could be conducted in the laboratory or in real life and it usually requires a small number of subjects. In experimental research, usually the researcher divides the subjects into two or more groups and treat all groups equally except giving only one group an extra condition, such as a treatment. The researcher then records any change or differences between the groups. The key aspect of the experimental research is that the researcher manipulates a condition or variable to see the reaction to this change (Neuman, 2013). The second method of data collection under the quantitative method is the survey. Surveys could be questionnaires or interviews which are conducted to collect information regarding the participants' background, opinion, attitude, behaviour or belief. Surveys are usually collected from a large sample and often, but not always, through a random sampling technique to allow the generalisation of the results. Unlike experiment, in survey, the researcher do not manipulate a condition to observe a reaction (Neuman, 2013). There are different techniques to conduct Surveys: interviews, which could be conducted face-to-face (structured interview) or by telephone (telephone questionnaires), and self-administered questionnaires, which could be distributed via the Internet, the post, or delivery and collection.

Surveys could be conducted longitudinal or cross-sectional. The longitudinal study aims to examine a set of variables or subjects over a period of time, which allows the researcher to observe the change and control some of the variables in the study. However, the longitudinal research has its limitations. For example, it is expensive and time consuming. Also, the researcher has to deal with the risk of losing some of the variables of subjects as the longitudinal research takes a long time. In addition, the longitudinal surveys use a smaller sample size, which affects the generalisation of the findings. On the other hand, the cross-sectional survey focuses on studying a specific phenomenon at a specific time only. This strategy is time effective, less expensive, and replicable. However, researchers using cross-sectional surveys have to carefully select a representative sample, and carefully structure a survey that can capture individual behaviour (Bryman, 2016).

The cross-sectional survey strategy is better suited for this study for several reasons. First, the aim of this study is to identify the factors influencing citizens' adoption of E-government in Saudi Arabia. To achieve this aim, this study will investigate the relationships between the dependent factor (E-government adoption) and several independent factors, besides investigating the associations between the independent factors. Some factors, such as beliefs and behaviour, should be collected neutrally without manipulation or control. In addition, surveys are appropriate to use when conducting a study in a geographically large region, which is the case in this study.

The aforementioned different survey techniques have their own advantages and disadvantages. Self-administered questionnaire is a common technique used to collect data. It is especially useful for studying a large population since it is time-efficient. Sapsford (2007) mentioned that one of the benefits of self-administered questionnaires is being a standardized measuring instrument, however, its major disadvantage is the absence of a person who can clarify the questions for the respondents. For that reason, the researcher should write the questions as clearly as possible, but without being too long in order not to lose the participant's interest.

The constructed questionnaires could be distributed via the Internet, the post, and/or delivery and collection. The effectiveness of each of these distribution methods depends on different aspects. Utilising the Internet to distribute the questionnaire enables the researcher to reach the study sample in a short time, and it also enable the researcher to be confident that the right person has responded to the questionnaire if it was sent via email. The response rate for Internet distributed questionnaire varies between 30-50%, within organisations using the Internet, or could be 11% or lower when using the Internet in general. The estimated time to complete the data collection when using the Internet is approximately 2-6 weeks, depending on the number of follow-up emails (Saunders et al., 2012). On the other hand, when using the post or the delivery and collection method, the researcher should know the addresses of the selected individuals or organisations in order to deliver the questionnaire to them. When using the post, there is a low confidence

that the right person has responded to the questionnaire personally, since another individual who is not part of the population could have answered it. The same scenario applies when using the delivery and collection method, however, the level of confidence could be increased since the questionnaires could be checked at collection. The response rate for both methods is between 30-50%. The data could be collected in 4-8 weeks, depending on the number of follow-up letters, when using the post to send the questionnaires. On the other hand, when using the delivery and collection method, the time required to collect the data depends on the researcher or the individual who is personally delivering and collecting the questionnaires (Saunders et al., 2012).

Based on the characteristics of the research population and the study context, the Internet and delivery and collection methods seem to be the most appropriate methods for questionnaire distribution. The post method was eliminated because the postal service in Saudi Arabia is not used regularly, and many people do not have a postal address. The distribution of the questionnaire will be further discussed in the following two subsections: Population and Sample, and Sampling Technique.

4.6 Population and Sample

The challenges of citizen's adoption of E-government are mainly attributed to either the online service provider (the government) or the user (citizen). Each of those groups can provide information relevant to their roles, e.g. the IT employees and managers have more understanding of how technology work, and what resources are available, while citizens can contribute more in understanding the factors affecting the adoption from their perspective and experience. Since this study focuses on identifying the factors affecting citizens' adoption of E-government, and since there is no better group that reflects the actual opinions and experiences of the citizens than the citizens themselves, the target population of this study will be the Saudi citizens, aged 18 and above, who have utilized any E-government website, whether to search for information or to apply for government services online. The target population had several constraints, which are justified as follow:

- Age constraint: the age of the target population was limited to those who are 18 years old or older. This constraint was defined because the Saudi government provides its services electronically to the citizens starting at the age 18.
- Nationality constraint: although the Saudi E-government provides government services to Saudis and non-Saudis alike, the target population was limited to the Saudi nationals only. This is because the foreign residents and visitors in Saudi Arabia come from various countries and collecting a sample that is truly representative of the population that consists of Saudi residents and non-Saudi residents and visitors will be very hard to achieve in the defined timeframe and, thus, it might affect the scope of the research.
- Previous use constraint: the population of the study was specified to include only those who have previously used E-government websites whether as passive or active users. The reason for adding this constraint is because based on the literature review, among the identified crucial factors that affect IS adoption are the technological factors, which are integrated in the proposed model as the three website quality aspects. Since the participants have previously used E-government websites, they will be able to evaluate these qualities based on their true experience and not on how they expect or imagine the E-government portals to be like. Providing an evaluation of the website quality aspects based on true experience will aid in determining whether these factors have significant influence on the adoption of E-government and what type of influence they have.

Since the target population is very large, and the locations of the individuals that make up the target population are scattered across a large geographical area, it is not feasible to collect the data from each individual in the population, even while utilising the Internet. Therefore, a sample of the defined population will be collected. There are many advantages associated with sampling, including low cost and high

accuracy (Saunders et al., 2012). The sampling technique used in this research will be discussed in the following section.

4.7 Sampling Technique

When it comes to sampling, there are two types: probability and non-probability. Probability sampling is utilised to generate inference about a population from a sample (Saunders et al., 2012). During probability sampling, each element in the population has an equal probability to be selected to sample. Probability sampling represents the population in the most reliable way (Walliman, 2006). However, the use of probability sampling is not always possible or feasible. Probability sampling requires a sampling frame, which is a list of all the elements in the population from which the sample will be drawn. An absence of the sampling frame, therefore, will prevent from using the probability sampling techniques. This leads to the utilisation of non-probability sampling. There are several non-probability sampling techniques, such as, quota, snowball, and convenience sampling. Deciding on which sampling technique to use depends on the objectives of the study.

After considering the different sampling techniques and their appropriateness for the purpose of this study, it was decided that a non-probability self-selection convenience sampling technique will be used. The main reason behind this decision is the lack of sampling frame. There is no known number of the Saudi nationals aged 18 and above who have previously used an E-government portal. Moreover, even if the authorities were contacted to seek this information, the information that might or might not be provided will not truly reflect the population because the number of citizens who have used an E-government portal is constantly changing. In addition, depending on the data and information privacy policy, the authorities might be able to provide a list of the citizens who have used an E-government portal to submit a request, however, it is not possible that they have a list of the citizens who have visited an E-government portal to read information without submitting any request.

Based on the aforementioned sampling issue, the non-probability self-selection convenience sampling technique was selected for this study. Many previous research have asserted the appropriateness of choosing such a technique to sample a population for a study where there is a problem in obtaining a sampling frame. The non-probability self-selection convenience sampling technique has been utilised in previous studies that had a problem in obtaining a sampling frame and collected their data through the Internet across a geographically large area, such as Alsaif (2014). However, collecting data through Internet-based questionnaires while using a non-probability sampling technique has limitation. These limitations include the possibility of generating bias data because of self-selection which results in preventing the generalisation of the study findings. The limitations of this study that are related to the selected sampling technique will be discussed in the final chapter.

4.8 Development of Research Instrument

The measuring items used in this study were either adopted or adapted from previous research including Al Khattab et al. (2015), Alomari et al. (2012), Almalki (2014), Featherman and Pavlou (2003), and Srite and Karahanna (2006). Many of the measuring items used in this study were either adapted or adopted from the study conducted by Almalki (2014) on E-government adoption in Saudi Arabia. The researcher proposed and validated a model that combines TAM, ISSM, perceived risk, and computer self-efficacy in order to understand what factors affect E-government adoption from the citizens' perspective. The researcher also examined the effect of some of Schwartz' personal values. Although there are similarities between the study conducted by Almalki (2014) and the current research, there are also many differences. While the previous research integrated all of the factors from TAM and ISSM, the current research only integrated perceived usefulness, intention to use, and usage behaviour from TAM, while opting to exclude perceived ease of use from the proposed model since this aspect is already measured in the system quality factor. In addition, this research only integrated the three quality factors from ISSM since they measure various aspects of the website that help in understanding which characteristics of the website have positive effects and which have negative ones.

Moreover, the effects of these quality factors on perceived risk were never examined in the context of E-government adoption in Saudi Arabia, which are some of the relationships this study proposed to examine. Although the study conducted by Almalki (2014) examined the effect of perceived risk on the adoption, the researcher did not examine the effects of the three quality factors on perceived risk, and neither did he study the relationship between trust and risk and their effect on E-government adoption. The significance of these relationships is proposed to be examined in this study. Finally, while Almalki (2014) examined the cultural role on E-government adoption using Schwartz personal values in a separate model from the one integrating TAM and ISSM, this research will examine the cultural role using Hofstede's national culture dimensions which will be integrated in one model with the factors adopted from TAM, ISSM and trust and risk model.

One of the advantages of adapting measuring items from previous studies is increasing the reliability and validity of the measures. Since the measuring items used in the research conducted by Almalki (2014) were validated in Saudi Arabia using the same targeted population of this study, it will be an advantage to use the same measuring items for the factors adopted in both studies. The following subsections provide a discussion of the development of the research instrument.

4.8.1 Measures of TAM Constructs

Three constructs were adopted from the Technology Acceptance Model: perceived usefulness, intention to use, and usage behaviour. The Technology Acceptance Model was integrated in many prior IS/IT research and, thus, different versions of its measuring items exist in the literature. The measuring items of the perceived usefulness construct assess how much the users believe that using the E-government portal is better than using the traditional method to acquire a government service or collect information, while the measuring items of the intention to use and usage behaviour constructs measure users' intention, or lack thereof, to use the E-government portal and their current usage behaviour, respectively. Seven measuring items were adapted from Al Khattab et al. (2015) and Gefen and Straub (2003) to measure PU. The wordings of the original measuring

items were modified slightly to maintain a consistent statement format and change the name of the websites used in the previous studies. On the other hand, the measuring items of IU and UB construct were adopted from (Almalki, 2014). The measuring items for perceived usefulness were adapted from two previous studies as the two items (PU6 and PU7) adapted from Al Khattab et al. (2015) measure the usefulness of using the E-government portal in terms of the location and the quality of the provided service compared to using the traditional method. Having access to government services from various locations is considered an advantage over having to be physically present in a specific place in order to apply for a service. Therefore, measuring whether E-government have this benefit or not is important to understand the degree of usefulness of E-government and if possible, how to improve it. Similarly, the quality of the service provided might differ when using E-government because in the traditional way of applying for government services, some citizens get additional privileges and priority if they happen to be associated with someone of influence either within the government office or on a larger scale. This is known as 'wasta' in Saudi Arabia. Citizens who usually receive the government services without wasta might find that using E-government is a much better option than applying for the service in person, since E-government does not prioritise processing the applications based on who it belongs to. Table 8 contains the measuring items of the constructs adopted from TAM.

Table 8: Measuring Items of Constructs Adopted from TAM

Code	**Perceived Usefulness (PU)**		**Source**
	Adapted Measuring Items	**Original Measuring Items**	
PU1	This E-government portal is useful for searching for information and applying for government services	Travelocity.com is useful for searching and buying flights	(Gefen and Straub, 2003)
PU2	Using this E-government portal improves my performance in searching for information and applying for government services	Travelocity.com improves my performance in flight searching and buying	

PU3	Using this E-government portal enables me to search for information and apply for government services faster	Travelocity.com enables me to search and buy flights faster	
PU4	Using this E-government portal makes it easier to search for information and apply for government services	Travelocity.com makes it easier to search for and purchase flights	
PU5	Using this E-government portal increases my productivity in searching for information and applying for government services	Travelocity.com increases my productivity in searching and purchasing flights	
PU6	Using this E-government portal helps me to benefit from government services from any location	Transacting with electronic government services will help me benefit from government services from any location	(Al Khattab et al., 2015)
PU7	Using this E-government portal improves the quality of service I receive from government	Transacting with electronic government service will improve the quality of service I receive from government	
Code	**Intention to Use (IU)**		**Source**
IU1	I intend to re-use this e-government portal in the future		(Almalki, 2014)
IU2	I intend to re-use this e-government portal to obtain information and get services as often as needed		
IU3	I intend to re-use this e-government portal rather than visit the office when I need information and/or to apply for services		
IU4	To the extent possible, I would re-use this e-government portal to do different things (e.g. obtain information, apply for services)		
Code	**Usage Behaviour (UB)**		**Source**
UB1	I use this e-government portal to retrieve information		(Almalki, 2014)
UB2	I use this e-government portal to apply for services		
UB3	I use this e-government portal to make payment for government services		
UB4	I use this e-government portal to communicate with the government organisation		
UB5	I use this e-government portal to network with others (e.g. government officials and citizens)		
UB6	I use this e-government portal to check the requirement before visiting the office		

UB7	I use this e-government portal to check the latest news of this government organisation	

4.8.2 Measures of ISSM Constructs

Three constructs were adopted from the Information System Success Model: system quality, information quality, and service quality. The measuring items of SQ and SVQ were adapted from Almalki (2014) while the measuring items of IQ were adopted from the same study. The adapted measuring items differ from the original to keep the format of the statements consistent and less wordy in order to allow the participants to read the items and understand them more easily which, in turn, will prompt them to complete the questionnaire. Seven measuring items were adapted to measure the system quality construct. These measuring items reflect the users' views on the system reliability, accessibility, response time, and flexibility. The adopted measuring items for information quality assess information accuracy, completeness, usefulness, currency, and format. As for the service quality construct, seven measuring items were adapted. These measuring items measures different dimensions of service quality, which are: tangibles, reliability, responsiveness, assurance, and empathy. Table 9 presents the measuring items of the constructs adopted from ISSM.

Table 9: Measuring Items of Constructs Adopted from ISSM

Code	**System Quality (SQ)**		**Source**
	Adapted Measuring Items	**Original Measuring Items**	
SQ1	This E-government portal is easy to use.	This e-government portal is user friendly	(Almalki, 2014)
SQ2	This E-government portal is constantly available (24/7)	I find this e-government portal available every time I need it (i.e. 24/7)	
SQ3	This E-government portal is easy to navigate	This e-government portal's site map is well organised (i.e. easy to navigate)	
SQ4	This E-government portal is easy to get used to adopting	I was able to adjust myself readily to use this e-government portal	
SQ5	This E-government portal is accessible	This e-government portal provides good access (i.e. ability to find and reach the website quickly)	

SQ6	This E-government portal quickly loads all the texts and graphics	This e-government portal quickly loads all the text and graphics	
SQ7	The system used in this E-government portal is considered trustful	This e-government portal is reliable	
Code	**Information Quality (IQ)**		**Source**
IQ1	This E-government portal provides understandable information		(Almalki, 2014)
IQ2	This E-government portal provides complete information		
IQ3	This E-government portal provides precise information		
IQ4	This E-government portal provides up-to-date information		
IQ5	This E-government portal provides reliable information		
IQ6	This E-government portal provides useful information		
Code	**Service Quality (SVQ)**		**Source**
	Adapted Measuring Items	**Original Measuring Items**	
SVQ1	This E-government portal electronically provides all the services found in the government office	All the services I expect to receive from this government organisation are available online in their portal	(Almalki, 2014)
SVQ2	This E-government portal enables me to receive all the available E-services without the need to visit the government office during any stage	All services provided by this government organisation in their portal can be completed online without the need to visit the government office at any stage	
SVQ3	This government organisation is transparent in delivering their E-government services	This government organisation is transparent in delivering their e-government services	
SVQ4	This E-government portal allows interactive communication with the government organisation	This e-government portal allows me to communicate interactively with the organisation	
SVQ5	This E-government portal is responsive to user's requests (i.e. quick response and the ability to get help if there is a problem or question)	This e-government portal is responsive to my request (i.e. quick response and the ability to get help if there is a problem or question)	
SVQ6	Using this e-government portal makes me feel confident that	Using this e-government portal makes me feel confident that	

	information/services will be delivered as promised	information/services will be delivered as promised	
SVQ7	The employees of this government organisation show empathy when communicating with them via their portal	This organisation shows empathy when communicating with them via their portal	

4.8.3 Measures of Trust and Risk

There are different measurements of trust and perceived risk in the literature. Selecting the appropriate measuring items is a crucial task to ensure that these items measure the construct correctly. Five measuring items were adapted from Alomari et al. (2012) and Al-Sobhi (2011) to measure the trust in the Internet construct. The three measuring items (TI1, TI4, and TI5) adapted from Alomari et al. (2012) reflect users' trust in the security measures, safety nets and performance structures of the Internet, while the other two measuring items (TI2 and TI3) which were adapted from Al-Sobhi (2011) address the participants' perspective of the legal structure and sharing sensitive information through the Internet. As for measuring the trust in the government construct, five measuring items were adapted from Alomari et al. (2012) and Al Khattab et al. (2015). The first three measuring items of this construct, which were adapted from Alomari et al. (2012), assess how much the users' believe that the government agency will process the applications, and that it will be processed faithfully while keeping the citizen's best interest in mind. The last two measuring items, which were adapted from Al Khattab et al. (2015), measure the participants' belief that the government organisation has the required ability to process the transactions and enough resources and experience to provide and maintain their services electronically. As for the perceived risk construct, six measuring items were adapted from Almalki (2014) and Featherman and Pavlou (2003). The measuring items of the perceived risk construct reflect the users' perception of the six dimensions of risk: performance, financial, time/opportunity, security/privacy, social, and psychological loss. Some of the original measuring items were slightly modified to generalise some statements so they can measure different E-government portals and not only one specified portal as in the original item TI1. Also, most of the measuring items were modified to keep a consistent format for all of the statements

in order to make it easier for the participants to read and complete the questionnaire. Table 10 shows the adapted measuring items for the constructs adopted from Bélanger and Carter's Trust and Risk Model.

Table 10: Measuring Items of Constructs Adopted from the Trust and Risk Model

Code	Trust of the Internet (TI)		Source
	Adapted Measuring Items	**Original Measuring Items**	
TI1	The Internet has enough safeguards to make me feel comfortable using it to transact personal requests with our government	The internet has enough safeguards to make me feel comfortable using it to interact with government online.	(Alomari et al., 2012)
TI2	I feel assured that legal and technological structures adequately protect me from problems on the Internet	I feel assured that legal and technological structures adequately protect me from problems on the internet	(Al-Sobhi, 2011)
TI3	I feel secure sending sensitive information across the Internet	I would feel secure sending sensitive information across the e-internet	
TI4	I am confident that the data I submit through the Internet will not be misused	I am confident that the data I submit through government websites will not be misused and will be treated confidentially	(Alomari et al., 2012)
TI5	In general, the internet is now a robust and safe environment in which to transact with our government.	In general, the internet is now a robust and safe environment in which to transact with government	
Code	**Trust of the Government (TG)**		**Source**
	Adapted Measuring Items	**Original Measuring Items**	
TG1	I trust that this government organisation will process the applications I submit online	I am confident that the forms I submit though government websites will be processed	(Alomari et al., 2012)
TG2	I trust that this government organisation can carry out online transactions faithfully	Government can be trusted to carry out online transactions faithfully.	
TG3	I trust that this government organisation will keep my best interests in mind	I trust government because they keep my best interests in mind.	

TG4	I believe that this government organisation has the ability to reliably process transactions made over the Internet	The government has the ability to reliable process transactions made over the Internet.	(Al Khattab et al., 2015)
TG5	I believe that this government organisation has sufficient experience and resources to provide and maintain their services through the Internet	The government have sufficient experience and resources to provide and maintain their services through the Internet.	
Code	**Perceived Risk (PR)**		**Source**
	Adapted Measuring Items	**Original Measuring Items**	
PR1	Using this e-government portal would involve performance risk (i.e. missing deadline due to portal not working)	Using this e-government portal would involve performance risk (i.e. missing deadline due to portal not working)	(Almalki, 2014)
PR2	Using this e-government portal would involve financial risk (i.e. losing money when paying online due to transaction errors)	Using this e-government portal would involve financial risk (i.e. losing money when paying online due to transaction errors)	
PR3	Using this e-government portal would involve security/privacy risk (i.e. losing my portal's login account by hackers, losing my personal information entered in this e-government portal)	Using this e-government portal would involve security risk (i.e. losing my portal's login account by hackers)	
PR4	Using this e-government portal would involve time risk (i.e. wasting time to learn how to use E-government websites)	My signing up for and using an XXXX would lead to a loss of convenience of me because I would have to waste a lot of time fixing payments errors.	(Featherman and Pavlou, 2003)
PR5	Using this e-government portal would involve social risk (i.e. losing status in one's social group)	My signing up for and using an XXXX would lead to a social loss for me because my friends and relatives would think less highly of me.	
PR6	Using this e-government portal would involve psychological risk (i.e. conflicting with one's self-image or self-concept)	The usage of an XXXX would lead to a psychological loss for me because it would not fit in	

		well with my self-image or self-concept.	

4.8.4 Measures of the Espoused Cultural Values

Four of the espoused national culture values, which are uncertainty avoidance, masculinity/femininity, power distance, and individualism/collectivism, will be measured using adopted measuring items from Srite and Karahanna (2006). Also, the long-term orientation measuring items will be adopted from Hoehle et al. (2015). The measuring items for uncertainty avoidance reflects how the participant deals with ambiguity and uncertainty. High UA scores means that the individual prefers sticking to known situations and traditional methods, while low UA score means that the individual has a more relaxed attitude and is willing to try new methods with some degree of risk and unknown. The measuring items for masculinity/femininity reflects the degree of competitiveness. High MF score means the individual focuses more on being competitive, having achievements, and receiving rewards for success. On the other hand, low MF score means the individual prefer cooperation over competitiveness and they tend to be more modest when doing an achievement rather than wanting to receive materialistic rewards. The measuring items for PD measures how much the individual accepts that people have varying levels of power. Individuals who register high score on this scale tend to accept hierarchy and inequality among people, while individuals with lower PD scores want people to have equal power and ask for justification when some people have more power than the others. Lastly, the measuring items of IC measures how much the individual prefers to be in a loosely-knit or tightly-knit social framework. Individual with high IC scores prefer living in a close society where one has to take care of him/herself, their immediate family, their relatives, and members of a particular group. On the other hand, individuals with low IC scores prefer to live in a society where they only have to take care of themselves and their immediate family. Finally, individuals who score lower on LTO prefer to maintain the traditions and norms and usually face new technology with suspicion, while individuals who score higher on LTO prefer thrifting and enhancing their education in order to have better

future. Table 11 presents the measuring items for the espoused national culture constructs.

Table 11: Measuring Items of Constructs Adopted from Hofstede's National Culture Values

Code	Uncertainty Avoidance (UA)	Source
UA1	Rules and Regulations are important because they inform workers what the organisation expects of them.	(Srite and Karahanna, 2006)
UA2	Order and structure are very important in a work environment.	
UA3	It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do.	
UA4	It is better to have a bad situation that you know about, than to have an uncertain situation which might be better.	
UA5	Providing opportunities to be innovative is more important than requiring standardized work procedures.	
UA6	People should avoid making changes because things could get worse.	
Code	**Masculinity/Femininity (MF)**	**Source**
MF1	It is preferable to a have a man in a high-level position rather than a woman.	(Srite and Karahanna, 2006)
MF2	It is more important for men to have a professional career than it is for women to have a professional career.	
MF3	Solving organisational problems requires the active forcible approach which is typical of men.	
MF4	There are some jobs in which a man can always do better than a woman.	
MF5	Women do not value recognition and promotion in their work as much as men do.	
Code	**Power Distance (PD)**	**Source**
PD1	Managers should make most decisions without consulting subordinates.	(Srite and Karahanna, 2006)
PD2	Managers should not ask subordinates for advice, because they might appear less powerful.	
PD3	Employees should not question their manager's decisions.	
PD4	A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates.	

PD5	Higher level managers should receive more benefits and privileges than lower level managers and professional staff.	
PD6	Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manger might appear to be weak and incompetent.	
Code	**Individualism/Collectivism (IC)**	**Source**
IC1	Being accepted as a member of a group is more important than having autonomy and independence.	(Srite and Karahanna, 2006)
IC2	Group success is more important than individual success.	
IC3	Being loyal to a group is more important than individual gain.	
IC4	Individual rewards are not as important as group welfare.	
IC5	It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative.	
Code	**Long-Term Orientation (LTO)**	**Source**
LTO1	In your private life, personal steadiness and stability is important.	(Hoehle et al., 2015)
LTO2	In your private life, thrift is important.	
LTO3	In your private life, respect for tradition is important.	

4.9 Reliability and Validity of the Measures

After constructing the research instrument, it is important to examine its reliability and validity. Reliability of an instruments refers to its ability to produce consistent results (Bryman, 2016). This means similar findings should be produced whenever the data is gathered from the same sample (Saunders et al., 2012). When evaluating the reliability of an instrument, three factors are often considered: stability, internal reliability, and inter-rater reliability. Stability is concerned with whether or not the measure will produce similar results if it was administered twice to the same group. Stability is mostly examined using the test-retest method. On the other hand, internal reliability refers to whether or not the multiple measuring items of a construct are all related to the defined construct. The internal reliability could be examined using the split-half method or Cronbach's alpha. The third type of reliability, the inter-rater reliability, is usually concerned with studies that have more than one 'rater' use their subjective judgement during observations or classification of data (Bryman, 2016).

Validity refers to whether a measuring item or a set of measuring items can correctly measure a specific concept. There are various types of validity: face validity, concurrent validity, predictive validity, discriminant validity, and convergent validity (Bryman, 2016, Neuman, 2013). Concurrent validity and predictive validity are sometimes treated as sub-categories of criterion validity. Also, discriminant validity and convergent validity are sometimes identified as sub-categories of construct validity (Neuman, 2013). Face validity, as its name implies, is deciding whether the indicators really measure the construct or not based on only reading them. To ensure that face validity is achieved, researchers should develop their measures based on strong theoretical or conceptual background. Alternatively, the measurements could be adopted from previous studies conducted in the same research field or a similar one, in which the measure have been already validated (Hardesty and Bearden, 2004). Concurrent validity requires having a pre-existing measure that is already validated and accepted in order to verify the new measure. The concurrent validity is attained when both measures produce results that are similar. Predictive validity is attained when a future event or behaviour is correctly predicted by the measures (Neuman, 2013). Convergent validity means that all the indicators belonging to one construct should converge or act alike which is determined by assessing their inter-correlation. High inter-correlations mean that the indicators have converged, while lower scores mean that there is a lack of convergence. The last type of validity is discriminant validity, which requires each construct to be unique. Meaning that the indicators of one construct should have low correlation with the indicators of another construct (Neuman, 2013).

The face validity of the measures used in this study were already attained because the measures are adapted from previous studies. Moreover, the measures were checked by experts in the field, which will be discussed in Section 4.10.4. The full procedure of testing the reliability and validity will be discussed in Section 5.6.5.

4.10 Online Survey

In section 4.5, the utilisation of online questionnaires to collect the primary data was justified, and the advantages and disadvantages of using this strategy to

collect data were highlighted. The following sections discuss important aspects that must be carefully thought of when utilising online surveys.

4.10.1 Survey Design

Questionnaire design is a crucial aspect of the research especially when utilising Internet questionnaires to collect the data, since the clarity of the questions will affect the validity of the responses provided and the attractiveness of the questionnaire's layout will have an impact on the response rate. The cover letter is usually the first part of the questionnaire the participants see, and it plays an important role in their decision to whether to complete the questionnaire or not. Dillman (2007) suggested using the social exchange theory when designing a questionnaire as rewards, costs, and trust form the critical factors that could be used to predict people's actions. Individuals are more likely to respond to the questionnaires and provide accurate answers when they trust that the rewards resulting from participating in the study outweigh the costs of doing so.

Dillman's (2007) suggestion was followed while designing the questionnaire. The cover letter included a brief introduction of the researcher and the research topic. In order to establish trust, the cover letter also informed the participants that the researcher holds a scholarship from the Saudi government, which means the findings of this study will help improving the quality of the Saudi E-government in the future. This information also acted as a reward of participating in the study because there is a large chance that the government officials who are responsible for developing and improving E-government will use the findings of this research to enhance some aspects of the current Saudi E-government. The participants were also thanked in advance of completing the questionnaire and after the completion, which Dillman (2007) addresses as a reward. In order to reduce the costs associated with completing the questionnaire, simple words that are clear and easy to understand were used throughout the questionnaire. Moreover, the number of questions were reduced during the pilot stage, which is discussed in section 4.10.4, in order to make the questionnaire short and easy to complete.

All of the questions in the questionnaire were designed to be closed-ended with the answers provided in 5-points Likert Scale in order to encourage participation. The questionnaire consisted of 85 questions in total. Nine questions were related to the demographic information, which were presented in the first part of the questionnaire, right after the cover letter. The second part of the questionnaire contained 54 questions about the factors that were adopted from TAM, ISSM, and Trust and Risk model, which were hypothesised to have an effect on E-government adoption in Saudi Arabia. At the beginning of the second section of the questionnaire, the participants are instructed to select an E-government portal from a list or provide the name of an E-government portal that they have previously used, and then to use the selected portal as a reference when answering the questions in section two of the questionnaire. The third and last part of the survey included 22 questions about the espoused cultural values. In order to filter out the questionnaires that were completed randomly by the participants without reading the measuring items, for each construct, a single measuring item was phrased negatively. These items are: PU5, PR1, TG4, TI3, SQ3, IQ2, SVQ4, IU4, UA3, MF2, PD2, and IC2. The final version of the questionnaire is provided in Appendix B.

