UNIVERSITY OF SOUTHERN QUEENSLAND

Factors That Impact the Acceptance of E-Services in the Public Sector in the United Arab Emirates Case Study: The General Directorate of Residency and Foreigners Affairs (GDRFA) - UAE

A Dissertation Submitted by

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Abstract

The invention of the computer and the development of the Internet has proven to be of vital importance and benefit to society, with increasingly more services delivered through the Internet are becoming available to end-users. E-services are usually more convenient to use, although it is still not fully known how inclined consumers are towards acceptance of e-services. The level of e-government adoption in the Gulf Corporation countries is still at an immature state despite various efforts taken by the government to propagate the importance of e-services. The United Arab Emirates (UAE) government is investing significant funds for its e-services; but there is still low acceptance in the adoption of these services.

The primary focus of this study is to investigate and identify the perceptions of potential end users relating to factors which impact on e-services acceptance. Technology Acceptance Model (TAM) has been adopted in this study as it can be extended when technologies are introduced. This research validates the developed TAM model and evaluates the variance of the outcome variable (acceptance of e-services). Seven factors were adopted as determinants of acceptance of e-services: security, trust, support, e-marketing mix, computer self-efficacy, web skills, and language.

The study was undertaken in the General Directorate of Residency and Foreigners Affairs (GDRFA) in the UAE. A quantitative survey methodology was adopted in this study, which surveyed 466 customers who use the GDRFA e-services.

The overall findings revealed that security, e-marketing mix, language, web skills, computer self-efficacy and support significantly affected ease of use and perceived usefulness. However, the trust and computer self-efficacy doesn't affect the ease of use. Further, ease of use significantly affects intention to use and perceived usefulness while in turn intention to use was influenced by perceived usefulness.

This study offers an understanding of people's adoption of e-government services with the help of established theories such as TAM and various factors that influence the e-government adoption with reference to UAE.

CERTIFICATION OF DISSERTATION

I certify that the ideas, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Candidate signature

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ENDORSEMENT

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Co-Supervisor

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Dr. Latif Al-Hakim   Date

Dedication

The research reported on in this thesis aims to improve the lives of the people of the United Arab Emirates through supporting further innovation in egovernment. It is dedicated to our inspiring leaders including:

H.H Sheikh Khalifa Bin Zayed Al Nahyan. The President of the UAE

H.H Sheikh Mohammed Bin Rashid Al Maktoum. The Prime Minister and Vice President of the United Arab Emirates

H.H Sheikh Saif bin Zayed Al Nahyan, Deputy Prime Minister and Minister of Interior of the United Arab Emirates

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CHAPTER 1

Introduction

1.1. Overview

The last decade of 20th century was marked by the emergence of internet and its widespread use. The adoption of e-commerce hasincreased rapidly through the use of web sites and e-storefronts (Tiwana & Balasubramanian, 2001). E-services are a modular and rapid model of services that can be provided to both customers and other businesses through electronic means such as the Internet. E-service is an interactive software based information service that is provided over the internet that includes computing resources, information and business process (Lee *et al.,* 2011; Piccinelli & Stammers, 2002) and they provide a very efficient means for business service providers to directly deal with their customers, thereby providing a personal one-on-one interaction and improving customer satisfaction and creating transactional efficiencies (Ruyter *et al.*, 2001; Featherman & Pavlou, 2003). Any kind of business service can be converted into an e-service to provide a much faster and more efficient service.

Paper-based processes are now being converted into computerized software based processes with an increasing trend during the last few decades. It is essential to apprehend the end user understanding of the interfaces involved in these E-services in order to enhance customer satisfaction and also in turn improve business efficiency (Belanche *et al.*, 2012). E-services are considered as a combination of programs run on vendor's servers and client–side user interface (Taipale, 2012). There is a need to understand the end users feedback on various potential risks involved with using e-services. In order to ensure the development of a more complete system, the consumer perceptions have to be considered (Compeau *et al.*, 1999) as it will have an impact on both, the practitioners and the researchers (Davis,

2002). Understanding an individual's feedback on E-services will also enable in identifying issues associated with services and will also provide a window into the overall system performance.

A future modern and successful welfare state will require most of its public services and government administrations to be digitized utilizing E-services (Zhao *et al.*, 2012). In combination with rapid technological advancements in research, together with wide spread use and adoption of such technologies will lead many governments to look favourably at developing and utilizing E-services within their government (Reddick, 2006). E-government refers to information technology and its use towards creating a better, faster and more transparent window through which the government operates and offers its services to the people (Yildiz, 2007). Implementation of e-government technology is challenging for the governments which find it difficult to prioritize various services required for the development of E-services, as they are restrained by allocation of funds (Al-Mashari, 2007). The non-adopters of online services, have resulted in government's lack of competency in eliminating or negotiating expensive usual service channels (Norris & Moon, 2005).

E-service is not entirely developed for its concepts and theories yet and is still at its development stage. There are not much enough literature pertaining to e-government and in particular about its concepts and therefore this subject requires more investigation (Taipale, 2012).According to Heeks & Heeks (2007) there are a number of studies that have delved into this field and number of researchers have provided their opinions. There are several aspects to E-government services such as public, technical, political, social and economic administration which have influenced on various technical perspectives including socio-economic and public administrative aspects. There are increasing arguments on the adoption of these concepts and subjects (Evans & Yen, 2006), and almost all the definitions do emphasize the same concept, which is about the adoption of e-government services and the government using information technology based systems to provide a better service to their users (Reddick, 2006).

E-government provides an effective medium for citizens and other stakeholders to exchange information from their government, as well as execute essential tasks such as filing their tax returns and payment of government bills such as electricity/gas etc. There are not much dissimilarity between government's e-government websites and

business websites that provide services to customers. These government websites are also prone to the similar vulnerabilities as other e-services such as hacking (Gil-Garcia & Martinez-Moyano, 2007). A major difference between e-government web services and organizational Information Technology (IT) based e-commerce services is that, in government supported services, have a monopolistic authority in their domain (Sprecher, 2000). In addition, it is also argued that it is vital and essential to endorse IT adoption theories that have been developed in the private sector or to synthesize a new model that has the ability to explain the citizen's use of e-Gov (e-Government) websites from an integrated perspective (Zhao *et al*, 2012).

Government's exploitation of information and communication technology with a view to reach their users in a professional, personalised and efficient manner to encourage people's involvement in the decision making process is called e-government. E-government technology has the potential to make the government more transparent, visible and effective. The E-government system is different in the case of developed and developing nations. In the case of developing countries, the public sector reforms are often run by the donor nations or the World Bank (McGill, 1997 cited in Perumal, 2009). Even though most developing nations have streamlined their economic processes, the public administrative process is usually centralised (Perumal, 2009) and economically challenged nations which cannot afford to invest in the required infrastructure resulting in poor progress in the development, usage and spread of E-government for their users (Yong, 2003 cited in Perumal, 2009).

Many nations have their own versions of an e-government system, which may vary based on the administrative services they offer, and all the e-government services are citizen focused (Shareef *et al.*, 2009) and in order for the e-government system to work, the users will need to adopt and make use of it (Evans & Yen, 2006; Shareef *et al.*, 2009). Even though there is evidence that points to the fact that e-government has been increasing among different nations in the world, it is not yet clear as to whether all the users of developing and developed countries are ready to embrace e-services (Carter & Bélanger, 2005). The citizens' willingness to adopt these services will shape the success, diffusion and acceptance of e-government initiatives. Many government agencies have started to utilize e-services so as to deliver different services to the community in an appropriate manner, however the functions and

benefits of e-services are not yet comprehensively explored (Ghosh, 2009). The main focus of this study is to identify the perception of ultimate users of e-government services as well as to denote specific factors hindering the e-government usage by government sectors. By means of a theoretical model, the relationship among government and public sectors and the specific factors that have been acknowledged such as support, security, trust, and language (Carter & Belanger, 2005) are being investigated.

E-government needs to meet the general and specific needs of its users and to allow for the development of online services which would meet the expectation of all users. The intention should not just be to replicate the manual service but to go much further in enhancing the services that customers can receive through e-government. E-government needs a citizen-centric approach, following a step-by-step process wherein the marketing basics can be utilized to maximum advantage. In marketing analysis, the model, which promotes an effective marketing mix, is found to be a latest addition in the segmentation approach. This model is likely to provide effective application for the absorption as well as adoption of electronic government. This will help to recognize problems residing in the e-government system such as unwillingness of users and less developed infrastructure that are essential for every e-government implementation. It is acknowledged that the characterization of the environment by controllable factors is essential to bring radical change in any e-government implementation. From the range of research frameworks, TAM was selected as a basic model to guide this study. The main reason for choosing this model is that TAM has the potential to help in developing a better understanding of the factors affecting the acceptance of new technology by the end users.

1.1. Background

There is limited knowledge and understanding of the importance of managing the technology through which the Internet and web deliver e-Commerce opportunities (Chatterjee, 2002).Even though the use of e-services provides a convenient and efficient access to electronic services, a little is understood about how consumers evaluate its acceptance (Featherman and Pavlou, 2003). Most prior studies have been undertaken in developed countries. This research fills the gap in the literature in that

it investigates and identifies key factors that impact the acceptance of e-services in the United Arab Emirates (UAE). This study provides clarity to issues relating to acceptance by the public sector. The study adopted Technology Acceptance Model (TAM) model in comparison to other adoption models such as Theory of Planned Behaviour (TPB) and Theory of Reasoned Action (TRA). While other studies have used Theory of Planned Behaviour (TBP) (Taylor & Todd, 1995); its application poses huge problems in comparison to TAM (Mathieson, 1991). In particular, constructs of TAM are measured in the similar way, while it is difficult to operationalize and more complex is to measure TPB constructs (Taylor & Todd, 1995) beyond which further constructs demands a pilot study to identify reference groups, outcomes, control variable in each situation (Mathieson, 1991).

In order to understand and explain the attitude, TAM is considered a more suitable tool which is the reason for being selected for the present study as it has been for previous similar studies such as that of Mathieson (1991); Chismar & Wiley-Patton (2003); Sang & Lee (2009); Al-Shafi & Weerakkody, (2009); Sang *et al.,* (2009); Sang *et al.,* 2010; Wang, 2002; Zhang *et al.,*(2011). Taylor & Todd (1995) compared TAM with decomposed TBP with eight added antecedent constructs. They found that TAM explained 34% of the variance while 36% was explained by TPB. The number of constructs in both the models was 5 and 13 constructs respectively and with 5 constructs, TAM is able to explain 34% of the variance in usage with only 2 per cent less than TPB decomposed.

This study will consider the issues and concerns associated with successful acceptance of e-services in the government sector in the United Arab Emirates (UAE) using TAM as a base model. E-Government service development is still in its early stages in the UAE and government services departments such as the Ministry of Interior, Ministry of Labour, Ministry of Health, Ministry of Higher Education, and Ministry of Treasury. All of these ministries offer e-services to users through departments and centres that have been established for this purpose. The Ministry of Interior is considered to be one of the pioneers in the introduction and implementation of e-services. The GDRFA department is a crucial part of the Ministry of Interior in the UAE due to the essential and critical activities conducted by this department. There are seven departments of GDRFA working in the UAE, all of which provide users with e-services particularly to the UAE Citizens, Residents,

Gulf Cooperation Council National (UAE, Bahrain, Qatar, Oman, Kuwait and Saudi Arabia) and Visitors.

1.1.1. Country profile

In 1971 the United Arab Emirates was established through a treaty signed by seven previously-independent countries: Ajman, Abu Dhabi, Al-Fujairah, Dubai, Sharjah, Ras Al-Khaimah, and Umm al-Quwain (Central Intelligence Agency (CIA), 2011). The population of the UAE is composed of Emiratis and expatriates. It is evident from the official data that among the 8.264 million total population, 7.316 million were identified to be expatriates (UAE Interact, 2011). The nation has adopted a policy of free trade worldwide. The Ministry of Information and Culture (2004) invited more than 1000 technology-related companies from all over the world to establish a base in the UAE market place with the aim of promoting information technology capabilities to the UAE community. Dubai Internet City (DIC) was launched in the year 2000 in order to support e-services in Dubai. The UAE has made several efforts in making itself a leader in the technological and industrial sector by means of decreasing the technological gap (Ayish, 2005) between UAE and industrial nations.

The government system of the UAE can be described as a federal presidential elected monarchy. Traditional Islamic/Arab culture is predominantly followed in this country. The UAE has one of the most developed economies among other Middle Eastern nations (IMF, 2009); it is an extremely wealthy nation. It is also estimated that the GDP per capita of UAE is almost US$ 42,000 (IMF, 2009). The main engine that supports the economy and its growth and development is the extraction, processing and export of 'Oil'. Since the discovery of oil in the 1970s, it has continued to fund an extraordinary pace of development of this nation. In recent years, the UAE has managed to diversify its revenues and economy by shifting from a predominantly oil based economy to a tourism and service based economy, which has been identified through a reduction on its dependence on oil (90% of GDP in 1980 to 37% in 2006). The federal government in the UAE splits the nation into different districts and develops specializations based on what each district has. For example, the government has supported and developed light manufacturing in Sharjah, tourism and services in Dubai, heavy industry in Ras Al-Khaimah and

energy and petrochemicals in Abu Dhabi (Dubai e-government, 2005; IMF, 2009). The exports of the UAE has over the years evolved from oil, petrochemicals, fertilizers, cement and aluminium to include electronics, light manufacturing, machinery and transport equipment. In addition to all these services, the government has recently begun to take interest on the information technology and its related services. The Ministry of Information and Culture (2004) invited almost 1000 IT companies from around the world to visit the country and the support which the government is willing to provide if they were to establish themselves in the country. In order to promote the growth of IT related services, the Dubai Internet City (DIC) was launched in the year 2000 to support e-services in the city. UAE is attempting to reduce the technological gap that exists between their country and other developed nations (Ayish, 2005).

To measure the development of national e-government capacities, the United Nations has generated the United Nations e-government development index (EGDI). The EGDI is a composite indicator that consists of three indices (online service index, telecommunication index and human capital index) that are equally weighted. In view of the steady growth in technological capabilities and the fact that the UN aims to reflect these developments in their indices, the EGDI is not fully comparable to prior indices reported by the organisation.

The three indices that make up the EGDI cover a broad range of topics that are relevant for e-government (Alshomrani, 2012):

1) The online service index measures a government's capability and willingness to provide services and communicate with its citizens electronically.
2) The telecommunication infrastructure index measures the existing infrastructure that is required for citizens to participate in e-government.
3) The human capital index is used to measure citizens' ability to use e-government services.

The high rate of e-government development index points to the advance progress in the adoption of e-government.

Table 1. 1: Western Asian Region E-government Development (EDG) Index

Country	E-government Development Index EGDI		E-government Development Index Ranking	
	2010	**2008**	**2010**	**2008**
UAE	**0.5705**	**0.6301**	**49**	**32**
Bahrain	0.7363	0.5723	12	42
Kuwait	0.5290	0.5202	50	57
Saudi Arabia	0.5142	0.4935	58	70
Qatar	0.4928	0.5314	62	53
Oman	0.4576	0.4691	82	84
Iraq	0.2996	0.2690	136	151

Source: Adopted from Alshomrani, 2012, Journal of Emerging Trends in Computing and Information Science

As shown in Table 1.1, with an E-government Development Index EGDI value of 0.7363, Bahrain is quickly coming up as the new leader in the Western Asia region. In a global survey on E-government ranking, Bahrain was ranked 13th in the year 2010. Bahrain's e-governmental portal system was launched in the year 2009 with the motto 'E-Government for a Better Life' and aimed to provide its citizens with a host of information on the functioning of government and its administrative processes. In comparison to Bahrain, Saudi Arabia attained an EGDI value of 0.5142 and it was ranked 50th in the world when it comes to the implementation of e-government among the nations around the world a survey done in 2010. In 2010, UAE attained a ranking of 49 with an EGDI score of 0.5705 as shown in the above Table 1.1.After Bahrain, UAE ranked highest while there is a wide gap in ranking between these two states.

Growth of the UAE e-government implementation is significant. The UAE is ranked fourth in the world, with 30.8 per cent of the country's households and businesses connected to fibre optic systems, behind Japan, South Korea & Hong Kong. The UAE is described as representing 96% of the Middle East region's FTTH/H subscribers and 76% of all homes passed by fibre (Warkentin et al, 2002; Heeks &Ronaghan 2002). In the case of the UAE, Ahmed (2006) emphasises that the maturity level of e-services in the UAE has vastly increased from 2004 to 2005.

Recent evidence (Lootah & Geray, 2006) reveals that Dubai e-Government has enabled 81% of services—which are at different stages of implementation.

With respect to e-government development index, Saudi Arabia gathered (0.6658) and Qatar (0.645). These indicators showed great advancement in their positions with respect to e-government development. It is seen that this expansion is attributed to development in citizen centric services raising the global ranking of these nations to 58 and 62 respectively. It is seen that in Saudi Arabia the e-government measures introduced ensured that there was a rise in productivity and efficiency of the public sector thereby promoting an overall increase in return on investment of ICT providing an easy-to-use timely accurate service. An example of the manner in which this technology is being utilized is through a separate e-payment portal has been developed through which citizens are able to handle all online transactions.

In accordance with the strategy of the Supreme Council of Information and Communication Technology (ICT QATAR), Qatar developed a strategic plan for the implementation of an integrated government programme (United Nations e-Government Survey, 2012). The Qatari e-government site offers many services, ranging from student registration and paying traffic violations to applying online for visas and permits (Al-Shafi &Weerakkody, 2008). Official e-government efforts in Oman (referred to as "e-Oman") started in 2003 with the establishment of a government organization called "Oman digital". This organization is responsible for all e-government and e-commerce services in Oman. Initially, this organization was responsible for identifying the information and technological needs for different government agencies in Oman to participate in e-government. E-government still has a limited influence on Jordanian citizens. A survey was conducted by the Arab Advisors Group (AAG) revealing that the percentage of Jordanian households connected to ADSL is 11.7% of total households in year 2008 (Arab Advisors Group: http://www.arabadvisors.com).

The GDRFA departments are essential for every citizen and resident of the UAE as they perform the most important functions of the government. Dubai is considered a multicultural city and has 180 nationalities from all over the world (UAE Interact, 2011).GDRFA controls the main and most important departments in the UAE such as the Department of Airports and Land Border Points. The main role of this department is processing passengers' entry and departure, as well as issuing business

transits, visitor's visas and promoting commercial and tourist activities in the UAE.,
The present study would focus on the above research issue.