4.10.2 Survey Translation

Since this study targets the Saudi citizens, whose first language is Arabic, the questionnaire was made available in Arabic and English. The reasoning behind making the questionnaire available in English although the first language in Saudi Arabia is Arabic is that many Saudis, who are included in the target population of this study, speak English as a second language, especially those who are or were studying at English speaking countries. This group might prefer completing the questionnaire in English. There are three techniques that are used for survey translation: direct translation, back-translation, and parallel translation (Saunders et al., 2012). The direct translation, as its name implies, requires an individual to directly translate the original questionnaire to another language. Although this technique is easy to implement, many mistakes could occur especially when translating a meaning from one language to another. On the other hand, back-translation requires an individual

to translate the original questionnaire to a target language, and then another individual has to translate the already translated questionnaire from the target language back to the original language of the questionnaire. After that, the original questionnaire and the one that was back-translated will be compared against each other to find if there is any mistake in the translations and correct them. This technique requires having two individuals, one who is a native speaker of the source language and another who is native speaker of the target language. Finally, the parallel translation requires two or more translators to individually translate the original questionnaire to the target language and then compare the translations. Although this technique might creating a translated questionnaire with good wordings, the downside is that lexical, idiomatic, and experiential meaning might not be translated correctly (Saunders et al., 2012).

After comparing the advantages and disadvantages of each translation technique, the back-translation technique was chosen to translate the questionnaire from English to Arabic. The questionnaire was first developed in English, since all of the items were adapted from the literature were written in English. The researcher then translated the questionnaire to Arabic. The translated version was given to another person whose first language is Arabic and also fluent in English in order to translate it back to English. After that, the original English version of the questionnaire and the back-translated version were compared against each other. Some minor amendments were made in the translation.

4.10.3 Ethical and Privacy Issue

The ethical and privacy issues were addressed in the cover letter of the survey. The participants were informed that their identities will be kept anonymous and the collected data will only be used for the purpose of this research which was also explained in the cover letter. The participants were also informed that their participation in this study is optional and that by proceeding to complete the questionnaire, they consent to participate in the study and have the collected data used in the research, however, they still can withdraw from participation at any stage.

The survey used in this research was approved by the Departmental Ethics Committee (DEC) at the University of Strathclyde. The DEC requires the researcher to follow normal professional practice, the Data Protection Act, and University Ethics Policy. The cover letter included the information specified in the guidelines and required by the DEC to grant an approval of the research. These guidelines are:

- Providing the participant with information about the project, how the data will be stored and used, if the data will be used anonymously, and what organisations are involved in the research.
- Not placing the participants at risk at any time during the study.
- Provide the participants with contact information to raise any issues they might have with the study.
- The participants should be able to withdraw from the study at any time.
- This information should be provided in plain, simple language that the participants can understand easily.

4.10.4 Survey Piloting

Once the questionnaire was developed, it was piloted through collecting experts' and colleagues' reviews, and through conducting cognitive interviews. Piloting the questionnaire is an important step in order to ensure that no mistakes occurred while developing the questionnaire, and that all questions and instructions are clear and easy to understand (Dillman, 2007). The developed questionnaire was first shown to some experts in order to collect their reviews and recommendations since the experts have more knowledge regarding the research area, the different variables, and measuring items used in this research, thus they will be able to identify any problem in that area. After collecting the experts' reviews, the questionnaire was shown to some colleagues since they can identify other problems such as the sequence of the questions and typos.

The first step that was taken in piloting the developed questionnaire was consulting three experts. The Arabic version of the questionnaire was sent to three experts who have provided valuable feedback and suggested some changes to the

questionnaires. These suggestions were concerned with the number of measuring items each variable had, the clarity of some of the statements, and the appropriateness of the measuring items of the 'trust of the government' construct. Therefore, based on the experts' feedback, some improvements were done on the questionnaire. For example, the number of items measuring each variable have become similar. Also, one of the variables in the national culture values (long-term orientation) was deleted because it only had three measuring items and all of the experts suggested removing the variable since the measuring items might not be able to capture the variable correctly. Before deleting the variable, more research was conducted to find if there were other measuring items from previous studies that measure the espoused long-term orientation, however, there was no sufficient number of measuring items.

Another improvement in the questionnaire was made by changing the measuring items of the 'trust of the government' variable. The experts have commented that the previous measuring items, such as "I think I can trust our government" and "Our government can be trusted to carry out online transactions faithfully", could be misinterpreted by the participants as whether or not they trust the governing authority, which in Saudi Arabia is mainly consisting of the royal family. Therefore, the collected data would have not measured the variable correctly. In order to capture a better measurement of the variable, the previous measuring items were substituted with clearer ones, such as "I believe that this government organisation has the ability to reliable process transactions made over the Internet". The new measuring items will allow the participants to easily understand that these items will not measure their trust in the governing authority, however, they will measure people's trust in the abilities of the employees working in the specified government organisation, besides their trust that the government organisation has the necessary resources to fulfil and process the E-government requests and applications.

After receiving the experts' reviews and revising the questionnaire based on the collected reviews, it was time to collect colleagues' reviews on the questionnaire.

The purpose from collecting colleagues' reviews was to find if there were any unclear question, typos, error in the sequencing, or any significant question that was not included, besides estimating how long it would take the participants to complete the questionnaire. The questionnaires were formatted as it would appear in the data collection stage, however, a space for feedback was added after each set of measuring items for each variable so the participating colleague will be able to write a feedback on each variable and its measuring items separately. A second cover page was added to the questionnaire in order to explain the purpose of collecting the reviews from the colleagues and to give them instructions.

The questionnaires were distributed in both languages to find if both versions have the same level of clarity or if there is a difference between them. In total, five reviews were collected. Two of the colleagues who speak Arabic and English were asked to complete the questionnaire in both versions, however, they were instructed to complete the Arabic version first then the English one, because when launching the questionnaire to collect the data, it is expected that most of the participants will choose to complete the questionnaire in Arabic since it is their first language and many Saudis do not speak English. After completing both versions of the survey, a few questions were asked about the consistency and clarity of both versions. The fifth review was collected using the English version of the questionnaire.

The collected reviews have pointed out a typo in the English version, a few grammatical errors in the English version, and a suggestion to flip the labels of the Likert scale. Acting on the collected reviews, the typo and grammatical errors were fixed, however, the suggestion of flipping the labels of the Likert scale was not followed because the current organisation of the labels of the Likert scale is compatible with Qualtrics, which will be used for data collection.

After making some changes to the questionnaire, it was time to conduct some cognitive interviews. The cognitive interviews, also known as think-aloud interviews, allow the researcher to find if the participants understand the questions and statements in the questionnaire as they are intended to be. Also, cognitive interviews

allow the researcher to find which questions are taking most of the time in order to improve this part of the questionnaire. During this process, a potential questionnaire respondent is asked to complete the questionnaire while thinking out-loud and while the researcher is sitting with them.

This process was followed with five potential participants who have different ages, occupations, and education level. The comments made by the participants during this stage showed that the questions and statements in the questionnaire are comprehensible. Also, they seemed to have no problem understanding the instructions and following them.

4.10.5 Data Collection

Qualtrics system was utilised to create and distribute the questionnaires. The link of the questionnaire was distributed through emails, messaging apps, and social media with a brief description of the study and encouraging the recipients and participants to distribute the questionnaire. The questionnaire was made available for participation for 6 weeks. During the 6 weeks, 1,127 participants attempted to complete the questionnaire. Out of the 1,127 attempts, only 527 were usable responses, which is around 46.8% of the total attempts. The other responses were excluded because each case had missing values of over 10%, which is considered much higher than the acceptable percentage (Hair et al., 2010). Many participants have quit the questionnaire after answering the first few questions. This might have occurred due to the length of the questionnaire as it contained 85 questions. Discussion of the participants' profile and data analysis will be presented in the next chapter.

4.11 Summary

This chapter discussed the research design. This research will be conducted while adopting a critical realist stance. The deductive approach will be used with a quantitative method. The data for this study will be collected from Saudi citizens using non-probability sampling technique to distribute self-administered questionnaires via the Internet. The chapter has also discussed the survey design,

translation, and piloting. The following chapter will focus on the data analysis and the results of the analysis.

Chapter 5: Data Analysis

This chapter presents the data analysis. First, a discussion about data coding and editing will be provided, followed by a presentation of the respondents' demographics. After that, the chapter discusses the different data analysis methods and clarifies which method will be used to analyse the data while providing justification for choosing it. Next, a discussion of the conducted Exploratory Factor Analysis will be presented. Following that, a presentation of the preliminary data analysis will be provided, including screening for missing data, finding outliers, testing data normality, examining the linearity and collinearity, and addressing the adequacy of the sample size. Next, the chapter will present the application of PLS-SEM in seven stages: specifying the structural mode, specifying the measurement model, data collection and examination, path model estimation, assessing the measurement model, assessing the structural model, and interpretation of the results and drawing conclusions. Finally, this chapter will provide the results for examining the effects of the demographic variables.

5.1 Data Coding and Editing

The first step in data analysis is data coding and editing. This is an essential step in order to guarantee that the analysed data is correct and therefore, the produced outcome makes sense and provide perfect basis for the study's recommendations and guidelines. This study utilised Qualtrics to collect the data. The first step taken after collecting the data was to export the data to an SPSS file. After that, the data were thoroughly examined in order to ensure that no mistakes occurred during the exportation. The examination showed that no errors occurred while exporting the data to the SPSS file even after comparing random cases from the SPSS file against the original data in the Qualtrics system.

The next step was to code the variables in the SPSS file. Each variable was coded using the initials of the variable name and a number. For example, intention to use was measured by four items, so these items were assigned the following codes:

IU1, IU2, IU3, and IU4. Coding the variables in this way makes reading and understanding the results of the analyses easier.

After coding the variables, the data were screened for any errors or typos caused by the participants such as entering text in a numeral field, e.g. age, or entering the values in Arabic. Since the questionnaire was close-ended, there errors could only occur in few fields such as age, name of a government portal, and occupation. Several of the entries in these fields were translated from Arabic to English after screening the data. Finally, the scores of the measuring items that were phrased negatively were reversed so that each item can measure its construct in the same direction as the other measuring items of the same construct.

5.2 Respondents' Demographics

The total number of useful responses was 527. Table 12 presents the participants' characteristics. The male members form a larger portion of the participants (72.1%) than the female members (27.9%). In addition, the majority of the respondents (31.3%) belong to the age group 31-40, while the age groups 18-21 and 61+ contained the smallest percentage of the participants with 3.6% each. As for the education level, most of the participants have Bachelor degrees (57.9%), while 20.1% have Master degree, and 10.6% have PhD degree. Government employees form the largest portion of the participants (55.3%), followed by private sector employees (14.2%) and then retirees (13.9%). It seems that most of the participants (75.5%) have computer experience of more than 10 years. Also, 84.3% of the participants have Internet experience of more than 5 years, and 90.7% have been using the Internet daily.

Table 12: Respondents' Characteristics

Characteristics	Frequency	Percent%
Gender		
Male	380	72.1
Female	147	27.9
Age		
18-21	19	3.6
22-25	33	6.3

26-30	76	14.4
31-40	165	31.3
41-50	134	25.4
51-60	81	15.4
61+	19	3.6
Education Level		
High School or Less	43	8.2
Bachelor	305	57.9
Master	106	20.1
PhD	56	10.6
Other	17	3.2
Occupation		
Student	49	9.3
Government Employee	294	55.8
Private Sector Employee	75	14.2
Retired	73	13.9
Unemployed	36	6.8
Computer Experience		
1-3 Years	33	6.3
4-6 Years	40	7.6
7-9 Years	50	9.5
10+	398	75.5
Never Used It	6	1.1
Internet Experience		
1 Year or Less	7	1.3
2-3 Years	30	5.7
4-5 Years	46	8.7
5+	444	84.3
Internet Use		
Everyday	478	90.7
Several Times a Week	35	6.6
Several Times a Month	12	2.3
Once a Month	2	.4

The questionnaire provided the participants with a list of several government web portals and asked them to select one of these portals to use as a reference while answering the questionnaire. The most selected E-government portal (66.8%) was Absher, which is under the Ministry of Interior. Table 13 presents the selected E-government portals based on their frequency.

Table 13: E-government Portals Selected by Participants

E-government Portal Selected	Frequency	Percent%
Absher (Ministry of Interior)	352	66.8
Noor (Ministry of Education)	112	21.3
Jadara (Ministry of Civil Service)	28	5.3
Taqat (Ministry of Labor)	9	1.7
Eskan (Ministry of Housing)	9	1.7
Other	17	3.2

5.3 Data Analysis Method

There are two categories of data analysis techniques: first-generation, and second-generation. First-generation techniques include correlation, regression, and difference of means test. First-generation techniques have limitations when it comes to analysing causal or complex models because it is not suitable for modelling mediation, multi-group moderations of multiple effects, latent variables, and assessing goodness of the model (Lowry and Gaskin, 2014). The second-generation technique is commonly known as Structural Equation Modelling (SEM). SEM is a collection of statistical models that are used to find explanations of the relationships between multiple variables. SEM has three prominent characteristics: the ability to estimate multiple and interrelated dependence relationships, the ability to account for measurement error and represent unobserved concepts, and the ability to define a model that explains all of the relationships (Hair et al., 2010). SEM overcomes the disadvantages of the firs-generation method as it allows the researchers to include unobserved latent variables in their models, and to estimate multiple causal relationships simultaneously (Lowry and Gaskin, 2014). Recently, more researchers in the IS field have been using SEM to analyse their data due to the better results produced by SEM compared to the first-generation techniques (Gerow et al., 2010).

There are two types of SEM: Covariance-Based SEM (CB-SEM), and Partial Least Squares SEM (PLS-SEM). There are different characteristics of CB-SEM and PLS-SEM that assist in the selection of the appropriate method. CB-SEM is more appropriate to use when the objective of the analysis is theory confirmation or comparison of multiple theories, while PLS-SEM is more appropriate to use to predict

a specific construct or to detect salient factors (Hair et al., 2011, Hair Jr et al., 2016). PLS-SEM is also appropriate to use in exploratory research and in research that extend an existing structural theory (Hair et al., 2011). PLS-SEM does not have high constriction on the sample size as it can be used whether the sample is large or small, while CB-SEM only supports large samples. Of course, the definition of a large sample and of a sufficient sample is still up for debate. While some researchers defined having a large sample as having more than 200 cases, others have stated that the minimum sample size for CB-SEM depends on the model complexity and the characteristics of the measurement model (Afthanorhan, 2013). Another characteristic of PLS-SEM is being nonparametric, which mean it does not assume a normal data distribution. On the other hand, CB-SEM has a strict assumption regarding the distribution of the data. Moreover, CB-SEM requires having at least three measuring items per construct, while PLS-SEM allows using constructs measured with one or two items (Hair Jr et al., 2016). Table 14 summarises the comparison between CB-SEM and PLS-SEM.

Table 14: CB-SEM vs. PLS-SEM

	CB-SEM	**PLS-SEM**
Sample size	Large samples	Small and large samples
Distribution	Normal distribution	No distributional assumptions (nonparametric method)
Missing Value	Missing values must be under a specific level and must be dealt with before proceeding with the analysis	Highly robust as long as missing values are bellow a specific level
Number of measuring items per construct	At least 3 measuring items	Single-item and multi-items measures
Model complexity	Some models are difficult to evaluate especially complex models containing moderations	Large and complex structural model
Research goal	Theory confirmation or comparison of different theories	Exploratory research and extension of structural theory. Also, appropriate to use to predict a specific

		construct or detect salient factors

Out of the two types of SEM, CB-SEM was the first to achieve popularity among the researchers. However, later on, the researchers have recognised the benefits of using PLS-SEM when the data failed to meet the assumptions of CB-SEM or when the proposed model was large and/or complex. It is crucial to keep in mind that just because PLS-SEM overcomes some of the limitations of CB-SEM that resides in its assumptions, it does not mean PLS-SEM does not have any assumptions because it does have them but they are more lenient than CB-SEM's. One of the reasons some researchers prefer to not use PLS-SEM is because sometime it is viewed as less robust than CB-SEM. This view could be due to the misuse of PLS-SEM by some researchers (Hair et al., 2011). One of the tops way of misusing PLS-SEM is using it for analysing small samples (Marcoulides and Saunders, 2006). Although having a small sample in itself is not a problem as PLS-SEM can analyse it, however, the definition of 'small sample' is what some researchers are erroneously taking advantage of. When using PLS-SEM, it is important to ensure that the sample can provide sufficient stable estimates and acceptable levels of statistical power. One of the problems associated with using small sample sizes, e.g. 20, is that the researcher cannot notice structural path coefficients with low values. These low valued path coefficients could be noticed when using a sample size between 150 and 200 (Marcoulides and Saunders, 2006). The PLS-SEM's rule of thumb regarding sample size states that the minimum sample must be equal to ten times the largest number of formative indicators measuring a construct or ten times the largest numbers of structural paths pointing at one construct, using the largest outcome out of these two methods (Marcoulides and Saunders, 2006, Hair et al., 2011). Despite the existence of this rule of thumb, researchers must be cautious when employing it as it does not always provide an accurate result because other aspects need to be considered such as the distribution of the data and missing data. Marcoulides and Saunders (2006) advised the researchers to use larger sample size whenever the data is moderately non-normal.

Despite the aforementioned sample size concern, when applied correctly, PLS-SEM can provide robust results, and when the sample size is large, the results

produced by PLS-SEM are very similar to those produced by CB-SEM. Moreover, when the CB-SEM assumptions cannot be met, PLS-SEM produce good approximation of CB-SEM results. Also, when choosing between these two techniques, the primary determinant is the research goals. Based on the previous discussion, PLS-SEM is more suitable to use in this study. As the aim of the research is to find the factors affecting citizens' adoption of E-government, and because some of the data distributions, which will be discussed in Section 5.5.3., are non-normal, PLS-SEM is more appropriate to use for the analysis. This study utilised PLS-SEM to analyse the data using SPSS 24 and SmartPLS 3.

5.4 Exploratory Factor Analysis (EFA)

Section 4.8 discussed the development of the research instrument. It was explained that the measures of a few constructs, namely perceived usefulness, perceived risk, trust in the Internet, and trust in the government, were adapted from different literature in order to cover more aspects of the construct that would not be covered if the measures were adopted from only one study. However, by combining the measures from different literature, an Exploratory Factor Analysis need to be conducted in order to ensure that the all of the items measure the same construct. A sample size of at least 50 observations could be used to preform EFA, however, it is recommended to use a sample of 100 observations or more (Hair et al., 2010). Following this recommendation, the first 100 responses were extracted from the collected data to perform the EFA. The EFA was conducted using SPSS 24.

5.4.1 EFA Assumptions

Prior to conducting EFA, the data were screened. Although EFA does not assume normality, variables that have extremely non-normal distribution can affect the results. Similarly, having outliers in the data can have a negative influence on the outcomes (Hancock and Mueller, 2010). Therefore, the data were first tested for normality and outliers. The normality was assessed using the z scores of the Skewness and Kurtosis, which is the most common technique for evaluating normality. The value of Skewness indicates the symmetry of the distribution; whether it is skewed to the right, to the left, or evenly distributed. On the other hand, Kurtosis measures

the peakedness of the distribution (Tabachnick and Fidell, 2006). The most commonly used values for evaluating the z scores are ±1.96, for .05 significance level, and ±2.58, for .01 significance level (Hair et al., 2010). Utilising the ±2.58 threshold, all distributions appeared to be normal.

Next, a test for identifying the outliers was carried out. Outliers are observations that are very different from others. Outliers could be detected using various methods, such as box-plot, stem-and-leaf plots, and standard-deviation (Hair Jr et al., 2016). The standard-deviation method is commonly used to identify outliers. First, the standard-deviation values are calculated around the mean of each variable, and then, these scores are assessed. Scores that are higher than a specific value are considered outliers. The threshold value is specified depending on the size of the sample. Hair et al. (2010) recommended defining outliers as cases with standard scores of 2.5 or more in small samples, defined as 80 observations or fewer. On the other hand, when using larger samples, it is recommended to increase the threshold up to 4. However, because the current sample size is 100 which is still higher than 80 but not by far, it was decided to use the value recommended by Tabachnick and Fidell (2006) which is 3.30. All standard scores equal to 3.30 or higher were defined as outliers. As a result, four cases were identified as outliers. Each of the cases is an outlier in only one variable. As these outliers were sampled from the target population, it was decided to include them in the analysis, which is recommended by Tabachnick and Fidell (2006). However, in order to examine their impact, the analysis was conducted once with the outlier cases and then without them. Both analysis with and without the outlier cases rendered the same results with very similar loading scores, thus, there was no significant impact from the outliers.

One last test was conducted to test the suitability of the data for the EFA, which is evaluating the values of Kaiser Meyer Olkin (KMO) and Bartlett test of Sphericity. The KMO reflects if the sample is adequate or sufficient for conducting the EFA, while Bartlett test examines the relationships between the variables. Having a KMO value of more than 0.5 indicates that the sample is adequate for the EFA. According to Hadi et al. (2016), Kaiser (1974) recommended using a value of at least

0.5, while values between 0.5 and 0.7 are considered medicore, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are considered great, and values above 0.9 are superb. As for Bartlett test, a statistically significant result is indicated when the value is below 0.5, which means there is a sufficient correlations between the variables, and thus the EFA could be conducted (Hadi et al., 2016, Hair et al., 2010). After running the test on the 100 observations, the results showed that the KMO value was 0.75, which is good according to the aformentioned categorisation, while the Bartlett test was significant. These results indicate that the EFA could be carried. Table 15 shows the results of Kaiser Meyer Olkin (KMO) and Bartlett's test.

Table 15: Kaiser Meyer Olkin (KMO) and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.75
Bartlett's Test of Sphericity	Approx. Chi-Square	1045.54
	Df	153
	Sig.	0.00

5.4.2Factor extraction and Rotational Methods

There are two methods used for factor extraction; component analysis and common factor analysis. Component analysis, which is also known as principal components, is appropriate to use when the aim is to reduce the number of variables to be used. On the other hand, common factor analysis is recommended when the objective is to identify different factors from the variables (Hair et al., 2010). The principal component method was used as the extraction method because the primary concern of this analysis is to extract the minimum number of variables that explain the maximum portion number of the total variance. Moreover, each construct integrates measures from two different literature, which means that these measures were validated in the previous research, and it was already established which variables measure which factors, however, the measures have not been validated when they are combined, such as in this study. Therefore, the aim of the EFA is

identifying which variables explain most of the total variance. This is consistent with the recommendation provided by Hair et al. (2010).

After selecting a factor method, a rotational method must be chosen. Rotational methods are either orthogonal or oblique. The orthogonal method does not allow correlation between the extracted factors. On the other hand, the oblique method allows having correlation between the extracted factors (Hadi et al., 2016). No specific rules exist that determine which rotational method to utilise (Hair et al., 2010). However, researchers in the social science have made recommendations of using an oblique rotational method because oblique method produces more realistic output as most of the factors in reality have some degree of correlation, while the orthogonal method produces an idealistic pattern of loadings (Hadi et al., 2016, Schmitt, 2011). Following this advice, an oblique rotational method, Promax, was utilised. A factor loading of at least 0.7 is recommended in order to retain the variable (Hair et al., 2010). The analysis resulted in deleting some variables as they did not have significant loadings. These variables are: PU5, PU6, TG4, TI3, and PR1. The PU6 measuring item was dropped from the analysis as it did not have a significant loading. This item measures the participant's perception that they can use the E-government portal from any location. The reason this measuring item did not load with the other items might be because it includes an external factor that affects the experience of using E-government, which is the Internet. Since the use of the E-government portal requires Internet access, evaluating whether the participant can reach the web portal from any location might partially reflect on the usefulness of the new system; however, it is more associated with the availability and reliability of the Internet connection in various locations. The remaining 4 measuring items (PU5, PR1, TI3, TG4) which were removed based on EFA are the items that were reverse coded in order to filter out questionnaires that were filled randomly just for the sake of completing it. The reverse coding of these items might be the cause of the lack of significant loadings for the aforementioned four measuring items.

The final analysis showed that all of the remaining variables had loadings of 0.7 and higher, which is the recommended value. Table 16 presents the factor loadings of the EFA analysis.

Table 16: EFA Factor Loadings

Pattern Matrix				
	Component			
	1	2	3	4
PU1	0.78	0.06	-0.09	-0.08
PU2	0.91	0.00	-0.01	0.06
PU3	0.80	0.06	0.12	0.10
PU4	0.84	0.00	0.06	0.04
PU7	0.72	-0.15	-0.07	0.07
TG1	0.11	-0.12	0.78	-0.08
TG2	0.08	-0.07	0.84	-0.10
TG3	0.07	0.14	0.74	0.12
TG5	-0.21	0.04	0.81	0.07
TI1	-0.07	-0.14	0.03	0.74
TI2	-0.03	0.08	0.22	0.76
TI4	0.10	0.03	0.00	0.74
TI5	0.15	0.00	-0.18	0.83
PR2	0.16	0.82	-0.01	-0.19
PR3	0.21	0.75	-0.02	-0.21
PR4	-0.11	0.77	0.10	-0.14
PR5	-0.11	0.91	-0.01	0.20
PR6	-0.13	0.89	-0.08	0.21

5.4.3 Common Method Bias Test

Common method bias occurs when the collected responses are results of the design of the instrument rather than a reflection of the participants' perspectives. Method bias is a measurement error that affects the validity of the findings of the study (MacKenzie and Podsakoff, 2012). Method bias can be detected through running Harman's single-factor test, which is commonly used by researchers. This test is conducted through loading all of the variables into an exploratory factor analysis and examining the results of an un-rotated factor analysis while placing a constraint to extract one factor only. The percentage of the factor's explained variance determines whether the bias is present or not. If the total variance of the factor is less than 50%, then the common method bias does not affect the data. The

aforementioned method was followed to test the data for common bias method. Table 17**Error! Reference source not found.** presents the results of the test, which indicates that the common method bias does not affect the data since the total variance of the factor is 30% which is less than the 50% threshold.

Table 17: Results of Harman's Single-factor Test

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.55	30.80	30.80	13.55	30.80	30.80
2	3.93	8.93	39.73			
3	2.28	5.19	44.92			
4	1.94	4.41	49.33			

5.5 SEM Assumptions

5.5.1 Missing Data

When using SEM, whether CB-SEM or PLS-SEM, having complete data is a basic assumption. Missing data occur because the participants do not answer one or more questions either on purpose or by mistake. The 527 usable questionnaires used in this study did not have any missing data. Qualtrics provide a validation feature that requires the participant to answer a question in order to be able to proceed to the next page and submit the questionnaire. This feature was enabled on all questions; thus, no missing data was present in the 527 cases.

5.5.2 Outliers

When it comes to outliers, research have emphasised on paying close attention to outliers as they can have various effects on the analysis, such as inflating the r values, underestimating a true relationship, and affecting the correlation coefficient especially in small samples (Pallant, 2010). As previously mentioned, the standard-deviation method is known as the most popular. In this method, the standard deviation values are calculated around the mean of each variable. After that, the standard deviation values are assessed and observations that have values above or below a certain threshold are considered outliers. Hair et al. (2010) recommended identifying cases with scores ±2.5 as outliers when using a small

sample, which is defines as 80 observations or fewer. For larger sample, it was recommended to increase the threshold to ±4. Following this recommendation, the four standard deviations rule was utilised, and 19 observations were identified as outliers on at least one indicator. Table 18 summarises the findings of the outliers detection.

Table 18: Outlier Observations

	Frequency	**Percent %**
Outlier Observations	19	3.6
Non-Outlier Observations	508	96.4
Total	527	100

There are different ways to deal with outliers, such as amputation and deletion. Although, some researchers suggest deleting outliers, many researchers advise to include the outliers in the analysis in order to increase the generalisability of the findings, especially when they could be included without making huge difference in the results of the analysis (Hair et al., 2010). In order to examine the impact of the detected outliers, the analysis was conducted once with the outlier cases and then without them. Both analysis with and without the outlier cases generated the same results, thus, there was no significant impact from the outliers to cause their exclusion.

5.5.3 Normality

The normality of the data is determined by its distribution. Violating the normality assumption can distort the results when using SEM. The impact of this violation is not as prominent in PLS-SEM as it is in CB-SEM, however, identifying whether the data is normally distributed or not is recommended as extremely non normal data can increase the standard error calculated during bootstrapping and some relationships might be falsely concluded as insignificant (Hair Jr et al., 2016). Although there are different tests used to evaluate data normality, the Skewness-Kurtosis z scores is mostly used by researchers. The z scores could be calculated using SPSS. Z scores that fall between ±1.96 are considered normal. Another threshold commonly used while assessing normality is ±2.58. Z scores that are within ±2.58 range are normal at .05 significance level (Hair et al., 2010). The normality test was

conducted while utilising the latter threshold. The results showed that all scores of Skewness are acceptable, however, five Kurtosis scores were above the acceptable value. Table 19 shows the results of the normality test.

Table 19: Normality Test Results

	Skewness		Kurtosis			Skewness		Kurtosis	
Variable	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**	**Variable**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
UB1	1.47	0.11	2.78	0.21	**TI1**	0.74	0.11	0.49	0.21
UB2	1.99	0.11	5.51	0.21	**TI2**	0.52	0.11	-0.13	0.21
UB3	0.94	0.11	-0.24	0.21	**TI4**	0.48	0.11	-0.08	0.21
UB4	1.09	0.11	0.84	0.21	**TI5**	0.62	0.11	0.60	0.21
UB5	0.33	0.11	-0.81	0.21	**PR2**	-0.19	0.11	-0.66	0.21
UB6	1.41	0.11	1.85	0.21	**PR3**	0.00	0.11	-0.69	0.21
UB7	0.72	0.11	-0.13	0.21	**PR4**	-0.32	0.11	-0.73	0.21
SQ1	1.14	0.11	1.32	0.21	**PR5**	-0.65	0.11	-0.28	0.21
SQ2	1.25	0.11	1.48	0.21	**PR6**	-0.62	0.11	-0.18	0.21
SQ3	0.05	0.11	-1.00	0.21	**IU1**	1.53	0.11	3.60	0.21
SQ4	1.09	0.11	1.83	0.21	**IU2**	1.26	0.11	2.91	0.21
SQ5	1.16	0.11	2.14	0.21	**IU3**	1.47	0.11	2.63	0.21
SQ6	0.61	0.11	-0.03	0.21	**IU4**	0.52	0.11	-0.73	0.21
SQ7	1.15	0.11	1.70	0.21	**UA1**	0.90	0.11	0.43	0.21
IQ1	1.08	0.11	1.52	0.21	**UA2**	1.23	0.11	2.37	0.21
IQ2	-0.07	0.11	-0.91	0.21	**UA3**	0.49	0.11	-0.80	0.21
IQ3	0.86	0.11	0.75	0.21	**UA4**	0.13	0.11	-0.44	0.21
IQ4	0.80	0.11	0.46	0.21	**UA5**	0.78	0.11	0.30	0.21
IQ5	0.85	0.11	0.78	0.21	**UA6**	-0.46	0.11	-0.66	0.21
IQ6	0.59	0.11	0.15	0.21	**MF1**	-0.01	0.11	-1.06	0.21
SVQ1	0.57	0.11	-0.34	0.21	**MF2**	0.15	0.11	-0.22	0.21
SVQ2	0.40	0.11	-0.73	0.21	**MF3**	0.26	0.11	-0.75	0.21
SVQ3	0.67	0.11	0.27	0.21	**MF4**	1.02	0.11	0.85	0.21
SVQ4	-0.24	0.11	-0.61	0.21	**MF5**	-0.28	0.11	-0.57	0.21
SVQ5	0.24	0.11	-0.53	0.21	**PD1**	-0.85	0.11	0.36	0.21
SVQ6	0.79	0.11	0.69	0.21	**PD2**	0.31	0.11	-0.92	0.21
SVQ7	0.14	0.11	-0.04	0.21	**PD3**	0.21	0.11	-0.72	0.21
PU1	0.93	0.11	1.26	0.21	**PD4**	0.04	0.11	-1.03	0.21
PU2	0.77	0.11	0.93	0.21	**PD5**	0.34	0.11	-0.77	0.21
PU3	0.84	0.11	1.16	0.21	**PD6**	-0.29	0.11	-0.93	0.21
PU4	0.81	0.11	0.96	0.21	**IC1**	0.74	0.11	0.09	0.21
PU7	1.05	0.11	1.76	0.21	**IC2**	0.71	0.11	-0.14	0.21
TG1	0.95	0.11	0.74	0.21	**IC3**	0.85	0.11	0.39	0.21

TG2	1.21	0.11	1.81	0.21	**IC4**	0.35	0.11	-0.75	0.21
TG3	0.64	0.11	0.10	0.21	**IC5**	0.95	0.11	0.69	0.21
TG5	0.77	0.11	0.58	0.21					

It is important to consider sample size and the type of analysis to be conducted using the data before deciding whether to use the data as it is or transform it to enhance its normality. Data with non-normal distribution have prominent impact on the results of the analyses when using small samples, e.g. 50 observations or less. This effect decreases as the sample size increases. In samples of 200 observations or more, the impact of having non-normally distributed data on the results will be insignificant (Hair et al., 2010). The sample size used in this study is 527 observations, which is well above 200, thus, the impact of the non-normal distribution will be insignificant. Moreover, as previously discussed in Section 5.3, PLS-SEM will be used to analyse the data. As PLS-SEM is a nonparametric statistical method, it does not assume or require the data to be normally distributed (Hair Jr et al., 2016). Based on aforementioned factors, the data will be retained as it is and no methods will be used to establish normality in the non-normal distributions.