1.1.2. *Growth of IT diffusion in the UAE*

The UAE is at the forefront when it comes to the adoption of information technology
and is already quite well ahead of other countries in the Gulf Co-operating Council
(GCC) when it comes to Internet penetrations well as being amongst the best
amongst the developing nations around the world. The UAE has approximately 1.1
million fixed telephone lines and 3.3 million mobile telephone lines and there are
also approximately 400,000 Internet subscribers in the nation (UAE, 2005 Yearbook,
p. 309). There have also been significant developments made in the field of satellite
broadcasting and in the development of the Internet related services within the
country.

The federal structure of the government in the UAE holds that the
telecommunications sector is the responsibility of the national government. The
complete Internet and other telecommunications related services in the country are
all offered and governed by a public entity that is fully controlled by the government
called Etisalat (Zhao, 2012). Business units and subsidiary organizations provide
Etisalat and its clients with the support services including data, voice, IT solutions
and consulting, satellite, Internet, submarine cable-laying, smart card manufacture,
data clearing, and maintenance and related telecommunications services. Since
Etisalat is the only provider of Internet and telecommunication related services
consumers have no other choice but to use that service provider in order to avail
themselves of such services. In 2005 Etisalat announced revenues of AED 12.9
billion and net profit of AED 4.3 billion (Etisalat Annual Reports 2001, 2002, 2003,
2004 and 2005)

Etisalat was launched in 1976 and was the only provider for telecommunication
related services in the country till the year 2005. In order to diversify its revenue
sources, the organization had invested in telecommunication related companies such
as Qatar Telecom, Thuraya Satellite, Sudan Telecom and Zanzibar Telecom. In
2001, the organization gained approximately 1 million additional customers in each
of the fixed line as well as GSM businesses, which surpassed the company's
expectations. The organization provides connectivity to 213 GSM roaming partners

in 96 nations and also to 258 international destinations (Etisalat Annual Report, 2005). The UAE was ranked 23rd by Networked Readiness Index (2005), a joint project by World Economic Forum and INSEAD. This joint committee evaluated the information and communication technology levels and its development among various countries. In another index, the Index of Economic Freedom, a joint project by the Wall Street Journal and Heritage Foundation, the UAE was ranked 65th among the nations worldwide and 3rd among the Arab states after Kuwait which ranked 50 and Saudi Arabia with a rank of 62 (IDC/World Times, 2005).

This index measures 10 areas of economic freedom and uses 50 different variables to asses a nation. The number of measures and support that the government has provided has played a major role in developing the country slowly and steadily towards an information technology based society. Based on the classification provided by the US'IDC Group, the UAE is ranked on the top in comparison to all other GCC nations when it comes to information technology (IT) users. In international Information Society Index (ISI) for 2005, UAE was ranked 32 by IDCISI among 53 countries by means of assessing 23 indicators observing the competence of nation's citizenry to exchange information both internally and externally. The observed 23 indicators are classified into 4 categories as: computer infrastructure (2) Internet infrastructure (3) information infrastructure (4) social infrastructure (IDC World Times, 2005).

1.1.3. Growth of e-government service adoption in the UAE

There is an interest on the part of the UAE government in developing E- government based projects to benefit users as well as the businesses that are operating in the nation as it is expected to increase productivity significantly. While a significant number of the projects are web based, there are some that are based on telecommunications services. E-government in the UAE has a robust and well-developed infrastructure benefitting from all the efforts that were put into attracting some of the top businesses related to the ICT field. A number of projects related to e-government are being funded with a goal to enhance productivity, for example project of developing a government data network based on open computing standards and e-Government project which mostly focused on laying down an ICT infrastructure for delivery of government on-line services (Kostopoulos, 2003). Most

of the e-government policies and services are highly citizen centric and serve not only as an example to other GCC nations but also the world (Kostopoulos, 2006). Awan (2003) declared that the website that represents the UAE government is the best among other major government websites of GCC nations. Due to the visionary guidance of the government, there are a number of e–services provided through the UAE website that are aimed towards enabling the government to carry out a number of administrative tasks such as policymaking, service delivery and governance. One of the primary UAE government focuses of the 2011-2013 is to modernize its initiatives and services to bring it on par to an international level.
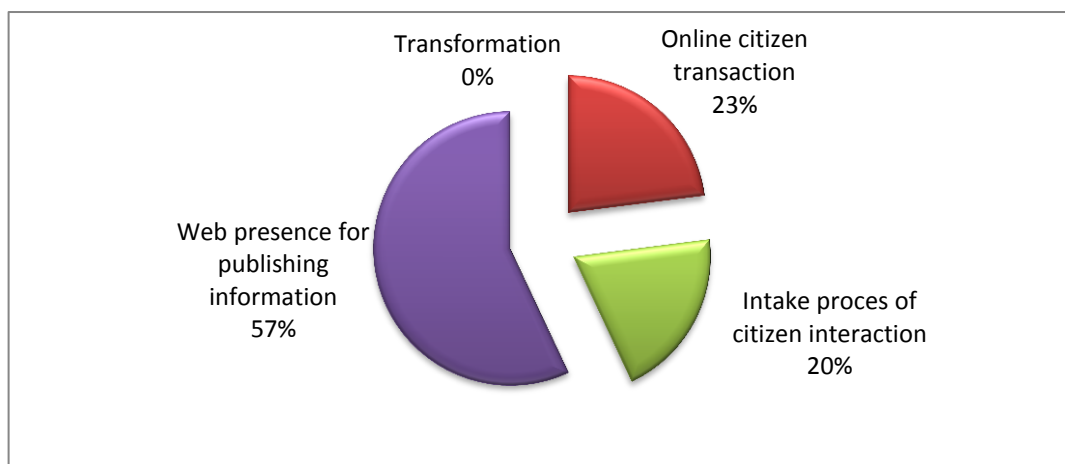
Figure 1. 1: E-service profile summary of the UAE Layne & Lee (2001)
Source: Layne & Lee [2001]

From Figure 1.1, it can be identified that the e-services profile of UAE was found to comprise of web presence of publishing information, online citizen transactions and an intake process of citizen interaction.   How does this relate to the discussion – you need to relate it back to either the previous discussion or expand to make the figure more relatable in your discussion. What you have here is not enough information on its own.

A four-stage process was developed to show e-government applications by Layne & Lee (2001), including Information, Interaction, Transaction and Transformation. In the first process information is provided pertaining to the procedures involved in the day-to-day governing process. The second stage involves the interactivity process in which the people can download applications and other government service related documents. The third stage involves the electronic delivery of online documents and,

applications, with the final stage including the delivery of the services on behalf of the government to the people. The important observation to be noted is that there is bigger challenge of inter-agency integration (Ready, 2004), which is the key to achieving 'Citizen-Centric' e-government.

The United Nations identified UAE as the best among the Gulf countries when it comes to the quality of e-government services provided to its citizens and also ranked it 18th among the world (e4all, Jan 2004). At the time of this study, the government of Dubai is offering approximately 1444 e-services. Some examples of programs or e-services provided to the people are:

- The Dubai police have a system wherein the people living in the city can log in and get minute-by-minute updates on the traffic system.
- The location of the nearest police stations is also provided with the use of a Wireless Application Protocol service.
- There are a number of kiosks set up at various places around the city such as shopping malls where people can log in, check and pay their fines that are due for traffic violations etc (Ducont 2001).

1.1.4. Immigration department in the Seven Emirates

All departments, involved in the performance of immigration duties, were integrated in 2009 under the Department of Naturalization and Residency in the UAE. This was named as the General Directorate of Residence and Foreigner affairs (GDRFA, 2012). The vision of this section of the government was to ensure that they develop security in the country and makes it one of the safest nations to live in. The government formed a mission statement which indicated that enforcement of citizenship laws is effective in a manner that residents are protected thereby ensuring that the there is increased levels of security and promotion of economic benefits to UAE. The department aims at contributing to the promoting protection of all its regions while at the same time maintaining a strong and cordial relationship both externally with other countries and internally within the community by building up the confidence. This is often carried out by promoting active management of services (GDRFA, 2012). There are seven different immigration departments, which are included under the general directorate. The following section highlights the general activities of this section and will detail their vision, role and purpose.

ABU DHABI

GDRFA – Abu Dhabi was founded in 1966 whose basic responsibility was to ensure that passports are issued to citizens and citizenship records are maintained and foreign policy and laws related to entry and residency of foreign citizens in the country are implemented. In addition coordination among the departments is also maintained. In the year 1972 and 1973 two laws 17 and 6 were implemented in order to regulate aspects related to nationality, passports, immigration and residency with specific reference to Abu Dhabi (Abu Dhabi GDRFA, 2012).

DUBAI

Two departments Central Immigration Department and the Ports and Borders Department were established in October 1971 by the Late H.H. Sheikh Rashid Bin Saeed Al Maktoum in Dubai. These departments directly reported to the Ministry of Interior and were governed by the Federal Law no (17) which was found to focus its efforts on naturalization and passports. In 2003, DNRD presented the following departments under its governance including Entry permits, Monitor and Investigations, Administrative and Financial affairs, Information Technology, Airports and Land Border Points Dubai International Airport.

Department of Entry Permits: This department presents responsibilities related to issuance of work permit to workers and domestic helpers

Department of Monitor and Investigation: This department presents responsibilities related to monitoring of application with respect to citizenship, change in current status of residents, investigating violators of residency status, reports about absconders and monitoring of fees with respect to naturalization laws.

Department of Administrative and Financial Affairs: This department plays an important role with respect to management of human and financial resources. They also involve themselves in collaborating with various other companies and establish a credible form of public relations with other departments and offices.

Department of Information Technology: This department is responsible for the introduction and maintenance of essential programs that are being used or offered as part of the e-government initiative by the government and also the programs that are being used by the government as part of its regular administrative process. This department is also responsible for the hardware equipment related to IT.

Department of Airports and Land Border Points Dubai International Airport:
This department oversees the immigration of people into and out of the country. It is responsible for the visa process and plays a major role in promoting commercial and tourist activities of UAE. Recently with the increasing digitization of services, this department has made it possible for people to download digital copies of e-forms and visa applications and to apply online it while carrying out transactions using the internet alone.

AL FUJAIRAH

The foresight of the ministry of GDRFA Al Fujairah is to extensively work in furnishing a state UAE and safer and secured globally by providing numerous services in transacting that thereby, saves time and effort. They strive to assure the application of laws on nationality and residence comprising the return to the state security and financial benefits and provision of secured outlets with the consolidated work. (Ministry of Interior GDRFA Al Fujairah, 2012).

UM ALQUWAIN

A main role of GDRFA is to provoke the relationship among public and government institution. To achieve the best services and development, it is essential to acknowledge the administration, views and ideas of Umm Al Quwain government (GDRFA- Umm Al Quwain, 2012). The main intention of the directorate is to implement nationality as well as residency law so as to provide a greater advantage of security and economic benefits and strategic partnerships. (GDRFA in Ras Al khaimah, 2012).

SHARJAH

The main function of the Directorate is to maintain the high morals, values as well as principals of security practices. Their main intention is to maintain the security as well as stability of the citizens by means of focusing Naturalization and Residence Affairs of residents and visitors (General Directorate of Residence and Foreigners Affairs of Sharjah, 2012).

AJMAN

The different services which are presented by the GDRFA in Ajman include services for residents; VISA related issues, Ports and overseas offices as well as AFF. The

website is found to present a number of services to both permanent and non-permanent residents aiming at reducing time of transactions. This directorate launched an online service in 2011 which enabled individuals to apply for entry permits online and to implement nationality and residency laws (GDRFA in Ajman, 2012).

RAS AL-KHAIMAH

The aim of the e-service launched by this Directorate is to facilitate procedures and ensure that whereabouts are made available with respect to online transactions in terms of passport renewal, residency permits, entry permits and permits for older people and special needs people.They have also collaborated with the Department of Information Technology to ensure that the highest levels of security protocols are implemented to prevent any kind of falsification and to maintain piracy (General Directorate of Residence and Foreigners Affairs -Ras Al-Khaimah, 2012).

1.1.5. Regulations Act

In accordance to the 1971 Constitution, which has been accepted by the Rulers of the Emirates, the Supreme Council of Rulers is the highest legislative authority in the UAE. This Constitution also supports a National Assembly in which the Emirates choose the members. The laws passed by this National Assembly as well as by the Federal Council of Ministers should get the approval of Supreme Council of Rules. While the Federal Government has taken care of corporate and commercial matters local authorities in the different Emirates are authorized to issue Decrees regulating local matters through the following main corporate and commercial laws: Labour Law No. 8 of 1980; Commercial Agencies Law No. 18 of 1981 (as amended); Maritime Law No. 26 of 1981; Commercial Companies Law No. 8 of 1984 (as amended); Civil Transactions Law (the Civil Code) No. 5 of 1985; Trade Marks Law No. 37 of 1992;Commercial Transaction Law No. 18 of 1993 (Gulf-law, 201 2).

1.2. Research problem

Even though the government agencies have achieved the digital transmission of information for higher rates, they still increase their transparency, improve the communication among public and government institutions as well as increase the

access of information for citizens. At the same time, the level of acceptance of e-government by citizens is less than in most of the GCC countries. Studies of several researchers are continuing to identify the leading adoption construct and various frameworks as well as developing models to understand adoption of service by clients. Al-Sobhi, Weekakkdoy, E-Haddedah (2011); AlAwadhi & Morris (2009); *Al-Sobhi, Weerakkody, Mustafa Kamal, (2010);* Al-Busaidy&Weerakkody (2009); Al-Busaidy, Weerakkody & Dwivedi (2009); Rouibah (2009) Al-Shafi & Weerakkody (2008); Awan (2008); Al-Qirim (2007) have identified the different factors that influenced the adoption of e-services in Arabian Countries. Most of these studies applied Unified Theory of Acceptance and the use of Technology (UTAUT) model and only one recent study (Rouibah, 2009) applied TAM. The study by Rouibah (2009) did identify the factors in assessing the intention to use Camera Mobile Phone (CMP) before retail shopping not from adoption of e-government perspective.

In addition there has been a lot of speculation as to the need for e-services to be more citizens centric, there is in reality little attention paid to understanding the people's needs and wants (McDonald *et al*., 2007). In fact most of the public organizations have shown a trend towards developing e-services that are more focused towards their own internal operations (Löfstedt, 2007b; Verdegem & Verleye, 2009).Marketing scholars believe that marketing is mostly related to non-profit organizations common to those in the public sector (Kotler & Levy, 1969), furthermore it is also argued that there is no significant role played by marketing in the public sector (Caruana *et al*., 1997; Laing, 2003). Earlier studies conducted from e-services have not focused from marketing factors particularly 4 Ps in UAE context. This research gap has been filled in this study, as thee-marketing mix factors are considered as an important independent variable.

Despite the large amount of research work that has been carried out on this topic, little information and research evidence is available with respect to e-Government acceptance in the UAE from the perspective of potential users; and TAM is expected to be an appropriate approach. The literature suggests that factors of Perceived Usefulness (PU), Ease of Use (EU), and interest in the government, financial safety and privacy may be important to users when selecting e-Government services. Currently, it is unclear whether the same factors apply to the UAE. This study aims

to address this gap and specifically concentrate on the Seven Emirates of the UAE to investigate, identify and develop a better understanding of factors impacting e-service acceptance.

It has not been identified if any of the studies made an attempt to establish the relationship between the service delivery and usage in a detailed manner with respect to technology adoption models and e-service adoption. This is because the expectation as well as perception of users is often varied from the service provider in line with key factors such as security, trust, support, e-marketing mix, computer self-efficacy, web skills, and language. Considering the aforementioned dimension, the currently used evaluation methods and norms for measuring the perception of service users are often found to be varied from the means used for measuring the perception of service providers (government agencies). Al-Shafi & Weerakkody (2008), Sahraoui (2005) contended that some of the aforementioned conditions are part of a widening gap in the midst of e-government and e-service implement with adoption that leads to lack of understanding, less than satisfactory adoption rates and poor revenue on investment for the government. These studies doesn't offer any guidelines for measuring user expectation and service provider expectation (government agencies) of what constitutes as features impacting development and integration of such a technological option into their governance measures. Though the advantages of e-governments are familiar the concepts of telecommunication has not yet been recognized in many developed countries. In particularly on example in a Western Asian province has been provided with a substantial investment for telecommunication development, there has seen to be little progress in its adoption. Most of the Arabic countries have been encountered with various problems, which will slow down the implementation of digital transmission of information, by their e-government initiatives.

Technology Acceptance Model is used in this study to establish a theoretical model to identify the factors affecting the acceptance of e-services. The main justifications for adopting TMA for the suggested model are:

1. TAM is the most commonly used model to measure the acceptance of information systems due to its parsimony and the considerable number of studies, which support its use (Azam *et al.* 2010). The main advantage of TAM is

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that it has been specifically established to address the issue of acceptance of technology (Oye *et al.* 2012).

2. TAM can be used in different fields and industries, the health sector (Chismar & Wiley-Patton, 2002; Henderson & Divett, 2003; Kim & Chang, 2007; Holden & Karsh, 2010), the education sector (Teo, 2010; Al-lawati, 2011) and the banking and financial sector (Pikkarainen *et al.* 2004; Gordon *et al.* 2010; TAM has been employed in studies on the private sector, for example, Jan & Contereras (2011); Cakmak *et al.* (2011); Chow *et al.* (2011); and in the public sector, for example, Roberts & Henderson (2000); Pieterson *et al.* (2007); Ouadahi (2008).

3. The use of TAM is no longer limited to traditional information systems, but its use has been extended to include electronic information systems including, for example, e-commerce, e-shopping, e-learning and e-procurement. Conducting TAM in virtual environments is deemed to be an essential advantage.

4. The validity and reliability of TAM has been tested and proved (Davis 1989). Despite criticisms of TAM, there is acceptance of its use in certain situations. Acceptance of electronic applications by customers became the main reason for using TAM; and most of the studies dealing with the research issue have used TAM.

5. TAM is an updated model and many research projects have been conducted using this model. The new versions of this model, TAM2 and TAM3, were the outcomes of further development of TAM.

In the United Arab Emirates the government is investing significant funds for its e-services; but there are still low levels of acceptance in using such services. This research uses the Technology Acceptance Model approach in order to identify the significant issues among the wide range of factors stated in the literature.

1.3. Research Questions

Based on this problem, two research questions have been formulated:

4) What are the significant factors perceived by end users that impact on the successful acceptance of e-services in one agency in the public sector in the UAE?

5) Is the developed model is valid and reliable to measure and evaluate the variance of the outcome variable (acceptance of e-service)?

Considering that the TAM model has been tested widely in developed countries, the answer to the second question will provide an answer to the question of the validity and reliability of the model in developing counties such as the UAE (or in different cultural environments).

1.4. Nature of the Study

Due to the rapid and unprecedented advancement in science and technologies, many intelligent devices are now being used in schools to aid students and teachers to progress their education (Selim, 2003). The invention of the computer and the development of the Internet proved to be of vital importance and benefit to society. Increasingly, services delivered through the Internet are becoming available to end-users. E-services are usually more convenient to use, although it is still not fully known how inclined consumers are towards acceptance of e-services (Featherman and Pavlou, 2003). The significance of this study is its attempt to identify the factors that are perceived to influence the successful acceptance of e-services. Different dimensions will be considered in the study model. Education and experience have been selected as essential factors that affect acceptance. This construct includes factors which deal with how users perceive the use of online services according to cultural norms and values. The behaviour of consumers in using e-services will also be examined. E-Marketing mix elements are adopted as an affected construct and include factors relating to the product of e-services, with a particular focus on how well these services are marketed to potential users. Finally, technical infrastructure will be used in the study model to identify the role of this construct in the acceptance of e-government services.

1.5. Scope of Study

The primary focus of this study is to investigate and identify the perceptions of potential end users relating to factors which impact on e-services acceptance. These customers visit the Web pages of government departments to obtain information and use the e-service. The study will be undertaken in the General Directorate of Residency and Foreigners Affairs in the UAE. The outcomes from this study are expected to provide information that will support the improvement in the delivery of e-services from the government. It is also expected that the results developed from this research may help the UAE government in improving its services through this technology, as has been the case in other countries. The UAE government organization managers realise and understand the importance of the results obtained from research for planning and decision-making and the study has executive support by the top management in the case study organisation. This study will focus on the identification of the different factors affecting the perception of end users towards government e-services.

The study will focus only the government agent initiatives of United Arab Emirates, specifically its status with ease of use as well as perceived usefulness along with its level of completion and level of acceptance of e-government in UAE. Similarly, the factors responsible for the successful e-transformation of electronic government and the influence of e-government on development of United Arab Emirates have been discussed. Furthermore, some recommendations to achieve a successful e-Government model on the basis of findings of the study are provided to improve the e-government of United Arab Emirates.

1.6. Rationale for Research

There is an anticipatory shift of from the static Websites of the previous decade to the presence of new dynamic and established web applications in the future. There is an increasing demand for the presence of interactive web applications to facilitate ease of use for the citizens of the UAE. The increase in transparency, two way communication and interactions of the government with citizens and businesses has become a vital part of any governance. Therefore e- governance measures require the presence of such Interactive Web application, which enables increases in participation of citizens and awareness toward the benefits of these applications. The

advancement of usability measures also helps in obtaining up to date information on issues, provides relevant services, statistics and facilities promoting empowerment of true e-democracy.

The motivation of this research is to provide an overall view about the functioning of e-government, which will present a framework of acceptance of e-services, as well as completion of the study. In order to capture the different perspectives, this research provides the deliberation, actions as well as academic research, which are essential for developing concepts, means and methods, approaches that will provide progress of the development of e-government through the valuable inputs of one of the most important stakeholders (customers).

This research is mainly conducted to provide a clearer idea about the UAE government initiatives and to reinvent their governance and operations with reference to e-service adoption. Significant recommendations will be provided to make an informed management decision for future planning as well as the development of government initiatives within the UAE. As the UAE government acts as a role model for other Gulf Cooperation Council as well as other developing countries, this research will act as a model for e-government implications and it will directly support and guide the transformation to e-government from the federal government and governments globally.

Furthermore, from the discussion of this research, it can be acknowledged the significant information regarding Internet, E-Commerce, marketing mix and E-government has provided a significant contribution to the emerging literature through an original investigation, analysis and testing of ideas as well as formulation of strategic program or model regarding e-government adoption in the UAE. Additionally this research determines the e-government initiatives of UAE and their efforts on modernizing the administration, operations as well as delivery of public service by adopting e-government. Apart from this, they focus on the salient aspects of the transformation process and how the process will modernize the operation as well as functioning of the UAE local government regarding the delivery of services to the public.

This modernization will hopefully project the UAE government into the modern economic world generated by ICT revolution. This thesis explored the conditions,

which are suitable as well as appropriate for the government of UAE to become fully recognised and implemented. Therefore, it can be summarized that the modernization of the UAE are found to be accompanied with unique tools, talents, resource policy as well as strategies being utilized and implemented in mitigating many social, political, economic, organizational and technological challenges in the modern economic.

Instead of hierarchical decision-making structures, e-government efforts require new type of public servant who is more comfort with collaboration as well as horizontal relationships. Such initiative may encounter with various problems if they offend the status quo. Usually government departments are always working as separate units and are answerable only to their corresponding minister resulting in accompanying different departments. If the agencies of different departments work towards sharing their information with each other this will enhance the quality of service to the users.

This research on the e-government initiatives of UAE determines their efforts on e-services of government through its main stake holder: customers. It also determines the significance of e-service of government of the UAE in terms of its ease of use and perceived usefulness along with level of acceptance and level of completion. It also determines the factors of responsibility for the successful implementation of the e-government service. Lastly, a model has been developed by this study so as to achieve a successful e-Government model on the basis of findings of the study along with the development of the best features and practices of the e-Government technology and the e-government of United Arab Emirates. It is envisioned that this study will become an invaluable reference tool and provide information for the development of proposals for the successful transformation to electronic government of the UAE. This should be achievable through the means of the recognized theoretical model, the findings and conclusions that have been drawn from the proposed model of e-government implementation.

1.7. Research Design

The researcher through the literature review has developed a structured framework which identified the requirements of IT in the public sector and the increasing need for the adoption of e-services in e-government.

Identification of the research purpose is the primary and critical step in research (Straits *et al*., 2004). Three main purposes of research activity are found to be Exploratory, Descriptive and Explanatory (Saunders & Lewis, 2000). In this study the researcher adopted the explanatory research basis. This explanatory research basis identifies the explanation for the complex web of interconnected variables that have been obtained from the principal research question or hypothesis. This will ensure that the research arrives at the solutions to the proposed problem.

The survey was used as a main method for collecting data from the sample chosen for this study by the researcher. A structured closed ended questionnaire (Appendix 1) was developed based on the previous literatures to identify an adoption factors that impact the acceptance of e-services considering UAE context along with socio demographic factors. A questionnaire response was capture using a five point Likert scale ranging from strongly disagree=1 to strongly agree=7.

The questionnaire was pre-tested among 50 respondents (not participated in the main study) before the main study to ensure reliability and validity of the data collected. Included in the testing process were five analysts who are also experts in research that provided verification of the questionnaire. The questionnaire were tested for identifying clarity in concept, correspondence to the subject matter, showing consistency with other questions, sufficient inclusive, correctness and accuracy, specificity and preciseness, a reasonable range of variations and finally items in each concept which is applied specifically to the topic. Improvements in the questions were made after pretesting and before final administration, on the basis of suggestion and comments of the experts. The validation techniques are presented in Table1.2.

Table 1. 2: Steps in conducting the survey

	Stages	**Explanation**
1.	Design the questionnaire	Questionnaire will be designed based on previous studies. The focus of the questionnaire will be on factors that are mentioned in the study model.
2.	Conducting the pilot study	The main purpose of the pilot study is to ensure that the questions have been formulated in the right way and can be understood by the respondents. Any ambiguous and duplicate questions would be edited or removed.

3.	Distribution of questionnaire (Sample of Users)	Distribution of questionnaire by researcher amongst customers visiting selected government agencies. Post questionnaire online on government website.

The responses collected from the respondents were carefully analysed, tabulated and interpreted so as to evaluate the level of awareness of respondent in respect to any enquires the research may produce.

Descriptive analysis has been used as a statistical method with the percentage, frequency and the mean scale rating as an analytical factor. Here the status of government agent initiatives has been measured with frequency counts and percentage distribution. The level of acceptance as well as the level of completion of e-government initiatives has been expressed with respect to the mean scale. Also, the factors responsible for the successful e-transformation of electronic government and its impact on UAE development are also measured with mean scales. Structural Equation Modelling (SEM) was used to analyse the survey data. The main purpose behind using this technique is to identify the validity and reliability of each construct in the model. Finally, the e-government model of implementation can be formulated on the basis of the findings of the study in associations with good practices of e-government and its implementation in other countries.

1.8. Thesis chapters

Chapter 1 - Introduction: The Introduction chapter outlines the research questions, significance of the study, contribution of the study, brief research that will be used in the study. The introduction provide snapshot of the complete thesis that contains specific details on how the study will be performed.

Chapter 2 – Literature Review and The Study Model: This chapter provides pertinent information from relevant secondary sources. The researcher plans to collect information from updated sources pertaining to the field of study. In this case, all of the aspects relating to government e-services will be included in the literature review. Most importantly, this section provides adequate information to the issue at hand. The research identifies the major factors in the perception of end users towards e-services from the government in United Arab Emirates. This is important in

designing a study model that will be the framework of the study. The factors are identified and categorized in three sections, specifically, technical infrastructure, E-Marketing mix elements and education and experience.

Chapter 3 – Research Methodology: This section provides detailed research methodology such as research design, research philosophy, sampling, sample size, target population, data collection methods and ethical information and validity and reliability issues. The survey questionnaire is the research instruments used in this study is discussed in this chapter. The questionnaire was designed based on the experience of previous studies. In addition permission to conduct the study and ethical clearance also been discussed. This method focuses on measuring and evaluating the factors that affect the acceptance of e-services in the public sector in the UAE. GDRFA is the case study for this research.

Chapter 4- Data Analysis: The researcher will analyse and discuss the information collected from the sample of study that is considered as the stakeholders in e-services. Various methods of analysis will be used to interpret the data. Structural Equation Modelling (SEM) will be used to analyse the survey data. The main purpose behind using this technique is to identify the validity and reliability of each construct in the model. Training sessions in SPSS/AMOS will be undertaken prior to data collection.

Chapter 5: Discussion: based on the results of statistical analysis this chapter will be established. The discussion will be based on the results of testing the hypotheses of study. These results will be supported by the previous studies.

Chapter 6: Conclusion, Limitations and Recommendations

From the analysis and interpretation of data conclusions and recommendation are formulated. The study will answer the research problems and questions and provide closing recommendations for future research. The writing and revising of the whole dissertation is of vital importance in presenting the significance of the data collected from research sample. The dissertation embodies the significance of the whole study and present final conclusions to the study.

1.9. Summary

Factors affecting the acceptance the new technology are still one of the most important issues in the information systems filed. This issue became more complicated due to the considerable extension in the use of technology by different groups of stakeholders. The UAE can be considered one of the earlier Arabic countries that adopted the e-government. Thus, an investigation should be conducted to identify to which whether the services of e-government are accepted by the users. This study is conducted in the GDRFA to investigate the factors affecting the acceptance of e-services. The outcomes from this study are expected to provide information that will help improve the delivery of e-services from the government.

Literature Review and the Study Model

2.1. Introduction

A great deal of benefit to society has been provided by the advent of the computers and the Internet. The applications of technology have changed the way the world communicates. The importance of the World Wide Web has been acknowledged by its application in a number of fields including commerce, marketing, education and finance. The introduction of e-services in the public sector is one such modern-day application. These e-service applications have encountered many issues and much research has focused on approaches to fix these issues and problems in different arenas. The acceptance of these services is a critical issue in this domain. Given its importance, the present study has aimed to review the previous work focusing on e-services in public sector using a critical approach. A number of databases were used in order to identify the articles for this review, including "ABI/INFORM, the ACM digital library, as well as an index search of Government Information Quarterly, Information Systems Research, Journal of Management Information Systems (MIS), Management Information Systems Quarterly, Organization Studies, Organization Science, Public Administration Review and Social Science Computer Review". Research was conducted to identify articles published since 1990 that presented the following key words 'e-services', 'e-application', 'e-governance', 'e-governance UAE', 'information technology UAE' technology adoption theories', 'e-service UAE' and 'factors influence e-services adoption' In order to develop a relevant review, the journal issues of the major Information Systems (IS) journals from January 2001 to Aug 2012 were reviewed. The following section outlines the literature review.

The following section outlines the literature review:

- First and second section presents concepts and definition of the chosen constructs.

- Third section presents the different models presented over the years with respect to consumer behaviour and finally technology adoption models.

- Fourth section discusses the model in the e-governance context.

- Fifth section gives the theories of success and adoption models.

- Section six and seven discuss details of application of the TAM model.

- Section eight presents insight into TAM in current research.

- Section nine to eleven provides an overview of e-applications in Arabic countries.

- Section twelve discusses specific factors affecting e-services in UAE context also is discussed.

Section thirteen identifies other models which have been used to substitute the TAM and by reviewing previous studies the present study identified appropriate research gaps in the relevant literature and develops theoretical framework and hypothesis.

Before moving on to the empirical studies, it is imperative to understand the conceptual definitions of e-government from the perspective of different authors. The following section critically analyses the definitions of e-government services. .

2.2. Definitions of e-Government

The growth of World Wide Web, information technology application and modern day advanced computing technology has been tremendous over the last decade. This is due to the recent advancements in information technology (Castells, 1996; Rogerson & Fairweather, 2003). There are many researchers who considered different applications of the internet in functioning in the public sector and the government / electronic-government is one which allows governments worldwide to develop trust among their residents and to provide quality services. These services are presented with a goal of decreasing cost and effort with the view of sharpening the image and effectiveness of the government (Howard, 2001; Prins, 2001; West, 2004).

Most governments have been perceived as slow moving bureaucracies that are reluctant or incapable of adapting to new business models and technologies. This perception can be changed once businesses and the citizens involve themselves with

governmental agencies, however this involves significant clerical activities that could result in making the whole process perplexing and inconvenient. A clear understanding of the concepts and definition of e-Government could help to derive understanding of e-service possible (Buckleys, 2003).

There are innumerable definitions underlying the concept of electronic government based on the views and opinions by many experts as most of them propose the terminologies as fresh in the current discipline of knowledge, there is no single definition that has gained universal acceptance. The substance of e-Government comprises of a comparatively short history of 15 years (Persisteras & Tarabanis, 2004). The word e-Government was discovered to create meaningful substance, where 'e' indicates electronic manner of producing and distributing services. Understanding the terminology of government and its concepts involved helps to define e-Government.

According to Pardo(2000),a government is identified to be a mixture of structural hierarchy, identification of goals and implementation of relevant function .This function which comprises of various phenomena should be considered like the organization, in relation to agencies, authorities and cultures (Pardo, 2000). With the increasing growth of technology use more recently, the internet, there is indeed increased anticipation by most of the citizens which has pressurized governmental agencies to perform at their best and provide up to date information for each specific department. Governments around the world improve their functionality and provide solutions for government by promoting effective e-Government services are now adopting this growth in Information and communication technology services (West, 2004).

While identifying the need to use electronic services in a government functioning context it is important that the researcher presents the different definitions used to define an electronic government and thereby arrive at the most suitable definition for this research.Ndou (2004) attested that the cause of failure for some e-Government initiatives is because of the way they have been defined. He identifies that the complexity involved in e-governance is not identified due to the narrow focus which does not take into account a wide range of dimensions which are required to be implemented. This type of governance makes use of technology available in the form of ICT with a specific focus on the internet as the medium to promote the

governmental function (OECD, 2004). The World Bank Group (2003) defined e-Government with respect to usage of ICT for advancing competency, quality, proficiency and accountability of government and focussing on the different attributes of governance wherein adoption of these technologies will have a positive impact. It can be identified that from the above discussion the definitions which have been identified present the ultimate outcome or benefit of implementation without giving the measures by which one can get there.

The delivery of any information with regards to functions or goals of the government as well as the services provided by the government to the citizens through the use of electronic measures like the internet and the World Wide Web is defined to be e-government (Yildiz, 2007). Electronic government was defined by Keeson & Edvardsson (2008) as the use of information and communication technologies (ICTs) in public administrations, combined with organizational change and new skills, in order to improve public services and democratic processes and to strengthen support for public policies.

Any literature, which has been proposed in the past, has looked at e-government as an argument, which focuses on broad aspects without identifying the narrow intricacies. In the following section, the author attempts to investigate and interpret different dimensions of e-government initiatives from holistic perspectives focusing on other side of government such as businesses, citizen and employees.

Few researchers while defining e-Government stressed the relationship between the government and its citizens. Layne and Lee (2001) cited that electronic government denotes the degree of usage of technology particularly the internet by their government to provide different types of services and deliver information to their citizens, employees, other public sector agencies, any business partners that the government may have and finally the state and central government. By adopting an E-government it is observed that government agencies make use of information technology resources to provide easier and more customized solutions to their citizens in the forms of: (a)a government-to-citizen relationship (G2C), (b) a relationship between a business run in the locality and its relationship with the government (G2B) and (c) an existing relationship between the local government entities and the central government (G2G).

E-Government is defined as managing the public sector using a specialized strategy for decreasing costs and layers of business procedures in order to discuss with citizens and businesses efficiently (Ebrahim & Irani, 2005).Tsai *et al.,* (2009) presented E-Government as an electronic business that is distinct and includes specific objectives and attributes. It is actually practical to insist that the government provide e-Government services to furnish information to its citizens and businesses via the internet (Ebrahim & Irani, 2005).

The background of e-Government involves six common aspects as follows (Guangwei Hu, *et al.* 2008):

- Available at all government levels;
- Engages majority of the citizens and business;
- Authorization and delivery of information in public services;
- Integrated activity involving many usage methods of internet, web sites, system integration and interoperability;
- Prioritizing quality and security in addition to providing services;
- It is possible to recall it as a main strategy or access.

The World Bank defined e-Government in 2010 as, "usage of information technologies by government agencies such as WANs, the internet and mobile computing that have the ability to interact with citizens, businesses and other arms of government".

The use of these technologies in government is vital in delivering a number of different benefits. Included in these benefits are improved service quality and delivery to the citizens directly, improved interaction between the commercial and industrial entities and the government, transparency of operations, information access presented to the citizen about the empowerment of citizens and finally better management of governance amongst the different governmental organizations (Sang *et al.,* 2009).