5.5.4 Linearity and Collinearity

Linearity is one of the assumptions of SEM, which if violated, the strength of the relationships in the model will be underestimated. This occurs because correlations only represent the linear relationships between variables (Hair et al., 2010), thus it is important to test the data for any violation of the linearity assumption. Linearity is most commonly examined using scatterplots (Hair et al., 2010, Tabachnick and Fidell, 2006). To examine the linearity, a scatterplot matrix was produced (See Appendix C). By examining the graph, it appears that the linearity assumption was met.

Another aspect the data should be examined for is collinearity. Collinearity has a similar impact as non-linearity on the correlation results, and in addition, it has an influence on the overall findings of the study. Collinearity occurs when independent variables are not very distinct from one another and are much correlated with each other. Collinearity can be identified through evaluating the

Variance Inflation Factor (VIF) values, which could be calculated in SPSS. Values that are higher than 10 indicate that there is collinearity (Hair et al., 2010). The results of the collinearity test showed that there are no collinearity issues. All VIF values are well below the threshold. The highest VIF value obtained is 2.17, which is well lower than 10. The calculated VIF values are provided in Appendix D.

5.5.5 Sample Size

Having an adequate sample size is an important aspect when using SEM. Researchers are encouraged to have large dataset, however, the definition of large is not clearly defined in the literature. Most researchers depend on using rules of thumb. One way of estimating the required sample size is by using the 10 times rule, which suggests that the sample size should be 10 times the largest number of formative variables measuring a single factor, or 10 times the largest number of arrows directed at one factor, whichever produces the largest number (Hair Jr et al., 2016). Other estimations commonly used are the 5:1 ratio and the 10:1 ratio, which requires collecting five observations per variable or 10 observations per variable. As a starting point, it is preferable to have at least 100 observations (Hair et al., 2010). Another method that is used to calculate the required sample size for a study is by using GPower, which is a software that is used for power analysis and sample size calculations. To use calculate the required sample size, the researcher needs to specify the group of the statistical tests and the test type. After that, the researcher needs to select the type pf power analysis; in this case it is a priori for computing the required sample size. Lastly, the researcher needs to specify the input parameters including number of tails, effect size, alpha level, and the desired level of power. Figure 12 presents the variables entered in GPower to calculate the required sample size and the result of the calculation. In order to achieve an effect size of 0.5, an alpha level of 0.05, and a 0.95 level of power, it is recommended that the sample size of this study consists of 54 participants. Based on the suggested sample size from the literature and GPower analysis, the questionnaire was distributed online, and 527 of the collected questionnaires were usable. The collected sample size for this study is larger than the suggested sample size, thus, it is considered adequate for using SEM.

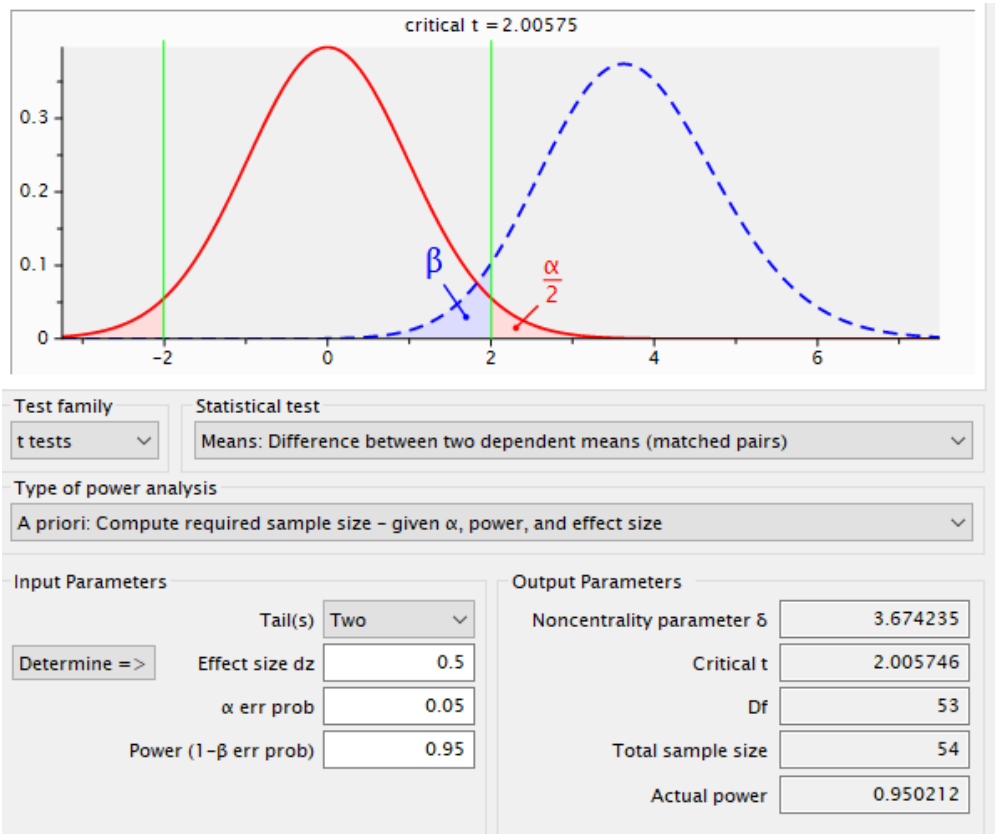


Figure 12: Required Sample Size

5.6 Applying PLS-SEM

The previous sections included discussions about the assumptions of SEM and how they were met. The following sections will illustrate the application of PLS-SEM in seven stages. These stages were identified by Hair Jr et al. (2016). Figure 13 shows the stages of applying PLS-SEM. The first stage is concerned with specifying the structural model, while the second stage is about defining the measurement models, and the third stage focuses on collecting and examining the data. These three stages have been implemented in (CH. 3, 4, 5). The fourth stage involves PLS path model estimation, while the fifth stage requires the assessment of the measurement model's results. The sixth stage is for assessing the results of the structural model. The final stage is making final interpretations of the results and drawing conclusions.

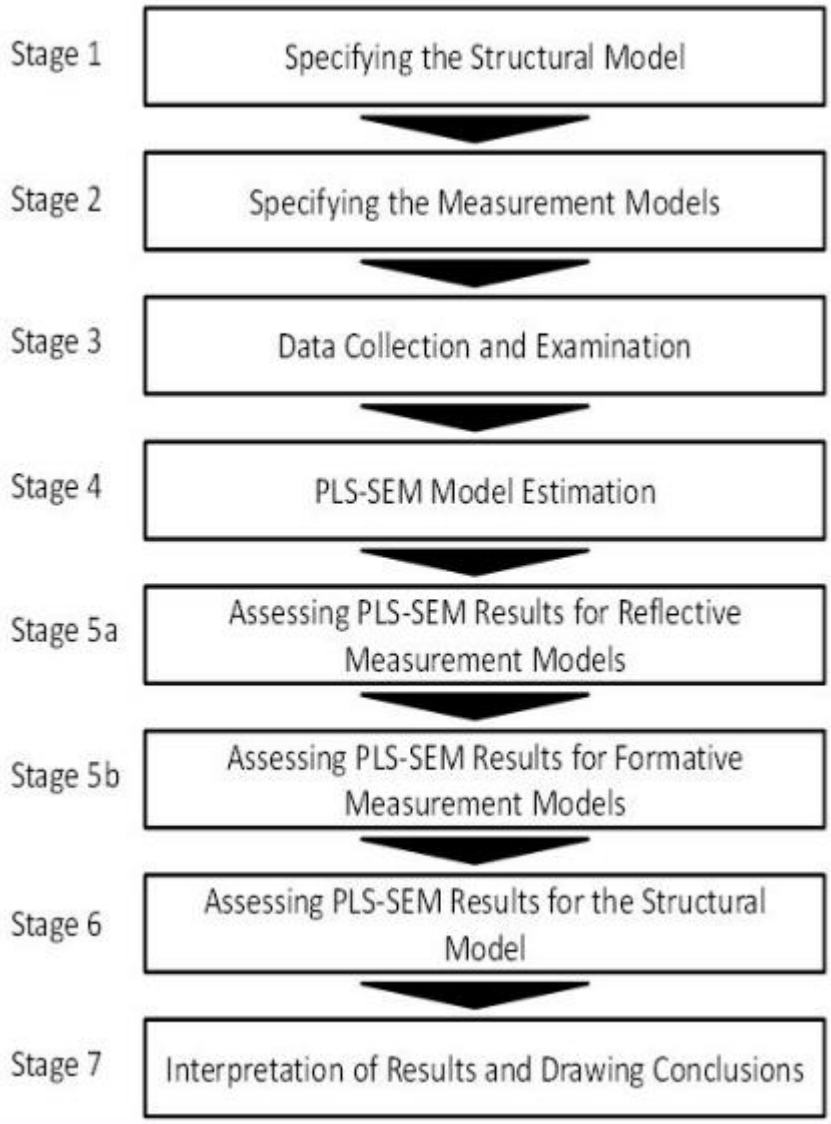


Figure 13: Stages of Applying PLS-SEM

5.6.1 Stage One: Specifying the structural model

This stage involves preparing the structural model, which is also known as the inner model. The structural model illustrates the relationships between the factors. The structural model is developed based on an extensive literature review and the order of the constructs must be based on theory, logic, or observations (Hair Jr et al., 2016). The relationships in the structural model could be causal, mediating, or moderating. Causal links or relationships are direct relationships between factors in which one factor predicts the other. A mediating relationship occurs when a variable or construct interferes between two related constructs. Although similar to mediation, moderation happens when a variable or construct influences the

relationship between two factors by changing the strength of the relationship or even changing the direction of the relationship (Hair Jr et al., 2016). The structural model for this study was specified in Chapter 3. The defined structural model has causal, moderating, and mediating relationships. Figure 10 presented the developed structural model.

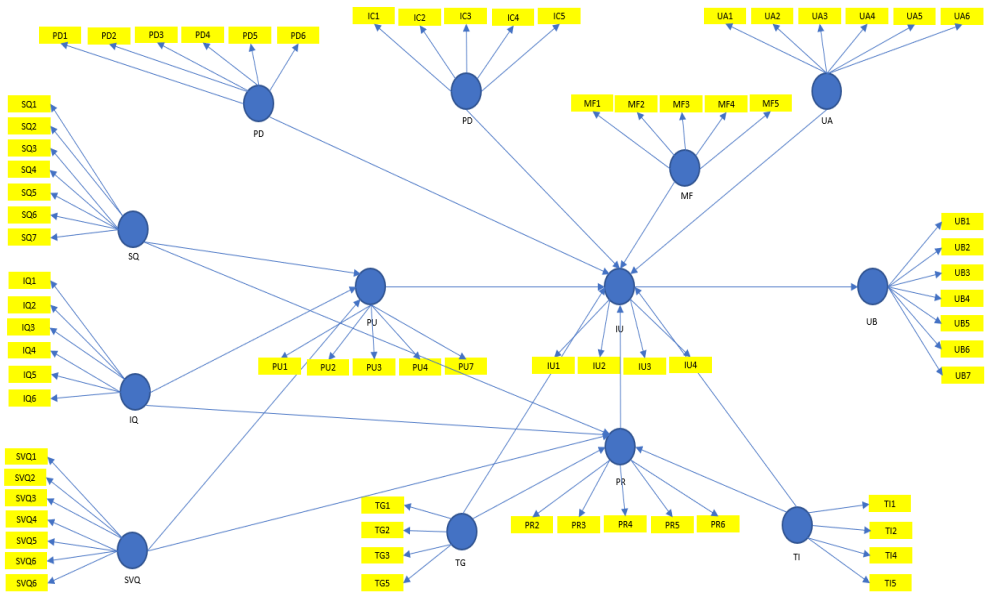
5.6.2 Stage Two: Specifying the measurement models

The measurement models, which is also known as the outer models, describe the relationships between the constructs and their own variables. Measurements models could be reflective or formative. Reflective measurement models are commonly used in the social science research. The variables in such models reflect the effect of the underlying construct, which means the causal effect is initiated from the construct to its variables. As all of the variables measuring one construct are caused by the same construct, there must be a high correlation between these variables. Moreover, all of the variables measuring a specific construct must be interchangeable, so that if one of the variables were removed, as long as the reliability is acceptable, the meaning of the construct would not change (Hair Jr et al., 2016). On the other hand, formative measurement models are found with the assumption that causal indicators, a.k.a. variables, create the construct. Opposite to the reflective measurement models, the variables in the formative measurement models are not interchangeable because each variable captures a different dimension of the construct. Therefore, when constructing a formative measurement, it is important to ensure that each variable captures an aspect of the construct and that all of the construct's aspects are covered by the variables (Hair Jr et al., 2016).

When utilising PLS-SEM, single-item measures or multi-items measures could be used. Single-item measures have the advantage of generating higher response rate as the participant can complete them easily and quickly. However, using single-item measures have a number of disadvantages, such as when using the imputation methods to deal with missing values. Also, using single-item measure provide few degrees of freedom to use in calculating a solution when the data is divided into groups. Oppose to the multi-items measure, the measurement error cannot be

removed when using single-item measures, which causes its reliability to decrease. Researchers have advised against considering using single-item measure unless in specific situations, such as having a sample size of 50 observations or less, expecting weak path coefficients of 0.30 or less, the variables of the original multi-item scale are highly homogeneous, and having semantically redundant items (Hair Jr et al., 2016).

The measurement models for this study were adopted from the literature, as it was discussed in Section 4.8. All of the measurement models are reflective and multi-item. Figure 14



illustrates the specified measurement model. The model consists of 13 reflective constructs. System quality and service quality were each measured by seven items, while the information quality construct was measured by six items. The trust constructs, trust of government and trust of Internet were each measured by four items. The perceived usefulness construct and perceive risk were each measured by five items. The intention to use construct was measured by four items, while the usage behaviour construct was measured by seven items. Finally, for the espoused culture factors, the uncertainty avoidance and power distance were each measured by six items, while the masculinity/femininity construct and individualism/collectivism construct were each measured by five items.

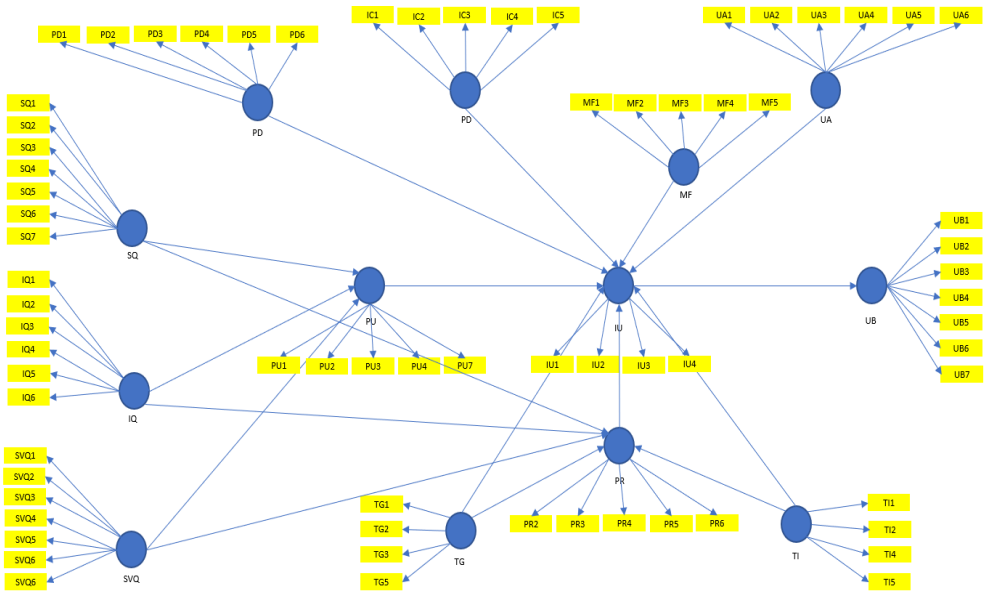


Figure 14: Measurement Model

5.6.3 Stage Three: Data Collection and Examination

After specifying the measurement models, data collection and examination are required. This stage involves selecting the target population and collect the required data through an appropriate sampling technique. The collected data will be used to test the structural and measurement models. This stage has been already implemented. The processes of defining the target population and data collection were discussed in Chapter 4, while data examination was discussed in Sections 5.1 and 5.5.

5.6.4 Stage Four: Path Model Estimation

After data collection and examination, the data is used in the path model estimation. This stage requires the selection of the parameter settings based on understanding PLS-SEM algorithm and its statistical properties. There are three structural model weighing schemes: the centroid weighing scheme, the factor weighing scheme, and the path weighing scheme. Although the results of using these schemes do not differ vastly, it is recommended to select the path weighing scheme as it produces the highest R^2 value for the endogenous construct. Moreover, the path weighing scheme is applicable to all the different kinds of path model specifications and estimations (Hair Jr et al., 2016). Following the recommendations of Hair Jr et al. (2016) regarding the common rules of thumb for initialising the PLS-SEM algorithm,

the PLS-SEM algorithm in this study was initialised while selecting the path weighing scheme, using the value +1 as the initial value for all outer weights, and selecting the value 300 as a maximum number of iterations.

5.6.5 Stage Five: Assessing the Measurement Model

The assessment of the reflective measurement models in PLS-SEM requires evaluating the internal consistency reliability, convergent validity and discriminant validity. Once the reliability and validity of the measurement model have been established, the structural model will be assessed. The following subsections will discuss the reliability and validity of the measurement model.

5.6.5.1 Internal Consistency Reliability

The internal consistency reliability examines whether all of the indicators associated with a construct are actually measuring it (Pallant, 2010). There are different ways to measure the internal consistency. Cronbach's alpha is a statistical measure that is the most commonly used for this purpose. Cronbach's alpha provides the average correlation between all of the indicators that belong to one construct. Despite its popularity, Cronbach's alpha is criticised for assuming that all of the indicators have equal outer loadings (Hair Jr et al., 2016), and that the number of indicators influences the calculation of Cronbach's alpha in that fewer items produces lower value, especially in scales with items fewer than 10 (Pallant, 2010, Hair Jr et al., 2016). Due to the limitations of Cronbach's alpha, researchers are advised to use other measures of internal consistency such as composite reliability and the mean of inter-items correlations. Composite reliability measures the internal consistency while considering that each indicator has a different outer loading. A construct should have a composite reliability value of 0.70 or higher in order to be considered internally consistent. Following this rule, the composite reliability of each construct was assessed using the calculations provided in SmartPLS. The results show that all constructs had a composite reliability score of more than 0.70, which is satisfactory. Table 20 presents the results of the internal consistency reliability.

Table 20: Composite Reliability Values

	Composite Reliability
IC	0.82
IQ	0.90
IU	0.94
MF	0.85
PR	0.92
PU	0.92
SQ	0.88
SVQ	0.89
TG	0.90
TI	0.88
UA	0.90
UB	0.83

5.6.5.2 Convergent Validity

The convergent validity evaluates the correlation between the variables that measure one construct. The convergent validity of reflective measurement models is usually evaluated using the outer loadings of the items and the average variance extracted (AVE). The minimum significant outer loadings required is 0.70 (Hair et al., 2010, Hair Jr et al., 2016). The reason behind specifying that the outer loading should be at least 0.70 is because the square of a standardised item's outer loadings, which is also known as communality, indicates how much variance is shared between the construct and the item. The square of 0.70 will approximately[1] equal to 0.50. This means that if an item has an outer loadings of 0.70, the construct can explain about 50% of the item's variance (Hair Jr et al., 2016). Following this rule, multiple items were deleted because their outer loadings were below the required value. Moreover, the PD construct was dropped because all of its indicators, except one, had loadings of lower than 0.70. Due to the disadvantages if single-item measures, which were discussed in section 5.6.2, it was decided to remove the whole construct from the analyses. Table 21 presents the final outer loadings of the items after removing the items that have not met the requirement.

[1] The square number of exactly 0.708 equals 0.50.

Table 21: Outer Loadings

	IC	IQ	IU	MF	PR	PU	SQ	SVQ	TG	TI	UA	UB
IC3	0.86											
IC5	0.80											
IQ3		0.81										
IQ4		0.83										
IQ5		0.88										
IQ6		0.84										
IU1			0.93									
IU2			0.94									
IU3			0.87									
MF1				0.72								
MF3				0.83								
MF4				0.86								
PR2					0.80							
PR3					0.80							
PR4					0.85							
PR5					0.88							
PR6					0.87							
PU1						0.80						
PU2						0.87						
PU3						0.87						
PU4						0.87						
PU7						0.79						
SQ1							0.80					
SQ4							0.82					
SQ5							0.78					
SQ6							0.72					
SQ7							0.74					
SVQ1								0.79				
SVQ2								0.79				
SVQ3								0.81				
SVQ5								0.73				
SVQ6								0.80				
TG1									0.86			
TG2									0.88			
TG3									0.85			
TG5									0.75			
TI1										0.87		
TI2										0.86		
TI5										0.78		
UA1											0.89	

UA2											0.96	
UB1												0.77
UB2												0.87
UB6												0.73

The AVE is a common measure used to establish convergent validity. AVE represents the grand mean of the squared loadings of the indicators measuring a construct. The AVE of a construct should be 0.50 or higher to be considered significant. Following this rule, the AVE of the constructs were evaluated. All of the constructs had AVE scores of 0.50 of higher. Table 22 presents the AVE of each construct.

Table 22: Average Variance Extracted

	Average Variance Extracted (AVE)
IC	0.69
IQ	0.70
IU	0.83
MF	0.65
PR	0.70
PU	0.70
SQ	0.59
SVQ	0.61
TG	0.70
TI	0.70
UA	0.81
UB	0.63

5.6.5.3 Discriminant Validity

After establishing the convergent validity, it is time to examine the discriminant validity. Discriminant validity examines how much a construct differs from other constructs. Discriminant validity is usually established by examining cross-loadings or using Fornell-Larcker criterion. By examining the cross-loadings, the researcher ensures that the indicator only loads highly on the construct it is associated with. It is common to have an indicator loading to different constructs, however, it is crucial that the indicator's loading on its associated construct is higher than its correlation with other constructs. When using the Fornell-Larcker criterion,

the square root of AVE is compared against the construct's correlations. The square root of the construct's AVE should be higher than any of the construct's correlations with other constructs. Recent study found that using the aforementioned methods is an unreliable way to establish discriminant validity. To overcome the shortcoming of cross-loadings and Fornell-Larcker criterion, researchers should assess the hetrotrait-monotrait ratio (HTMT). HTMT is "the ratio of the between-trait correlations to the within-traits correlations" (Hair Jr et al., 2016, p. 118). The HTMT value should be lower than 0.90 if the constructs in the model are conceptually very similar, and lower than 0.85 if the constructs in the model are conceptually more different. For a more defined result, a statistical discriminant validity test can be calculated using the values of HTMT. In PLS-SEM, this could be done through bootstrapping. After running a bootstrapping analysis, the confidence interval is evaluated. If the confidence interval contains the value 1, then the discriminant validity is not established. Following these guides, the HTMT values and the bootstrapping confidence interval were evaluated. All of the constructs have HTMT values less than defined threshold. Table 23 presents the constructs' HTMT values.

Table 23: HTMT Values

	IC	IQ	IU	MF	PR	PU	SQ	SVQ	TG	TI	UA	UB
IC												
IQ	0.35											
IU	0.39	0.59										
MF	0.38	0.11	0.14									
PR	0.11	0.23	0.37	0.13								
PU	0.33	0.68	0.66	0.08	0.12							
SQ	0.34	0.76	0.62	0.13	0.24	0.68						
SVQ	0.33	0.70	0.48	0.11	0.13	0.76	0.68					
TG	0.34	0.65	0.63	0.11	0.19	0.75	0.67	0.74				
TI	0.45	0.52	0.49	0.17	0.22	0.55	0.57	0.59	0.69			
UA	0.33	0.34	0.48	0.15	0.28	0.28	0.39	0.19	0.31	0.32		
UB	0.24	0.53	0.59	0.09	0.13	0.59	0.50	0.49	0.46	0.30	0.27	

The confidence intervals for HTMT were examined after running a bootstrapping analysis. None of the confidence intervals include a value of 1, which means the discriminant validity has been established. Table 24 presents the upper and lower limits of the confidence intervals for examining HTMT.

Table 24: Confidence Intervals for HTMT

	2.5%	97.5%		2.5%	97.5%
IQ -> IC	0.23	0.47	**TG -> PU**	0.67	0.81
IU -> IC	0.27	0.50	**TG -> SQ**	0.58	0.75
IU -> IQ	0.50	0.67	**TG -> SVQ**	0.67	0.80
MF -> IC	0.25	0.51	**TI -> IC**	0.30	0.58
MF -> IQ	0.05	0.18	**TI -> IQ**	0.41	0.61
MF -> IU	0.06	0.24	**TI -> IU**	0.41	0.58
PR -> IC	0.04	0.23	**TI -> MF**	0.08	0.29
PR -> IQ	0.13	0.33	**TI -> PR**	0.13	0.32
PR -> IU	0.28	0.46	**TI -> PU**	0.44	0.64
PR -> MF	0.07	0.20	**TI -> SQ**	0.46	0.66
PU -> IC	0.22	0.45	**TI -> SVQ**	0.49	0.68
PU -> IQ	0.60	0.75	**TI -> TG**	0.59	0.78
PU -> IU	0.58	0.73	**UA -> IC**	0.21	0.46
PU -> MF	0.04	0.14	**UA -> IQ**	0.22	0.45
PU -> PR	0.07	0.20	**UA -> IU**	0.37	0.58
SQ -> IC	0.22	0.47	**UA -> MF**	0.08	0.23
SQ -> IQ	0.68	0.83	**UA -> PR**	0.18	0.37
SQ -> IU	0.53	0.70	**UA -> PU**	0.17	0.38
SQ -> MF	0.07	0.21	**UA -> SQ**	0.28	0.50
SQ -> PR	0.15	0.35	**UA -> SVQ**	0.10	0.28
SQ -> PU	0.59	0.76	**UA -> TG**	0.20	0.42
SVQ -> IC	0.22	0.45	**UA -> TI**	0.21	0.42
SVQ -> IQ	0.62	0.77	**UB -> IC**	0.12	0.38
SVQ -> IU	0.39	0.56	**UB -> IQ**	0.44	0.62
SVQ -> MF	0.05	0.20	**UB -> IU**	0.51	0.67
SVQ -> PR	0.08	0.15	**UB -> MF**	0.04	0.14
SVQ -> PU	0.68	0.82	**UB -> PR**	0.07	0.19
SVQ -> SQ	0.61	0.75	**UB -> PU**	0.49	0.68
TG -> IC	0.22	0.48	**UB -> SQ**	0.39	0.61
TG -> IQ	0.56	0.72	**UB -> SVQ**	0.39	0.59
TG -> IU	0.54	0.70	**UB -> TG**	0.35	0.56
TG -> MF	0.05	0.21	**UB -> TI**	0.19	0.41
TG -> PR	0.09	0.29	**UB -> UA**	0.15	0.39

5.6.6 Stage Six: Assessing the Structural Model

After establishing the reliability and validity of the measurement models, it is time to assess the structural model. This includes inspecting the predictive power of the model and relationships between the constructs. The structural model of this

study is complicated since it includes mediation and moderation. Therefore, the structural model will be assessed in several steps.

5.6.6.1 Significance of Path Coefficients

The first step in assessing the structural model is examining the significance and relevance of the relationships between the constructs. The structural model is evaluated without the moderating constructs, e.g. the espoused culture values, in order to test the main effect between PU and IU. This is an important step to follow as Hair Jr et al. (2016) explained that if the moderating effects were included, the value of the effect between the IV and DV will change and will be identified as simple effect, however, when omitting the moderating effects, the effect between IV and DV will be what is called direct effect. The direct effect is the relationship between two constructs without the presence of any moderating construct. On the other hand, simple effect refers to the relationship between two constructs when the relationship is moderated, and the moderating variable has a value of zero. The path coefficients were calculated using a two-tailed bootstrapping resampling procedure with 5000 samples and bias corrected confidence interval. The bootstrapping procedure computes the t-value and p-value, which are used to conclude whether the coefficient is statistically significant at specific significance level. The p-value must be ≤ 0.01 in order to have 10% significance level, ≤ 0.05 to have 5% significance level, or ≤ 0.001 to have a 1% significance level. The examination of the path coefficients included noting the direction of the relationship, whether it is positive or negative, and comparing it against the hypotheses.

The assessment of the path coefficients' p-values and the direction of the relationships concluded that two of the proposed hypotheses for direct relationships were rejected, while 11 were supported. The p-value of the proposed path coefficient between TI and IU was 0.12, which is more than 0.01, which means the relationship is not significant. Therefore, H7a was rejected. The other hypothesis that was not supported is H5b, which stated that SVQ is expected to have a negative influence on PR, however the results showed that SVQ has a significant positive influence on PR, which is the opposite of the hypothesis.

The analysis has supported the other 11 hypotheses that were concerned with direct relationships. All of the three quality factors, (SQ, IQ, and SVQ), showed to have significant positive influences on PU. All of these path coefficients were significant at 1% significance level (SQ → PU= 0.22 at $p \leq 0.001$; IQ→PU= 0.22 at $p \leq 0.001$; SVQ→PU= 0.41 at $p \leq 0.001$). Therefore, H3a, H4a, and H5a were supported. Also, as it was hypothesised, SQ and IQ had significant negative influences on PR (SQ→PR= -0.17 at $p \leq 0.05$; IQ→PR= -0.18 at $p \leq 0.001$), thus H3b and H4b were supported. In addition, both trust constructs showed significant negative impacts on PR (TG→PR= -0.10 at $p \leq 0.05$, TI→PR= -0.12 at $p \leq 0.05$). This is in agreement with hypotheses H6b and H7b, therefore, the hypotheses were accepted. Also, TG was indeed found to have a significant positive influence on IU (TG→IU= 0.21 at $p \leq 0.001$) as it was hypothesised in H6a, therefore, H6a was accepted.

Moreover, all three hypotheses regarding the influence of IU on UB, PU on IU, and PR on IU were accepted. IU showed to have a significant positive influence on UB (IU→UB= 0.48 at $p \leq 0.001$) as it was hypothesised in H1. Also, PU had a significant positive influence on IU (PU→IU= 0.40 at $p \leq 0.001$), which is in line with H2, and PR had a significant negative influence on IU (PR→IU= -0.24 at $p \leq 0.001$), which agrees with H8. Based on the results of the analysis, H1, H2, and H8 were accepted. Figure 15 illustrates the examined model with the obtained path coefficient scores.

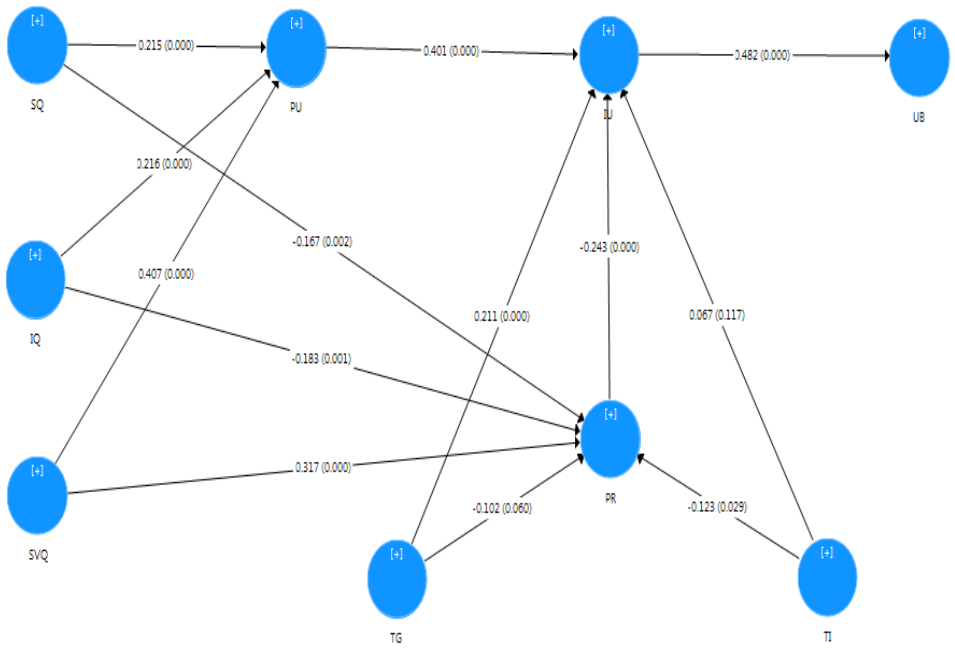


Figure 15: Path Coefficient

5.6.6.2 Coefficient of Determination (R^2)

The R^2 value is the squared correlation between the actual and predicted values of an endogenous construct. The R^2 value indicates the model's predictive power. This value ranges between 0 and 1. The higher the value, the more accurate the prediction. There is no specific rule exists in the literature regarding the acceptable R^2 value. Hair Jr et al. (2016) stated that the acceptability of the R^2 values depends on the complexity of the model and that it varies from one research discipline to another. However, researchers usually cite Falk and Miller's (1992) criteria when evaluating the R^2 values, which states that an endogenous construct is considered to have a suitable explanatory power if the variation explained is equal to or more than 10% (Chengalur-Smith et al., 2012, Carlson and O'Cass, 2010, Gil-Garcia, 2008). When assessing the parsimony of different models, the comparison of the R^2 values is considered problematic because as the models have more paths pointing toward a construct, the R^2 value will be higher. In order to overcome this problem, the adjusted R^2 value is used when comparing the predictive power of different models. The adjusted R^2 value considers the number of exogenous constructs and the sample size (Hair Jr et al., 2016).

The adjusted R^2 values of the endogenous constructs were examined. The average explanatory power of endogenous constructs in the model was 33% (R^2 = .33). All of the endogenous constructs have at least met the minimum required value of 0.10. Table 25 presents the values of the coefficient of determination.

Table 25: R^2 and Adjusted R^2 Values

	R Square	R Square Adjusted
IU	0.47	0.46
PR	0.11	0.10
PU	0.53	0.52
UB	0.23	0.23

5.6.6.3 Effect Size (f^2)

The f^2 effect size is the measure of how much impact the endogenous construct will have if an exogenous construct was removed from the model. The f^2 values are computed in SmartPLS by running the PLS-SEM algorithm. A construct is considered to have a small effect if its f^2 value is between 0.02 and 0.14, while it is considered to have a medium effect if its f^2 value is between 0.15 and 0.34, and a large effect if its f^2 value ≥ 0.35. A construct with an f^2 value < 0.02 means it has no effect on the endogenous construct (Hair Jr et al., 2016). Table 26 presents the f^2 effect size of the constructs. The results illustrate that two factors, namely TG and TI, did not have effect on some or all of their endogenous constructs. The R^2 value of PR does not seem to be affected by the presence or removal of TG or TI constructs. Similarly, the f^2 effect size of TI on IU seems to be non-existent. The remaining of the constructs have medium effects on their endogenous constructs.

Table 26: f^2 Effect Size

	IU	PR	PU	UB
IQ		0.02	0.05	
IU				0.30
PR	0.11			
PU	0.17			
SQ		0.02	0.05	
SVQ		0.05	0.20	
TG	0.04	0.01		
TI	0.01	0.01		

5.6.6.4 Predictive Relevance (Q^2)

Q^2 value indicates the model's out-of-sample predictive power. When a model is said to have a predictive power or predictive relevance, it means that it can accurately predict data not used in the model estimation. The Q^2 value is calculated through running a blindfolding procedure. Prior running this procedure, an omission distance (*D*) must be specified. Researchers suggest specifying a *D* between 5 and 10, while being careful that the sample size divided by the selected *D* would not produce an integer. The omission distance indicates that while running the blindfolding procedure, every x data point of the items will be omitted and then predicted, with x being the specified *D* value. A *D* of 5 means that about 20% of the data points have been omitted per blindfolding round. Similarly, a *D* of 10 indicates that about 10% of the data points were omitted per blindfolding round. An endogenous construct's Q^2 value that is larger than 0 indicates the model's predictive relevance for this construct (Hair Jr et al., 2016). Based on the recommendation from the literature, an omission distance of 10 was selected to examine the predictive power of the model. Table 27 presents the Q^2 values obtained from the analysis.

Table 27: Q^2 Values

	Q^2 (*D=10*)
IU	0.37
PR	0.07
PU	0.36
UB	0.14

5.6.6.5 Effect Size (q^2)

Similar to the relationship of f^2 to R^2, q^2 value indicates how much an exogenous construct influences the predictive power of the endogenous construct. The q^2 value is calculated using the results of the blindfolding procedures with and without the exogenous construct, while using the same *D* in both procedures. This value is computed manually as it is not provided by the SmartPLS software. The q^2 values were calculated first by calculating the difference between the Q^2 value of the endogenous construct when the exogenous variable is included and the Q^2 value of the same endogenous construct when the exogenous construct is deleted from the

model. Next, the difference is divided by 1 - Q^2 value when the exogenous variable is included (Hair Jr et al., 2016). The results are evaluated using the same criteria used for evaluating f^2. This means if calculated q^2 value is between 0.02 and 0.14, the exogenous construct is considered to have a small predictive relevance for the endogenous construct, while it is considered to have a medium predictive relevance if its q^2 value is between 0.15 and 0.34, and a large predictive relevance if its q^2 value ≥ 0.35. Based on the literature, the q^2 values were calculated and evaluated. Table 28 presents the calculated q^2 effect sizes. The results show that some of the exogenous constructs have small predictive relevance for their endogenous construct while others do not have a predictive relevance. Three out of four exogenous constructs, namely TG, PR, and PU, showed to have small predictive relevance for IU, while TI did not have any predictive relevance. On the other hand, only one exogenous construct (SVQ) have a small predictive relevance for PR, while IQ, SQ, TI, and TG did not have any predictive relevance for the endogenous construct. Finally, all of the three exogenous constructs (SQ, IQ, SVQ) had small predictive relevance for PU.

Table 28: q^2 Effect Sizes

	IU	**PR**	**PU**
IQ		0.01	0.03
SQ		0.01	0.03
SVQ		0.03	0.11
TI	0.01	0.01	
TG	0.02	0.00	
PR	0.07		
PU	0.11		

5.6.6.6 Mediation

The structural model of this study includes multiple mediations. The effects of TG and TI on IU were expected to be partially mediated by PR. To analyse mediation in SmartPLS, bootstrapping procedure is utilised as it is compatible with the nonparametric nature of PLS-SEM. There are different types of mediation and none-mediation based on the significance of the direct and indirect effects between the exogenous and endogenous constructs. The mediation analysis might reveal that the constructs do not have a mediated relationship. Two instances of no mediation

are identified as direct-only non-mediation, and no effect non-mediation. The former indicates that the direct effect between the constructs is significant while the indirect effect is not significant. The latter means that neither the direct nor the indirect effects are significant. On the other hand, three types of mediation were identified in the literature, which are: complementary mediation, competitive mediation, and indirect only mediation. The complementary mediation occurs when both the direct and indirect effects are both significant and point in the same direction. If both effects are significant but point in different directions, then the mediation is a competitive one. Finally, if only the indirect effect is significant, then the mediation is called indirect-only mediation (Hair Jr et al., 2016). The significance of the direct and indirect effects is assessed using the results produced from the bootstrapping procedure. The indirect effect and its sign are determined by multiplying the path coefficient between the IV and the mediator by the path coefficient between the mediator and DV.

The structural model of this study includes a mediation between TI and IU and between TG and IU. The mediating construct is PR. Analysing the direct and indirect effects between TI and IU revealed that TI is fully mediated. The indirect effect of TI on IU is significant while the direct effect is not, as it was discussed in Hair Jr et al. (2016). Therefore, TI has an indirect-only mediation. On the other hand, the analyses of the direct and indirect impact of TG on IU show that the relationship between TG and IU has a complementary partial mediation. TG has a significant direct effect on IU as it was previously discussed in Section 5.6.6.1. Moreover, TG has a significant indirect effect on IU. As the direct effect between TG an IU is positive, and the indirect effect is also positive, which is the product of two negative coefficients (TG → PR, and PR → IU), thus, both effects point in the same direction. This means that the mediation of TG and IU relationship is a complementary mediation. Table 29 presents the results of the mediation analysis.

Table 29: PR Mediation Effect

	Direct Effect	**Indirect Effect**	**Total Effect**

	Path Coefficient	p-value	Path Coefficient	p-value	Path Coefficient	p-value
TG → IU	0.21	0.001	0.02	0.06	0.24	0.001
TI → IU	0.07	0.12	0.03	0.04	0.10	0.03

5.6.6.7 Moderation

Moderator variables are either categorical or continuous. Categorical moderator variable is, as its name indicates, a moderator whose data is categorical and is collected through one item, such as gender, marital status, and type of payment. On the other hand, continuous moderator variable is usually measured using multiple items. This type of moderator is believed to have an impact on the strength of a specific relationship between two constructs (Hair Jr et al., 2016). When integrating a moderator in a path model, an interaction term must be created to analyse the influence of the moderator. There are three different approaches that is used to create the interaction term: product indicator approach, orthogonalising approach, and two-stage approach. When utilising the product indicator approach, the interaction term is created by multiplying each indicator of the exogenous construct with each indicator of the moderator in order to create the product indicators. These product indicators are the indicators of the interaction term. This approach is usually not recommended as it is not suitable to use if the exogenous construct or the moderator is measured formatively. Also, when modelling the interaction term, the product indicator approach requires reusing the indicators of the exogenous construct and the moderator in the measurement of the interaction term, which causes collinearity in the path model. In order to reduce the collinearity, the indicators of the moderator are first standardised before making the interaction term. Another issue of using the product indicator approach is that "the path coefficient of the interaction term must not be used to quantify the strength of the moderating effect" (Hair Jr et al., 2016, p. 254). Due to the characteristic of the PLS-SEM algorithm, the coefficient should be adjusted, however, this adjustment is still not available in SmartPLS.

The second approach is the orthogonalising approach. It is considered an extension of the product indicator approach that was created to overcome two of its

problems. The orthogonalising approach aims to eliminate the collinearity from the path model instead of only reducing it, which is what is done in the product indicator approach. The effect between the exogenous and endogenous constructs without the presence of the interaction term is known as the main effect, while the effect between the exogenous and endogenous constructs when the interaction term is included in the model is known as the simple effect. The orthogonalising approach plan to enable the comparison between both of these effects, which is an improvement over the product indicator approach. When using the orthogonalising approach, the indicators of the interaction term are the standardised residuals, therefore, no collinearity occurs in the path model, and the strength of the moderating effect could be interpreted, unlike in the product indicator approach. However, the orthogonalising approach cannot be used when the exogenous construct or the moderator are measured formatively (Hair Jr et al., 2016).

The third approach of analysing moderations is the two-stage approach. The first stage requires analysing the path model without the interaction term. During the second stage, the scores of the exogenous construct and the moderator are multiplied to create a single-item measure for the interaction term. Also, during this stage, "all other latent variables are represented by means of the single items of their latent variable scores" from the first stage (Hair Jr et al., 2016, p. 252). The two-stage approach can be utilised when using either type of measurement models, hence, it is more commonly used by researchers. The two-stage approach is also recommended if the objective of the analysis is to find the significance of the moderating effect, while the orthogonalising approach is recommended if the objective is to maximise the prediction or minimise the estimation bias of the moderating effect, however, it is important to remember that the orthogonalising approach is only applicable if the latent variables are measured reflectively (Hair Jr et al., 2016).

For this study, the objective of analysing the cultural moderators is to find the significance of the moderating effects. Therefore, based on the recommendation of (Hair Jr et al., 2016), the two-stage approach was utilised to analyse the moderation. The first stage is concerned with the measurement model and it requires including

the moderating variables and assessing their reliability and validity. The reliability and validity of the model was already established and discussed in Section 5.6.5. The second stage of the two-stage approach requires creating the interaction term and including it in the model to assess the significance and strength of the moderating effect. The interaction term can be built using SmartPLS. Running the necessary analyses yielded the results presented in Table 30. The results of the analysis show that although each of the interaction terms have a positive path coefficient, none of these paths are significant. UA and IC had slightly larger path coefficients than MF (UA*PU → IU = 0.07 with p-value > 0.10; IC*PU → IU = 0.06 with p-value > 0.10; MF*PU → IU = 0.04 with p-value > 0.10). Also, the effect size f^2 of all the interaction terms show that they have no effect on the R^2 value of IU as they are all bellow the defined 0.02 threshold. Figures 17, 18, and 19 illustrate the effects of the interaction terms examined in the analysis. The blue line in the middle indicates the effect of the interaction term when it is at the mean value. The green line, which is at the top, indicates the effect of the interaction term when it has increased one standard deviation from the mean, while the red line located at the bottom indicates the effect of the interaction term when it has decreased one standard deviation from the mean. Although none the moderating effects are significant, the results of the moderation analysis provide some insight. Figure 16 shows that the moderating effect of IC on the relationship between PU and IU increases for individuals who espouses more of the individualist characteristics. Figure 17 shows that the moderating effect of MF on the aforementioned relationship increases for individuals espousing more of the feminist characteristics. Finally, Figure 18 shows that the moderating effect of UA increases for individuals espousing lower degrees of UA.

Table 30: Result of Moderation Analyses

	Path Coefficient	**p-value**	**f^2**
IC*PU → IU	0.06	0.12	0.01
MF*PU → IU	0.04	0.24	0.00
UA*PU → IU	0.07	0.12	0.01

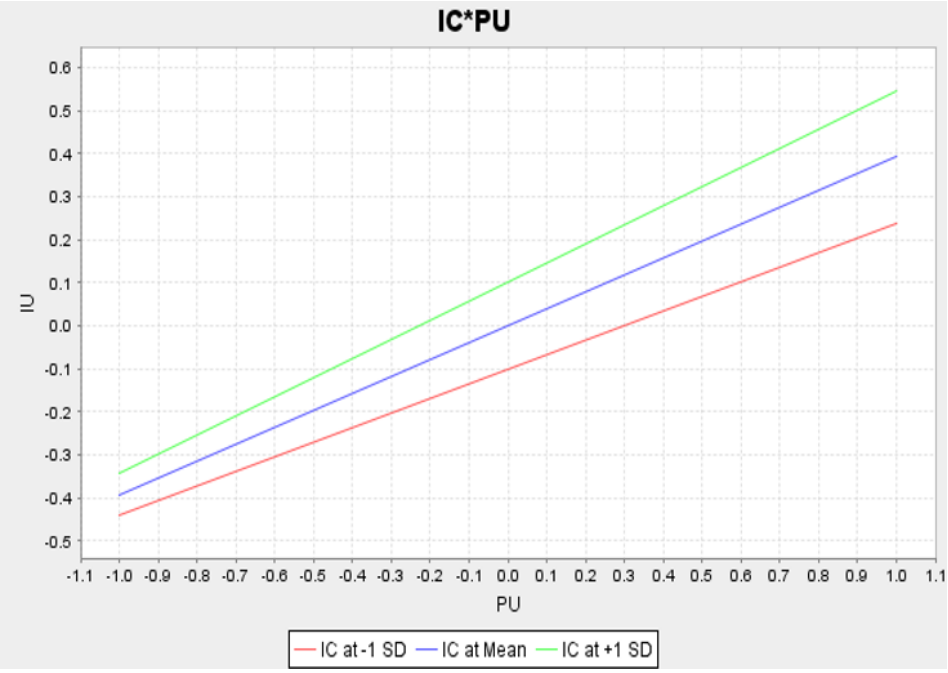


*Figure 16: Effect of IC*PU Interaction Term*

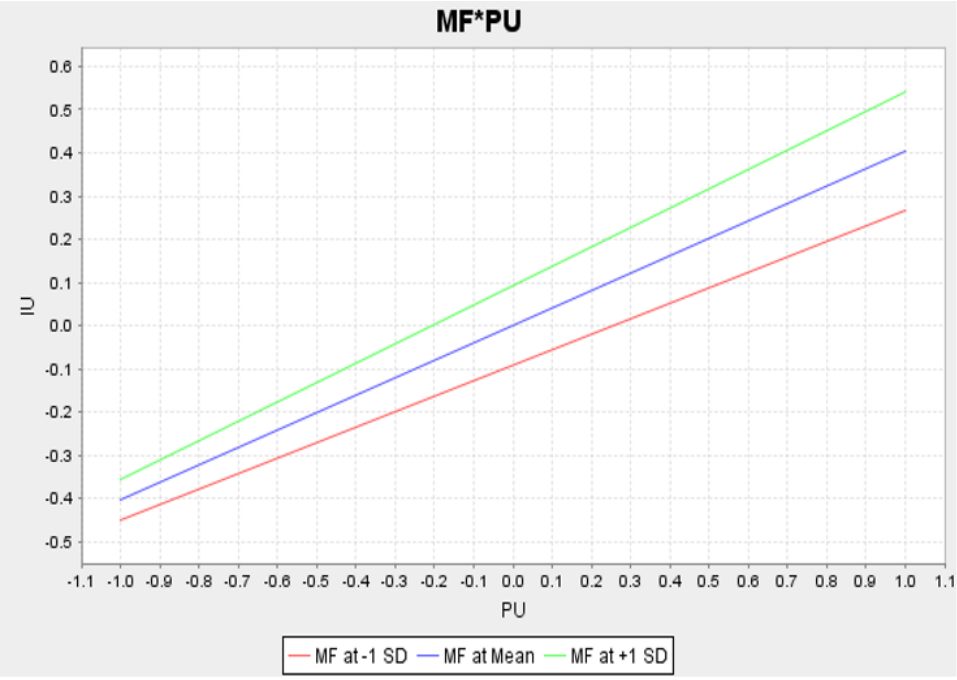


*Figure 17: Effect of MF*PU Interaction Term*

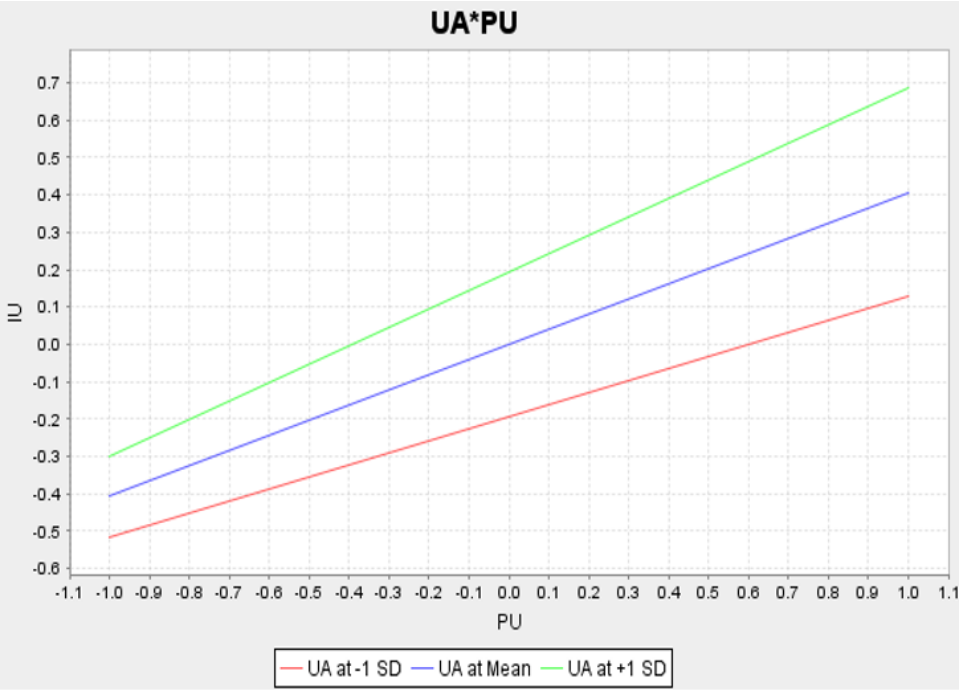


*Figure 18: Effect of UA*PU Interaction Term*

After analysing the direct effects, mediation, and moderation in the model, it is time to draw conclusions regarding the hypotheses. The following section summarises the hypotheses test results.

5.6.7 Stage Seven: Interpretation of the results and drawing conclusion

The previous stages of PLS-SEM application covered specifying the structural and measurement models, data collection and examination, path model estimation, and assessing the measurement and structural models. The last stage of applying PLS-SEM is the interpretation of the results and drawing conclusion. The assessment of the structural model has produced the following results, presented in Table 31, regarding the acceptance and rejection of the hypotheses. A detailed discussion of the findings will be provided in the following chapter.

Table 31: Summary of Hypotheses Acceptance/Rejection

	Hypothesis	**Accepted/ Rejected**
H1	Perceived usefulness has a positive influence on intention to use.	Accepted
H2	Intention to use has a positive influence on usage behaviour.	Accepted

H3a	System quality has a positive influence on perceived usefulness.	Accepted
H3b	System quality has a negative influence on perceived risk.	Accepted
H4a	Information quality has a positive influence on perceived usefulness.	Accepted
H4b	Information quality has a negative influence on perceived risk.	Accepted
H5a	Service quality has a positive influence on perceived usefulness.	Accepted
H5b	Service quality has a negative influence on perceived risk.	Rejected
H6a	Trust of the government has a positive influence on intention to use.	Accepted
H6b	Trust of the government has a negative influence on perceived risk.	Accepted
H7a	Trust of the Internet has a positive influence on intention to use.	Rejected
H7b	Trust of the Internet has a negative influence on perceived risk.	Accepted
H8	Perceived risk has a negative influence on intention to use.	Accepted
H9	The influence of PU on IU increases for individuals who espouse higher degree of UA.	Rejected
H10	The influence of PU on IU increases for individuals who espouse higher degree of individualism.	Rejected
H11	The influence of PU on IU increases for individuals who espouse higher degree of Femininity.	Rejected
H12	The influence of PU on IU increases for individuals who espouse lower degree of Power distance.	Not Evaluated
H13	The influence of PU on IU increases for individuals who espouse higher degree of Long-term orientation.	Removed during question-aire pilot

5.6.8 Demographic Variables

The previous assessment of the structural model (discussed in Section 5.6.6) were conducted without examining the effect of the demographic variables. In order to examine the influence of the demographic variables on the adoption of E-government, these variables were included as control variables for the usage behaviour construct. After adding the control variables, the model was analysed through bootstrapping. The results of the analysis, which are presented in Table 32, showed that only age and gender have a significant influence on the usage behaviour (age → UB = -0.104 at $p \leq 0.001$; gender → UB = 0.127 at $p \leq 0.05$).

Table 32: Results of the Demographic Variables Analysis

Control Variable	UB	
	Path Coefficient	p-value
Age	-0.104	0.001
Gender	0.127	0.004
Occupation	-0.054	0.196
Education Level	0.020	0.588
Computer Experience	-0.028	0.475
Internet Experience	-0.041	0.261
Internet Use	0.031	0.294

5.7 Summary

This chapter presented the statistical methods that were utilised to analyse the data. The chapter first presented that data screening and coding, followed by a summary of the respondents' demographics. After that, a discussion of the different data analysis methods was provided along with the justification for selecting PLS-SEM to analyse the data. Next, the chapter presented the details of the conducted Exploratory Factor Analysis. Following that, a presentation of the preliminary data analysis was provided, including screening for missing data, finding outliers, testing data normality, examining the linearity and collinearity, and addressing the adequacy of the sample size. Then, the chapter presented the seven stages of applying PLS-SEM: specifying the structural mode, specifying the measurement model, data collection and examination, path model estimation, assessing the measurement model, assessing the structural model, and interpretation of the results and drawing conclusions. Finally, the chapter presented the results of examining the effects of the demographic variables. The following chapter will provide discussions of the findings of the conducted analysis.

Chapter 6: Discussion

Based on the results of the data analysis, which were presented in Chapter 5, this chapter will discuss the findings regarding each hypothesis and the factors affecting E-government adoption in Saudi Arabia. The chapter will also discuss the findings of this study in relation to the findings of previous studies.

6.1 TAM and E-government Adoption

H1: Perceived usefulness has a positive influence on intention to use.

The Technology Acceptance Model is one of the prominent adoption models that is frequently cited and adopted in the IT/IS literature. Based on the conducted literature review, this study adopted three constructs from TAM: perceived usefulness, intention to use, and usage behaviour. Two hypotheses were proposed to examine the relationships between these three constructs. The first proposed hypothesis involves the effect of perceived usefulness on intention to use. Davis (1989) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" (p. 320). Previous literatures have examined this construct using different names such as performance expectancy, extrinsic motivation, job fit, relative advantage, and outcome expectation. Despite the slight differences between the definitions of these constructs, Venkatesh et al. (2003) stated that all of these constructs measure the same concept. Perceived usefulness measures how much benefit the user will attain from using a new system over an older one. In this research, perceived usefulness was defined as the degree to which an individual believes that using E-government portals would enhance his or her reception of government information and services. The first proposed hypothesis (H1) in this study states that perceived usefulness has a significant positive influence on intention to use. The analysis of the collected data confirmed the proposed hypothesis (PU→IU= 0.40 at $p \leq 0.001$). The result of the analysis suggests that PU is a significant predictor of IU, therefore, citizens with higher scores of perceived usefulness of E-government will have more intention to use the E-government system. This finding is in line with the conclusion drawn by previous

studies such as Davis et al. (1989) who have examined the acceptance of computer technology using the Technology Acceptance Model, Venkatesh and Davis (2000) who have proposed and validated an extension of TAM, and Taylor and Todd (1995) who examined TAM and two variations of TRA in order to find which model is most helpful in understanding the information technology usage. In the context of E-government adoption, a similar finding was concluded by Phang et al. (2006) when they conducted a study to find the salient factors affecting senior citizens' adoption of E-government in China. Moreover, Lean et al. (2009) examined the factors affecting citizens' adoption of E-government in Malaysia and found that perceived usefulness has a significant positive effect on the intention to use. In the United States, Carter and Bélanger (2004) have conducted a study on citizens' adoption of E-government. The results of their study confirmed that PU has a significant positive effect on IU, which is in line with the finding of this research. In addition, the recent studies conducted on the subject of E-government adoption by Xie et al. (2017), Lu and Nguyen (2016), and Seo and Bernsen (2016) revealed that, indeed, perceived usefulness has a significant positive effect on the intention to use E-government.

H2: Intention to use has a positive influence on usage behaviour.