The definition of e-Government arises either from a political perspective, a technological perspective, a citizen's perspective and an administration perspective. The definition arises from different spheres targeting on various values. E-Government was defined by United Nations (2010) as utilization of internet and World Wide Web to deliver government information and services to the citizen. The

above definition focuses on technological perspective in relation to political outcome without providing transparent vision of this concept. Nordfors *et al* (2006) has identified the need for the classification of e-Government into three different areas as: e-democracy, e-service provision, and e-management and for it to take into consideration many aspects especially the outcomes. Ndou (2004) has furthered this by classifying major dimension of e-Government as: e-administration (used for automation and the computerization of departmental administrative tasks); e-citizens (used to understand connections and interrelationships between governments and citizens); e-services (delivering automated services); and e-society (enabling relationships and interactions to take place beyond boundaries), among the public agency and the private sector and civil community in general (See Figure 2).Although as has been discussed throughout this section there are different definitions of e-government, looking at e-government from a different perspective which includes political, technological, citizen's and an administration perspective, for the purposes of this study the definition of Nordfors *et al* (2006) has been adopted, whereby the authors have classified e-government into a different perspective. This definition would be applicable to present study due to the research question and setting posed. The following model depicts the three major dimensions of e-government:
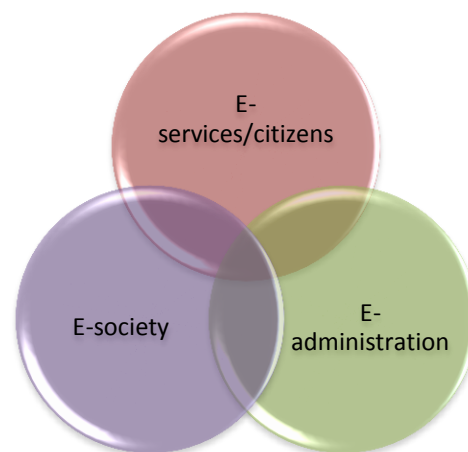
Figure 2. 1: E-Government Domains

Source: Adopted from E-Government domains (Ndou, 2004, p.5)

The figure 2.1 presents the three different domains of E-Government as proposed by Ndou (2004). These domains include E-society, E- administration and E- services which all have overlapping domain.

In recent years, government are reaching greater heights by implementing electronic service (e-service) infrastructure and organizational capacity for integration of transacting official businesses online (Johnson, 2007). Business organizations that prefer dealing with unique and innovative services adopt e-services which distinctly aid in service design strategies and new service development. The internet has spread across the globe and business organizations, utilizing e-services can definitely provide for transactions of their business needs and new revenues efficiently (Liu, Shen & Liao, 2003).

Since the focus of study is to understand the e-services of government sector, it would be appropriate to critically analyse the conceptual definitions of e-services. Although there are different definitions of e-services identified under different background, the current study reviews from e-business to e-service and in particular the definitions from its applicability of government services. The following section provides an overview of e-service concept and stage models.

2.3. Concept of Eservice

The concept of service and e-business are indistinguishably interlinked. Successful self-service business enterprises exist that helps inhabitants to hunt information and purchase products (Earle, 1999). These kinds of self-service business are principally focussed on increasing sales and e-commerce. Today, most people particularly the younger generation prefer to avail themselves of e-mail services via Internet for their queries and support for purchasing products and services (Jha, 1999). This undoubtedly indicates that today's generation are more attached to the Internet and prefer accessing their required services at their convenience via this method. This purposely adds value to Internet services in this web based world. There are other service providers who utilize e-services to distribute their core services along with providing customer support such as the technical support. Due to the new technological advancements, customer expectations are high and demand for individualized services. Many organizations adopt e-services, primarily adopted by banks, airlines, car rental organizations, management consultants and educational institutions as these organizations deal comprehensively with their many customers' needs (Forrest & Mizerski, 1996).

The significant concern of carrying out E-service research is to receive and provide services to the business organizations and its external customers respectively (Croom & Johnston, 2003). Several authors have analysed and provided the conceptual definitions of e-services. E-services weredefined by Zhang, Prybutok & Huangm, (2006) as the centralization of processes, policies, procedures, tools, technologies and resource efforts of a business to facilitate customer's needs through the Internet. This definition of E-service focuses more towards business perspective rather than service point of view. In Information System (IS) research, E-service is increasingly growing as an important topic presenting a similar implication to e-Government, still there is no agreeable definition for e-services as stated earlier. The concept of e-services is indistinguishably merged with electronic business (Zeithaml & Bitner, 2000). The earlier IS literature studies have provided many formulations of e-services with different focuses in defining e-service (Zeithaml & Bitner, 2000; de Ruyter, Wetzels & Kleijnen 2001; Ghosh, Surjadjaja & Antony 2004; Rowley 2006; Rust & Lemon 2001; Turban *et al.,* 2002; Salaun & Flores 2001). For instance, De Ruyter *et al* (2001) emphasized the significance of e-service in self-service circumstances. Many customers preferred customized services through the internet and even the service providers who try to meet their customer's needs are distributing services and customer support through the internet. Based on their formulation, e-services are synergistic, content oriented and internet based offering customers, services with technology support and systems. Service providers provide this to the customer relationship is the primary focus in e-services concept (de Ruyter, Wetzels, & Kleijnen 2001).

Rust & Lemon (2001) proposed a concept of e-services as either self-service or information service that mainly looks for data related to e-services. As observed by Rust and Lemon, the internet can be stated as a useful medium for interactive communication between buyers and sellers as e-services majorly focus on information communication rather than an interactive communication. E-services enable the exchange of information and values through the internet (Zeithaml, Parasuraman & Malhotra 2002; Salaun & Flores 2001; Kim, Kim & Lennon, 2006).Ghosh *et al* (2004) emphasized the significance of information in e-service.

E-services have better response rates to aid customer services and meet their expectations (Salaun & Flores, 2001). In comparison to the traditional offline

method, e-services help customers to have unique experiences as they follow interactive streams of a transaction. As discussed earlier, this interactive communication managed by e-services helps the counterparts to understand the customer's information and an expectation that thereby helps the customer to perceive and analyse the required quality as it could impact on the conceptualization of customer satisfaction information (Rust & Lemon 2001; Salaun & Flores, 2001).

In consideration with the aforementioned concepts of e-service, Rowley (2006) broadly defined e-services on the basis of concepts of service to Hoffman &Bateson (1997). Rowley (2006) defines e-services as "deeds, efforts or performances whose delivery is mediated by information technology. Such eservice includes the service element of e-tailing, customer support and service delivery". Reynolds (2000) examined electronic service or e-service as web-based services, which are transported through a medium called the internet. De Ruyter *et al.* (2000) states that e-services are designed in an interactive, content oriented manner and internet based customer services are impelled by customers and interlinked with associated organizational customer support processes and technologies and this is achieved with an objective to stabilize customer-provider service relationship .Surjadjaja *et al.* (2003) has declared that the e-service concept is not the sequencing of the words 'electronic' and 'service' however can be defined as "the provision of service over electronic networks" Rust & Kannan (2003).This has been furthered by Wang *et al.,* (2005) who defined e-service as "the information and services provided to the public on government web sites".

As can be seen by the interplay of definitions in a transparent e-Service operation, either a part or the overall interplay between the service provider and the customer happens only because of the Internet. It is observed that there is no agreeable definition of e-service as indicated in previous studies. All the definitions are not providing a clear premise rather their definitions are more reflected on the significance of e-service rather its actual use from the perspective e-government. The definition by Rowley (2006), was more applicable to e-government sector as he defined the delivery as "e-tailing, customer support and service delivery" rather business. In this context the present study adopted the Rowley (2006) definition for e-service.

2.4. E-services Stage Models

It is evident from the history of e-government that various e-government solutions have been adopted by most of the governments on a global scale since the 1990s ranging from transactions to networked services, e-participation, that flow from government to citizen. Despite the increased trend of adopting e-Government measures, it is imperative to determine the steps in e-Government so that the specification of each step underlying the e-Government adoption could be attained. This also helps to determine the difficulty in comparing and understanding the results obtained from various studies. There are many researchers and institutes who have suggested various stage models and few of these similar stages were christened differently (Tan et al., 2007). Models include the Australian National Auditing Office (ANAO) model (1999), The Swedish Agency for Administrative Development (SAFAD) model (2000), Layne & Lee model (2001) which have four stages ,Hiller & Belanger's model (2001), Siau & Long model (2005) and United Nations Public Administration Network(UNPAN's model) (2003) have five stages while Deloitte's model (2001) has six stages.

The United Nations Department of Economic and Social Affairs (UNDESA) emerged with the stages providing for a model of e-Government services. They identified the four stages as emerging, enhanced and transactional and connected in developing online services (United Nations, 2012). In 2012, the United Nations report incorporated 193 countries worldwide including the UAE (United Nations, 2012) presented a model which comprised of four stages as presented earlier and this service was basically from static information such as links to ministries, departments, archived information to unidirectional government to citizen. This was joined by the United Nations Department of Economic and Social Affairs (UNDESA) who developed the steps concerned with the development of e-Government services. These services were adopted throughout the European countries and while the UAE ranked 0.7344 under emerging economy. The UAE has initiated numerous e-government programs and has been at the forefront of adopting advanced technologies to enhance the efficiency of governance. There are number of factors that affect the services provided by the e-government such as support, security, technical infrastructure, and trust. It has also been observed that research

conducted has identified the relationship between the government and its citizen with respect to electronic services often depends on a number of different theories. The next section examines the different theories of e-government adoption.

2.5. E-Government Adoption

There exist many internet service adoption approaches. In general the organizational decision to utilize IT services for supporting the functions of the organization including decision making and business management is referred to as adoption in IT sector (Thong & Yap, 1995). The six stages of IT system implementation are initiation, adoption, adaptation, acceptance, use and incorporation (Kwon & Zmud, 1987) and the above discussed scenario is one of the mentioned stages. The following section provides a brief overview of various adoption models used for IS technology.

2.6. Theories of IS System Success and Adoption

In this section theories and models that are developed with regards to distinct disciplines and are utilized for predicting, explicating and understanding experience and adoption by individuals for new products and technologies.

2.6.1. Information systems success model

Although there are innumerable researchers conducting studies into Information Systems (IS), the concept of "IS success" is not evident. This is due to mixture of issues. Attaining success is not an easy task as it depends on various aspects to be analysed at various levels such as technical, individual, group and organizational apart from depending on numerical ratios such as economic, financial, behavioural and perceptual (Molla & Licker, 2001). The information success model was first developed by DeLone & McLean (2003) in the year 2003, while the e-service model was developed by Croom & Johnston (2003). Both these models intensify internal customer services through e-procurement. In2006, Zhang *et al.,* (2006) carefully analysed the factors that affect the e-service transaction and these factors were used to develop a framework that was developed by Johnson (2007) for the purpose of pricing government e-services. This task model was related to the updated DeLone

&McLean's (2003) Information Systems Success Model. Though there are several models on IS success, the model developed by DeLone & McLean has been widely used by several researchers. This e-servicesmodel was formulated to provide an e-services success measurement framework that comprises of three phases which are design, implementation and the results phases. The resulting   framework can be seen in Figure 2.2 analyses the five dimensions of quality that is system quality; information quality; e-service quality; customer satisfaction; and net benefits influencing the success of application of e-services.

DeLone & McLean Information System Success Model

DeLone & McLean (2003) identified a model of the relationship between factors contributing to the success of information systems including "system quality, information quality; use; user satisfaction; individual impact and organizational impact" thereby developing the Information System Success Models depicted in the Figure 2.2.
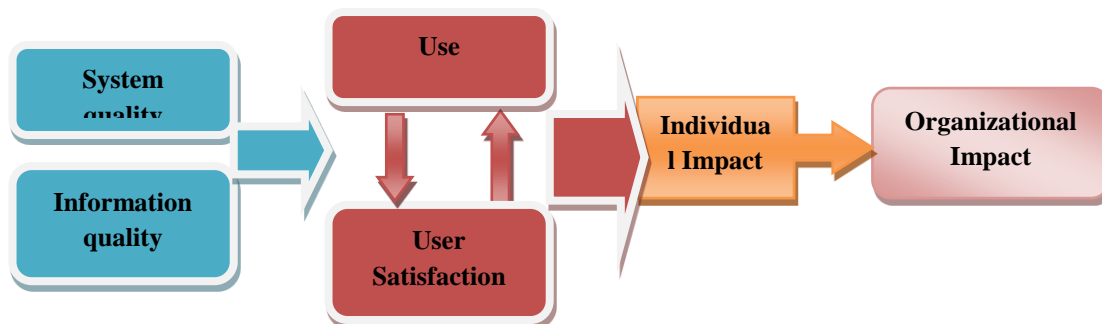
Figure 2. 2: Information System Success Model

Source: DeLone & McLean (1992)

It was observed that the overall degree of system quality and information quality was associated with degree of use and user satisfaction. These two facets were most important in identifying the impact on an individual and the ultimate impact on an organization.

DeLone & McLean (2003) presented an update to their IS success model as can be identified in Figure 2.3 depicting the updated model that focuses on the primary changes required considering the quality and service quality. They defined their model dimension as follows:

- Systems quality: It is determined by flexibility, accessibility, reliability, response rate and utility.

- Information quality: It is determined by integrity, capability of understanding, personalization, relevance and safety.

- Service quality: It is determined by commitment, sympathy and sensibility.

- Use: It is determined by nature of use, navigation patterns, traffic and number of executed transactions.

- User satisfaction: It is determined by frequent purchases, frequent visits and user surveys.

- Net benefits: This is identified by impact of overall cost reduction, expanding available markets, improving the overall sales, reducing the cost and finally improving the time in which the task is completed.
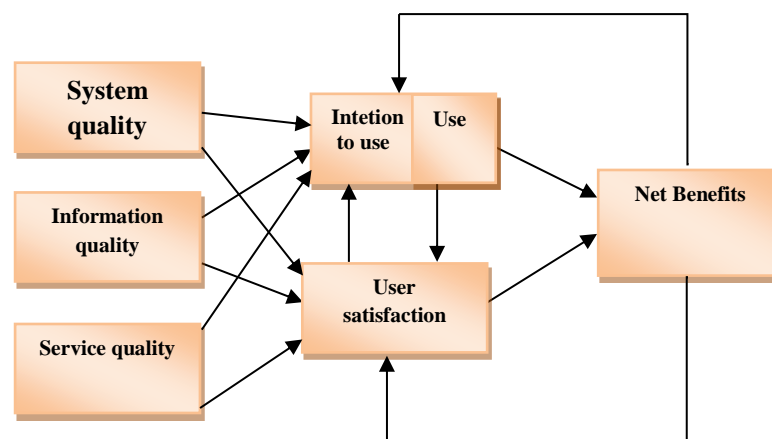
Figure 2. 3: The updated DeLone & McLean's 2003 Model

The main feature of this model includes a new factor impacting the success of IS apart from Information and System quality which is Service Quality. If the degree of net benefit was more than the degree of intention to use and user satisfaction was also more and vice versa.

There are a number of studies supporting the updated DeLone & McLean model. It has been observed that apart from system and information quality, other behavioural factors also affect the usage adoption as observed by Davis et al (1992). A relatively high content in psychology has supported general motivation theory to describe this

behaviour. Vallerand (1997) introduced an exemplary review on the basic principles underlying the theoretical foundation. Likewise, Davis *et al.,* (1992) enforced this theory to study new technology and usage. For many organizations, it could be either public or private, investing in technology can be costly and any failure in its usage can lead to strong financial loss. The scenario was acknowledged both in developed and developing countries particularly more significant in developing countries like the UAE and India where there is low usage which has caused failing levels of expectation and the frequent occurrence of problems (European Commission, 2005; Parasuraman *et al.,* 2005; Sumak *et al.,* 2009). To overcome this problem of adoption, several research projects were carried out for evaluating and quality checking of e-services and these studies have used technology adoption theoretical model to identify the different factors that adopt and resists its usage. As the former discussed the e-service success model, and the present study assesses the behaviour of citizens on e-service adoption, it would be appropriate to study the behavioural based theoretical models. The following section critically reviews the different adoption models.

2.6.2. Adoption Model

There are numerous models that have been developed with respect to the adoption of technological innovation in literature, usage and implementation of both in e-commerce and e-Government. Constructs which are associated with these scenarios have been assessed and in particular the review focuses only those constructs that have been used in E-government literature. Since the present study focuses on adoption of information technology from user perspective, the following section discusses the technology adoption theories based on behavioural model.

2.6.3. Technology (Behavioural) Adoption Theories

The user behaviour with respect to technology has been widely examined in literature. It is observed that in IS literature, different models and theories have been identified with regards to user behaviour with the aim to promote forecasting of user behaviour (Venkatesh *et al*, 2003). In areas of IS, the study and use of adoption is regarded as a mature area of research (Venkatesh *et al.,* 2003; Benbasat &Zmud, 1999; Hu *et al.,* 1999) as several studies have been conducted to test this model.As can be observed over a period of nearly thirty years, there have been many

researchers that have adopted, modified and validated adoption theories to understand and determine technology use and acceptance (Venkatesh *et al.,* 2003; Benbasat & Zmud, 1999; Hu*et al.,* 1999). The use of information technology is primarily an intentional behaviour which is compelled by the conscious decisions to act (Guinea &Markus, 2009). It is not surprising that studies adopting information technology could utilize intention-based models that include the following:

- Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975);
- Theory of Planned Behaviour (TPB) (Ajzen, 1991; 1988; 1985; Ajzen & Fishbein, 1980);
- Technology Acceptance Model (TAM) (Davis, 1989; Davis *et al.,* 1989); and the
- Diffusion of Innovation Theory (DOI) (Rogers, 1995; Venkatesh*et al.,* 2003).

The following section critically analyses the different theories of Behavioural Adoption with the aim to identify the best theory to test the present model in the UAE e-government service context.