The second proposed hypothesis of this study is associated with the effect of IU on UB. The hypothesis states that intention to use has a significant positive influence on usage behaviour. In this study, the definition of intention to use was adopted from Lean et al. (2009) who defined the construct as "a measure of the strength of one's intention to perform a specified behaviour" (p. 461). Davis et al. (1989) have identified IU as a direct antecedent and the main predictor of UB. Moreover, the importance of IU was further explained as that it is the only construct to directly influence UB and that other constructs can only have indirect effects on UB through IU. Previous studies have established that intention to use has a significant positive effect on usage behaviour. Taylor and Todd (1995) examined multiple IS adoption models to find which one is the most helpful in understanding the information technology usage. One of the findings of their study was that IU has a significant positive effect on UB. This conclusion was also drawn by other studies,

such as Venkatesh and Davis (2000), Venkatesh et al. (2012), and Venkatesh et al. (2003). In this study, the results of the data analysis presented in the previous chapter have confirmed the second proposed hypothesis (IU→UB= 0.48 at $p \leq 0.001$), which agrees with the findings of the aforementioned literatures. Moreover, a study was conducted by Alsaif (2014) on citizens' adoption of E-government using an integrated model based on UTAUT. The researcher found that behavioural intention has a significant positive effect on usage behaviour, which comes in agreement with the finding of this study. On the other hand, Al-Sobhi (2011) have also integrated UTAUT in his research model in order to examine the role of the intermediaries in citizens' adoption of E-government. The study revealed that behavioural intention does not have a significant effect on usage behaviour. The researcher explained that the behavioural intention construct was measured by three items. Two of these items related to the intention to use E-government without the intermediaries and one of them is about the intention to use E-government through the intermediaries. Al-Sobhi (2011) stated that the analysis of the first two items showed that behavioural intention does not have a significant effect on usage behaviour, while the analysis on the third item alone revealed that behavioural intention does have a significant effect on usage behaviour. The researcher suggested that the government work with intermediaries in order to achieve higher adoption rate. It is important to mention that the data used in the study conducted by Al-Sobhi (2011) was collected only from male citizens who lived in Madinah city, while the data used in the study conducted by Alsaif (2014) was collected from both genders from different regions in Saudi Arabia. The data used in this study was also collected from both genders, which might explain why the finding of this study comes in agreement of the finding of the study conducted by Alsaif (2014). Moreover, the time when these two studies were conducted might have an effect on their finding, as during the time of Al-Sobhi's (2011) study, not many citizens have experience in using E-government, thus, they needed the guidance of the intermediaries. On the other hand, during the time of Alsaif's (2014) study and the current research, more citizens have experience in using E-government and can complete the tasks without help. Therefore, the finding of this

study indicates that in the context of E-government adoption in Saudi Arabia, the stronger the citizens' intention to use, the more likely they will act on those intentions.

6.2 ISSM and E-government Adoption

H3a: System quality has a positive influence on perceived usefulness.

System quality measures the technical components of the E-government portal through evaluating the presence of desired characteristics such as ease-of-use, functionality, reliability, flexibility, data quality, portability, and integration. SQ is one of the important constructs in E-government adoption since it is considered the interface connecting the users and the government (Osman et al., 2014). A reliable system that is easy to navigate and has other positive attributes helps the user to perceive the usefulness in adopting this system, while a system with a low quality decreases the user's perception of the system' usefulness (Gao and Bai, 2014, Zhou, 2011). Based on the conducted literature review, this study proposed a hypothesis (H3a) that SQ has a significant positive effect on PU. This hypothesis was accepted after analysing the collected data (SQ → PU= 0.22 at $p \leq 0.001$), which indicates that system quality has an important role in citizens' adoption of E-government. This means that citizens who find that the E-government portal has a higher system quality, have higher perception of usefulness associated with the adoption E-government. The significance of H3a also means the citizens care for the quality of the system, and the higher the system quality, the more usefulness they will perceive the system to have. This finding is in line with the finding from the study conducted in Saudi Arabia by Almalki (2014) on E-government adoption. The researcher found that SQ has a significant positive effect on PU. This highlights the important role of system quality in citizens' adoption of E-government, especially in Saudi Arabia. A similar finding was demonstrated in previous studies, such as Zhou (2011) who examined the roles of the three website quality aspects on the adoption of mobile websites in China. The researchers found that system quality has a significant positive influence on perceived usefulness. Gao and Bai (2014) have also conducted a study in China on the continuous intention to use mobile social networking services. The

same finding was also concluded regarding the effect of SQ on PU. Chen and Cheng (2009) examined the direct effect of SQ on IU in the context of online shopping adoption. The researchers found that SQ has a significant positive effect on IU.

H3b: System quality has a negative influence on perceived risk.

The effect of system quality on perceived risk is rarely examined in the context of E-government adoption. Kim and Lennon (2013) examined the effect of SQ on PR in online shopping adoption in the United States and found that system quality has a significant negative effect on perceived risk. In contrary, Hsieh and Tsao (2014) concluded that SQ does not have a significant negative influence on PR. Hsieh and Tsao (2014) conducted their study in Taiwan to investigated how to reduce perceived online risk through the three system quality variables. The researchers have pointed out that SQ did not have significant negative effect on PR because E-commerce have matured, thus, all shopping websites provide an expected level of system quality which makes them all equal in this aspect and does not allow differentiation between them. The current study, on the other hand, is firstly, conducted on the adoption of E-government which is different from E-commerce. Secondly, E-government is still a relatively new concept in Saudi Arabia and the standards of system quality is rapidly changing, thus perceiving that the E-government portal has a high or at least sufficient system quality results in alleviating some of the perceived risk associated with the use of E-government. Therefore, this study proposed a hypothesis (H3b) which stated that system quality has a negative influence on perceived risk. The conducted data analysis confirmed the proposed hypothesis (SQ→PR= -0.17 at $p \leq 0.05$). The confirmation of hypothesis 3b indicates that the evaluation of SQ has an impact on risk perception by the Saudi citizens. When the system quality is considered high, some degree of the perceived risk associated with the adoption of E-government will decrease, however, having an E-government portal with a low system quality will increase the perception of risk associated with using E-government such as time risk and performance risk.

H4a: Information quality has a positive influence on perceived usefulness.

The information quality construct measures the accuracy, currency, ease of understanding, completeness, timeliness, relevance, and consistency of the information provided in a website. The significant effect of IQ in the adoption of E-government and E-commerce was demonstrated in previous studies. Gao and Bai (2014) concluded that IQ has a significant positive effect on PU when they studied the factors affecting users' continuous intention of using mobile social networking service. Moreover, Zhou (2011) researched the subject of mobile website adoption and found that information quality is the main factor that influences perceived usefulness. In the context of E-government, Jiang (2011) have conducted a study in in China which also concluded that IQ has a significant positive impact on PU. On the other hand, Shareef et al. (2011) examined the factors affecting E-government adoption at different levels of maturity, and found that IQ has a significant effect on the adoption during the interactive phase, however, the effect was negative. The researchers explained that during the interactive phase, if the user perceives the displayed information to have high quality, which means it is complete, up-to-date, accurate, and so on, then the user will not feel the need to send enquiries to the government agency via the E-government portal. In contrary, if the displayed information has low quality, then the user will need to contact the government agency through the E-government portal to find more information about the subject. To determine the significance of the effect of IQ on PU in the context of citizens' adoption of E-government in Saudi Arabia, this study proposed hypothesis 4a, which stated the information quality has a positive influence of perceived usefulness. The conducted data analysis has supported H4a (IQ→PU= 0.22 at $p \leq 0.001$). This indicates that part of the citizens' usefulness perception of using E-government depends on the quality of the information displayed on the E-government portals. When the citizen finds that the information in the E-government portal has positive attributes such as being complete, current and accurate, he/she will find using E-government useful because it allows to retrieve the required information without the need to physically visit a government agency. This flexibility of the E-government will be perceived as useful. Therefore, managers need to ensure that the information posted

on the E-government portals are of high quality by defining guidelines to check the quality of the information.

While both Gao and Bai's (2014) and Zhou's (2011) study found that the influence of IQ on PU is more significant than the impact of SQ on PU, this study found that both factors have the same significance level, which means in the context of Saudi Arabia, the citizens place equal emphasise on the qualities of the system and information to determine the level of usefulness gained from adopting E-government. Therefore, the E-government managers should pay equal attention to the quality of the system and the quality of the information.

H4b: Information quality has a negative influence on perceived risk.

To best of knowledge, the effect of information quality on perceived risk in the context of E-government adoption was never examined. Some research in the context of other IS/IT adoption have examined the relationship between these two constructs. Nicolaou and McKnight (2006) conducted a study on the role of perceived information quality in data exchanges. The researchers found that IQ has a significant negative effect on PR. Similarly, in a study conducted by Yi et al. (2013) on identifying the antecedents of initial trust in web-based health information, the researchers found that perceived information quality has a significant negative effect on perceived risk. Both of these studies highlighted the importance of IQ in reducing risk perception because when the user thinks the displayed information have multiple positive attributes, such as being accurate, current, comprehendible and complete, the user will be confident that the system he/she is using is legitimate. As the use of any online system has some level of risk associated with it, and because of the importance of reducing the level of perceived risk in order to increase the adoption, this research proposed a hypothesis (H4b) which assumed that information quality has a negative effect on perceived risk. The collected data was analysed to examine this hypothesis, and the results have confirmed it (IQ→PR= -0.18 at $p \leq 0.001$). Accepting this hypothesis means that the quality of the information displayed in the E-government portals affect the citizens' perception of risk associated with adopting

E-government. As the user is assured, through the quality of the information, that the information displayed online is the same as the one provided in the government offices, some degree of the risk associated with using E-government will be alleviated. Therefore, E-government managers need to ensure that the information displayed online has high quality since the citizens evaluate the quality of the information to decide the level of risk associated with using E-government.

H5a: Service quality has a positive influence on perceived usefulness.

The third website quality factor that was investigated in this study is service quality. Delone and McLean (2003) defined service quality as the overall support provided by the service provider. The effect of service quality was examined in different IT/IS adoption fields. Ahn et al. (2007) conducted a study on the role of website quality and playfulness on the acceptance of online retailing in Korea. The researchers found that SVQ has a significant positive effect on PU. The relationship between SVQ and PU was also examined by Pai and Huang (2011) who studied the factors affecting the adoption of healthcare information systems and found that service quality has a significant positive influence on perceived usefulness. In the E-government adoption field, few studies have examined the effect of SVQ on PU. In Saudi Arabia, Almalki (2014) conducted a research to find the salient factors affecting E-government adoption and found that service quality does not have a significant influence on perceived usefulness. The researcher explained that the finding could be attributed to the quality of the E-government services at the time of the study as the citizens were not satisfied with it. On the other hand, Chen et al. (2015) conducted a study on the adoption of the online tax filing system in Philippine. The researcher examined the effect of SVQ on PU and found that it has a significant positive effect. Since only few studies in the field on E-government adoption have examined the significance of the relationship between service quality and perceived usefulness despite the importance of this relationship as it was highlighted in other IS/IT adoption studies, and since only one research examined the effect of SVQ on PU in the context of Saudi Arabia, this research proposed hypothesis 5a in order to examine the effect of SVQ on PU in the context of E-government adoption in general,

and in Saudi Arabia more specifically. Based on the literature, the proposed hypothesis stated that service quality has a positive effect on perceived usefulness. The conducted data analysis confirmed the hypothesis (SVQ→PU= 0.41 at $p \leq 0.001$). This finding comes in line with the finding of the study conducted in Philippine by Chen et al. (2015), however, it is contradictory to the conclusion drawn by Almalki (2014) in his study on E-government adoption in Saudi Arabia. Although both this study and the study conducted by Almalki (2014) were conducted in the same country and collected the data through online questionnaire while allowing the participants to select the E-government portal that they have experience with to evaluate, the results regarding the significance of the effect of SVQ on PU are different. This difference in the results can be attributed to the characteristics of the Saudi E-government at the time of the study. Since Almalki (2014) conducted his study, the evaluated E-government portals could have matured from only displaying information and providing simple services that do not require interaction between the citizen and the service provider to providing various services that require this sort of interaction while also enabling the citizen to send enquiries to the government agency that is providing the online service. Moreover, the quality of the service in the E-government portals could have enhanced. This enhancement in the E-government portal could have resulted in making the effect of SVQ on PU more prominent in this study. The confirmation of H5a indicate that the citizens place great importance on the quality of the service provided through the E-government to decide whether the adoption of E-government will be useful to them or not. Also, in this study, SVQ has the most influence on PU out of the three website quality factors. Therefore, since the citizens care about the quality of the service provided in E-government, E-government managers should ensure that adequate support is always present in the E-government portals by assigning this task to the appropriate staff, and that the transactions are promptly processed.

H5b: Service quality has a negative influence on perceived risk.

Based on the conducted literature review and to the best of the researcher knowledge, the effect of service quality on perceived risk was not previously

examined in the context of citizens' adoption of E-government. However, the impact of SVQ on PR was studied in other researchs conducted in different fields, such as the study conducted by Hsieh and Tsao (2014) on the role of the website quality constructs in reducing perceived risk in online shopping. The researchers concluded that SVQ has a significant negative effect on PR. Other studies were conducted in the marketing field that came to the same conclusion. Clow et al. (1996) examined whether the presence of specific cues in the advertisement will reduce the perceived risk. These cues belong to the five dimensions of service quality: tangibility, reliability, responsiveness, assurance and empathy. Clow et al. (1996) found that all dimensions of SVQ have significant negative effect on perceived risk. Another study in the marketing field was conducted by Garretson and Clow (1999), in which the researchers examined the effect of coupon face value on service quality, perceived risk and purchase intention. The analysis of the study concluded that service quality has a significant negative effect on perceived risk.

Since perceived risk is one of the barriers to IS/IT adoption (Al Khattab et al., 2015, Alfalah et al., 2017), it is important to decrease the effect of this construct in order to increase the probability of the adoption. Based on the review of the previous studies that have examined the effect of SVQ on PU, this study proposed hypothesis 5b, which stated that service quality has a negative effect on perceived risk. Interestingly, the data analysis presented in Chapter 5 revealed that, contrary to H5b, service quality has a significant positive effect on perceived risk (SVQ→PR= 0.32 at $p \leq 0.001$). This finding opposes the results of the aforementioned studies, which have concluded that service quality has a significant negative effect on perceived risk. On the other hand, the finding of this study comes in agreement with the conclusion of a study conducted by Marakanon and Panjakajornsak (2017) in Thailand on the factors affecting customer loyalty of environmentally friendly electronic products. However, the researchers did not provide an insight on how to explain this conclusion.

As for this study, several observations can help in explaining this finding. First, the analysis revealed that PR has a significant negative influence on IU (PR→IU= -0.24

at $p \leq 0.001$), which will be discussed further in Section 6.3. This means the citizens already believe that adopting E-government is associated with some degree of risk. Second, the data analysis of this study also showed that, out of the three quality constructs, SVQ has the most influence on PU, which indicates that although SQ and IQ play significant roles in the adoption of E-government, the role of SVQ is more prominent. Citizens seem to care more about the service quality because it is concerned with one of the most important objectives of E-government, which is providing services to the citizens. Moreover, many citizens mostly visit the government agencies, in the traditional system, in order to acquire services that require paper applications, while only few citizens visit the agencies to obtain information because usually citizens can ask about specific information through telephones. Therefore, since applying for services in the traditional system require more effort, more importance is placed on service quality in E-government to determine whether it is useful or not. Third, although SVQ is part of the website quality constructs, it was the only factor out of the three quality constructs to have significant positive effect on PR while SQ and IQ were found to have significant negative effects on PR. Requesting services through the E-government portal requires sharing personal information and uploading sensitive data. Since the citizens already perceive some risk with using E-government, uploading and sharing such information makes the risk more prominent, thus increasing the level of perceived risk. Lastly, upon further inspection of the measuring items for SVQ, it was clear that SVQ evaluated the services provided through E-government and the government organisation providing the services, however, having prompt responses and timely processing of the applications does not mean the information uploaded online will always be safe and never get stolen. Therefore, since having a high service quality means the citizen needs to share personal information in order to receive these services, the increase in service quality results in increasing the risk associated with using E-government.

6.3 Trust, Risk and E-government Adoption

H6a: Trust of the government has a positive influence on intention to use.

Trust of the government measures the citizen's perception of the integrity and abilities of the government agency that provide the electronic service. Based on the conducted literature review, the effect of trust of the government on intention to use varies from one study to another, for example, Bélanger and Carter (2008) studied the roles of trust and risk in E-government adoption and found that trust of the government has a significant positive effect on the intention to use E-government. Similarly, Voutinioti (2013) examined the factors affecting E-government adoption in Greece and found that trust of the government has a significant positive impact on behavioural intention. On the other hand, other studies, such as Kurfalı et al. (2017) and Carter and Bélanger (2004), have found that TG does not have significant effect on IU. Since the concept of E-government is still relatively new in Saudi Arabia and the adoption of E-government is voluntary, which can have an impact on the significance of TG in E-government adoption (Carter and Bélanger, 2004), measuring whether the citizens believe that the government agencies have the required technical resources and skills to successfully process various electronic applications and requests would provide valuable insight. Therefore, this study proposed hypothesis 6a to examine the effect of trust of the government on the intention to use E-government. The hypothesis stated that trust of the government has a positive influence on the intention to use. The data analysis supported H6a (TG→IU= 0.21 at $p \leq 0.001$). The acceptance of this hypothesis indicates that citizens' trust in the skills of the government agencies and the availability of the required resources to process the online applications motivate the citizens' intention to use E-government. Since E-government is still considered a new concept in Saudi Arabia and the citizens do not have a lot of experience using it, the citizens' positive perception of the government agencies' skills and possession of the required resources encourages the citizens to intend to use E-government. Therefore, the promotion of E-government needs to emphasise that the government agencies providing the E-government services have the required skills and resources and have received the necessary training to be qualified for this position.

The finding of this study agrees with the conclusion drawn in previous studies, such as Carter and Bélanger (2005), Carter and Weerakkody (2008), and Voutinioti (2013). On the other hand, some previous studies have concluded that TG do not have a significant effect on IU. Kurfalı et al. (2017) examined the influence of TG on behavioural intention to use E-government services and on performance expectancy in Turkey. The findings showed that TG does not have direct influence on the users' intention to use E-government, however, TG still has indirect effect on the intention to use through performance expectancy. This finding could be attributed to the characteristics of the sample. The average age of the sample used in the Turkish study was smaller than the average age of the sample used in this study. Moreover, the education level of the sample used in the Turkish study is higher than the education level of the sample used in this study, and lastly, part of the sample gathered in the Turkish study was from members of the Informatics Association of Turkey, which means they truly understand the use and processes involved in IS, unlike the general public, from which the sample of his study was drawn, who have little insight regarding the intricate processes within E-government. The findings of the studies conducted by Carter and Bélanger (2004), Carter and Bélanger (2005) and Bélanger and Carter (2008) support this explanation. In the study conducted in (2004), Carter and Bélanger collected their sample from undergraduate students and the results showed that TG does not have a direct effect on IU. The research have explained the finding by stating that since the tasks of tax filing and licence renewal must be completed regardless of the users' trust or lack of trust in the government, and also since the users perceived the online services as useful and compatible with their lifestyle, the TG variable does not have direct effect on IU. However, in their other studies that were conducted in (2005) and (2008), which also evaluated the same online services used in the first study, the researchers found that TG does have a direct effect on IU. The samples in the latter studies were collected from a more diverse population of citizens and not only undergraduate students as it was the case in the first study.

H6b: Trust of the government has a negative influence on perceived risk.

Based on the conducted literature review, trust of the government seems to have a significant negative effect on perceived risk. However, some researchers believe that the significance of the relationship is affected by the users' familiarity with the E-government concept in the country of the study (Carter et al., 2016). The influence of TG on PR was examined in different countries. Carter and Weerakkody (2008), studied the roles of trust and risk in E-government adoption and hypothesised that trust of the government reduces perceived risk. The data analysis conducted by the researchers revealed that TG has a significant negative effect on PR. The same conclusion was drawn by Alfalah et al. (2017) who researched the factors affecting older citizens' adoption of E-government in Saudi Arabia. On the other hand, other studies did not find the relationship between trust of the government and perceived risk significant, such as the research conducted on the adoption of the Jordanian E-government by Al Khattab et al. (2015) and the study conducted by Carter et al. (2016) to compare the factors affecting E-government adoption in USA and UK. In order to examine the significance of the relationship between trust of the government and perceived risk, this study proposed hypothesis 6b, which states that trust of the government has a negative influence on perceived risk. The analysis of this study has supported H6b (TG→PR= -0.10 at $p \leq 0.05$) and confirmed that perceived risk partially mediates the relationship between trust of the government and intention to use. Also, this mediation is a complementary mediation since both direct and indirect effects of TG on IU point to the same direction.

The acceptance of hypothesis 6b is in line with the finding of the study conducted by Alfalah et al. (2017), however, the population of this study included all adult citizens and the sample was collected from various regions in Saudi Arabia while the population of the study conducted by Alfalah et al. (2017) only included the older adults in Saudi Arabia and the sample consisted only of the older adults living in one specific city in Saudi Arabia. This indicates that citizens' trust of the government helps in reducing risk perception. Therefore, E-government managers need to emphasise the capabilities of the government agencies providing the E-government services in order to gain a higher level of trust from the citizens, which will result in reducing

citizens' perception of risk. The reduction of perceived risk helps in increasing citizens' intention to use E-government as this study have concluded. Contrary to the finding of this study, there are some research that did not find the effect of TG on PR significant, such as Al Khattab et al. (2015) and Carter et al. (2016). Both of these studies were conducted in countries other than Saudi Arabia, whose E-governments are in different maturity levels and their government agencies have different capabilities. These differences might have attributed to the different outcomes regarding the significance of the negative influence between TG and PR.

H7a: Trust of the Internet has a positive influence on intention to use.

TI is concerned with the users' perception of the existing regulations and structure of the Internet which lead them to believing in the safety and security of using the Internet to interact with the government. Based on the conducted literature review, the significance of the relationship between trust of the Internet and intention to use in the context of E-government adoption differs from one study to another. Some studies have concluded that trust of the Internet has a significant positive influence on the intention to use, such as Bélanger and Carter (2008), Alfalah et al. (2017), Carter et al. (2016), and Voutinioti (2013), Al Khattab et al. (2015), Kurfalı et al. (2017). On the other hand, other studies have concluded that TI does not have a significant positive influence on IU, such as Carter and Bélanger (2004); Alomari et al. (2012); and Weerakkody et al. (2013). Although, two of the aforementioned studies were conducted in Saudi Arabia, this study proposed examining the significance of the relationship between TI and IU because Alfalah et al. (2017) only included older adults in their study while Weerakkody et al. (2013) stated that despite the rejection of the hypothesis examining the positive effect between TI and IU, TI construct had overlapping variance with the trust of the intermediary construct on behavioural intention, which means since trust of the intermediary became a significant predictor of behavioural intention, TI became insignificant although some of its variance on behavioural intention is already explained by trust of the intermediary. Therefore, the effect of TI on IU was examined in this study through proposing hypothesis 7a, which stated that trust of the Internet has a positive effect

on the intention to use E-government. The conducted data analysis revealed that TI has insignificant effect on IU, thus, H7a was rejected (TI→IU= 0.067 at p > 0.01).

The rejection of H7a comes in line with the finding of the study conducted by Carter and Bélanger (2004) who have examined the factors affecting E-government adoption in the US. A similar result was drawn by Alomari et al. (2012) who have identified the factors affecting E-government adoption in Jordan. Carter and Bélanger (2004) have explained the insignificant effect of TI on IU that was found in their study as that the younger adults are usually more comfortable with using the Internet and that they already use it to do other tasks such as sending E-mails, thus, using the Internet to receive E-government services does not differ from using it to do these other more familiar tasks. Although this explanation might be correct, it has not been statistically proven. Furthermore, it does not apply to the finding of this study as the sample consisted of participants in different age groups and the participants whose age 30 years old or bellow only made up around 24% of the sample, therefor, the sample was not dominantly consisted of young adults, unlike the sample used in Alomari et al.'s (2012) study. The rejection of H7a might be related to the Internet experience of the participants as most of the participants have used the Internet for many years. This finding can indicate that because the citizens already trust the Internet and are comfortable with using it to complete different tasks, their trust of the Internet does not affect their intention to use E-government. Although the conducted data analysis rejected the existence of significant direct relationship between TI and IU, it was confirmed that TI still have significant indirect effect on IU through PR.

H7b: Trust of the Internet has a negative influence on perceived risk.

Similar to the relationship of trust of the government with perceived risk, the conducted literature review revealed that trust of the Internet can be significant in reducing perceived risk. Previous research have examined the significance of the relationship between TI and PR and found different results. Bélanger and Carter (2008) conducted a study in the US to examine the roles of trust and risk in E-

government adoption and found that trust of the Internet has insignificant effect on perceived risk. Similarly, Carter et al. (2016) examined the effect of TI on PR in E-government adoption in the UK and concluded that the relationship is insignificant. The researchers stated that the insignificant effect of TI on PR might be due to the lack of awareness of the available E-government services and how to utilise them. On the other hand, in the context of E-government adoption on the Arab countries, two studies have examined the negative effect of trust of the Internet on perceived risk and found the relationship significant. These research were conducted by Al Khattab et al. (2015) in Jordan, and Alfalah et al. (2017) in Saudi Arabia. Since Alfalah et al.'s (2017) study only focused on the older adults in Saudi Arabia, this study proposed hypothesis 7b to examine the significance of TI's effect on PR for the adult citizens in Saudi Arabia in general. H7b states that trust of the Internet has a negative influence on perceived risk. The conducted data analysis confirmed the proposed hypothesis (TI→PR= -0.12 at $p \leq 0.05$).

The finding of this study agrees with the conclusions of other previous studies, including Alfalah et al. (2017). The confirmation of H7b indicates that trust of the Internet is an important construct that can help in reducing risk perception for E-government adoption. This finding could be explained by the characteristics of the participants and the national culture of Saudi Arabia. Most of the participants in this study have been using the Internet for over five years, which means they have used the Internet long enough to trust it for browsing different websites and accessing their e-mails. Therefore, having to use the E-government services through the Internet forms no problem to the participants. However, the E-government concept itself is new to the citizens, and it still have not existed long enough for the citizens to use it and get familiar with it, which means for the Saudi citizens, E-government is considered the unknown that have some degree of risk attached to it. However, the familiarity of the citizens with the Internet relieves some of the associated risk, since the citizens already trust the Internet and they need to utilise it to use E-government.

H8: Perceived Risk has a negative influence on Intention to Use.

Perceived risk is defined as “the citizen’s subjective expectation of suffering a loss in pursuit of a desired outcome” (Warkentin et al., 2002, p. 160). The adoption of technology always has some risks as it has benefits, however, the significance of the risk associated with adopting the technology defers from one setting to another. Alfalah et al. (2017) examined the factors affecting older adults’ adoption of E-government in Saudi Arabia and found PR to have significant negative effect on IU. On the other hand, Bélanger and Carter (2008) conducted a study in the US to examine the effects of trust and risk on E-government adoption and concluded that PR does not have a significant negative effect on IU. Also, Carter et al. (2016) examined the factors affecting E-government adoption in the US versus the UK. The researchers found that perceived risk does not have significant effect on citizens’ intention to use in the US sample while it has significant negative effect in the UK sample. The lack of significance in the relationship between PR and IU might be due to citizens’ familiarity with using E-government. It is possible that if the citizens are not familiar with the E-government concept, they perceive higher degrees of risk associated with using E-government. As a result, this high perception of risk negatively affects the citizens’ intention to use E-government. However, it appears that the more familiar the citizens are with E-government, the less risk they will perceive in using E-government. Although the citizens still perceive some degree of risk, the effect of the perceived risk on the intention to use is not significant.

In order to examine whether the relationship between PR and IU is significant in the context of E-government adoption in Saudi Arabia, this study proposed hypothesis 8, which states that perceived risk has a negative influence on intention to use. The conducted data analysis accepted the proposed hypothesis (PR→IU= -0.24 at $p \leq 0.001$). This finding agrees with the finding of the research conducted by Alfalah et al. (2017) on the older citizens in Saudi Arabia, as well as the finding regarding the UK sample in the study conducted by Carter et al. (2016).The acceptance of H8 indicates that the citizens in Saudi Arabia perceive risk in adopting E-government since the concept of E-government is still relatively new and the citizens are more accustomed to using the traditional system to apply and receive

government services. The degree of risk perceived by the citizens is significant to reduce their intention to use E-government. However, similar to the influence of TI on IU, it is expected that overtime, when the Saudi citizens get used to utilising the E-government services, the influence of PR on IU will be insignificant since the use of E-government will no longer be considered an unknown territory. Meanwhile, in order to reduce the citizens' perceived risk, it is advised that the E-government managers focus on promoting E-government as a safe and secure mean to apply and receive government services.

6.4 Espoused Cultural Values and E-government Adoption

H9: The influence of PU on IU increases for individuals who espouse higher degree of uncertainty avoidance.

H10: The influence of PU on IU increases for individuals who espouse higher degree of individualism.

H11: The influence of PU on IU increases for individuals who espouse higher degree of femininity.

Hypotheses 9, 10, and 11 were proposed to examine the effect of the espoused national culture on the adoption of E-government through moderating the influence of PU on IU. Previous studies have emphasised the important role of the espoused national culture in technology adoption and several studies have examined the moderating influence of the cultural values (Srite and Karahanna, 2006, Hoehle et al., 2015, Vance et al., 2008, Bagchi et al., 2004, Udo et al., 2012). The moderating effect of the espoused national culture was examined using a two-stage approach. The result revealed that none of the proposed moderators have significant effect on moderating the relationship between PU and IU. Therefore, H9, H10, and H11 were rejected.

Previous studies had mixed results regarding the moderating effect of the espoused national culture values on the influence of PU on IU. In the study conducted by Srite and Karahanna (2006), the researchers examined the moderating effect of

masculinity/femininity on the relationship between PU and behavioural intention. The researchers found that masculinity/femininity does not have a significant moderating effect on the specified relationship. Similarly, Tarhini et al. (2017) conducted their study in the E-learning field in Lebanon and found that neither MF nor IC have significant moderating effect on the influence of PU on behavioural intention, while PD and UA showed to have significant moderating influence on the aforementioned relationship. On the other hand, Alshare and Mousa (2014) conducted their research in Qatar to examine the moderating effect of the espoused cultural dimensions on consumer's intention to use mobile payment devices. The findings of their study have concluded that MF has a significant moderating effect on the relationship between performance expectancy and behavioural intention. Similar to the conclusion drawn by Tarhini et al. (2017) regarding the moderating effect of power distance, Alshare et al. (2011) examined the moderating effect of the espoused national culture values on the relationship between PU and attitude towards computer usage. The data for the study were collected from USA, Chile, and UAE. The findings showed that PD has a significant moderating influence. Similarly, Udo et al. (2012) conducted their study in the E-service adoption context and collected their data from USA and Nigeria. The researchers found that PD has a significant moderating effect on the relationship between PU and satisfaction.

The rejection of H11 in this study is in agreement with the conclusions drawn by Srite and Karahanna (2006) and Tarhini et al. (2017) regarding the nonsignificant moderation effect of MF. When it comes to the influence of the espoused national culture values, the results are not expected to be the same as the ones found in other studies because each country has a different culture and the individuals living in the country espouse different degrees of that culture. Therefore, the findings of this study regarding hypotheses 9, 10, and 11, could actually mean that the espoused national culture values do not have significant moderating influence in the context of E-government adoption, or it could be attributed to the collected sample as it only consisted of Saudi citizens, or a combination of the sample, measurement, and analysis because many of the measuring items of the espoused national culture

constructs were dropped during the analysis of the measurement model as they failed the convergent validity test and the PD construct was also removed from the analysis. This might have occurred because the participants did not clearly understand the measuring items or the purpose of them, which might cause the participants to provide false information.

6.5 Summary

This chapter have presented a discussion of the finding from the conducted data analysis in relation to the proposed hypotheses and previous studies. This study has confirmed that IU has a significant positive influence on UB, while PU has a significant positive influence on IU. Also, it was confirmed that PR has a significant negative effect on IU. The analysis showed that, indeed, PU is the main predictor of IU, which is in line with previous studies. Therefore, PU is considered a crucial factor in E-government adoption. Moreover, this study concluded that all of the three quality constructs have significant positive influence on PU, however, out of these constructs, SVQ demonstrated having more impact on PU, which makes SVQ an important predictor of PU. On the other hand, SQ and IQ showed to have significant negative effects on PR, which support the proposed hypotheses. One surprising finding of this study is that SVQ was found to have significant positive influence on PR, which is the opposite of the proposed hypothesis. The reasons behind this finding was attributed to the participants' evaluation of the quality of services provided online against the ones provided in the government offices, in combination with the already existing risk perception that is associated with E-government. As for the trust constructs, this study confirmed that TG has a significant negative influence on PR, while it was also confirmed that TG has significant direct and indirect effects on IU, which makes the relation between TG and IU partially mediated by PR. On the other hand, it was concluded that TI has a significant negative influence on PR. In addition, TI showed to have a nonsignificant direct influence on IU while it does have a significant indirect effect on IU, which concludes that the relationship between TI and IU is fully mediated by PR. Finally, this study concludes that none of the espoused national culture values have a significant moderating influence on the relationship

between PU and IU. The final model of this research for citizens' adoption of E-government in Saudi Arabia is illustrated in section 7.3.2 Chapter 7. The following chapter introduces the theoretical and practical contributions of this study in addition to the research limitations and implications for future research.

Chapter 7: Conclusion

This chapter will present an overview of the whole research and its aim and objectives. After that, the chapter will provide a summary of the research findings regarding E-government concept and the current state of E-government adoption in Saud Arabia, in addition to the development and evaluation of the proposed conceptual model. Next, the theoretical contributions of this research is presented, followed by the practical contribution. Finally, tis chapter will discuss the limitations of this study and present the implications for future research.

7.1 Overview of the Research

Due to the benefits of E-government which were reaped by the developed countries that have already implemented it, many of the developing countries have been working on implementing E-government to enhance their communication with their citizens and gain some of the benefits associated with E-government. As the adoption of a system determines the success or failure of it, the factors affecting the adoption of E-government were researched.

The research started by conducting a literature review on the previous studies that focused on citizens' adoption of E-government. The literature review included studies that were conducted in the developed and developing countries in order to determine which factors were most commonly examined and which factors were given less attention despite their importance in the IS/IT adoption filed. The literature review revealed that most of the studies were conducted in non-Arabic countries, which have different political, cultural, and/or economical settings from Saudi Arabia. Therefore, the application of the findings of these studies to the context of E-government adoption in Saudi Arabia is not reasonable since the difference in the ICT infrastructure, and the political stability, among other variables, can affect the adoption of E-government. Moreover, the aforementioned reason also prevents the application of the findings of the studies conducted in other Arab countries to the context of Saudi Arabia. Although some similarities exist between the Arab countries, there are also some differences, for example, each of the countries have a different

government that operate differently from each other, and each country has a different ICT infrastructure maturity. In addition, the studies conducted on E-government adoption in these other countries have evaluated different E-government portals that have different maturity level from Saudi Arabia's and have distinctive characteristics. Among the reviewed literature, only few research were found that have studied the adoption of the Saudi E-government. After evaluating the existing literature, the limitations and critique of these studies were discussed in Section 2.9. Based on the conducted literature review, the factors affecting citizens' adoption of E-government in Saudi Arabia were identified as a gap in the literature, thus, this research attempted to answer the following question:

What are some of the salient factors influencing citizens' adoption of the Saudi E-government?

To answer this question, a conceptual model was developed which integrated three adoption models: The Technology Adoption Model, the Information System Success Model, and trust and risk model. In addition, the conceptual model integrated Hofstede's national culture dimensions. The research followed a deductive approach to achieve the aim and objectives of the study. Through utilising a non-probability self-selection convenience sampling technique, 527 usable online questionnaires were collected from the Saudi citizens via Qualtrics. After collecting the data, the data analysis was carried out using SPSS and SmartPLS. The data analysis was conducted by evaluating the measurement model first, which includes examining the reliability and validity. Next, the structural model was evaluated, which includes testing the hypotheses. Lastly, the findings of the study were discussed and compared against the literature in Chapter 6.

7.2 Overview of the Research Aim and Objectives

The aim of this research is to identify the factors affecting citizens' adoption of E-government in Saudi Arabia. The following objectives were identified to achieve the aim of the study:

- To explore the concept of E-government and understand the current state of E-government adoption in Saudi Arabia.
- To propose a conceptual model consisting of factors influencing citizens' adoption of E-government in Saudi Arabia based on the literature review.
- To evaluate the model through conducting a quantitative study in Saudi Arabia.
- To contribute to the literature on citizens' adoption of E-government in Saudi Arabia.
- To suggest some practical guidelines on how to enhance and promote E-government.
- To provide implications for future research.

7.3 Research Outcomes

7.3.1 Exploring E-government concept and the current state of E-government adoption in Saudi Arabia

This objective was met through conducting the literature review and was discussed in Chapter 2. The current state of E-government adoption in Saudi Arabia was discussed through analysing different UN and Yesser reports. On the other hand, the concept of E-government was explored and discussed through conducting an in-depth literature review and multiple comparisons between multiple E-concepts, such as E-governance and E-commerce. Different terms, such as the electronic government, E-government services, government E-services, and E-services, were used to refer to E-government, however, the term E-government was used throughout this research. Moreover, there are various definitions of E-government depending on the perspective of the researcher. For this study, E-government was defined as the utilisation of ICT to deliver government services to the citizens through multiple channels that allow 2-way communication between the government and the citizens in order to enhance government-citizen relationship while improving the quality of the provided services.

7.3.2 Developing and evaluating the conceptual model

Another objective of this study is to develop a conceptual model based on the literature review to help in identifying the factors affecting citizens' adoption of E-government in Saudi Arabia. Based on the literature review, the most prominent adoption factors were part of three adoption models: TAM, ISSM, and trust and risk. Hofstede's national culture dimensions were included in the conceptual theory based on the literature review. Several hypotheses were developed based on the conducted literature review.

The model was tested using data collected via questionnaire. The data was analysed using SPSS and SmartPLS. The results confirmed that IU has a significant positive influence of UB, while PU had a significant positive effect on IU, which come in agreement with the findings of previous studies such as Davis et al. (1989), Alomari et al. (2012), Lean et al. (2009), Phang et al. (2006), Venkatesh and Bala (2008), Venkatesh and Davis (2000), Venkatesh et al. (2003), Venkatesh et al. (2012). The analysis also showed that PU has the most influence on IU. On the other hand, PR has negative influence on IU. Several previous studies have come to the same conclusion regarding the effect of PR on the adoption of IS such as Hung et al. (2006), Nicolaou and McKnight (2006), Bélanger and Carter (2008). The TG construct was found to have a positive effect on IU while also having a negative influence on PR. This comes in agreement with the findings of the study conducted by Bélanger and Carter (2008) on E-government adoption. However, the finding regarding the influence of TG on IU is contradictory to the findings of the studies conducted by Carter and Bélanger (2004) and Kurfalı et al. (2017). The difference in the findings of the studies could be attributed to the characteristics of the samples. Both of these studies have collected their data from university students only. Moreover, Carter and Bélanger (2004) have also explained that whenever it is mandatory to complete a task and when using the electronic method fits the user's lifestyle, TG has no direct effect on IU. On the other hand, trust in the Internet showed to have a negative influence on PR, while contrary to the hypothesis, it does not have a significant influence on IU. The study conducted by Bélanger and Carter (2008) came to the same findings. Despite having a

nonsignificant direct effect on IU, TI still has a significant indirect effect on IU through PR.

The study also concluded that all of the three quality factors have positive effects on PU. This comes in line with the finding of previous studies such as Zhou (2011), Gao and Bai (2014), Chen and Cheng (2009), Jiang (2011) and Pai and Huang (2011). Out of the three quality factors, SVQ has the largest influence on PU. The findings also indicate that SQ and IQ have significant negative effects on PR, which agree with the findings of the studies conducted by Hsieh and Tsao (2014), Nicolaou and McKnight (2006) and Yi et al. (2013). An unexpected finding was drawn regarding the effect on SVQ on PR. The analysis showed that SVQ has a significant positive effect on PR, which is the opposite of the hypothesis. This finding comes in line with the finding of the study conducted by Marakanon and Panjakajornsak (2017), however, it contradicts the findings of Hsieh and Tsao (2014). Nonetheless, SVQ showed to be an important factor in citizens' adoption of E-government in Saudi Arabia as it has a significant indirect positive effect on IU. Although SVQ indirectly influences IU through PU and PR, its effect via PU is larger than its effect through PR. Finally, the study concluded that none of the espoused national culture values have significant moderating effect on the relationship between PU and IU. Figure 19 presents the final version of the theoretical model for citizens' adoption of E-government in Saudi Arabia.

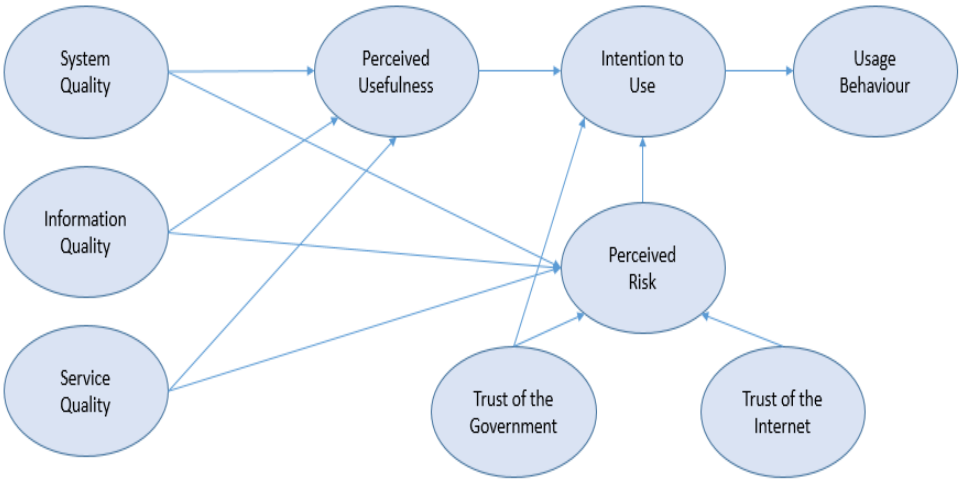


Figure 19: The Final Version of the Theoretical Model

In Section 2.9, I have identified eight limitations of the existing literature on E-government adoption that prevents the generalisation of the results of these studies to context of Saudi Arabia. This study has overcome seven out of the eight identified limitations, while only one of the identified limitations, which is concerned with the representation of the population, was not overcome due to the difficulty of obtaining a sampling frame. The details on how this research has addressed each of the identified limitations are presented as follows:

1. Sample size: some of the previous studies had small sample size which affected the strength and generalisability of their findings. This research has a sample size of 527 which is considered large and, based on the GPower analysis, more than sufficient to run the required analyses in order to validate the proposed model.
2. Research location: most of the studies were conducted in countries other than Saudi Arabia, which have different characteristics from Saudi Arabia, such as in the ICT infrastructure, literacy, and the availability of human skills. Moreover, many of these studies have focused on a specific E-government service provided in these other countries. Therefore, the findings of these studies are affected by the quality of these E-government services beside other aspects such as self-efficacy, literacy, computer literacy, resource availability, and many other factors that vary in significance from one country

to another. This study was conducted in Saudi Arabia where the participants have evaluated Saudi E-government portals, therefore, the results of the study and recommendations drawn from them are based on the Saudi E-government system and are from the citizens' perspective.

3. Representation of the population: the sample in some of the previous studies were not representative of the population. Since it was not possible to obtain a sampling frame, a non-probability sampling technique was followed in this study. Therefore, it could not be claimed that the obtained sample is representative of the population, thus, this study did not overcome this identified limitation.
4. Empirical validation: several of the studies only proposed an adoption model theoretically without empirically validating the proposed model. In this study, an integrated adoption model was proposed and then empirically validated using data collected from Saudi Arabia.
5. Examining the cultural dimension: despite the important role of culture that was demonstrated in other IS adoption studies, most of the reviewed research on E-government adoption have focused on the technological and social aspects. Only few of them considered examining the cultural effect through incorporating one or two of Hofstede's national culture values as cultural aspects, while even fewer studies have integrated all dimensions of Hofstede's national culture. The proposed model of this study has integrated Hofstede's national culture values as moderators of the relationship between perceived usefulness and intention to use. Despite the lack of significance of the proposed cultural moderators, this study attempted to explore the effect of culture on the adoption of E-government which was rarely examined in the previous studies.
6. Trust and perceived risk: limited number of research have investigated the effects of the trust and risk on each other and on other adoption constructs in the context of E-government adoption. The lack of examining these factors was also highlighted by (Carter et al., 2016). This study has integrated trust

and risk factors and examined their influence in the adoption of E-government. The results showed that both trust of the government and trust of the Internet have significant negative effects on perceived risk, while perceived risk has a significant negative influence on the intention to use, and finally, trust of the government has a significant positive effect on the intention to use.

7. The effects of the website quality factors: the three website quality factors proposed in the IS Success Model include many important aspects of a system that the potential user usually evaluates in order to decide whether the new system is useful or not. Among the reviewed research, only few have examined some of these factors and even fewer research included all three constructs. Since any given system has advantages and disadvantages, the effects of the website quality factors on both perceived usefulness and perceived risk were examined as a high system quality is expected to increase the perceived usefulness of a system while decreases its perceived risk.
8. Time of research: despite the existence of studies on the adoption of E-government in Saudi Arabia that have examined the effects of some factors and relationships that were also examined in this study, the results of the previous research might be no longer applicable as technology is constantly changing, therefore, the characteristics of the E-government portal that was evaluated in the previous research could have changed positively or negatively, which affects citizens' intention to adopt E-government. Since the participants in this study have evaluated the current Saudi E-government portals, the provided recommendations for the managers can help in improving the quality of E-government and, therefore, enhance the adoption rate.

7.4 Theoretical Contribution

The identified gap in the literature was investigated through proposing and validating an integrated model based on well-known theories in the IS adoption field.

This study contributes to the knowledge and literature in the adoption of E-government as follow:

7.4.1 Contribution to the Literature by Developing an Integrated Model

This study proposed and validated a model for the factors affecting E-government adoption in Saudi Arabia. The model was based on three IS/IT adoption models: TAM, ISSM, and the trust and risk model, in addition to Hofstede's national culture values. The final model for E-government adoption was illustrated in Figure 19 and it only integrates factors from TAM, ISSM, and the trust and risk model. The final results of this study provided a way to understand citizens' adoption of E-government through using a unique model that integrates three well-known theoretical models from the literature. The developed model can provide foundation for future studies not only in Saudi Arabia, but also in other countries. In addition, the validated measuring items used in this study can be used in further research on E-government adoption especially in Saudi Arabia and other countries in the Middle East.

Many previous studies in the E-government adoption field, especially those conducted in the Arab countries, have utilised only a single IS adoption model to explain E-government adoption, or have oversimplified their research models that explain E-government adoption by linking all constructs directly to the intention to use construct despite the evidence existing in the IS/IT adoption literature that the constructs of IS/IT adoption are interdependent. The results of this study show how TAM, ISSM, and trust and risk model can be integrated in a single model to explain citizens' adoption of E-government and to which degree the different aspects combined in the model can explain citizens' adoption of E-government. Through conducting this study, it was shown that the significance of the factors affecting E-government adoption can vary from one country to another as not all of the proposed hypotheses were accepted. This conclusion acts as an encouragement for researchers to examine the similarities and differences in the factors affecting E-government adoption in different countries.

7.4.2 Contribution to the Literature on the Roles of Website Qualities in IS/IT Adoption

This research provides further knowledge on the effects of system quality, information quality, and service quality on the adoption of E-government through examining their influence on reducing perceived risk. Previous studies have mainly focused on examining the effects of these constructs on perceived usefulness or the intention to use as it was originally proposed in the ISSM. However, adopting new systems and technologies is associated with some negative attributes as it is associated with positive ones. The quality of the system, information, or service can either positively or negatively affect the perception of usefulness as well as the perception of risk as it was demonstrated in this study. To best of knowledge, the effects of system quality, information quality, and service quality of perceived risk have never been examined in the previous studies conducted on the adoption of E-government in Saudi Arabia, while some studies conducted in other countries have examined the effect of one or two of the website quality factors on perceived risk. Therefore, this research provides valuable insight on the influence of the website qualities on perceived risk.

7.4.3 Contribution to the Literature on the Role of Perceived Risk in E-government Adoption

One of the critiques of the previous studies conducted on E-government adoption in Saudi Arabia is that the effect of perceived risk is rarely examined. This is also one of the identified limitations of TAM, which was discussed in Chapter 3. The adoption of new technologies and systems involves advantages and disadvantages to the adopters, however, the degrees of these perceived advantages and disadvantages can provide an estimation of how likely the person will adopt the new system. Therefore, measuring the perceived risk construct and examining its effect on the intention to use is equally as important as measuring perceived usefulness and examining its influence. This study demonstrated the important role of perceived risk in IS/IT adoption through integrating the construct in the proposed model and confirming its significant influence on the intention to use during the validation of the proposed model.

7.4.4 Contribution to the Literature on the Role of Trust in E-government Adoption

The conducted literature review revealed that despite the existence of studies on E-government adoption, only few of these research examine the roles of trust and risk. When a situation requires trust, there must be some level of risk that needs to be alleviated. This study integrated the trust and risk model in the proposed research model. The data analysis discussed in Chapter 5 confirmed the significant effects of trust of the government and trust of the Internet in reducing perceived risk. The findings regarding the effect of trust on perceived risk suggest that the researchers in the E-government adoption field consider examining the relationship between trust and risk in future studies.

7.5 Practical Contribution

The current state of E-government adoption in Saudi Arabia was discussed in Sections 1.4.2 and 1.4.3, which have revealed that the Saudi government aspires to increase the level of citizens' adoption of E-government in order to receive the benefits associated with utilising E-government. When aiming to enhance the level of adoption, there are various factors to consider that can help in achieving the desired outcome, however, the different significance levels of these factors can play a role in deciding which factor has a higher priority. The findings of the study have provided basis for several recommendations to the managers of the Saudi E-government portals which aim to assist in increasing the number of E-government adopters in Saudi Arabia. These recommendations and guidelines are provided and discussed in the following sub-sections.

7.5.1 Enhancing Service Quality

The results of this study showed that service quality has a significant positive effect on perceived usefulness. Moreover, the analysis concluded that service quality has a medium f^2 effect size while both system quality and information quality have small f^2 effect size, which indicates that service quality has a stronger impact on perceived usefulness. In addition, since the data analysis revealed that perceived usefulness is the main determinant of the intention to use, increasing the perceive

usefulness of E-government is considered a priority. Therefore, E-government managers need to focus on enhancing the service quality in order to increase the level of perceived usefulness. This can be achieved through sending updates to the citizens via SMS or E-mail on the current status of their applications to ensure the citizens that their applications are processed as promised. Moreover, the E-government service quality can be enhanced through enabling the citizen to receive the E-government services without the need to visit the government office during any stage, providing interactive communication in the E-government portal to enable fast communication between the citizen and the government, and enhancing the electronic citizen-government communication through ensuring that the E-government employees respond to the citizens' requests in a timely and helpful manner.

Although this study concluded that service quality has a significant positive effect on perceived risk, this finding should not deter the managers from enhancing service quality as the f^2 effect size of service quality on perceived risk is small. Therefore, enhancing the service quality will have more effect on perceived usefulness than on perceived risk. Moreover, based on the findings of this study, the degree of perceived risk can be reduced through other constructs, such as trust, system quality and information quality, which will be discussed in the following sections.

7.5.2 Enhancing Information Quality and System Quality

This study concluded that information quality and system quality have significant negative effects on perceived risk and significant positive effects on perceived usefulness. Although the f^2 effect size of system quality and information quality on perceived risk are small, still the influence of these constructs can reduce perceived risk and negate the positive effect of service quality on perceived risk since the f^2 effect size of service quality on perceived risk is also small. Therefore, it is recommended that E-government managers focus on enhancing system quality and information quality in order to reduce the increment in the perceived risk caused by enhancing service quality. In addition, when improving system quality and

information quality, their positive effects on perceived usefulness, combined with the stronger positive effect of service quality on perceived usefulness, will increase the level of perceived usefulness. Based on the results of this study, perceived usefulness has a larger impact on intention to use than perceived risk and following the recommendation of enhancing system quality and information quality will facilitate in increasing the positive impact of perceived usefulness on intention to use and decrease the influence of perceived risk on the same factor.

Information quality can be improved through keeping the information up-to-date while not dismissing the animated banner in the portal as the information it contains is, most of the time, the first part of the portal the user looks at and if the information or news displayed there is dated, the citizen will feel reluctant to use the portal. Moreover, the information quality could be improved by writing the information in a simple and comprehensible language and displaying it in a way that makes reading and understanding the content an easy task, such as short bullet points or tables. On the other hand, system quality can be improved through notifying the users several days before conducting any scheduled maintenance to the portal, decreasing the time and frequency of having an out-of-order portal, enhancing the authentication process yet not complicating it, and finally, creating a straightforward design that allows the user to easily find all the services provided and their information.

7.5.3 Encouraging E-government Use

Encouraging the citizens to use E-government will increase their familiarity with the system and can assist in decreasing the perceived risk associated with E-government. Similar to how the findings showed that TI does not have a significant influence on IU due to the user's familiarity with the Internet, it is expected that the more familiar the users get with E-government, the less perceived risk they will associate with it. The citizens could be encouraged to use E-government through placing advertisements through different media channels and providing access to the portal in the offices providing the services so it allows some of the citizens who visit the government offices to get the services to try applying online instead of waiting in

the queue and get instant help if they do not know how to do something while applying online.

7.5.4 Building Government-Citizen Trust

The findings of this study concluded that trust of the government has significant negative influence on perceived risk while it has a significant positive influence on intention to use, therefore, it has significant direct and indirect effects (through perceived risk) on intention to use. Out of the two trust constructs examined in this study, trust of the government proved to have significant direct and indirect effect on intention to use while trust of the Internet only had an indirect effect on intention to use. Since trust of the government has more effect on E-government adoption, it is recommended that E-government managers work on enhancing citizens' trust in the government agencies. This can be achieved through utilising different media channels to advertise for E-government and assure the citizens that the government organisations have the required resources and abilities to provide the services electronically. Also, requesting the users of E-government to rate the E-government services and write brief reviews on them might encourage the non-users to use E-government, however, it is recommended that this step is implemented after ensuring that the qualities of the services provided, the information displayed, and the actual system are high in order to avoid having to deal with receiving low ratings, which will reduce citizens' trust in the government.

7.5.5 Increasing Perceived Usefulness

One of the main findings of this study is that perceived usefulness is the dominant predictor of intention to use. Since perceived usefulness plays a crucial role in citizens' adoption of E-government, it is very important to increase citizens' perception of usefulness in adopting E-government. This can be achieved through the constant evaluation of the attributes that make applying to government services online different from in-office application. If there is no apparent difference between using E-government and the traditional system to apply for and receive the government services, then the citizens will more likely use the method they are more familiar with. In order to encourage the citizens to use E-government, it is important

to highlight the benefits of using E-government compared to the traditional method, such as avoiding being out in the hot weather and glaring sun during the summer or the freezing weather during winter, avoiding waiting in long queues, avoiding having someone jump the queue before you just because they have wasta, and avoiding arriving to the government office only to find it closed for prayer or because the office hours are over. Emphasising the advantages of using E-government can be communicated to the citizens through social media and television/radio advertisements.

7.6 Limitations

This study has developed and proposed a conceptual model to find out which factors affect citizens' adoption of E-government in Saudi Arabia. The proposed conceptual model was based on previous well-known IT/IS adoption models, in addition to Hofstede's national culture values. The proposed model was validated using data collected through online questionnaires from Saudi citizens. Nevertheless, this study has some limitations that can act as guidance for future research. Two of the limitations are concerned with the sample of the study. First, the model was validated using data collected from Saudi citizens only, although the Saudi E-government also provide services to non-Saudi nationals. This choice resulted in excluding a part of E-government users. However, this decision was justified in Section 4.6 which states that because the foreign residents in Saudi Arabia come from different countries and collecting a sample that is truly representative of the population that consists of Saudi and non-Saudi residents will be very hard to achieve in the defined timeframe and, thus, it might affect the scope of the research. Nonetheless, examining the model using data collected from any E-government user regardless of their nationality can shed the light more on which factors are more salient. Second, the data used in this study was collected using a non-probability sampling, which means the sample might not be representative of the population. However, this sampling technique was selected because it was difficult to obtain a sampling frame and it even might not be possible due to the rapid change in the number of E-government users.

Another limitation of this study is the digital divide. E-government services are targeted towards all of the citizens regardless their age, education level, or financial status. Although limiting the population to those who have previously used E-government provide an insight on which factors truly driven the citizens to adopt E-government, it has also eliminated the possibility of finding other salient factors in E-government adoption from the perspective of citizens who are technology-illiterate and those who do not have easy access to technology. An additional limitation of this research is that the conceptual model was only validated in the context of Saudi Arabia. Although this limitation does not affect this research as it was aimed to find the factors affecting citizens' adoption of E-government in Saudi Arabia, however, it is difficult to say that the validated model is applicable to E-government adoption in other countries.

Finally, this study evaluated the moderation effect of culture using Hofstede's national culture values, which have received some criticism. Despite the criticism, Hofstede's theory is considered the most valuable work on culture and his research is incorporated in other studies more often than not (Jones, 2007, Bagchi et al., 2004). Some of the criticism of Hofstede's work is regarding the method used in generating the country scores and the application of these scores in other research, however, this study realises that the country scores of Hofstede's work reflect the national culture of the country as a whole, which does not mean every citizen in that country espouses all of the national culture of the country. Therefore, this research adapted the measuring items developed based on Hofstede's original measures in order to evaluate the espoused national culture values at the individual level.

7.7 Implications for Future Research

The aforementioned limitations of this study provided some direction for future research. It is possible to have more insight regarding the factors affecting the adoption of E-government by validating the proposed model in this study using data collected from Saudi and non-Saudi residents. This will also allow for comparison between the factors affecting E-government adoption for the Saudi and non-Saudi residents. Moreover, in order to investigate the effect of other factors on E-

government adoption, a study could be conducted while including the residents who were excluded from the defined population of this research such as those who have not used E-government before and those who do not have easy access to technology. To better understand the factors affecting their adoption of E-government, interviews could be conducted with these residents, especially because some of them might be technology-illiterate and/or have hard access to technology.

Moreover, in future research, it would be useful to examine the differences between different demographic groups after obtaining sufficient sample for each group. This can provide better understanding on how the demographic characteristics moderate the effects between the constructs within the model. Finally, as this study only validated the proposed model in the context of Saudi Arabia, in the future, it would be interesting to validate the proposed model of this research in other countries and compare the findings with the outcomes of this study.

References

n.d. *Implementation* [Online]. Oxforddictionaries.com. Available: http://www.oxforddictionaries.com/definition/english/implementation [Accessed Nov 6 2015].

n.d. *Yesser_Overview* [Online]. Available: http://www.yesser.gov.sa/en/ProgramDefinition/Pages/Overview.aspx [Accessed 06/05 2015].

ABU-SHANAB, E. A. 2015. Reengineering the open government concept: An empirical support for a proposed model. *Government Information Quarterly*.

AFTHANORHAN, W. 2013. A comparison of partial least square structural equation modeling (PLS-SEM) and covariance based structural equation modeling (CB-SEM) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology,* 2**,** 198-205.

AHN, T., RYU, S. & HAN, I. 2007. The impact of Web quality and playfulness on user acceptance of online retailing. *Information & management,* 44**,** 263-275.

AJZEN, I. 1991. The theory of planned behavior. *Organizational behavior and human decision processes,* 50**,** 179-211.

AL-GHAITH, W., SANZOGNI, L. & SANDHU, K. 2010. Factors influencing the adoption and usage of online services in Saudi Arabia. *EJISDC: The Electronic Journal on Information Systems in Developing Countries***,** 1.

AL-HUJRAN, O., AL-DEBEI, M. M., CHATFIELD, A. & MIGDADI, M. 2015. The imperative of influencing citizen attitude toward e-government adoption and use. *Computers in Human Behavior,* 53**,** 189-203.

AL-KHOURI, A. M. 2013. e-Government in Arab Countries: A 6-Staged Roadmap to Develop the Public Sector. *Journal of Management and Strategy,* 4**,** p80.

AL-SHAFI, S. H. 2009. *Factors affecting e-Government implementation and adoption in the State of Qatar.* Brunel University, School of Information Systems, Computing and Mathematics.

AL-SHEHRY, A., ROGERSON, S., FAIRWEATHER, N. B. & PRIOR, M. The Motivations for Change Towards E-Government Adoption: Case Studies from Saudi Arabia. e-Government Workshop, 2006.

AL-SHEHRY, A. M. 2008. Transformation towards e-government in The Kingdom of Saudi Arabia: technological and organisational perspectives.

AL-SOBHI, F. 2011. *The roles of intermediaries in the adoption of e-government services in Saudi Arabia.* Brunel University, School of Information Systems, Computing and Mathematics.

AL KHATTAB, A., AL-SHALABI, H., AL-RAWAD, M., AL-KHATTAB, K. & HAMAD, F. 2015. The Effect of Trust and Risk Perception on Citizen's Intention to Adopt and Use E-Government Services in Jordan. *Journal of Service Science and Management,* 8**,** 279.

AL NAGI, E. & HAMDAN, M. 2009. Computerization and e-Government implementation in Jordan: Challenges, obstacles and successes. *Government Information Quarterly,* 26**,** 577-583.

ALATEYAH, S. A., CROWDER, R. M. & WILLS, G. B. 2012. Towards an integrated model for citizen adoption of E-government services. *International Journal of Information Technology and Computer Science,* 6**,** 47-57.

ALATEYAH, S. A., CROWDER, R. M. & WILLS, G. B. 2014. Identified Factors Affecting the Intention of Saudi Arabian Citizens to Adopt e-Government Services. *International Journal of Innovation, Management and Technology*.

ALEID, F. A. A. 2011. *An Investigation of the Factors Affecting Consumers' Adoption of E-commerce: An Empirical Study of Saudi Arabia.*

ALFALAH, A., CHOUDRIE, J. & SPENCER, N. Older Adults Adoption, Use and Diffusion of E-Government Services in Saudi Arabia, Hail City: A Quantitative Study. 50th Hawaii International Conference on System Sciences, 2017.