2.6.3.1.   *Theory of Reasoned Action (TRA)*

In 1980, Ajzen & Fishbein (1980) proposed Behavioural Theory. The model is considered to be the foundation theory that is related to attitudinal behaviour and in widely utilized for academic and business research (Ajzen & Fishbein, 1980). There are two determinants related to the Theory of Reasoned Action (TRA) such as intention attitude related to behaviour and subjective rules associated with behaviour. This theory was formulated to understand and forecast human behaviour and is a Generalized Research Intention Theory (Ajzen & Fishbein, 1980).The main aim of this theory is to form the basis on which IS researchers can identify with the different factors which are associated with innovation promotion in information technology use (Suh & Han, 2003). The theory of reasoned action has been a primary base for many literatures that are coherent to technology acceptance.
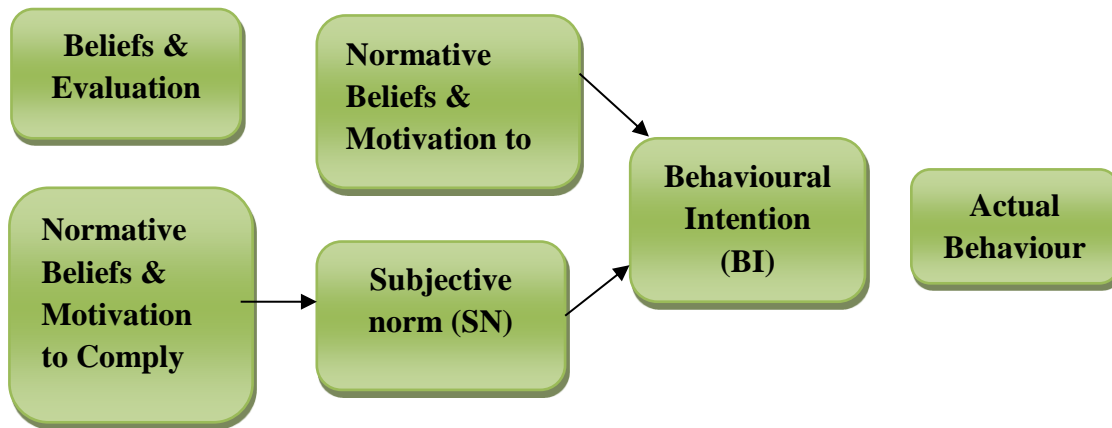
Figure 2. 4:A Theory of Reasoned Action (TRA) Model

Source: Ajzen& Fishbein (1980)

The overview of the theory of Reasoned Action as proposed by Ajzen & Fishbein (1980) is described in the above Figure 2.4. It is evident from the model that there is an impact on two distinct determinants like attitude for action and subjective norm due to various factors like behavioural outcome, assessing desired outcomes, normative beliefs and motivation. The impacted factors are observed to be influencing an individual's intention thereby impacting their behavioural pattern. This theory was limited to its correspondence as it is based on the assumption that behaviour is under volitional control and any habitual and irrational decisions that is not consciously considered cannot be explained through this theory (Ajzen, 1985; Sheppard *et al.,* 1988). To overcome this limitation of the theory of reasoned action a Theory of Planned Behaviour (TPB) was developed. The following section briefly highlights the theory along with its strength and limitations.

2.6.3.2.   Theory of Planned Behaviour (TPB)

In 1985, Ajzen proposed the theory of planned behaviour and was declared as a conservatory of TRA. The third determinants related to intention, known as perceived behaviour was proposed and developed into this model (Ajzen, 1985, 1991).In order to influence attitude and behaviour with respect to usage, norms and determined behavioural patterns the theory was proposed by Ajzen. In general, intentional behaviour is predicted by TPB. Though an enhanced framework of TRA of Ajzen (1985) predicted intentional behaviour, it is argued by Chau & Hu (2002) that when compared to TRA, TPB is more generalized. The main reason for the factor is the additional determinants obtained by behaviour control. Chau & Hu

(2002) enhanced the framework developed by Ajzen (1985), by combining the theory of planned behaviour with the more general frameworks of relations by considering belief, attitude, behaviour and intention.

Figure 2.5 gives a clear description of the Theory of Planned Behaviour Model which was modified by Chau & Hu (2002).This model presents modifications to the proposed TRA model by indicating that apart from attitude toward behaviour and subjective norms (SN), behavioural intention is impacted by an additional factor such as Perceived Behavioural Control (PBC). Later, Eagly &Chiaken (1993) presented the variables that obtained moral requirements which are self-identity and habit and even though these forecast the intention and behaviour in relation to the TRA model, it does not reveal planning of people and its work mechanism. Taylor and Todd (1995) followed this with the decomposed TPB to furnish ease and better clarity of behaviour. The following section provides the theory formulated by author.
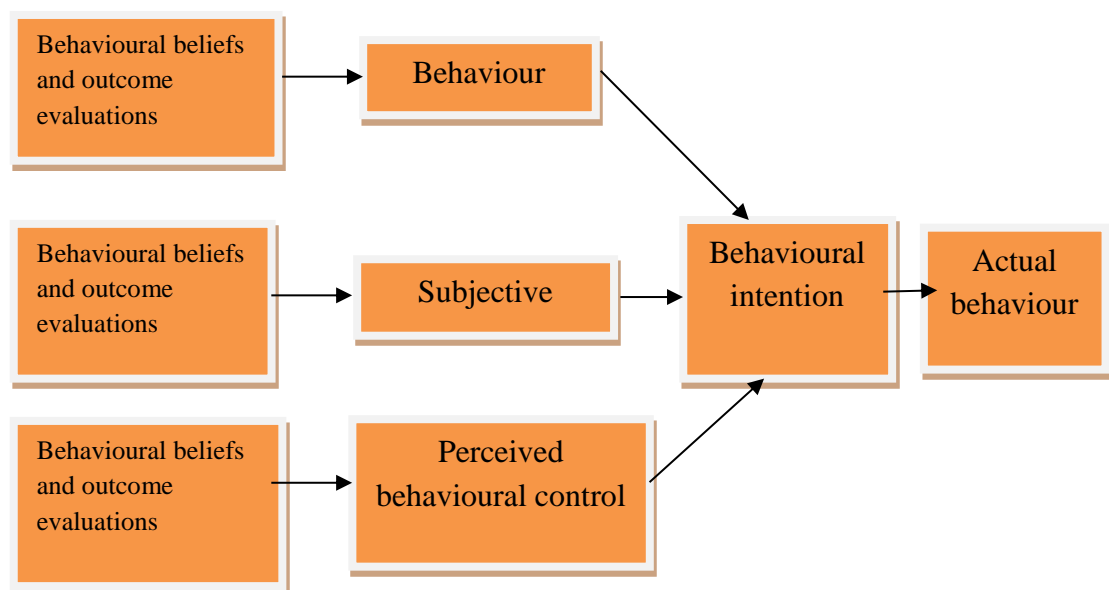
Figure 2. 5: The Theory of Planned Behaviour (TPB) Model

Source: Adopted from Chau & Hu (2002)

2.6.3.3.   *Decomposed Theory of Planned Behaviour (DTPB)*

The Decomposed Theory of Planned Behaviour is analysed through two alternate efforts formulated by two various studies of Taylor & Todd (1995) and Pavlong & Fygenson (2006). Taylor and Todd (1995) contributed true evidence and this was

followed by Pavlong& Fygenson (2006) who contributed a revised version. The Theory of Planned Behaviour (DPB) is an improvement theory of reasoned action (TRA) developed by Ajez (1985) which was extended by Taylor & Todd (1995) by proposing decomposed TPD in to detailed components. The DTPB theory enhances the theory of planned behaviour by adding elements from the diffusions of innovation (DOI) aspect.
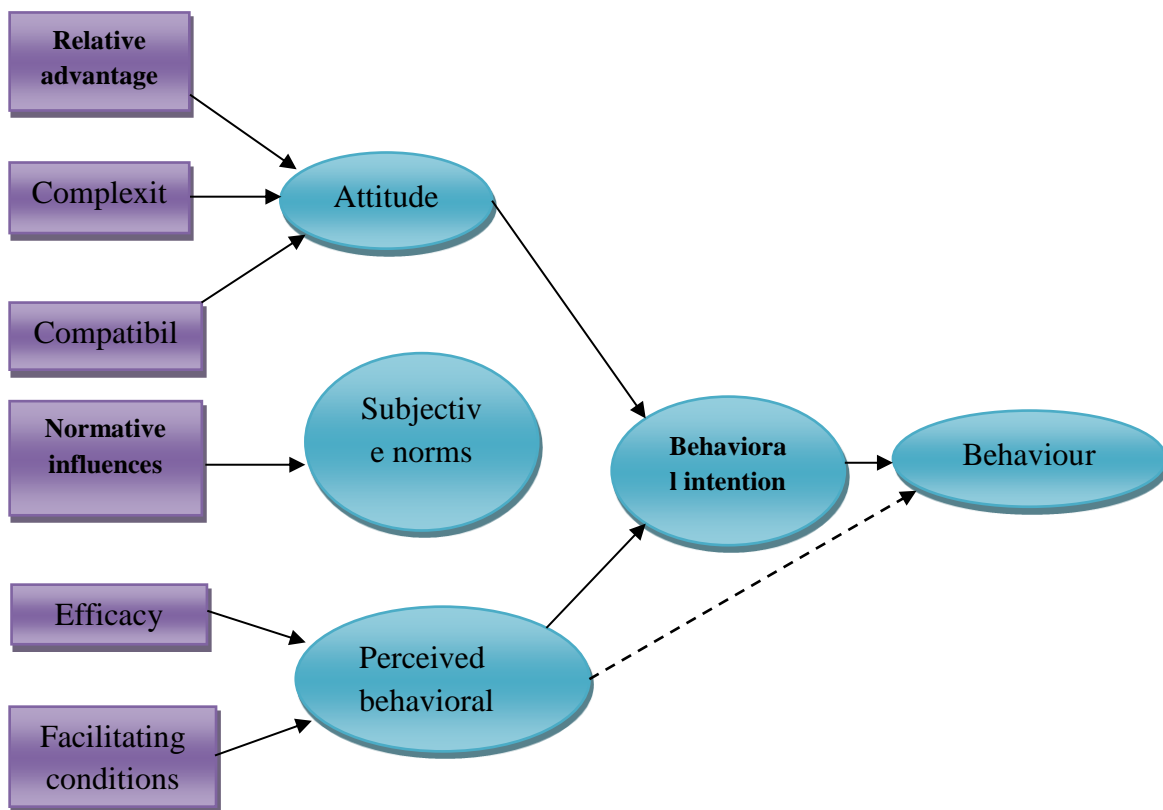
Figure 2. 6: Theory of Planned Behaviour with belief decomposed

Source: Taylor & Todd (1995a)

Figure 2.6 (See above) depicts model that includes measures of control belief and perceived behavioural control. While the model by Chau & Hu (2002) presented the facets impacting behavioural intention, it did not present a decomposed view of different behavioural beliefs and outcome evaluations. It is observed that attitude is impacted by relative advantage, complexity of task and the degree of compatibility. Normative influences are found to impact subjective norms and efficacy and

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facilitating conditions are found to impact perceived behavioural control. It is to be noted that in the study by Taylor & Todd (1995a) only behavioural intentions were studied and there was no direct impact on behaviour.

Taylor & Todd (1995a) during the process of decomposition largely relied on past research which generated a persistent relationship among different innovative characteristics such as compatibility, complexity and relative benefits and the decision to adopt particularly when utilizing information technology (Moore & Benbasat, 1993, cited in Taylor & Todd, 1995a). The authors believe in decomposed TPB with one dimensional belief structures that they furnish better diagnostic values for managers and provide suggestions on beliefs focussed to influence system utilization.

2.6.3.4. *Innovation Diffusion Theory (IDT)*

Due to the high intensity of technology penetration, this theory has been considered by many in different sectors as it describes and studies the innovations in areas like agricultural tools and organizational ending to information systems (Lu *et al.,* 2003). The Innovation Diffusion Theory underwent various modifications until the most widely accepted model was identified by Rogers (1962, 1995, 1983), whereby explains the various adoption patterns to describe the mechanism of adoption and facilitating the prediction of successful new invention in the Diffusion of Innovation Theory. Chwelos *et al* (2001) states that this view can be overlooked to cover 'technological' point as it has the ability to identify concepts, entities and techniques of information technology and has been utilized as a theory for many Information system (IS) research projects.

There are five factors related to innovation that have been identified in literature (Rogers, 1995):

1. The relative rate of advantage, which is identified by understanding the rate at which innovation is identified.

2. Overall compatibility which is identified by the method by which innovation is expedited in the organization. This is related to the type of company values, their previous agenda and the overall requirements which are needed by any adopter.

3. Complexity of the process is identified by the difficulty the organization faces in order to attain knowledge on the aspect following which there is implementation.

4. Piloting of the process where the innovation is allowed to undergo trial within a section of the organization to understand the changes in terms of benefits and hazards.

5. Documenting of the innovation by observing its process. In this it is seen that the innovation can be identified by a concrete performance indicator.

Previous research studies include the works of Brancheau & Wetherbe (1990) who have evaluated the Innovation Diffusion Theory at an individual level. In addition, Huff and Munro (1985) identified that the much improved Rogers' model yielded a good description of the IT assessment and the process of adoption. Roger's model is appropriate to both in IT implementation and organizations also, though they were actually targeted with individual level adoption (Attewell, 1992; Brancheau & Wetherbe, 1990). There are many other studies in application to diffusion theory (Attewell, 1992; Brancheau & Wetherbe, 1990; Kwon & Zmud, 1987; Tornatzky & Klein, 1982).

2.6.3.4.1.   The Rogers (1995) Five StageModel:

The five general characteristics of innovation are "relative advantage, compatibility, complexity, and observability and trial ability" as proposed by Roger and there have been numerous studies that manifested to constantly influence adoption. With regard to IT, Moore & Benbasat (1991) made use of the Roger's innovative characteristics and included within it many attributes comprising the ease of usage, image, clarity, result demonstrability and voluntariness which could be utilized to review individual technology acceptance and only when an individual open to innovation and its characteristics the knowledge develops. In turn, Persuasion is a result of an individual developing favourable and unfavourable attitude towards innovation. The engagement of activities by an individual results to either implement or reject the innovation, this is where the decision occurs. When an individual makes up his mind to use innovation, implementation occurs. Finally, confirmation is when an individual prefers fortifying for a previous innovation and reverses an earlier

decision to adopt Diffusion of Innovations (DOI) Theory which explains the innovation decision process, aspects depicting the adoption rate and adopters classification.

The reason why attitude is important in order to accept or reject decisions is not provided with evidence (Karahanna *et al.,* 1999). It is also advocated by (Chen, 2002) that the reason for involving innovation in the process is also not clearly explained. Various models have been examined with respect to adoption of technology. The following model which is a unified model was developed by examining the benefits and the constraints of the different models discussed. The explanation of this model is detailed below. The explanation presents the working of the model, the associated benefits and the probable limitations.

2.6.3.5. *Unified Theory of Acceptance and Use of Technology (UTAUT)*

According to Venkatesh *et al* (2003) there are eight models related to IT acceptance and they are as follows:

1. Reasoned Action Theory which was proposed by Davis *et al*., (1989)

2. TAM (Davis 1989)

3. Model of Motivation (Davis *et al*., 1992)

4. Planned Behavioural Theory (Ajzen, 1991)

5. Combination of TAM and TPB (Taylor & Todd, 1995)

6. PC Utilization (Thompson *et al*., 1991)

7. Diffusion of Innovation (Rogers 1995)

8. Theory of Social Cognition (Compeau & Higgins, 1995)

It is observed that the Unified Theory Model combines the main features proposed by the above eight models and identifies four main aspects which are directly related to the intention of a user. It is observed that these include performance expectancy, effort expectancy, social expectancy and the required facilitation. All of these factors are found to be identified as direct antecedents of tine information system related

behaviour of a user (Venkatesh *et al.,* 2003). This model is considered as an holistic, as it accounts the demographics of the user including age, gender, level of experience and willingness to use (voluntarism) which was failed to account in previous adoption models(Venkatesh *et al.,* 2003).
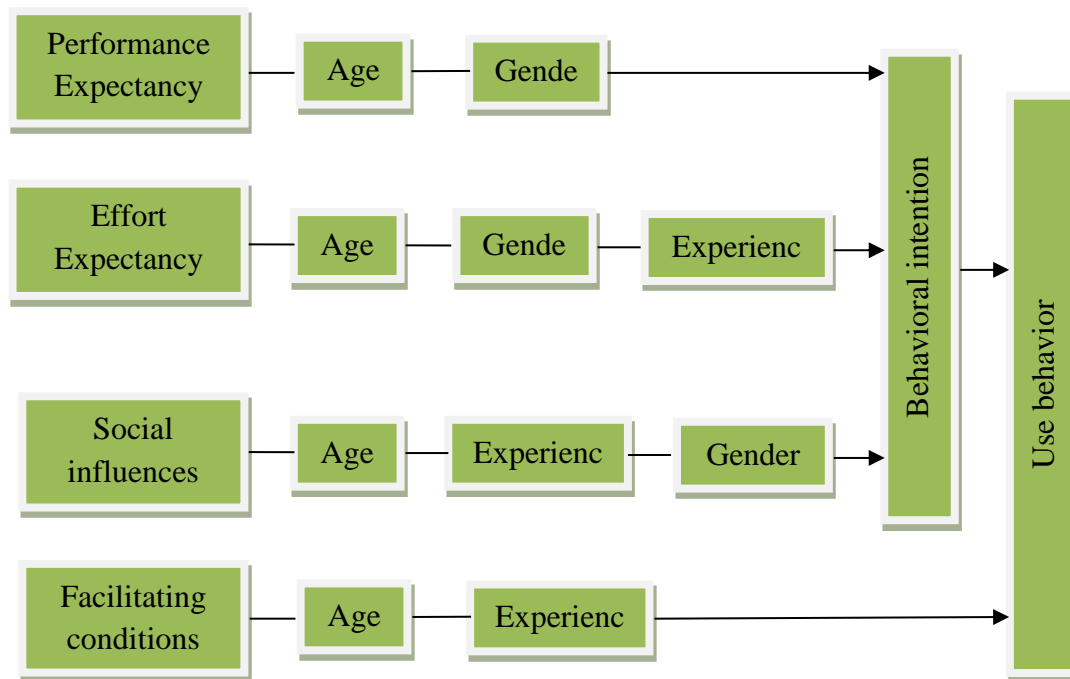
Figure 2. 7: The Unified Theory of Acceptance and Use of Technology

Source: Venkatesh et al (2003)

The above figure 2.7 explains the three distinct features associated with this model, there are: Determinants, modifiers and results. The end result that the model aimed at arriving at is the user behaviour. Some demographics were identified to be modifiers including age, gender and experience. Another factor which acted as a key modifier is the voluntariness of use. The three main determinants impacting the behavioural intention of individual are performance expectancy, effort and expectancy. Apart from them 'facilitating conditions' was a determinant which directly impacted user behaviour.

The authors speculated that four of these play an important role in determining the user acceptance and usage behaviour. On the basis of user acceptance literature and the outcomes of models' it was observed that comparison, attitude, computer self-efficacy and anxiety were hypothesized so that they do not directly impact on

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behavioural intention. The constructs which directly show no impact on the intention of the user with respect to technology include all four factors of UTAT despite the model presenting empirical evidences of a higher degree of association with intention to use (identified as a result of a high R square value) (Venkatesh *et al*., 2003). There are studies that describe the IS adoption behaviour which is confined to validation, application and replication for its power to predict IS.

Although the TAM is an extension of TRA, the author reviewed this section separately, as the focus of this study was based on the TAM Model. The following section discuss in depth on TAM from both theoretical and empirical perspective. TAM evolution, limitations and strengths also discussed in the following section.