ALGHAMDI, S. & BELOFF, N. Towards a Comprehensive Model for E-Government Adoption and Utilisation Analysis: The Case of Saudi Arabia. Federated Conference on Computer Science and Information Systems, 2014. 1217-1225.

ALGHAMDI, S. & BELOFF, N. 2016. Innovative Framework for e-Government adoption in Saudi Arabia: A Study from the business sector perspective. *International Journal of Advanced Computer Science and Applications (IJACSA),* 7.

ALHARBI, N., PAPADAKI, M. & DOWLAND, P. 2017. The impact of security and its antecedents in behaviour intention of using e-government services. *Behaviour & Information Technology,* 36**,** 620-636.

ALI, I. L. & SUNITHA, V. V. 2007. *E-government in developing countries: opportunities and implementation barriers.* Luleå University of Technology.

ALMALKI, O. 2014. *A framework for e-government success from the user's perspective.* PhD, University of Bedfordshire.

ALOMARI, M., WOODS, P. & SANDHU, K. 2012. Predictors for e-government adoption in Jordan: Deployment of an empirical evaluation based on a citizen-centric approach. *Information Technology & People,* 25**,** 207-234.

ALSAIF, M. 2014. *Factors affecting citizens' adoption of e-government moderated by socio-cultural values in Saudi Arabia.* University of Birmingham.

ALSHARE, K. & MOUSA, A. 2014. The Moderating Effect of Espoused Cultural Dimensions on Consumer's Intention to Use Mobile Payment Devices.

ALSHARE, K. A., MESAK, H. I., GRANDON, E. E. & BADRI, M. A. 2011. Examining the moderating role of national culture on an extended technology acceptance model. *Journal of Global Information Technology Management,* 14**,** 27-53.

ALSHEHRI, M., DREW, S. & ALFARRAJ, O. 2012. A Comprehensive Analysis of E-government services adoption in Saudi Arabia: Obstacles and Challenges. *International Journal of Advanced Computer Science and Applications (IJACSA),* 6**,** 8.2.

ALSOWOYEGH, G. A. 2012. *Cultural Drivers and Barriers to the Adoption of E-government in the Kingdom of Saudi Arabia.* University of Manchester.

ALTAMEEM, T., ZAIRI, M. & ALSHAWI, S. Critical success factors of e-government: A proposed model for e-government implementation. Innovations in Information Technology, 2006, 2006. IEEE, 1-5.

ALTAMEEM, T. A. 2007. *The critical factors of e-government adoption: An empirical study in the Saudi Arabia public sectors.* Brunel University.

ALZAHRANI, A. I. 2011. *Web-based e-Government services acceptance for G2C: A structural equation modelling approach.*

BACKUS, M. 2001. E-governance in Developing Countries. *IICD Research Brief,* 1.

BAGCHI, K., HART, P. & PETERSON, M. F. 2004. National culture and information technology product adoption. *Journal of Global Information Technology Management,* 7**,** 29-46.

BAGOZZI, R. P. 2007. The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift. *Journal of the association for information systems,* 8**,** 3.

BELANCHE, D., CASALÓ, L. V. & FLAVIÁN, C. 2012. Integrating trust and personal values into the Technology Acceptance Model: The case of e-government services adoption. *Cuadernos de Economía y Dirección de la Empresa,* 15**,** 192-204.

BÉLANGER, F. & CARTER, L. 2008. Trust and risk in e-government adoption. *The Journal of Strategic Information Systems,* 17**,** 165-176.

BÉLANGER, F. & CARTER, L. 2009. The impact of the digital divide on e-government use. *Communications of the ACM,* 52**,** 132-135.

BERNHARD IRENE, I. 2013. E-government and E-governance-Swedish Case Studies with Focus on the Local level.

BHATTACHERJEE, A. 2001. Understanding information systems continuance: an expectation-confirmation model. *MIS quarterly***,** 351-370.

BRDESEE, H., CORBITT, B., PITTAYACHAWAN, S. & ALSAGGAF, W. Organisational culture and adoption of electronic commerce: A study of the Saudi Arabian tourism market. Computer Science & Education (ICCSE), 2012 7th International Conference on, 2012. IEEE, 857-862.

BRYMAN, A. 2016. *Social Research Methods,* Oxford, Oxford University Press.

BYRON, L., GREEN, H. S., DOYLE, A. C. & LAUDER, E. 1981. e-Business & e-Commerce. Deitel & Associates, Inc.

CALISTA, D. J. & MELITSKI, J. 2007. E-government and e-governance: Converging constructs of public sector information and communications technologies. *Public Administration Quarterly***,** 87-120.

CARLSON, J. & O'CASS, A. 2010. Exploring the relationships between e-service quality, satisfaction, attitudes and behaviours in content-driven e-service web sites. *Journal of services marketing,* 24**,** 112-127.

CARTER, L. & BÉLANGER, F. Citizen adoption of electronic government initiatives. Proceedings of the 37th Annual Hawaii International Conference on System Sciences, 2004. IEEE, 10 pp.

CARTER, L. & BÉLANGER, F. 2005. The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information systems journal,* 15**,** 5-25.

CARTER, L. & WEERAKKODY, V. 2008. E-government adoption: A cultural comparison. *Information Systems Frontiers,* 10**,** 473-482.

CARTER, L., WEERAKKODY, V., PHILLIPS, B. & DWIVEDI, Y. K. 2016. Citizen adoption of e-government Services: Exploring citizen perceptions of online services in the United States and United Kingdom. *Information Systems Management,* 33**,** 124-140.

CHAFFEY, D. 2008. *E-business and E-commerce management*, Pearson Education Limited.

CHEN, C.-W. D. & CHENG, C.-Y. J. 2009. Understanding consumer intention in online shopping: a respecification and validation of the DeLone and McLean model. *Behaviour & Information Technology,* 28**,** 335-345.

CHEN, J. V., JUBILADO, R. J. M., CAPISTRANO, E. P. S. & YEN, D. C. 2015. Factors affecting online tax filing–An application of the IS Success Model and trust theory. *Computers in Human Behavior,* 43**,** 251-262.

CHEN, Y., CHEN, H., HUANG, W. & CHING, R. K. 2006. E-government strategies in developed and developing countries: An implementation framework and case study. *Journal of Global Information Management (JGIM),* 14**,** 23-46.

CHENGALUR-SMITH, I., DUCHESSI, P. & GIL-GARCIA, J. R. 2012. Information sharing and business systems leveraging in supply chains: An empirical investigation of one web-based application. *Information & Management,* 49**,** 58-67.

CLOW, K. E., TRIPP, C. & KENNY, J. T. 1996. The importance of service quality determinants in advertising a professional service: an exploratory study. *Journal of Services Marketing,* 10**,** 57-72.

COLEMAN, S. 2005. The lonely citizen: indirect representation in an age of networks. *Political communication,* 22**,** 197-214.

CUNNINGHAM, S. M. 1967. The major dimensions of perceived risk. *Risk taking and information handling in consumer behavior,* 1967**,** 82-108.

DAVIS, F. D. 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly,* 13**,** 319-340.

DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. 1989. User acceptance of computer technology: a comparison of two theoretical models. *Management science,* 35**,** 982-1003.

DELONE, W. H. & MCLEAN, E. R. 1992. Information systems success: The quest for the dependent variable. *Information systems research,* 3**,** 60-95.

DELONE, W. H. & MCLEAN, E. R. 2003. The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems,* 19**,** 9-30.

DILLMAN, D. A. 2007. *Mail and Internet Surveys: the tailored design method,* Hoboken, New Jersey, John Wiley & Sons, Inc.

DWIVEDI, Y. K., RANA, N. P., JANSSEN, M., LAL, B., WILLIAMS, M. D. & CLEMENT, M. 2017. An empirical validation of a unified model of electronic government adoption (UMEGA). *Government Information Quarterly*.

ELSHEIKH, Y. & AZZEH, M. 2014. What Facilitates the Delivery of Citizen-Centric EGovernment Services in Developing Countries: Model Development and Validation Through Structural Equation Modeling. *International Journal of Computer Science and Information Technology,* 6**,** 77-98.

ERUMBAN, A. A. & DE JONG, S. B. 2006. Cross-country differences in ICT adoption: A consequence of Culture? *journal of world business,* 41**,** 302-314.

FAKHOURY, R. & AUBERT, B. 2015. Citizenship, trust, and behavioural intentions to use public e-services: The case of Lebanon. *International Journal of Information Management,* 35**,** 346-351.

FALK, R. F. & MILLER, N. B. 1992. *A primer for soft modeling,* Akron, Ohio, The University of Akron.

FANG, Z. 2002. E-government in digital era: concept, practice, and development. *International journal of the Computer, the Internet and management,* 10**,** 1-22.

FEATHERMAN, M. S. & PAVLOU, P. A. 2003. Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies,* 59**,** 451-474.

FITZGERALD, B. & HOWCROFT, D. 1998. Towards dissolution of the IS research debate: from polarization to polarity. *Journal of Information Technology,* 13**,** 313-326.

GAO, L. & BAI, X. 2014. An empirical study on continuance intention of mobile social networking services: Integrating the IS success model, network externalities and flow theory. *Asia Pacific Journal of Marketing and Logistics,* 26**,** 168-189.

GARRETSON, J. A. & CLOW, K. E. 1999. The influence of coupon face value on service quality expectations, risk perceptions and purchase intentions in the dental industry. *Journal of Services Marketing,* 13**,** 59-72.

GEFEN, D., RAO, V. & TRACTINSKY, N. The conceptualization of trust, risk, and their relationships in e-commerce. Proc. 36th Hawaii Int. Conf. on System science (HICSS 2003), 2003.

GEFEN, D. & STRAUB, D. 2003. Managing User Trust in B2C e-Services. *E - Service Journal,* 2**,** 7-24.

GEROW, J. E., GROVER, V., ROBERTS, N. & THATCHER, J. B. 2010. The diffusion of second-generation statistical techniques in information systems research from 1990-2008. *JITTA: Journal of Information Technology Theory and Application,* 11**,** 5.

GIL-GARCIA, J. R. 2008. Using partial least squares in digital government research. *Handbook of research on public information technology. Idea Group, Hershey***,** 239-253.

GILBERT, D., BALESTRINI, P. & LITTLEBOY, D. 2004. Barriers and benefits in the adoption of e-government. *International Journal of Public Sector Management,* 17**,** 286-301.

HADI, N. U., ABDULLAH, N. & SENTOSA, I. 2016. An Easy Approach to Exploratory Factor Analysis: Marketing Perspective. *Journal of Educational and Social Research,* 6**,** 215.

HAIR, J. F., BLACK, W. C., BABIN, B. J. & ANDERSON, R. E. 2010. *Multivariate data analysis: A global perspecive*, Pearson.

HAIR, J. F., RINGLE, C. M. & SARSTEDT, M. 2011. PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice,* 19**,** 139-152.

HAIR JR, J. F., HULT, G. T. M., RINGLE, C. & SARSTEDT, M. 2016. *A primer on partial least squares structural equation modeling (PLS-SEM)*, Sage Publications.

HAMNER, M. & AL-QAHTANI, F. 2009. Enhancing the case for Electronic Government in developing nations: A people-centric study focused in Saudi Arabia. *Government Information Quarterly,* 26**,** 137-143.

HANCOCK, G. R. & MUELLER, R. O. 2010. *The reviewer's guide to quantitative methods in the social sciences*, Routledge.

HARDESTY, D. M. & BEARDEN, W. O. 2004. The use of expert judges in scale development: Implications for improving face validity of measures of unobservable constructs. *Journal of Business Research,* 57**,** 98-107.

HASHIM, H. 2014. *A Study of Adoption and Acceptance of e-Umrah System in Saudi Arabia: Overcoming Infrastructure Barriers and Limitations.* University of Sheffield.

HOEHLE, H., ZHANG, X. & VENKATESH, V. 2015. An espoused cultural perspective to understand continued intention to use mobile applications: a four-country study of mobile social media application usability. *European Journal of Information Systems,* 24**,** 337-359.

HOFSTEDE, G. 1980. Motivation, leadership, and organization: Do American theories apply abroad? *Organizational Dynamics,* 9**,** 42-63.

HOFSTEDE, G. 1994. The business of international business is culture. *International Business Review,* 3**,** 1-14.

HOFSTEDE, G. 2001. *Culture's consequences: comparing values, behaviors, institutions, and organizations across nations,* United States of America, Sage Publications. Inc.

HOFSTEDE, G. & BOND, M. H. 1988. The Confucius connection: From cultural roots to economic growth. *Organizational Dynamics,* 16**,** 5-21.

HORST, M., KUTTSCHREUTER, M. & GUTTELING, J. M. 2007. Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands. *Computers in Human Behavior,* 23**,** 1838-1852.

HSIEH, M.-T. & TSAO, W.-C. 2014. Reducing perceived online shopping risk to enhance loyalty: a website quality perspective. *Journal of Risk Research,* 17**,** 241-261.

HU, P. J., CHAU, P. Y., SHENG, O. R. L. & TAM, K. Y. 1999. Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of management information systems***,** 91-112.

HUNG, S.-Y., CHANG, C.-M. & YU, T.-J. 2006. Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. *Government Information Quarterly,* 23**,** 97-122.

JAEGER, P. T. 2003. The endless wire: E-government as global phenomenon. *Government Information Quarterly,* 20**,** 323-331.

JAYAWARDHENA, C. 2004. Measurement of service quality in internet banking: the development of an instrument. *Journal of Marketing Management,* 20**,** 185-207.

JIANG, X. Enhancing Users' Continuance Intention to E-Government Portals: An Empirical Study. International Conference on Management and Service Science (MASS), 2011. IEEE, 1-4.

JONES, M. L. 2007. Hofstede-culturally questionable?

JORGENSEN, D. J. & CABLE, S. 2002. Facing the challenges of e-goverment: a case study of the City of Corpus Christi, Texas. *SAM Advanced Management Journal,* 67.

KHAN, A. & WOOSLEY, J. M. 2011. Comparison of Contemporary Technology Acceptance Models and Evaluation of the Best Fit for Health Industry Organizations. *The International Journal of Computer Science & Emerging Technologies,* 1**,** 709-717.

KIM, J. & LENNON, S. J. 2013. Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention: Based on the stimulus-organism-response model. *Journal of Research in Interactive Marketing,* 7**,** 33-56.

KOLSAKER, A. & LEE-KELLEY, L. 2008. Citizens' attitudes towards e-government and e-governance: a UK study. *International Journal of Public Sector Management,* 21**,** 723-738.

KOUFARIS, M. 2002. Applying the technology acceptance model and flow theory to online consumer behavior. *Information systems research,* 13**,** 205-223.

KRAUSS, S. E. 2005. Research paradigms and meaning making: A primer. *The qualitative report,* 10**,** 758-770.

KURFALı, M., ARIFOĞLU, A., TOKDEMIR, G. & PAÇIN, Y. 2017. Adoption of e-government services in Turkey. *Computers in Human Behavior,* 66**,** 168-178.

LALLANA, E. C. 2008. E-government Interoperability. United Nations Development Programme

e-Primers for the Information Economy, Society and Polity.

LAM, W. 2005. Barriers to e-government integration. *Journal of Enterprise Information Management,* 18**,** 511-530.

LANGLANDS, A. 2004. *The good governance standard for public services*, Office for Public Management Ltd (OPM):, The Chartered Institute of Public Finance and Accountancy (CIPFA).

LEAN, O. K., ZAILANI, S., RAMAYAH, T. & FERNANDO, Y. 2009. Factors influencing intention to use e-government services among citizens in Malaysia. *International Journal of Information Management,* 29**,** 458-475.

LEE, M.-C. 2009. Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications,* 8**,** 130-141.

LIN, F., FOFANAH, S. S. & LIANG, D. 2011. Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Government Information Quarterly,* 28**,** 271-279.

LOCH, K. D., STRAUB, D. W. & KAMEL, S. 2003. Diffusing the Internet in the Arab world: The role of social norms and technological culturation. *IEEE Transactions on Engineering Management,* 50**,** 45-63.

LOWRY, P. B. & GASKIN, J. 2014. Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication,* 57**,** 123-146.

LU, N. L. & NGUYEN, V. T. 2016. Online Tax Filing—E-Government Service Adoption Case of Vietnam. *Modern Economy,* 7.

MACKENZIE, S. B. & PODSAKOFF, P. M. 2012. Common method bias in marketing: causes, mechanisms, and procedural remedies. *Journal of Retailing,* 88**,** 542-555.

MADDEN, T. J., ELLEN, P. S. & AJZEN, I. 1992. A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and social psychology Bulletin,* 18**,** 3-9.

MARAKANON, L. & PANJAKAJORNSAK, V. 2017. Perceived quality, perceived risk and customer trust affecting customer loyalty of environmentally friendly electronics products. *Kasetsart Journal of Social Sciences,* 38**,** 24-30.

MARCOULIDES, G. A. & SAUNDERS, C. 2006. Editor's comments: PLS: a silver bullet? *MIS quarterly***,** iii-ix.

MATHIESON, K. 1991. Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research,* 2**,** 173-191.

MATTACKS, K. 2009. *THE ICSA STUDY TEXT IN STRATEGIC AND OPERATIONS MANAGEMENT*, ICSA Information & Training Ltd.

MATTILA, M., KARJALUOTO, H. & PENTO, T. 2003. Internet banking adoption among mature customers: early majority or laggards? *Journal of Services Marketing,* 17**,** 514-528.

MCCLURE, D. L. 2001. *Electronic government: challenges must be addressed with effective leadership and management*, General Accounting Office.

MCKNIGHT, D. H., CHOUDHURY, V. & KACMAR, C. 2002. Developing and validating trust measures for e-commerce: An integrative typology. *Information systems research,* 13**,** 334-359.

MENSAH, I. K. & MI, J. 2017. Computer Self-Efficacy and e-Government Service Adoption: The Moderating Role of Age as a Demographic Factor. *International Journal of Public Administration***,** 1-10.

NADI, I. K. A. 2012. *Influence of Culture on e-Government Acceptance in Saudi Arabia.* Griffith University.

NEUMAN, W. L. 2013. *Social Research Methods: Pearson New International Edition,* Online, Pearson Education.

NICOLAOU, A. I. & MCKNIGHT, D. H. 2006. Perceived information quality in data exchanges: Effects on risk, trust, and intention to use. *Information systems research,* 17**,** 332-351.

NORRIS, D. F., FLETCHER, P. D. & HOLDEN, S. H. 2001. Is your local government plugged in? Highlights of the 2000 electronic government survey. Washington, DC: International City/County Management Association.

OMARI, A. 2013. Technology Adoption in the Arabian Gulf Countries: The Case of E-Government. *International Journal of Computer Science, Engineering and Information Technology,* 3**,** 1-8.

ONG, C.-S., LAI, J.-Y. & WANG, Y.-S. 2004. Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies. *Information and management,* 41**,** 795-804.

ORLIKOWSKI, W. J. & BAROUDI, J. J. 1991. Studying information technology in organizations: Research approaches and assumptions. *Information systems research,* 2**,** 1-28.

OSMAN, I. H., ANOUZE, A. L., IRANI, Z., AL-AYOUBI, B., LEE, H., BALCı, A., MEDENI, T. D. & WEERAKKODY, V. 2014. COBRA framework to evaluate e-government services: A citizen-centric perspective. *Government Information Quarterly,* 31**,** 243-256.

OZKAN, S. & KANAT, I. E. 2011. e-Government adoption model based on theory of planned behavior: Empirical validation. *Government Information Quarterly,* 28**,** 503-513.

PAI, F.-Y. & HUANG, K.-I. 2011. Applying the Technology Acceptance Model to the introduction of healthcare information systems. *Technological Forecasting and Social Change,* 78**,** 650-660.

PALLANT, J. 2010. SPSS survival manual, 4th. *England: McGraw-Hill Education*.

PALVIA, S. C. J. & SHARMA, S. S. E-government and e-governance: definitions/domain framework and status around the world. International Conference on E-governance, 2007.

PARASURAMAN, A., ZEITHAML, V. A. & BERRY, L. L. 1988. SERVQUA: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of retailing,* 64**,** 12-40.

PHANG, C. W., SUTANTO, J., KANKANHALLI, A., LI, Y., TAN, B. C. & TEO, H.-H. 2006. Senior citizens' acceptance of information systems: A study in the context of e-government services. *IEEE Transactions on Engineering Management,* 53**,** 555-569.

PITT, L. F., WATSON, R. T. & KAVAN, C. B. 1995. Service quality: a measure of information systems effectiveness. *MIS quarterly***,** 173-187.

PORTAL, S. N. n.d. *Ruling System* [Online]. [Accessed].

RANA, N. P. & DWIVEDI, Y. K. 2015. Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly,* 32**,** 172-181.

ROGERS, E. M. 1983. *DIFFUSION OF INNOVATIONS,* USA, The Free Press.

ROSE, W. R. & GRANT, G. G. 2010. Critical issues pertaining to the planning and implementation of E-Government initiatives. *Government Information Quarterly,* 27**,** 26-33.

ROYAL EMBASSY OF SAUDI ARABIA IN WASHINGTON, D. n.d. *Council of Ministers System* [Online]. Available: https://www.saudiembassy.net/about/country-information/government/council_of_ministers_system.aspx [Accessed].

SAPSFORD, R. 2007. *Survey research,* London, SAGE Publications Ltd.

SAUNDERS, M., LEWIS, P. & THORNHILL, A. 2012. *Research Methods for Business Students,* Harlow, Pearson Education Limited.

SCHMITT, T. A. 2011. Current Methodological Considerations in Exploratory and Confirmatory Factor Analysis. *Journal of Psychoeducational Assessment,* 29**,** 304-321.

SEDDON, P. B. & KIEW, M. Y. 1996. A partial test and development of the DeLone and McLean model of IS success. *Australasian Journal of Information Systems,* 4**,** 90-109.

SEO, D. & BERNSEN, M. 2016. Comparing attitudes toward e-government of non-users versus users in a rural and urban municipality. *Government Information Quarterly,* 33**,** 270-282.

SHAREEF, M. A., KUMAR, V., KUMAR, U. & DWIVEDI, Y. K. 2011. e-Government Adoption Model (GAM): Differing service maturity levels. *Government Information Quarterly,* 28**,** 17-35.

SHARMA, R. & MISHRA, R. 2014. A Review of Evolution of Theories and Models of Technology Adoption. *Indore Management Journal,* 6**,** 17-29.

SHARMA, R. & MISHRA, R. 2017. Investigating the role of intermediaries in adoption of public access outlets for delivery of e-Government services in developing countries: An empirical study. *Government Information Quarterly,* 34**,** 658-679.

SHERIDAN, W. & RILEY, T. B. 2006. Comparing e-government vs. e-governance. *Commonwealth Center for e-Governance***,** 1-5.

SRITE, M. & KARAHANNA, E. 2006. The role of espoused national cultural values in technology acceptance. *MIS quarterly***,** 679-704.

STRAUB, D., LOCH, K., EVARISTO, R., KARAHANNA, E. & SRITE, M. 2002. Toward a theory-based measurement of culture. *Human factors in information systems,* 10**,** 61-65.

SZAJNA, B. 1996. Empirical evaluation of the revised technology acceptance model. *Management science,* 42**,** 85-92.

TABACHNICK, B. G. & FIDELL, L. S. 2006. *Using Multivariate Statistics*, Pearson Education Inc.

TAN, C.-W., PAN, S. L. & LIM, E. T. 2005. Managing stakeholder interests in e-government implementation: Lessons learned from a Singapore e-government project. *Journal of Global Information Management (JGIM),* 13**,** 31-53.

TARHINI, A., HONE, K., LIU, X. & TARHINI, T. 2017. Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments,* 25**,** 306-328.

TASSABEHJI, R. 2003. *Understanding E-commerce for Business*, SAGE Publications Ltd.

TAYLOR, S. & TODD, P. A. 1995. Understanding information technology usage: A test of competing models. *Information systems research,* 6**,** 144-176.

TEICHER, J., HUGHES, O. & DOW, N. 2002. E-government: a new route to public sector quality. *Managing Service Quality: An International Journal,* 12**,** 384-393.

TEO, T. S., SRIVASTAVA, S. C. & JIANG, L. 2009. Trust and electronic government success: An empirical study. *Journal of Management Information Systems,* 25**,** 99-132.

THE WORLD BANK. n.d. *Definition of E-Government* [Online]. Available: http://go.worldbank.org/M1JHE0Z280 [Accessed 08/05 2015].

TREASURY, H. 2007. Project Governance: A guidance note for public sector projects. Correspondence and Enquiry Unit HM Treasury. Retrieved from http://www. hmtreasury. gov. uk/d/ppp_projectgovernanceguidance231107. pdf.

UDO, G. J., BAGCHI, K. K. & KIRS, P. J. 2012. Exploring the role of espoused values on e-service adoption: A comparative analysis of the US and Nigerian users. *Computers in Human Behavior,* 28**,** 1768-1781.

UN, U. N. 2005. Global E-Government Readiness Report 2005: From E-Government to E-Inclusion.

UN, U. N. 2008. United Nations e-Government Survey 2008: From e-Government to Connected Governance.

UN, U. N. 2010. United Nations E-Government Survey 2010: Leveraging e-government at a time of financial and economic crisis.

UN, U. N. 2012. United Nations E-Government Survey 2012: E-Government for the People.

UN, U. N. 2014. *E-Government Syrvey 2014: E-Government for the Future We Want* [Online]. Available: http://www.unpan.org/DPADM/EGovernment/UNEGovernmentSurveys/PreparatoryProcessof2016UNEGovernmentSurvey/tabid/1788/language/en-US/Default.aspx [Accessed].

VAN RAAIJ, E. M. & SCHEPERS, J. J. 2008. The acceptance and use of a virtual learning environment in China. *Computers and Education,* 50**,** 838-852.

VANCE, A., ELIE-DIT-COSAQUE, C. & STRAUB, D. W. 2008. Examining trust in information technology artifacts: the effects of system quality and culture. *Journal of Management Information Systems,* 24**,** 73-100.

VENKATESH, V. & BALA, H. 2008. Technology acceptance model 3 and a research agenda on interventions. *Decision sciences,* 39**,** 273-315.

VENKATESH, V. & DAVIS, F. D. 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science,* 46**,** 186-204.

VENKATESH, V., MORRIS, M. G., DAVIS, G. B. & DAVIS, F. D. 2003. User acceptance of information technology: Toward a unified view. *MIS quarterly***,** 425-478.

VENKATESH, V., THONG, J. Y. & XU, X. 2012. Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly,* 36**,** 157-178.

VOUTINIOTI, A. 2013. Determinants of User Adoption of e-Government Services in Greece and the Role of Citizen Service Centres. *Procedia Technology,* 8**,** 238-244.

WALLIMAN, N. 2006. *Social Research Methods*, Sage Publications Ltd.

WANG, W.-T. & LAI, Y.-J. 2014. Examining the adoption of KMS in organizations from an integrated perspective of technology, individual, and organization. *Computers in Human Behavior,* 38**,** 55-67.

WANG, Y. S. 2008. Assessing e-commerce systems success: a respecification and validation of the DeLone and McLean model of IS success. *Information Systems Journal,* 18**,** 529-557.

WARKENTIN, M., GEFEN, D., PAVLOU, P. A. & ROSE, G. M. 2002. Encouraging citizen adoption of e-government by building trust. *Electronic markets,* 12**,** 157-162.

WEERAKKODY, V., EL-HADDADEH, R. & AL-SHAFI, S. 2011. Exploring the complexities of e-government implementation and diffusion in a developing country: Some lessons from the State of Qatar. *Journal of Enterprise Information Management,* 24**,** 172-196.

WEERAKKODY, V., EL-HADDADEH, R., AL-SOBHI, F., SHAREEF, M. A. & DWIVEDI, Y. K. 2013. Examining the influence of intermediaries in facilitating e-government adoption: An empirical investigation. *International Journal of Information Management,* 33**,** 716-725.

WELCH, E. W., HINNANT, C. C. & MOON, M. J. 2005. Linking citizen satisfaction with e-government and trust in government. *Journal of public administration research and theory,* 15**,** 371-391.

WEST, D. M. 2004. E-government and the transformation of service delivery and citizen attitudes. *Public administration review,* 64**,** 15-27.

XIE, Q., XIE, Q., SONG, W., SONG, W., PENG, X., PENG, X., SHABBIR, M. & SHABBIR, M. 2017. Predictors for e-government adoption: integrating TAM, TPB, trust and perceived risk. *The Electronic Library,* 35**,** 2-20.

YESSER 2011. Saudi E-Government Program.

YESSER 2013. Yesser Saudi Arabia E-Government Performance

YESSER. n.d.-a. *The e-Government First Action Plan (2006 – 2010)* [Online]. Available: http://www.yesser.gov.sa/en/MechanismsandRegulations/strategy/Pages/implementation_plan_first.aspx [Accessed 27/09/2015].

YESSER. n.d.-b. *The e-Government Second Action Plan (2012 – 2016)* [Online]. [Accessed].

YI, M. Y., YOON, J. J., DAVIS, J. M. & LEE, T. 2013. Untangling the antecedents of initial trust in Web-based health information: The roles of argument quality, source expertise, and user perceptions of information quality and risk. *Decision Support Systems,* 55**,** 284-295.

YIMBO, W. O. 2011. *Analyzing E-Government in Developing Countries using a Stages Model Approach: A Case Study.* UNIVERSITY OF MINNESOTA.

YONAZI, J. J. 2010. *Enhancing Adoption of e-Government Initiatives in Tanzania.* PhD, University of Groningen.

ZHOU, T. 2011. Examining the critical success factors of mobile website adoption. *Online Information Review,* 35**,** 636-652.

Appendices

Appendix A: Ethics Approval

Management Science Ethics and Risk Management Project Approval Form

Please complete the following

Student:	Moroj Mohammed Alsulaimani
Project name:	Factors Influencing Citizens' Adoption of E-government in Saudi Arabia
Supervisor:	Viktor Dörfler
External organisations involved:	NA
Start date: 1/10/2014	Expected finish date: 31/12/2017

Nature of interaction with participants

Questionnaire, focus groups, interviews:

Online questionnaire

Other (specify):

Nature of participants (eg service users, office staff):

Saudi citizens who have previously used any Saudi E-government portal.

Are there any participants who could be considered vulnerable (eg patients, children):

No.

Is any information sought that might be considered personal? If so explain what the nature of this information is, why it is needed for the project, how it will be stored and whether it will be anonymized.

Some of the information might be considered personal, such as the region where the participant is living and his/her opinion regarding multiple statements about the factors affecting E-government adoption. These information are needed to fulfill the aim of the research, which is to identify the factors affecting E-government adoption in Saudi Arabia. The collected data will be completely anonymous and will be storedin a password protected folder.

Is any information sought that might be (personally or commercially) confidential? If so explain what the nature of this information is, why it is needed for the project, how it will be stored and how it will be desensitized prior to use in non-confidential settings.

Some of the collected data will be considered confidential, such as the participats' age, place of living, and place of growing up. These information will be used in the study to find if they have an effect on the adoption of E-government. Information such as names, dates of birth, and national ID numbers will not be collected and the identities of the participants will be anonymous. The data will be stored electronically in a passwored protected folder and all the collected data will be destroyed according to the policies and procedures of the University of Strathclyde after completing the study.

What do you consider to be the main ethical issues in this project?

The main ethical issue in this study is data storage and security. The collected data will be stored electronically with password protection. After finishing the study, the collected data will be destroyed according to the policies and procedures of University of Strathclyde.

Are there any significant risks to the participants (eg releasing confidential information)?

There will not be any significant riskto the participants. The main concern in this study is data storage and security, which was addressed in the previous question.

Are there any significant risks to the university, the student, or staff, from participation in this project?

No, there aren't any risks.

Does this project involve the NHS or external funding to the university?

Yes, the Saudi Ministry of Education is paying for the student's scholarship.

Attach: Participant information sheet and consent form

Signed

Student: Moroj Mohammad Alsulaimani

Alsulaimani

Supervisor: Viktor Dmitriev

Please return this form to the Management Science Department Office

Office use

Feedback Form DEC

Remit of DEC y/n

Risks not significant and does not involve NHS or external funding y/n

If yes to both then HoD or nominee can sign off risk management approval

Decision of DEC

Ethics approval: (choose 1)

- ☐ Approved
- ☐ More information required for the reasons given below
- ☐ Not approved for the reasons given below

Risk management approval: (choose 1)

- ☐ Approved for risk management purposes and the University is the sponsor.
- ☐ Not approved

Signed

Convenor of DEC (on behalf of HoD)

xxx

Appendix B-1: The Final Version of the Online Questionnaire (English)

University of Strathclyde Glasgow

English ▾

E-government Adoption in Saudi Arabia

Dear Sir/Madam,

I am a researcher at the University of Strathclyde, UK. Currently, I am conducting a research to identify the factors affecting citizens' adoption of E-government in Saudi Arabia. This questionnaire will be utilised for this purpose.
I would be very grateful if you could participate in this study by completing the questionnaire. This research is conducted for academic purposes only. The identity of the participants will remain anonymous and the collected data will be confidential. Participation in this study is voluntary and you may withdraw at any time. Completing and submitting the questionnaire will indicate your consent to participate in the study.

The questionnaire will require approximately 20 minutes to complete. The collected data will provide useful information for the researcher and for the organisations responsible for developing and improving the Saudi E-government.
For more information, please contact me at moroj.alsulaimani@strath.ac.uk

لإكمال الإستبيان باللغة العربية يمكن تغيير اللغة من القائمة أعلى الشاشة .

Kind regards,
Moroj Alsulaimani

>>

University of Strathclyde Glasgow

English ▾

PART 1: Demographic Information

Gender:

Male ○ Female ○

What is your age?

(Please input a number)

In which region do you live?
(Choose one)

- ○ Riyadh Region
- ○ Makkah Region
- ○ Madinah Region
- ○ Qasim Region
- ○ Eastern Region
- ○ Asir Region
- ○ Tabouk Region
- ○ Hail Region
- ○ Northern Border Region
- ○ Jizan Region
- ○ Najran Region
- ○ Albaha Region
- ○ Aljouf Region
- ○ Out of Saudi Arabia

In which region did you grow up?
(Choose one)

- ○ Riyadh Region
- ○ Makkah Region
- ○ Madinah Region
- ○ Qasim Region
- ○ Eastern Region
- ○ Asir Region
- ○ Tabouk Region
- ○ Hail Region
- ○ Northern Border Region
- ○ Jizan Region
- ○ Najran Region
- ○ Albaha Region
- ○ Aljouf Region
- ○ Out of Saudi Arabia

Education level:

- ○ High school or less
- ○ Bachelor
- ○ Master
- ○ PhD
- ○ Other; Please specify

Occupation:

- ○ Student
- ○ Government Employee
- ○ Private Sector Employee
- ○ Retired
- ○ Unemployed

How many years have you been using a computer?

- ○ 1-3 years
- ○ 4-6 years
- ○ 7-9 years
- ○ 10 years or more
- ○ Never used it

How many years have you been using the Internet?

- ○ 1 year or less
- ○ 2-3 years
- ○ 4-5 years
- ○ More than 5 years

How often do you use the Internet?

- Everyday
- Several times a week
- Several times a month
- Once a month
- Less than once a month

<< >>

English ▾

PART 2: Factors Affecting E-government Adoption

Please choose one of the E-government portals that you are familiar with and have visited recently, or type in the name of another E-government portal. Then, answer all the questions afterward while referring to the E-government portal you have selected.

- Absher (Ministry of Interior)
- Noor (Ministry of Education)
- Jadara (Ministry of Civil Service)
- Taqat (Ministry of Labor)
- Eskan (Ministry of Housing)
- Other, please write the name of the government organisation

Please read each statement and select the response that best expresses your opinion.

Usage Behaviour

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I use this e-government portal to retrieve information	○	○	○	○	○
I use this e-government portal to apply for services	○	○	○	○	○
I use this e-government portal to make payment for government services	○	○	○	○	○
I use this e-government portal to communicate with the government organisation	○	○	○	○	○
I use this e-government portal to network with others (e.g. government officials and citizens)	○	○	○	○	○
I use this e-government portal to check the requirement before visiting the office	○	○	○	○	○
I use this e-government portal to check the latest news of this government organisation	○	○	○	○	○

System Quality

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This E-government portal is easy to use.	○	○	○	○	○
This E-government portal is constantly available (24/7)	○	○	○	○	○
This E-government portal is difficult to navigate	○	○	○	○	○
This E-government portal is easy to get used to adopt	○	○	○	○	○
This E-government portal is accessible	○	○	○	○	○
This E-government portal quickly loads all the texts and graphics	○	○	○	○	○
The system used in this E-government portal is considered trustful	○	○	○	○	○

Information Quality

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This E-government portal provides understandable information	○	○	○	○	○
This E-government portal provides incomplete information	○	○	○	○	○
This E-government portal provides precise information	○	○	○	○	○
This E-government portal provides up-to-date information	○	○	○	○	○
This E-government portal provides reliable information	○	○	○	○	○
This E-government portal provides useful information	○	○	○	○	○

Service Quality

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This E-government portal electronically provides all the services found in the government office	○	○	○	○	○
This E-government portal enables me to receive all the available E-services without the need to visit the government office during any stage	○	○	○	○	○
This government organisation is transparent in delivering their E-government services	○	○	○	○	○
This E-government portal does not allow interactive communication with the government organisation	○	○	○	○	○
This E-government portal is responsive to user's requests (i.e. quick response and the ability to get help if there is a problem or question)	○	○	○	○	○
Using this e-government portal makes me feel confident that information/services will be delivered as promised	○	○	○	○	○
The employees of this government organisation show empathy when communicating with them via their portal	○	○	○	○	○

Perceived Usefulness

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This E-government portal is useful for searching for information and applying for government services	○	○	○	○	○
Using this E-government portal improves my performance in searching for information and applying for government services	○	○	○	○	○
Using this E-government portal enables me to search for information and apply for government services faster	○	○	○	○	○
Using this E-government portal makes it easier to search for information and apply for government services	○	○	○	○	○
Using this E-government portal decreases my productivity in searching for information and applying for government services	○	○	○	○	○
Using this E-government portal helps me to benefit from government services from any location	○	○	○	○	○
Using this E-government portal improves the quality of service I receive from government	○	○	○	○	○

Trust of the Government

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I trust that this government organisation will process the applications that I submit online	○	○	○	○	○
I trust that this government organisation can carry out online transactions faithfully	○	○	○	○	○
I trust that this government organisation will keep my best interests in mind	○	○	○	○	○
I believe that this government organisation does not have the ability to reliably process the transactions made over the Internet	○	○	○	○	○
I believe that this government organisation has sufficient experiences and resources to provide and maintain their services through the Internet	○	○	○	○	○

Trust of the Internet

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The Internet has enough safeguards to make me feel comfortable using it to transact personal requests with our government	○	○	○	○	○
I feel assured that legal and technological structures adequately protect me from problems on the Internet	○	○	○	○	○
I feel insecure sending sensitive information across the Internet	○	○	○	○	○
I am confident that the data I submit through the Internet will not be misused	○	○	○	○	○
In general, the internet is now a robust and safe environment in which to transact with our government.	○	○	○	○	○

Perceived Risk

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Using this e-government portal would not involve performance risk (i.e. missing deadline due to portal not working)	○	○	○	○	○
Using this e-government portal would involve financial risk (i.e. losing money when paying online due to transaction errors)	○	○	○	○	○
Using this e-government portal would involve security/privacy risk (i.e. losing my portal's login account by hackers, losing my personal information entered in this e-government portal)	○	○	○	○	○
Using this e-government portal would involve time risk (i.e. wasting time to learn how to use E-government websites)	○	○	○	○	○
Using this e-government portal would involve social risk (i.e. losing status in one's social group)	○	○	○	○	○
Using this e-government portal would involve psychological risk (i.e. conflicting with one's self-image or self-concept)	○	○	○	○	○

Intention to Use

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I intend to re-use this e-government portal in the future	○	○	○	○	○
I intend to re-use this e-government portal to obtain information and get services as often as needed	○	○	○	○	○
I intend to re-use this e-government portal rather than visit the office when I need information and/or to apply for services	○	○	○	○	○
To the extent possible, I would not re-use this e-government portal to do different things (e.g. obtaining information, applying for services)	○	○	○	○	○

<< >>

University of Strathclyde Glasgow

English ▾

PART 3: Espoused Culture Values

Please read each statement and select the response that best expresses your opinion.

Uncertainty Avoidance

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Rules and regulations are important because they inform workers what the organization expects of them.	○	○	○	○	○
Order and structure are very important in a work environment.	○	○	○	○	○
It is unimportant to have job requirements and instructions spelled out in detail so that people always know what they are expected to do.	○	○	○	○	○
It is better to have a bad situation that you know about, than to have an uncertain situation which might be better.	○	○	○	○	○
Providing opportunities to be innovative is more important than requiring standardized work procedures.	○	○	○	○	○
People should avoid making changes because things could get worse.	○	○	○	○	○

Masculinity / Femininity

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
It is preferable to a have a man in a high level position rather than a woman.	○	○	○	○	○
It is more important for women to have a professional career than for men to have a professional career.	○	○	○	○	○
Solving organizational problems requires the active forcible approach which is typical of men.	○	○	○	○	○
There are some jobs in which a man can always do better than a woman.	○	○	○	○	○
Women do not value recognition and promotion in their work as much as men do.	○	○	○	○	○

Power Distance

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Managers should consult subordinates when making most decisions.	○	○	○	○	○
Managers should not ask subordinates for advice, because they might appear less powerful.	○	○	○	○	○
Employees should not question their manager's decisions.	○	○	○	○	○
A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates.	○	○	○	○	○
Higher level managers should receive more benefits and privileges than lower level managers and professional staff.	○	○	○	○	○
Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manger might appear to be weak and incompetent.	○	○	○	○	○

Individualism / Collectivism

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Being accepted as a member of a group is more important than having autonomy and independence.	○	○	○	○	○
Individual success is more important than group success.	○	○	○	○	○
Being loyal to a group is more important than individual gain.	○	○	○	○	○
Individual rewards are not as important as group welfare.	○	○	○	○	○
It is more important for a manager to encourage loyalty and a sense of duty in subordinates than to encourage individual initiative.	○	○	○	○	○

<< >>

University of Strathclyde Glasgow

We thank you for your time spent taking this survey.
Your response has been recorded.

Appendix B-2: The Final Version of the Online Questionnaire (Arabic)

University of Strathclyde Glasgow

العربية ▼

العوامل المؤثرة في تبني المواطنين للحكومة الإلكترونية في المملكة العربية السعودية

السلام عليكم ورحمة الله وبركاته ،،

بداية أقدّم لكم نفسي، أنا مروج محمد السليماني، باحثة في جامعة (ستراثكلايد) في المملكة المتحدة، والهدف الرئيس من بحثي هو: تحديد العوامل المؤثرة في تبنّي المواطنين للحكومة الإلكترونية في المملكة العربية السعودية. وهذه الاستبانة سوف تسهم في إتمام هذا البحث؛ والحصول على نتائج ذات طابع علمي ومنهجي.

أود أن أشكركم على المساهمة في هذا البحث عن طريق تعبئة هذه الاستبانة. علماً بأنّ هذه الدراسة ستُجرى لأسباب أكاديمية بحتة، وستظل هوية المشاركين غير معروفة، وستُحفظ جميع البيانات المجموعة بشكل آمن. المشاركة في هذه الدراسة اختيارية، ويمكن للمشاركين في هذه الدراسة الانسحاب في أي وقت. وتكملة الاستبانة وإرسالها يدل على الموافقة على المشاركة في الدراسة.

هذه الاستبانة تتطلب مدة **20** دقيقة لاستكمالها. البيانات المدخلة سوف توفر معلومات مفيدة للباحثة وللمنظمات المسئولة عن تطوير وتحسين الحكومة الإلكترونية لمملكة العربية السعودية.

لمزيد من المعلومات، الرجاء التواصل على moroj.alsulaimani@strath.ac.uk

To complete this questionnaire in English, you can change the language from the drop down menu at the top of the screen

الباحثة/ مروج محمد السليماني

جامعة ستراثكلايد – المملكة المتحدة

<<

University of Strathclyde Glasgow

العربية ▼

الجزء الأول: المعلومات الديموغرافية

الجنس:

ذكر	أنثى
○	○

كم عمرك؟

(الرجاء ادخال رقم)

في أي منطقة تسكن؟

○ منطقة الرياض	○ منطقة حائل
○ منطقة مكة المكرمة	○ منطقة الحدود الشمالية
○ منطقة المدينة المنورة	○ منطقة جازان
○ منطقة القصيم	○ منطقة نجران
○ المنطقة الشرقية	○ منطقة الباحة
○ منطقة عسير	○ منطقة الجوف
○ منطقة تبوك	○ خارج المملكة العربية السعودية

في أي منطقة نشأت؟

- منطقة الرياض
- منطقة مكة المكرمة
- منطقة المدينة المنورة
- منطقة القصيم
- المنطقة الشرقية
- منطقة عسير
- منطقة تبوك
- منطقة حائل
- منطقة الحدود الشمالية
- منطقة جازان
- منطقة نجران
- منطقة الباحة
- منطقة الجوف
- خارج المملكة العربية السعودية

المستوى التعليمي:

- الثانوي فأقل
- بكالوريوس
- ماجستير
- دكتوراه
- آخر، الرجاء التحديد

المهنة:

- طالب
- موظف حكومي
- موظف في القطاع الخاص
- متقاعد
- بدون وظيفة

خبرتك في استخدام الكمبيوتر:

- 3-1 سنوات
- 6-4 سنوات
- 9-7 سنوات
- 10 سنوات فأكثر
- لم استخدمه من قبل

خبرتك في استخدام الإنترنت:

- سنة فأقل
- 3-2 سنوات
- 5-4 سنوات
- أكثر من 5 سنوات

كم مرة تستخدم الإنترنت؟

- يومياً
- عدة مرات في الأسبوع
- عدة مرات في الشهر
- مرة في الشهر
- أقل من مرة في الشهر

<< >>

xl

University of Strathclyde Glasgow

العربية ▼

الجزء الثاني: العوامل المؤثرة في تبني الحكومة الإلكترونية

الرجاء اختيار أحد الأنظمة للحكومة الإلكترونية و التي سبق أن استخدمتها في الفترة القريبة الماضية. ومن ثم الإجابة على الأسئلة التالية مستخدمًا الموقع الإلكتروني للجهة الحكومية المختارة كمرجع.

- نظام أبشر (وزارة الداخلية)
- نظام نور (وزارة التعليم)
- نظام جدارة (وزارة الخدمة المدنية)
- نظام طاقات (وزارة العمل)
- نظام إسكان (وزارة الإسكان)
- أخرى، الرجاء كتابة اسم الجهة الحكومية أو النظام

الرجاء قراءة كلاً من الجمل التالية ومن ثم اختيار الاجابة التي تمثل رأيك.

سلوك الإستخدام

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
أستخدم هذه البوابة للحكومة الإلكترونية للحصول على المعلومات	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية للتقدم بطلب الحصول على خدمات	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية لدفع مبالغ رسوم الخدمات الحكومية	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية للتواصل مع هذه الجهة الحكومية	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية للتواصل مع الأخرين (مثل المسؤلين الحكوميين والمواطنين)	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية للتحقق من المتطلبات قبل زيارة الجهة الحكومية في مقرهم	○	○	○	○	○
أستخدم هذه البوابة للحكومة الإلكترونية لمتابعة آخر أخبار هذه الجهة الحكومية	○	○	○	○	○

جودة نظام الموقع

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
هذه البوابة للحكومة الإلكترونية سهلة الاستخدام	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية متاحة باستمرار (24 ساعة يوميا / 7 أيام في الأسبوع)	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية منظمة بشكل يُتيح التنقل بين صفحاتها بصعوبة	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية من السهل التعوُّد على استخدامها	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية يمكن إيجادها والوصول إليها بسرعة	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية تقوم بتحميل النصوص والرسومات بسرعة	○	○	○	○	○
يُعد نظام هذه البوابة للحكومة الإلكترونية موثوق	○	○	○	○	○

جودة المعلومات

	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
توفّر هذه البوابة للحكومة الإلكترونية معلومات سهلة الفهم	○	○	○	○	○
لا توفّر هذه البوابة للحكومة الإلكترونية جميع المعلومات التي أتوقع وجودها في هذه البوابة	○	○	○	○	○
توفّر هذه البوابة للحكومة الإلكترونية معلومات صحيحة	○	○	○	○	○
توفّر هذه البوابة للحكومة الإلكترونية أحدث المعلومات	○	○	○	○	○
توفر هذه البوابة للحكومة الإلكترونية معلومات موثوقة	○	○	○	○	○
توفّر هذه البوابة للحكومة الإلكترونية معلومات نافعة	○	○	○	○	○

جودة الخدمة

	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
تُوفّر هذه البوابة للحكومة الإلكترونية (بشكل إلكتروني) جميع الخدمات المُقدّمة في مكاتب هذه الجهة الحكومية	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية تسمح بالحصول على جميع الخدمات المتوفرة إلكترونيا بدون الحاجة إلى مراجعة مكتب الجهة الحكومية في أي مرحلة من مراحل الحصول على الخدمة	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية شفافة في إيصال خدمات الحكومة الإلكترونية للمستخدمين	○	○	○	○	○
هذه البوابة للحكومة الإلكترونية لا تسمح بالتواصل بشكل تفاعلي بين المستخدمين والجهة الحكومية (مثل تبادل الرسائل بالبريد الإلكتروني، تلقي المساعدة الفورية، المشاركة في المنتديات)	○	○	○	○	○
هذه الجهة الحكومية تستجيب بسرعة لطلبات المستخدمين عبر بوابتهم الإلكترونية (استجابة سريعة للطلبات والقدرة على الحصول على مساعدة إذا كان هناك مشكلة أو استفسار)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يجعلني على ثقة بأنني سأحصل على المعلومات/الخدمات كما تعهدت به هذه الجهة الحكومية	○	○	○	○	○
يظهر الموظفون في هذه الجهة الحكومية التعاطف عند التواصل معهم عن طريق بوابتهم الإلكترونية	○	○	○	○	○

الفوائد المُدركة

	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
استخدام هذه البوابة للحكومة الإلكترونية مُفيد للبحث عن المعلومات والتقديم على الخدمات الحكومية	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يُحسّن من أدائي في عملية البحث عن المعلومات والتقديم على الخدمات الحكومية	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يُمكنني من البحث عن المعلومات والتقديم على الخدمات الحكومية بشكل أسرع	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يجعل البحث عن المعلومات والتقديم على الخدمات الحكومية أسهل	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يقلل من إنتاجي في عملية البحث عن المعلومات والتقديم على الخدمات الحكومية	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يُمكنني من الاستفادة من الخدمات الحكومية من أي مكان	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية يُحسّن من جودة الخدمات الحكومية التي أتلقاها	○	○	○	○	○

الثقة في الجهة الحكومية

	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
أنا أثق بأن هذه الجهة الحكومية ستقوم بمعالجة الطلبات المقدمة عن طريق بوابتهم الإلكترونية	○	○	○	○	○
أنا أثق في قدرة هذه الجهة الحكومية على تنفيذ العمليات الإلكترونية بأمانة	○	○	○	○	○
أنا أثق بأن هذه الجهة الحكومية ستضع مصلحتي في عين الاعتبار	○	○	○	○	○
هذه الجهة الحكومية ليس لديها القدرة على معالجة المعاملات المقدمة عن طريق الإنترنت بشكل موثوق	○	○	○	○	○
هذه الجهة الحكومية لديها الخبرة والموارد الكافية لتقديم الخدمات الحكومية عن طريق الإنترنت	○	○	○	○	○

الثقة في الإنترنت

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
تتوفر في الإنترنت الحماية الكافية التي تجعلني أشعر بالارتياح في استخدامه لإرسال طلبات المعاملات الشخصية للحكومة	○	○	○	○	○
أشعر بالاطمئنان؛ لأن البنية القانونية والتقنية كافية لحمايتي من مشاكل الإنترنت	○	○	○	○	○
لا أشعر بالأمان عند استخدام الإنترنت لإرسال معلومات حسّاسة	○	○	○	○	○
أثق بأن المعلومات المُرسلة عن طريق الإنترنت لن يتم استعمالها بشكل سيء	○	○	○	○	○
عمومًا، الإنترنت الآن هو بيئة قوية و آمنة للتعامل مع الحكومة	○	○	○	○	○

المخاطر المُدركة

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
استخدام هذه البوابة للحكومة الإلكترونية لا ينطوي على مخاطر بسبب أداء الموقع (بمعنى أنه لا توجد مخاطر مثل عدم التمكن من الحصول على الخدمة في الموعد المحدد بسبب أن البوابة لا تعمل)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية قد ينطوي على مخاطر مالية (فقدان المال عند الدفع إلكترونيًا عبر البوابة نتيجة خطأ في إتمام عملية الدفع)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية قد ينطوي على مخاطر أمنية (فقدان حساب الدخول للبوابة بسبب القرصنة الإلكترونية، فقدان المعلومات الشخصية التي تم إدخالها)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية قد ينطوي على مخاطر تتعلق بالوقت (إضاعة الوقت لتعلم كيفية استخدام البوابة الإلكترونية)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية قد ينطوي على مخاطر اجتماعية (فقدان منزلة اجتماعية، مثل تغير نظرة المجتمع لك للأسوأ)	○	○	○	○	○
استخدام هذه البوابة للحكومة الإلكترونية قد ينطوي على مخاطر نفسية (التعارض مع تصوّرك لنفسك)	○	○	○	○	○

نيّة الإستخدام

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
أنوي استخدام هذه البوابة للحكومة الإلكترونية مستقبلًا	○	○	○	○	○
أنوي استخدام هذه البوابة للحكومة الإلكترونية للحصول على المعلومات والخدمات عندما أحتاج إليها	○	○	○	○	○
أنوي استخدام هذه البوابة للحكومة الإلكترونية بدلا من زيارة الجهة الحكومية في مقرهم عندما أحتاج للمعلومات أو لتقديم طلب للحصول على خدمات	○	○	○	○	○
لا أنوي استخدام هذه البوابة للحكومة الإلكترونية للقيام بأشياء مختلفة (مثل الحصول على معلومات والتقدم بطلب للحصول على خدمات ... الخ) متى كان ذلك ممكنًا	○	○	○	○	○

<< >>

University of Strathclyde Glasgow

العربية ▼

الجزء الثالث: القيم الثقافية المُتبناه

الرجاء قراءة كل جملة ومن ثم اختيار الاجابة التي تمثل رأيك.

الابتعاد عن المجهول

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
القواعد والقوانين مهمة لأنها تخبر الموظفين ما تتوقعه جهة العمل منهم	○	○	○	○	○
النظام والهيكل مهمان جدًا في بيئة العمل	○	○	○	○	○
ليس من المهم الحصول على التعليمات و متطلبات العمل بالتفصيل حتى يعرف الناس ما المتوقع منهم عمله	○	○	○	○	○
من الأفضل أن تكون في وضع سيء تعرف عواقبه بدلاً من أن تكون في وضع غير معروف لك ولكن من المحتمل أن تكون عواقبه أفضل	○	○	○	○	○
في مكان العمل، توفير فرص للابتكار أكثر أهمية من طلب إجراءات عمل موحده (أي أن الابتكار والإبداع أهم من إتّباع روتين مُحدد)	○	○	○	○	○
يجب على الناس تجنب إجراء تغييرات (سواءً في عملهم أو في حياتهم الشخصية) لأن الأمور قد تزداد سوءاً	○	○	○	○	○

الذكورة / الأنوثة

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
من الأفضل أن يكون الرجل في منصب رفيع المستوى وليس المرأه	○	○	○	○	○
الحصول على مهنة محترفة أكثر أهمية بالنسبة للنساء من الرجال	○	○	○	○	○
حل المشاكل التنظيمية يتطلب أسلوب تعامل نشط وقوي وهو الأمر المعهود من الرجال	○	○	○	○	○
دائما هناك وظائف يكون أداء الرجال فيها أفضل من أداء النساء	○	○	○	○	○
النساء لا يقيّمن التميّز و الترقية في عملهن مثل الرجال	○	○	○	○	○

اختلافات القوّة والنفوذ

	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
يجب على المدراء استشاره المرؤوسين عند اتّخاذ معظم القرارات	○	○	○	○	○
اتخاذ القرارات يجب أن يكون بيد الإداره العليا في المنظمة وليس بيد الموظفين الأقل مستوى	○	○	○	○	○
ينبغي على الموظفين أن لا يشككوا في القرارات المتخذة من قبل المدير	○	○	○	○	○
ينبغي على المدير أن يقوم شخصيًا بتنفيذ المهام الصعبة والمهمة و يدع المهام المتكررة و البسيطة للموظفين	○	○	○	○	○
يجب أن يحصل المدراء ذوي المرتبة الأعلى على مزيد من المنافع و الامتيازات مقارنة بالمدراء ذوي المستوى الأدنى والموظفين الفنيين	○	○	○	○	○
ينبغي على المدراء الحرص على عدم سؤال الموظفين عن آرائهم بكثره وإلا سيبدو المدير ضعيفاً وغير كفء	○	○	○	○	○

الفرديّة / الجماعية

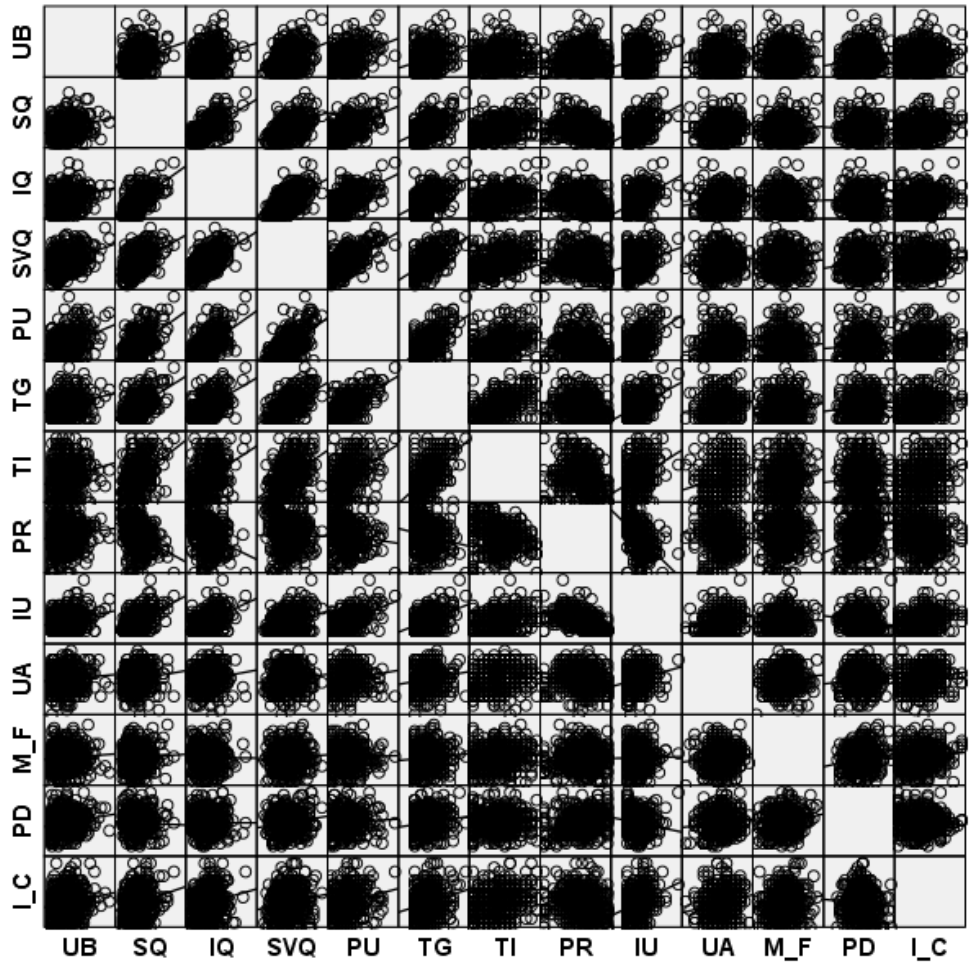
	أوافق بشده	أوافق	محايد	أعارض	أعارض بشده
أن يكون الشخص عضواً في مجموعة أكثر أهمية من أن يكون مستقلا بذاته	○	○	○	○	○
نجاح الفرد أكثر أهمية من النجاح الجماعي	○	○	○	○	○
الولاء للمجموعة أكثر أهمية من تحقيق مكاسب فردية	○	○	○	○	○
المكافآت الفردية ليست مهمة بقدر مصلحة المجموعة	○	○	○	○	○
أن يقوم المدير بتشجيع الموظفين على الولاء والإحساس بالواجب أهم من تشجيعهم على تحقيق مصالحهم الفردية	○	○	○	○	○

<< >>

University of Strathclyde Glasgow

نشكرك لاستقطاعك جزءًا من وقتك للإجابة عن هذا الاستبيان.
تم تسجيل استجابتك.

Appendix C: Linearity Test Results



Appendix D: Collinearity Results

	Tolerance	VIF
SQ → PU	0.56	1.79
IQ → PU	0.48	2.07
SVQ → PU	0.65	1.55
SQ → PR	0.51	1.95
IQ → PR	0.47	2.12
SVQ → PR	0.54	1.86
TG → PR	0.46	2.16
TI → PR	0.64	1.57
TG → IU	0.46	2.17
TI → IU	0.62	1.62
PR → IU	0.84	1.20
SQ → IU	0.56	1.80
UA → IU	0.91	1.10
MF → IU	0.90	1.11
PD → IU	0.81	1.24
IC → IU	0.84	1.19
IU → UB	1.00	1.00