2.6.3.6.   TAM Model

The Theory of Reasoned Action was expanded and extended to present the Technology Acceptance Model. This was carried out by Davis (1989) to improve upon his earlier model. TAM explains the acceptance level of individual to information technology (Davis, 1989). The objective of TAM is providing a description of determinants of computer acceptance among the users. The two of the technology acceptance measures along with attitudes of TRA substituted TAM. Firstly, it is the perceived usefulness (PU) that denotes to the rate of an individual believing to use a particular system that improves his/ her job performance. Secondly, ease of use (PEOU) denotes the rate at which an individual believes in utilizing specific system that would be free from efforts (Davis, 1989). The TRA's subjective norms are not subjective to TAM determining BI. Figure 8 below presents the original theory behind TAM that comprises the attitude elements. On the basis of practical evidences, the concluding model excludes the attitude as it does not concentrate on the effect of PEOU intensively and PU→BI was regarded with much importance (Davis *et al.,* 1989). The Theory of Acceptance Model assumes that PU is a characterized by PEOU, as when others are equal, it makes easier to use technology. Compatible with TRA, TAM insists the effect of external variables to be resolved by PEOU and PU.

The model proposed by Davis *et al.,* (1999) identified Technology Acceptance Model as shown in Figure 2.8. This model identified that actual use was dependent

on the behavioural intention of an individual which was in turn impacted by the attitude towards usage. The two different attributes which determine the attitude towards usage were Perceived usefulness and Ease of use which is moderated by external factors.
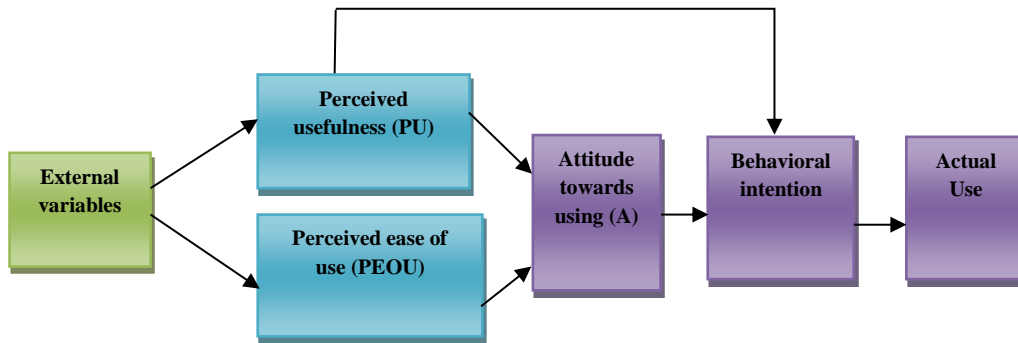
Figure 2. 8: Technology Acceptance Model

Source: Davis et al (1989)

The different external variables which are identified in this model include a number of different factors. These are identified as the ability to train, the ability to promote effective self-efficacy with respect to use of computers, the level of involvement of the user, the main aim behind the design of the system and finally the process by which the system is implemented (Davis, 1996). With the evolvement of TAM there were introduction to new variables affecting the external variables such as perceived use, ease of use, actual use and the intention behaviour. Thus, in comparison to any other models, the TAM model has an capability to incorporate new variables. The other variables which are frequently referred to include the quality of the IS, the compatibility of the system with other designs, the user anxiety with using a computer, the user enjoyment of IT and IS, the level of support in terms of computing features given to the user and most importantly the experience of the user with IT/IS systems (Lee *et al.,* 2003). The four main variables of TAM including perceived use, ease of use, behavioural intention and actual behaviour is presented in a manner wherein perceived use can be either as a dependent or an independent variable. When it is independently considered it is observed to directly have an impact on the behavioural intention of the user while as dependent variable it is found to be impacted on by ease of use. The actual behaviour is actually determined

by amount of time usage, frequency of usage, actual number of usages and diversity of usage.

2.6.3.6.1. TAM Evolvement

The origin of TAM in comparison to the original model has occurred during the past twenty years. Wixom & Todd (2005) clarified the extension of TAM in three significant methods. The initial approach includes the factors that exist from the relative models (SN & PBC from TPB). Secondly, it involves introducing additional or substituting beliefs to the model which are basically from diffusion of innovation theory such as trial ability, compatibility, visibility or result demonstrability. Thirdly, it involves investigating external variables that cause an effect on PEOU and PU like personality traits and demographic characteristics.

On the basis of the meta-analysis formulated by Lee *et al.* (2003), the origin of TAM (1986-2003) can be separated into four periods, which are introduction, validation, extension and elaboration (Han, 2003). The adoption phase investigates TAM and synthesizes the various information system applications such as key office applications including spreadsheet, Lotus 1-2-3, Word Perfect, Word, Excel; communication technologies such as emails, voice mail, customer dialup system and Fax; database systems; microcomputer; workstations; telemedicine technologies; and Internet–related IS applications such as www information services, online services, virtual workplace systems, digital libraries (Adams*et al.* 1992). The sample were many organizations of different cultures which are American financial institute, Canadian integrated steel company, accounting firms, public hospitals in Hong Kong, investment banks. The probation phase of TAM underwent two directions. Firstly to validate TAM's PU and PEOU instruments to compromise on psychometric properties and the next one to establish the concerned connections among the TAM component elements. There are again two divisions of the extension phase which can be branched in to two phases; the first one to extend the two major constructs (PU & PEOU) and the second one to incorporate relevant variables as significant antecedents of the two constructs PU & PEOU (Han, 2003).

In the previous Section (2.4.1), the example of the work on DTPB was compared with TAM and the original TPB. Taylor & Todd (1995b) identified that DTPB and

TPB justified the definition of TAM. The findings have to be interpreted with caution due to the trade-off between explanation power and complexity.

TAM is more stringent than DTPB comprising of 8 more variables. Davis *et al.* (1989) examined TRA with TAM in aspects of how the both models are manipulated by MBA students' relative facility with word processors across two time frames, soon after the introduction of the system and 2 weeks later. It was identified that TAM could describe the user's intention more so than how TRA performs. The researcher's use of the model wanted to prove that TAM could genuinely make use of accurate manipulations of user's acceptance and behaviour presented by various technologies, situations and work.

As discussed previously, Adam *et al.* (1992) reproduced and stretched the Davis' (1989) study by investigating the application of The Two Factor Model (PU & PEOU) to two various divisions of messaging techniques (electronic and voice mail) in 10 different organizations. Segar & Grover (1993)identified that the outcomes of Adams *et al.*s' (1992) experienced a measurement problem and until the measurement model formulates the existing relationship between the observed values and the prevailing elements in a dependable and relevant manner their application in examining structural relationship could lead to equivocal outcomes (Chin & Todd, 1995). Consequent to the report, Chin & Todd (1995) disapproved Segar & Grover's (1993) findings declaring that though there were foundations to criticise Adam *et al.*'s work, the logical thinking to apply classical statistic techniques were not possible.

The authors Chin & Todd (1995) criticized the inclusion of the third factor (effectiveness) of the model demanding that there was no substantive theoretical reasoning underlying it or any differences between the PU and the effectiveness construct and purpose to serve statistical considerations. Soon after a thorough analysis of Adams' *et al.* (1992) data and fresh independent set of information, Chin & Todd (1995) illustrated that Davis' (1989) usefulness construct possessed rationale psychometric properties and had no logical support or any substantive reason to divide the elements into two dimensions. The research studies in the past were mainly targeted on to analyse the reliability and validity of TAM tools. Segal & Grover (1993) put forth that the absence of appropriate measures of PU & PEOU

along different technologies and organizational aspects needs careful attention to interpret the concepts that are adjunct to use of technology.

Extensive research was conducted to introduce new variables to enhance the relationship underlying TAM elements. The limitation of TAM includes contradictory relationship among the constructs (Sun & Zhang, 2006). These authors felt it was better to include moderators to sweep over such limitations. They also indicated that there are various studies who pointed out a few moderator characteristics (Venkatesh *et al.,* 2003; Agrawal & Prasad, 1998). Venkatesh *et al.* (2003) examined 8 models which were utilized to explain technology acceptance behaviour and identified that through prediction; between t six to eight models were seen to rise after adding moderators. They argued that it was evident that this addition of moderators to different models in past research fairly enhances the predicted validity of many models above the required specifications (Venkatesh *et al.,* 2003).

A lack of moderating influences in TAM was identified by Agrawal & Prasad who suggested a need for more research (Sun & Zhang, 2006).Agrawal & Prasad (1999) contributed to TAM by examining the resolving effect of individual differences in relation to adoption of technology. Individual differences that impact on adoption were seen to include workforce possessing, education level of users, previous experiences and the training involvement of external variables between PU and PEOU beliefs, attitude and behavioural intentions. It was proposed that of the five individual characteristics composed; only three were of significance to PEOU. The other two, training and workforce possessing had no significant effect on PU. In relation to PU belief, only training involvement was seen to have a direct influence whereas, the others showed indirect effects with the PEOU belief due to the anticipation of PEOU- PU relationship with TAM. The subsequent efforts to refine the TAM model were focused on the influence of culture and voluntary versus required settings. The metrics proposed to be considered in research include education, age, gender and experience (Lee et al., 2003).

The evolution of TAM proceeded and in the elaboration period, research studies continued to create new versions that accomplished the external elements influencing PU & PEOU justifying all the limitations of past studies. Over a one year period Venkatesh and Davis (2000) examined the determining elements of TAM's

constructs PU & PEOU, along with this research they also examined the determinants of PU and presented a fresh model which was called as TAM2 as discussed in section (2.6).The same year Venkatesh (2000), put forth his work to analyse the PEOU determinants along with the specific system (During the initiation and after obtaining experience with target system) and formulated the control/adjustment–based theoretical model. This model identified a group of anchors which are control processes that could be external or internal and that was interpreted as computer efficacy and established their adjunctive conditions. The intrinsic motivation was established as computer playfulness and emotions were established for computer interest. An individual is expected to regulate his/her PEOU, though the anchors are characterised by the previous PEOU of a developed system and this is due to increased experience with the system. The model was investigated in three various organizations which used three measurements manipulated over three months-period.

The obtained outcomes identified that the proposed model of determinants of PEOU clearly described 60% variance in PEOU. The derived results the basic drivers of system-specific PEOU are increasingly individual difference variables and situational characteristics that with these effects grow even stronger absolutely with experience. This research was an answer to TAM's beliefs that were unified to the effect of external variables exclusively with the TAM constructs of PEOU & PU (Venkatesh, 2000). In 2003, Venkatesh *et al*(2003) built a complete model comprising of eight models utilized to describe the technology acceptance behaviour. The new model was renamed as unified theory of acceptance and use of technology (UTAUT) as discussed in section (2.11)

Sun & Zhang (2006) came up with the concept to extend TAM and implied an identification of ten moderating factors that were classified into three divisions which are organizational factors, technological factors and individual factors. The organization factors indicated the willingness and nature of profession, technological factors that are involved technology complexity, individual vs. group technologies, work vs. entertainment and finally individual moderators including culture, age, experience and intelligence of an individual. All of these factors are to be examined within the TAM.

Prior to introducing information systems, TAM was developed for the organization and it was identified that there were vast differences between Davis' (1989) approach and Ajzen's (1985) approach. TAM is proposed by IS inhabitants and was formulated in IS field and the development of TRA and TPB subsequent to the psychology field. Over the last twenty years, TAM has gained well acceptance as vigorous, efficient tool to forecast the acceptance of individual on emerging technologies. About 424 journal citations of the two articles were presented for TAM (that is, Davis 1989; Davis *et al.,* 1989) based on the Social Science Citation Index® (Venkatesh & Davis, 2000).The model is not without disadvantages which are discussed in the next chapter.

2.6.3.6.2. Critical Analysis of TAM Vs. Other adoption Models

In comparison to other adoption models such as TPB and TRA, TAM performs well as emphasized in previous studies (Gardner and Amoroso, 2004). Although studies have provided a better explanation of an intention to use about TBP (Taylor & Todd, 1995), the application poses huge problem in comparison to TAM (Mathieson, 1991). In particular, constructs of TAM are measured in the similar way in every construct, while it is difficult to operationalize and more complex to measure TPB constructs (Taylor & Todd 1995) and constructs demands a pilot study to identify reference groups, control variable and also outcomes in each situation (Mathieson, 1991).

In explanation of attitude TAM is also better in performing and therefore it may be the choice of model for a researcher of the present study and future studies as well (Mathieson, 1991). In a study conducted by Taylor & Todd (1995) where TAM was compared with decomposed TBP that has eight added antecedent constructs, the findings revealed that 34% of the variance was explained by TAM, while TPB explained only 36% variance. The number of constructs in both the models was 5 and 13 constructs respectively and with 5 constructs, TAM can able to explain 34% of the variance in Usage with only 2 per cent less than TPB decomposed. This shows that TAM is easier to apply with less expensive and moreover this model has a capability to add new variables.

2.6.3.6.3. Limitations of TAM

The main limitation, which has been associated with the use of the Technology Acceptance Model, is the degree of self-reporting which is involved. In this model acceptance is dependent on self-reporting and the model is built on the assumption that reporting actually reflects the degree of usage. Another limitation which can be identified is the type of respondents who are chosen to be a part of the sample group. When a specific group is targeted such as professional users or students in a university it makes it so much harder to generalize the results (Legris *et al.,* 2003).A third limitation which needs to be acknowledged is the degree of guidance presented by the TAM model with respect to design and implementation and its impact on usage (Taylor and Todd 1995; Venkatesh *et al.,* 2003). Feedback with respect to usefulness and ease of use is presented while other aspects such as flexibility, degree of integration, completeness of information presented and current nature of information are not available. These guidelines were also presented during the development of the TAM model but were sadly not discussed in depth by any researcher (Davis *et al.,* 1989).

Two shortcomings related to studies on TAM so far have been reported by Sun and Zhang (2006):

1. Explanatory power of the model;
2. Inconsistency in the degree of relationship among the established constructs.

The authors were found to examine data from fifty five different articles which were identified from different databases based on specific selection criteria. Their examination identified the vulnerability which is associated with explanatory power in two distinct sections: Low explanatory power of about 40% of models (Sun & Zhang. 2003; Venkatesh *et al.,* 2003) and differences in the explanatory power due to type of method used (field versus experimental studies).When experimental studies are conducted they are often representative of convenience sampling measures wherein a group of students or a specific group of professionals in one field are chosen. This is not representative of a real workplace scenario. In contrast when field studies are conducted they are often done in one shot again making it not representative of the real work place scenario (Sun & Zhang, 2003).It can be concluded that to overcome this limitation it is vital to adopt a longitudinal approach

wherein the change in perception of people can be examined right from introduction to the technology and the actual degree of usage after they become accustomed to the technology given to them.

The degree of inconsistency between the major constructs of the pattern has been identified. It has been pointed out that in some cases the relationship between the constructs showed statistical significance making the implementation of the TAM model a robust and reliable model. There have been cases where there is no significance obtained when tested statistically. As an example when the PEOU construct is considered it is observed that the effect on attitude, behaviour intentions as well as degree of usage was inconsistent but PEOU and PU relationship was significant and still there were certain cases where this was not observed. These reasons were attributed to the type and experience of the user. A more experienced user would have varying intellectual capacities and this could be reflected on their degree of perception on PEOU and PU.

From a detailed meta-analysis certain limitations were identified by Lee *et al.*, (2003), it was identified that most TAM models used a single information system or a single type of subject such as a single company, department, students, a onetime cross sectional study or a one type of task testing during testing of an information system. In an attempt to overcome these limitations, TAM2 was developed to cover for the absence of moderators in the original TAM.

2.7. Extension of the Technology Acceptance Model (TAM2)

Ventakesh & Davis (2000) evaluated the original TAM model for assessing perceived usefulness and utilization of intentions with respect to social influence and cognitive instrumental process. As discussed above, the original TAM model was based on the Ajzen (1985) TAM model excluding the subjective norms construct. After establishing TAM, there are various studies conducted robustness as expected from TAM, efforts made to compare TAM with its origins and other models that are used for explaining technology acceptance like Innovation Diffusion Theory as discussed in section 2.6.3.4.
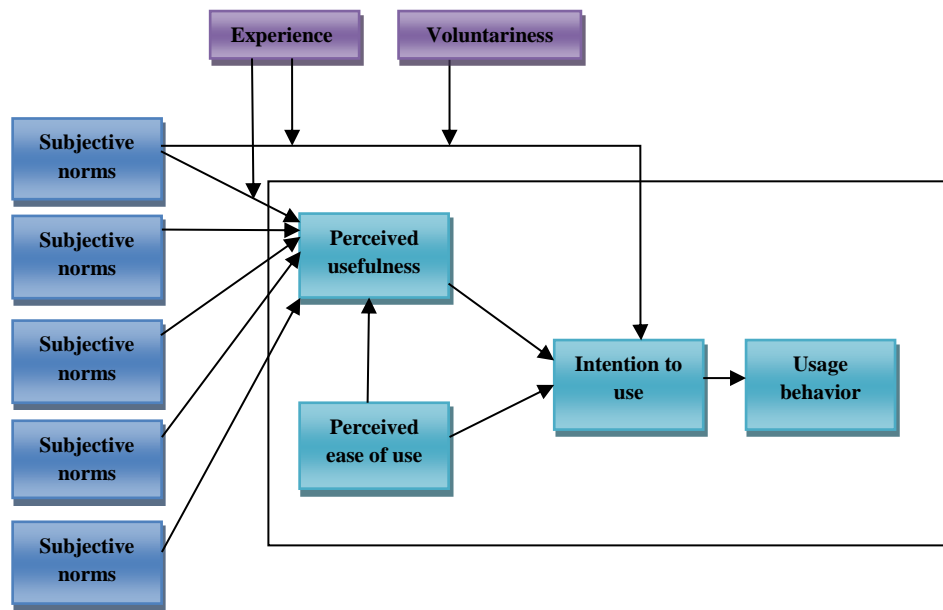
Figure 2. 9: TAM2-Extension of the Technology Acceptance Model

Source: Venkatesh & Davis (2000)

The above Figure 2.9 presents the extension of the TAM model developed by Venkatesh & Davis (2000). This model identified the different external variables, which influence the Perceived Usefulness and Ease of Use. These include image, job relevance, and output quality and result demonstrability. Apart from this, the intention to use is directly impacted by subjective norms, which are moderated by experience and voluntariness.

The major role of social influences with respect to computer usage contexts are explained and briefed by Venkatesh & Davis (2000), whereby TAM2 conceptualizes such that subjective norms directly affect intention over PU and also PEOU where occurrence is mandatory for the settings utilized by the system. The model considers the voluntariness as moderating variable in order to differentiate mandatory and voluntary compliance with respect to organizational settings. Subjective norms have the ability to impact intentions through PU or internationalization. Additionally, TAM2 conceptualizes internationalization occurs more when compared to compliance regardless of the usage of context being voluntary or mandatory.

Experience is theorized to mediate the association between subjective norms and intentions as well as subjective norms PU (internationalization). As discussed previously, association among SN and intention is strong in mandatory usage context and prior for implementing or at early stages of use. The relation between the aspects

is observed to be weak with respect to experience obtained during system usage. The impact on SN-PU is observed to be similar by experience.TAM2 has not provided any evidence such that image PU (identification) is impacted by experience or such association may become weak.

According to cognitive instrumental process, TAM2 argues that individuals are based on association between their job goals and outcomes of system utilization which is known as job relevance, as a basis for evaluating system usefulness also referred to as usefulness perceptions. The same factor is also considered to be related to the result demonstrability and output quality. Such association among factors is observed to be not altering increased experience. The results and outcomes of four longitudinal studies conducted on distinct systems at four organizations at three points at same time depicted that new model TAM2 explains34-52% of variance in usage intention and 60% of variance in perceived usefulness.

Other disciplines evaluated and executed the new model. Ozag & Duguma (2004) expanded Venkatesh & Davis (2002) recommendation for investigating organizational commitment processes, including person-job fit. The author introduced 3 cognitive processes as antecedents of perception of usefulness such as obligation/attribution, rationalization and investment. In health sector industry, applicability of TAM2 was assessed by Chismar & Wiley Patton (2003) for acceptance of Internet and Internet based health applications among 89 paediatric physicians. From the results it can be partially declared that model is easy to use but at the same time the core construct of the model is observed to be not supported by their findings. There was no prediction of use by PEOU on the other hand PU determined a strong determination of intention to use. It was argued by the authors that utilization of intention in medial industry described the important aspects for intentions in order to adopt new technology that are useful, related and output quality is desired for completing daily tasks. It has also observed that physicians have the competence and ability to adopt intentions well enough to address average population and implement advantageous applications of information technology regardless their ease of use.

TAM2 was implemented by Hart & Porter (2004) for determining influence of user's cognitive processes on perceived usefulness of on-line analytical processing technology (OLAP) in South Africa. Result demonstrability, output quality and job

relevance are the three cognitive process aspects determined. It is also observed from the results that there is a positive and significant correlation between three cognitive processes and PEOU with PU.

2.8. Summary of the Technology Acceptance Models

From the previous discussions of the model it is evident that evolution has documented how the first three models were extended when limitations were determined by research. TRA was extended and developed into TPB which was expanded as DTPB that acts a middle role in evolution scenario as it combines TPB and another extension to TRA: TAM and Diffusion of Innovation (DOI). The other models can be traced to Psychology discipline which explains the presence of certain variables like social pressure, self-efficacy and impact on the other models used for explaining technology adoption domain. Table 2.1 describes the determinants and aspects related to the technology models.

Table 2. 1: Contributing Theories of Technology Accepted Models and Core Constructs

Theory / Model and Discussion	Core Constructs
Theory of Reasoned Action (TRA) TRA is one of the basic theories in Psychology that has been utilized broadly to predict behaviour (Fishbein & Ajzen 1975; Sheppard *et al.,* 1988). A review of TRA research was performed by Sheppard *et al.* (1988)	• Attitude toward Behaviour • Subjective Norm • Social influence
TAM TAM (Davis, 1989; Davis *et al.,* 1989) is adapted from TRA and tailored to the context of technology acceptance and usage. Unlike TRA, the final conceptualization of TAM excludes the attitude construct in order to better describe intention parsimoniously.	• Ease of use • Perceived Usefulness
Theory of Planned Behaviour (TPB) TPB is an extension of TRA (Fishbein & Ajzen, 1975) by adding the construct of perceived behavioural control. This construct was theorized as an additional determinant of intention and behaviour in TPB. TPB has been successfully implemented to the understanding of individual acceptance and use of many different technologies (Harrison *et al.,* 1997; Mathieson, 1991; Taylor & Todd, 1995b)	• Attitude • Subjective Norm • Perceived Behavioural Control

Decomposed Theory of Planned Behaviour (DTPB) DTPB (Taylor & Todd, 1995b) was derived from TPB and TAM to certain extent. Empirical evidence suggests that DTPB is comparable to TPB and TAM (Taylor & Todd, 1995b) but holds the advantage of providing a deeper understanding of acceptance. Contrary to TPB but similar to TAM, DTPB "decomposes" attitude, subjective norm and perceived behavioural control into the underlying belief structure within technology adoption contexts (Taylor & Todd, 1995b).	• Attitude toward Behaviour • Complexity • Subjective Norm • Perceived Behavioural Control
Innovation Diffusion Theory (IDT)Diffusion of Innovation (DOI) IDT (Rogers, 1995) has its roots in Sociology and in use since the 1960's to study an array of innovations ranging from agricultural tools to organizational innovations. Moore & Benbasat (1991) adapted innovation characteristics presented in Rogers and refined a set of constructs that could be used to study individual technology acceptance.Agarwal & Prasad (1998) explored the role of these characteristics in predicting acceptance and found that there was a modest support for the predictive validity of innovation characteristics. In terms of the overlapping constructs with other models, relative advantage and ease of use of IDT are similar to perceived usefulness and ease of use of TAMand compatibility of this model is similar to the one used in DTPB	• Relative Advantage • Ease of Use • Image • Visibility • Compatibility • Results Demonstrability • Voluntariness of Use
Extended Technology Acceptance Model (TAM2) TAM2 extended TAM by including subjective norm as an additional predictor of intention in the case of mandatory settings (Venkatesh & Davis, 2000).	• Ease of use • Perceived Usefulness • Subjective Norm
DeLone & McLean (1992, 2003) IS Success Model DeLone & McLean (1992) exhaustively reviewed the different IS success measures and proposed a six-factor IS success model as a taxonomy and framework for measuring the complex-dependent variables in IS research. DeLone & McLean (2003) discussed many of the significant IS research efforts that have applied, validated, challenged and proposed enhancements to their original model and then proposed updated DeLone & McLean (2003) IS success Model.	• Information Quality • System Quality • Service Quality
Unified Theory of Acceptance and Use of Technology (UTAUT) The UTAUT (Venkatesh *et al.,* 2003) integrates the fragmented theory and research on individual acceptance of IT into a unified theoretical model that captures the essential elements of eight established models: TRA, TAM, TPB, C-TAM-TPB, Motivational Model (MM), Model of PC Utilization (MPCU), IDT and SCT. The	• Performance Expectancy • Effort Expectancy • Social Influence • Facilitating Conditions

| UTAUT is able to account for 70% of the variance in usage intention– a considerable improvement over any of the original eight models and their extensions | |

The literature of the theories and models that explains the technology acceptance has been explained in detail in the below section. The study has adopted the TAM model to better understand technology acceptance of e-service in public sector. In the following chapter, the literature that makes use of previously discusses models for explaining behaviour of individual with respect to specific technology acceptance area of application: e-services.

2.9. Research Using the TAM Model

2.9.1. Research on E-services using TAM Models

2.9.1.1.   Technology Acceptance Model Approach (TAM)

The study evaluates well established models that are related to and explains the technology adoption. The chapter briefs and studies to a greater extent the Theory of Reasoned Action (TRA). According to the model, the performance of an individual on specific behaviour is based on his or her behavioural intention (BI) for performing the behaviour. At the same time, an individual's attitude (A) and subjective norms (SN) are the factors determining the BI of an individual (Ajzen & Fishbein, 1980).

Davis (1989) developed and formulated the Technology Acceptance Model (TAM) which is an expanded version of TRA. The model explains in detail the reasons for an individual accepting or declining the information systems. Theoretical basis of TRA was used by the TAM model. The three basis principle related to TAM is to clarify elements and aspects related to computer acceptance based on the perceived usefulness (PU) and ease of use (PEU) (Gefen & Straaub, 2000).

As can be seen in Figure 2.8 which illustrates the TAM model, TAM is used to determine user acceptance of IS after exposure to the system for a short time period. An individual's acceptance of an information system is assessed by his/her intention to acknowledge and accept the technology.

Although detailed explanation of TAM was provided in previous section, brief overview in the present study context was highlighted in this section. The model describes how the determining factors and aspects enables the user's interface for utilizing technological solution thereby leading to actual usage behaviour and concluding if the application is rejected or accepted. The major principle for the model is to describe the factors and causes for the rejection or acceptance of information technology by people. It is defined by Chooprayoon *et al* (2007) that main objective of the model is to "to present an approach to study the effects of external variables towards people's internal beliefs, attitudes and intentions". Davis (1989) also described in the study that acceptance is based on two factors: perceived usefulness and ease of use.

It has been assumed by TAM that Behavioural Intention for utilizing a system or application results to the actual use of the system. There is certain empirical evidence for describing the relationship between perceived usefulness and all the empirical evidences are related to organizational environment of perceived usefulness that overrides the negative attitude. User may expect that enhancing performance may bring other benefits to them, such as salary increases or promotions, despite the fact whether the user likes the system or not. Venkatesh *et al.* (2000, p.187) adds that the effects of external variables (system characteristics, development process, training) on intention to use are mediated by perceived usefulness and ease of use. The fundamental conclusion of the theory is that perceived usefulness and ease of use will affect a person's intention to use the technology, which in turn affects the usage behaviour. The study of Davis (1989) is based on many previously developed theories, which will be discussed in the following section.

Many researchers Igbaria *et al.,*(1997); Jackson *et al.,*(1997); Karahanna *et al.,*(1999) suggested that the TAM needs to be supported by additional variables to come up with even stronger model. A most important contribution to extending TAM was introduced by Venkatesh &Davis (2000) and is called TAM2 which incorporated social influence processes (subjective norm, voluntarism and image), and cognitive instrumental processes (job relevance, output quality, result demonstrability and PEOU). TAM2 discarded attitude toward use (ATU) due to this being a weak predictor of behavioural intention or actual use (Venkatesh &Davis, 2000; Wu *et al.,* 2007). Two research paradigms have emerged to explain technology

adoption and acceptance. Using the first paradigm, researchers focus on trait variables to explain an individual's propensity to use new technology. For example, Parasuraman's (2000) technology readiness index delineates two drivers (optimism and innovativeness) and two inhibitors (discomfort and security) of an individual's propensity to use new technologies Two research paradigms have emerged to explain technology adoption and acceptance. Using the first paradigm, researchers focus on trait variables to explain an individual's propensity to use new technology. For example, Parasuraman's (2000) technology readiness index delineates two drivers (optimism and innovativeness) and two inhibitors (discomfort and security) of an individual's propensity to use new technologies

TAM in E-government Adoption

TAM has been successfully applied to investigations concerning user adoption behaviour in virtually any computer-related field and building technology acceptance frameworks in very narrow areas (Serenko & Bontis, 2004). The major advantage of TAM is that it can be extended when new technologies are introduced (Shih, 2003). Depending on the specific technology context, additional domain-specific constructs and explanatory variables may be needed beyond the ease of use and usefulness constructs (King & Gribbins, 2002). Al-adawi *et al*. (2005), Colesca and Dobrica (2008), Sang *et al*. (2009) and Jaeger & Matteson (2009) investigated TAM in the e-Government context.

2.9.1.2.   Use of TAM 2 in E-Government Adoption

The Extended Technology Acceptance Model (TAM2) was proposed by Venkatesh & Davis (2000), and incorporates two additional theoretical constructs: Cognitive Instrumental Processes and Social Influence Processes. It omitted attitude-to-use due to weak predictors of either behavioural intention to use or actual system use. Job relevance is an individual's perception of the degree to which the technology is applicable to his or her job. Output quality is an individual's perception of how well a system performs tasks necessary to his or her job. Resulting demonstrability is the tangibility of the results through the use of technology. Subjective norm is defined as

a person's perception that people who are important to him/her think he/she should or should not use the technology. Image is the degree to which one perceives the use of the technology as a means of enhancing one's status within a social group. Finally, elective is the extent to which one perceives the adoption decision as non-mandatory. Experience and elective are moderating factors of subjective norm.

In the proposed model, the constructs "elective" and "experience" are omitted. "Elective" is omitted because the use of e-Government websites is not being mandated, nor is there any expectation that it would be mandated in the near future. The construct "experience" is intended to be used for studies after subjects have worked with a system (Chismar & Wiley-Patton, 2003). Chismar & Wiley-Patton (2003) found that two of the three cognitive instrumental determinants, namely job relevance and output quality of perceived usefulness were significant. Considering this, Sang & Lee (2009) omitted the result demonstrability construct in their Conceptual Model of e-Government Acceptance in the Public Sector. Sang & Lee's (2009) approach is adopted in the proposed model.

A total of five studies (Al-Shafi &Weerakkody, 2009; Sang *et al.,* 2009; Sang *et al.,* 2010; Wang, 2002; Zhang *et al.,* 2011) have considered applying the TAM2 in e-Government adoption research. As far as using of TAM2 in this is concerned, only a very few studies have considered validating the additional constructs empirically. Sang *et al.* (2009, 2010) tried to use the additional constructs of the TAM2 on top of the TAM and examined their significance in context of Cambodia. Wang (2002) used the TAM2 to understand respondent's intention to adopt the electronic tax-filing system in Taiwan.

Another contribution (TAM3) has been proposed by Venkatesh & Bala (2008).The model is based on the literature of TAM, especially efforts dealing with determinates of perceived usefulness and ease of use. Many researchers including, Legris *et al.* (2003), Venkatesh *et al.* (2003), (Wu & Wang, 2005), (Bhattacherjee &Sanford, 2006), (Schepers & Wetzels, 2007); Srite & Karahanna (2006); Karahanna et al. (2006), (Chin et al., 2008); Wu & Lederer (2009), (Hsu & Lin, 2008), (Wu & Lederer, 2009; Lu et al., 2009)and Venkatesh *et al.* (2012) have used TAM. Reviewing the literature provides evidence based support for the suitability of using TAM in a research project to examine the acceptance of technology.

TAM is used in this study to establish a theoretical model to identify the factors affecting the acceptance of e-services. The main justifications for adopting TAM for the suggested model are:

1. Due to its parsimony and considerable number of studies supporting the use of TAM, it is considered as the most common approach for measuring the acceptance of information (Azam *et al*, 2010). The main advantage of TAM is such that the model is particularly useful for addressing the issues related to acceptance of technology (Oye *et al*, 2012).

2. TAM can be implemented for distinct fields and industries. Researchers such as Chismar & Wiley-Patton (2002), Henderson & Divett (2003), Kim & Chang (2007), and Holden & Karsh (2010) argued implementation of model in health sector; while other researcher such as Teo (2002), Liu (2010), Al-lawati (2011), argued for the implementation of the model for educational sector and Pikkarainen*et al* (2004), Lai & Chan (2010), Gordon *et al* (2010), Margin *et al* (2011), Ramile & Nel (2012), Marngin *et al* (2012) recommended to implement the model in banking and finance industry. The TAM was also implemented in the studies that focus private sector as discussed by authors like Jan & Conterer (2011); Cakmak*et al.*(2011); Bonson & Borrero (2011); Chow*et al.*(2011); Chen & Chao (2011) and also in the public sector by Roberts & Henderson (2000); Pieterson*et al.*(2007); Ouadahi (2008); and Wirtz*et al*(2011).

3. There are no restrictions or limitations for implementing the model but rather there has been vast development and implementation of the model in various sectors particularly for electronic information systems such as e-commerce, e-shopping, e-learning and e-procurement. Serenko (2008) described that implementing or executing the TAM model in the virtual environments is the most important and essential advantage.

4. Davis (1989) evaluated for the validity and reliability of the model of TAM. The results provided the support and acceptance for the implementation of the model rather than criticizing the model. The main reason for the implementation and execution of TAM model is the acceptance and support provided by the customers for the electronic

applications while the other reason is the utilizing TAM in the studies for addressing the research issues. The model is determined to be an updated model and there are various research studies that adopted for the TAM model. TAM2 and TAM3 are the updated versions for the model and are resulted due to the development of TAM.

The factors of perceived usefulness and ease of use are impacted by external variables considered in the original TAM.

2.9.1.2.1.   *Ease of use*

Rogers (1995) identified that the adoption of a technology depends upon the extent to which any innovation is perceived and identified as relatively easy to both understand and use. The technology that is recognized as easy to use attracts more adopters in comparison to the technology that is complex. The delivery system should be straightforward when used to require minimal effort. It is, essential to earnestly consider the technological skills and abilities of targeted users while designing e-Government services. This is done with the objective of making the systems user-friendly and easy to understand. The most studied technology characteristic involves a potential adopter's perception of easy to use technology (Benbasat, 1991& Davis, 1996).Ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989 p.320; Benbasat, 1991). Unlike PU, the effects of PEOU on attitude, behaviour intention and usage are quite inconsistent.

The most accepted finding says that the acceptance would increase with an increase in ease of use of PEOU (Davis, 1989; Venkatesh & Davis, 1996; Karahanna, Gefen & Straub, 2003; and Kaasinen, 2005). This relationship is observed at different levels of acceptance: intentional acceptance (Davis, Bagozzi, & Warshaw, 1989; Davis, Warshaw & Bagozzi, 1992; Thong, Hong, Wong, & Tam, 2001; Lin & Luarn 2005; Hulland, Plouffe & Vendenbosch, 2001; Davis &Venkatesh 1996); attitudinal acceptance(Fan, Devraj, & Kohli, 2002; Pijpers & Seyal, 2004) and behavioural acceptance (Henderson & Divett 2003; Davis, 1989; Parthasarathy & Bhattacherjee. 1998; Hong, Tam & Thong, 2002, Davis & Venkatesh, 2000).

Further to the direct effects of the ease of use (PEOU), another effect is the perceived usefulness that is reported for the acceptance of the technology (Davis, 1989, 1986; Fan, Devraj & Kohli 2002; Hulland, Plouffe & Vandenbosch, 2001). Perceived usefulness, which is discussed in detail in the next section, can be defined as the level or extent to which the technological innovation is likely to improve the performance of the potential adopter. Research has identified an indirect effect of ease of use as opposed to the direct effect (Chau, 1996; Johnson & Hardgrave, 2003; Divett & Henderson 2003; Beranek, Keil, & Konskynski, 1995; Vandenbosch, Plouffe & Hulland, 2001; Bettany-Saltikov, Van Schaik, & Warren, 2002).The ease of use sometimes holds more importance than perceived usefulness (Van der Heijden, 2004). Perceived usefulness seems to be more important and significant than ease of use (Davis, 1993).

Karahanna & Straub (1999) reported one more comparison of the consequences of perceived usefulness and ease of use. According to the researchers, ease of use was much more important for the pre-adoption attitudes, whereas perceived usefulness seems to be more important for the post-adoption attitudes. The initial decision to utilize a product of system might be mostly affected by whether it appears easy to use as well as the decision to continue using the system may be influenced by the belief of it being useful. This idea, still, has not been tested considerably. What are the various factors that would affect the ease of use? The flexibility of technology based on whether it could be adjusted as well as incorporated into the existing systems would be an important characteristic associated with ease of use or PEOU of a technology. Lesser is the flexibility of technology, lower would be the ease of use. There has been little research been conducted on the role of flexibility (Conventry, 2001; Chan & Sultan, 2000)

2.9.1.2.2.   *Perceived Usefulness*

Davis (1989, p.320) defines perceived usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance. When employees are often reinforced for good performances by promotions, bonuses etc. a system with high perceived usefulness is suited for supporting this kind of organizational culture and the applications may be very popular in these

situations. Conversely, ease of use is defined as the degree to which a person believes that using a particular system would be free of effort (Davis 1989, p.320).

Many studies have been conducted to determine the consequences of perceived usefulness on acceptance of technology. The general consensus is that the perceived usefulness results in an increase in the acceptance of technologies (Hu &Chau, 2002; Karahanna, Straub, & Gefen 2003), for intentional acceptance (Davis, Bagozzi, & Warshaw, 1989,1992; Chau, 1996; Venkatesh, & Davis, 2004; Johnson & Hardgrave, 2003; Hong, Wong, Thong, & Tam, 2001; Luarn & Lin, 2005; Liaw, 2002; Venkatesh, Morris, & Ackerman, 2005; Hulland, Plouffe, & Vandenbosch, 2001 and van der Heijden, 2004), attitudinal acceptance (Fan, Devraj & Kohli, 2002; Chiu & Hsu, 2004) as well as behavioural acceptance (Fang, 1998; Davis1986, 1989, 1993; Irani, 2000; Divett & Henderson, 2003; Schiffman, Igbaria, & Wieckowski, 1994; Parthasaraathy & Bhattacherjee, 1998; Koufaris, 2002; Siegal & Sussman, 2003; Hong, Thong & Tam, 2002; Bettany-Saltikov, Warren, & Van Schaik, 2002). There are certain exceptions to it as well; Van Schaik (1999) had reported no effect of the perceived usefulness on the attitudinal acceptance.

Even though sometimes the ease of use is found to be more significant than perceived usefulness (van der Heijden, 2004), the majority of users find perceived usefulness more significant than the ease of use (Henderson & Divett, 2003; Davis, 1989; Schiffman, Igbaria & Wieckowski, 1994). In particular for the post-adoption attitude formation (Karahanna & Straub, 1999) certain determinants of the perceived usefulness are identified as:

- Ease of use (Keil, Beranek, & Konskynski, 1995; Davis, 1989);
- Perceived advantages of technology (Salam, Amoako-Gyampah, 2004);
- Significant previous experience with technology (Irani, 2000);
- Significance as in case of digital library (Tam, Hong, Thong, & Wong, 2001)
- Advanced levels of the technology quality as well as creditability (Siegal & Sussman, 2003).

The advanced levels of the above mentioned variables were related with higher estimations of increased usefulness. It is necessary to identify these precursors to the perceived usefulness in order to understand as well as influence attitudes.

Studies by Polancic *et al.* (2010), and Yi *et al.* (2006) observed that the Technology Acceptance Model (TAM) is the most widely used model in trying to understand adoption of information technologies TAM is an adaptation of the Theory of Reasoned Action and was specifically developed to help explain acceptance of Information technology systems. TAM has been widely used across different information systems to help understand factors affecting adoption, the model is not without criticism. Wang *et al.* (2003) noted that although the goal of TAM "was to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behaviour across a broad range of end user computing technologies and user populations". This function was not clearly performed by the model.

Mpinganjira *et al.* (2011) noted that organizations that decide to introduce e-services to their customers do so because of the benefits associated with such initiatives primarily for themselves. The researchers identified two fundamental reasons for the introduction of online banking services. These include time and costs savings associated with making services available through online channels. Kohlborn *et al.* (2010) observed that online channels are the cheapest delivery channels for services. They allowed organizations to be accessible to their customers 24 h 7 days a week. Al-Rajehi (2007) noted that the benefits derived by business through offering services online are the force behind most government's decisions provides this service to their customers using online channels.

The Organisation for Economic Co-operation and Development (OECD) (2003) noted that there are some unique benefits associated with provision of government services using online channels. These include the fact that it helps in promoting transparency and accountability in the way government departments conduct their business, helps governments achieve specific policy outcomes by enabling stakeholders to share information and ideas and helps in building trust between governments and their citizens, an essential factor in good governance. It is important to note that it is one thing to roll out services online and another to convince targeted users to adopt the new channels of accessing services. Successful implementation of e-services, requires that measures be put in place to encourage targeted users adopting the new service channels. While it cannot be denied that

perceived usefulness and ease of use are critical in influencing attitude towards e-services, it is also important to recognize that at the basic level, customers need to have access to internet in order to access online services. They also need to have the skills that can enable them make use of the services. Giles (2010) noted that although technology opens up new dimensions of scope and timing, it also creates the possibility for crimes to be committed much more quickly.

The main purpose of this chapter is to shed light on the environment being investigated. It begins by providing an overview of information about e-government in the Arab World. This is followed by discussing the key challenges of e-government adoption in the Arab World. Then the chapter gives an overview about UAE on a range of dimensions.

2.10. Overview of E-Government and E-services in Arab World: Examples from a number Arabic Countries

In the Arabic world, adopting new technology and electronic systems are modern and recent initiatives. Many Arab countries have started to offer e-government information and services to public. In contrast it is observed by United Nations (UN) e-government survey (2008) that not a single Arab world country has made it into the top 25 global e-government readiness ratings, the first being United Arab Emirates in 32nd position.

Since penetration of technology has been quite recent, much of the existing research focused on e-government has been in developed countries, for example, Europe and the United States of America. In consequence, little is known about e-government development efforts and current progress in the developing countries including Arab Countries Chatfield &Alhurjan, 2007a). E-Government is considered one of the most significant applications in these countries. Chatfield & Alhujran (2009) classify Arabic countries into three levels according to the level of implementation of e-Government: Arab E-Government leaders (UAE, Bahrainand Qatar), Arab E-Government up comers (Jordan, Lebanon, Kuwait, Saudi Arabia, Morocco, Tunisia, Algeria, Omanand Syria) and Arab E-Government Laggards (Sudan, Yemenand Iraq). Attention has been paid to these initiatives by researchers in their attempts to identify the associated challenges, problems, opportunities, adoption and many other

relevant issues. In contrast, the Arab e-government laggards group offers the public limited information content and e-government services. To better understand the reasons and resistance of their adoption, only few studies have presented a review of e-government initiatives in the Arabian Gulf (Kostopoulos, 2004; Pons, 2004; Sahraoui, 2005). Others did so in a single country context (Abusin, 2007; Almahandi, 2004; AL-Shehry *et al*., 2006; Ciborra &Navarra, 2005; Zaied *et al*, 2007) but all these studies had certain limitations or do not provide conclusive findings.

Challenges for e-government adoption in the Arab World

Most of the developing countries, including the Arab Countries, understand the potential of e-government (Basu, 2004). e-government initiatives have flourished in developing countries (Ndou, 2004), with the literature reporting the low-level adoption of e-government services associated with the high-level of failure of e-government projects and low-level of functionality adopted in developing countries (Data, 2006; Heeks, 2003). Heeks (2003) found that 35 per cent of e-government initiatives in developing/ transitional countries failed completely and 50 per cent partially failed. Only 15%of countries have been successful in implementing e-government initiatives. A review of literature identified the challenges included the digital divide, ICT infrastructure, internal resources, and legislation and policy issues and these challenges are particularly apparent in the Arab world.

Digital Divide

There have been various perspectives from which the digital divide is viewed and defined. In general, the term digital divide is often "defined narrowly to refer to the gap between those who have physical access to digital information and communication technology (ICT) and those who do not" (Companine, 2000). More broadly, other researchers (Betrot, 2003; Ferror *et al*., 2005; Mossenburg *et al*., 2003; Norris, 2001) viewed the digital divide as multidimensional concept beyond the access to existing ICT infrastructure. They considered the global divide, the skills divides, the social divide, the economic opportunity divide, and the democratic divide as the components, which should be considered when analysing the digital divide.

ICT infrastructure

ICT infrastructure is documented as one of the major challenges for the e-government initiative implementation (Jaeger & Thompson, 2003; Ndou, 2004; Pons, 2004; Tapscott, 1996). Providing reliable telecommunication infrastructure, internet access and opening new service delivery channels (Cellular phones and Kiosks) is necessary to provide e-government services to all citizens and businesses. In addition, integration of data and technology across the government, as well as interconnection between all the government departments, are two essential factors to provide a central point of entry to all e-government services (Hunag & Bwoma, 2003).

2.10.1. Internal Resources

E-government System development requires the allocation of resources such as financial and human resources and the rigorous management of these resources. In developing countries, e-government projects are usually dependent upon financial aid from external doors. Usually this financial aid will not be sufficient to complete the whole project. For this reason, projects are often discontinued at some stage, causing project failure (Data, 2006; Schware & Deane, 2003). Another challenge for these countries is the shortage of qualified personnel, and the lack of professional training (Basu, 2004; Data, 2006; Ndou, 2004). Qualified staff and training programmes are essential requirements for e-government success. In addition, implementing e-government introduces new ways of performing and processing tasks. Change management issues need to be addressed. One of the important issues to overcome is employee resistance to change, as they assume that ICT would replace them and therefore would increase the possibility of losing their jobs (Ndou, 2004).

2.10.2. Legislations and Policy Issues

Using Internet applications involving e-government demands a range of new policies, laws and rules to deal with electronic activities. , regulations on electronic stamps and electronic signature are required. Policy issues such as privacy, and security on data collected by the government agencies about citizens, are also a large

concern (Basu, 2004). Therefore, government must ensure high security and privacy standards on government websites by adopting and strategically communicating its information security policy in order to earn users trust and continue willingness to adopt e-government services (Alhurjan &Chatfield, 2008).

The following figure 2.11 shows the distribution of government e-services across each emirate. From the graph, it is evident that the e-government initiatives in Abu Dhabi and Dubai are more advanced than the other emirates and have the foundation for providing citizen-centric services. Based on the foundation there is growing momentum at the federal level to move towards shared services and increased integration.
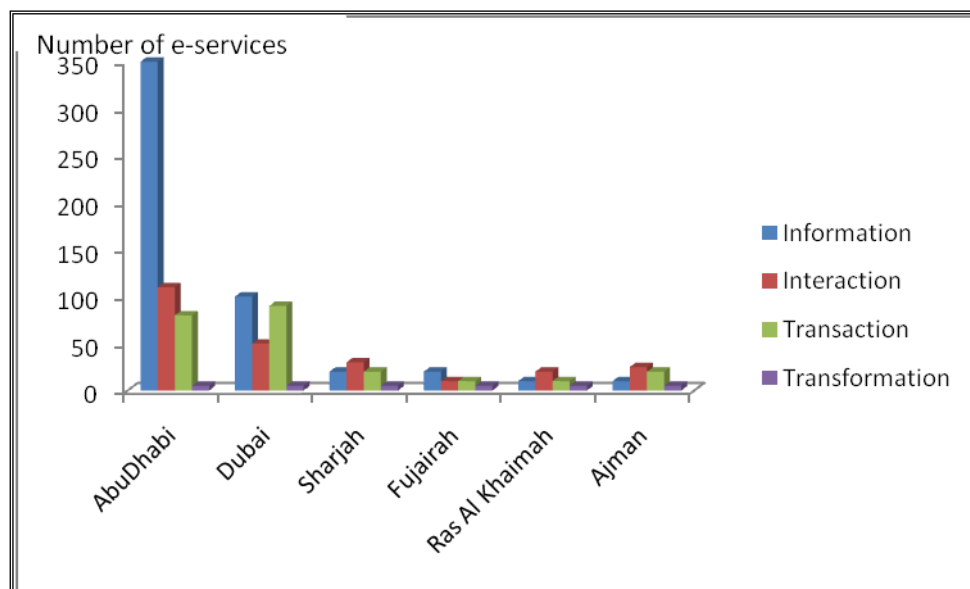
Figure 2. 10:E-Services Distribution across Emirates

Note: Figures are based on limited sample of publically available information and is only indicative. The figure are high in Abu Dhabi is most of the federal ministries are based in Abu Dhabi, Source: (Al-Khouri, 2011)
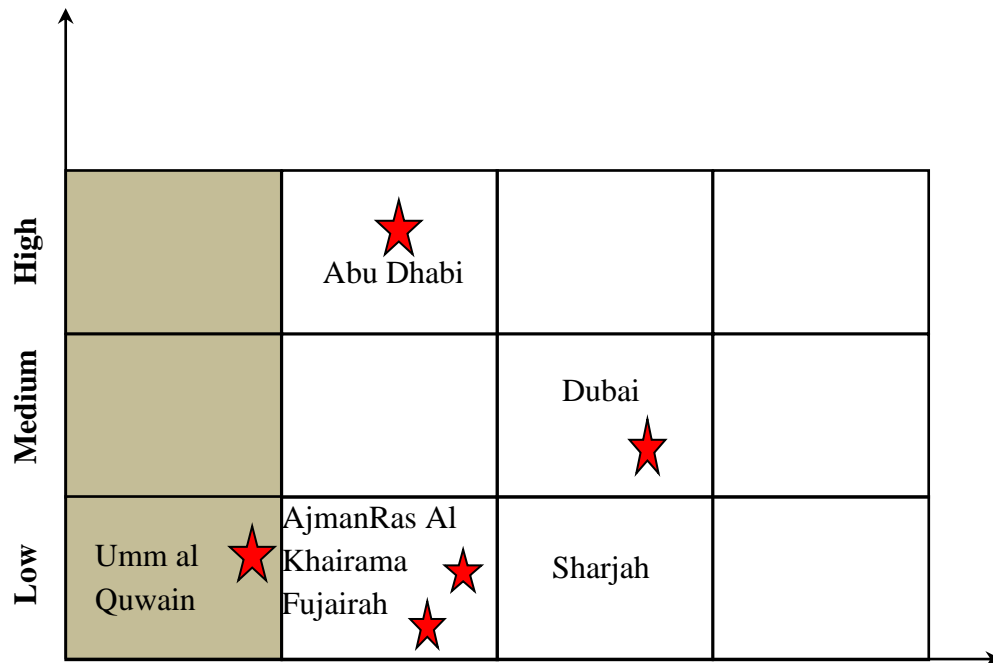
Figure 2. 11: Current Stage of UAE in e-government revolution

Note: e-government stage across the UAE is observed to be
transitioning from interaction to transaction, Source: (Al-Khouri, 2011)

Figure2.12 illustrates the stage of each emirate in the UAE and the evolution of e-government in each.

The UAE has one of the highest quality broadband connections in the world, according to findings by the University of Oxford (Fu and Jain, 2009).A recent research published by the Economist Intelligence Unit identified that the UAE was found to be leading the Middle East region in terms of its continued and steady improvement in broadband, mobile and Internet connectivity levels (EIU, 2010).On the other hand, the UAE is now considered to have the highest rates of fibre optic three penetrations in the world, according to research carried out by IDATE on behalf of the FTTH Council Europe Middle East Working Group (FTTHCE Annual Report, 2009). The UAE is ranked fourth in the world, with 30.8 per cent of the country's households and businesses connected to fibre optic systems, behind Japan, South Korea and Hong Kong. The UAE is described as representing 96% of the Middle East region's FTTH/H subscribers and 76% of all homes passed by fibre (Warkentin*et al*, 2002; Heeks &Ronaghan 2002).

The following section outlines e-government initiatives and challenges faced by Arabic countries

Qatar

Qatar is identified to be a peninsula which is strategically located at the centre of the west coast of Arabian Gulf. This country has a minimal population of citizens by birth with an increased number of expatriates working in Qatar (The Peninsula, 2008; Al-Shafi &Weerakkody, 2008). The concept of offering services by making use of e-Government services was first presented in the year 2000 (Al-Shafi &Weerakkody, 2008). Despite this launch there was a weak preparation with respect to overall formulation of strategies to promote effective e-government as well as implementation of the same in different public sector organizations. In 2004 efforts were taken by the ICT Qatar (Supreme Council of Information & Communication Technology Qatar) propaganda to improve this situation. It was observed that this measure enabled overall growth and acceleration over the last few years. Any program which was introduced in these years was improved.

Different e-Government measures were implemented for healthcare, internal affairs of the country as well as improvement in levels of education (Al-Shafi &Weerakkody, 2008). The vision of ICT Qatar states "Serve as independent and fair regulator, protecting consumers and businesses from unfair practices as Qatar transitions to a competitive telecoms market. In addition, Lead the government's ICT strategy, nurture innovative technologies to benefit those who live and work in Qatar, and help make people from all walks of life become comfortable with technology" (ictQATAR, 2008 ; The Peninsula, 2007).

Oman

Oman is located in the southeast of the Arabian Peninsula next to Saudi Arabia and the United Arab Emirates and is bounded in the northeast by the gulf of Oman and southeast by the Arabian Sea. Oman covers an area of about 119,500 square miles. As identified by the Ministry of National Economy (MONE, 2008), in 2003 Oman

had a population of 2.34 million people and a growth of around 46,800 every year; at the end of 2006 Oman had a population of 2.577 million people (MONE, 2008).

Oman is a country, which has an overall area of around 119,500 square miles and is identified to have a population of 2.34 million people. This country was observed to grow by 46,800 people every year (Mon, 2008). It was observed that e-Government efforts of Oman were started in the year 2003. These programs were referred to as e-Oman. The aims of these programs were to make the governance of Oman digital. It was also observed that different e-government and e-commerce services were promoted in Oman by identifying the needs of the government agencies in terms of technological needs. The program also aimed at increasing the number of people who wished to use e-governance services by providing education and awareness toward the benefits of suing e-services. The program was promoted at being aimed at primarily presenting effective infrastructure needs as well as providing an overall national web portal, which is common for a wide range of public sector services (Abunumy *et al*., 2005).

It is identified that the e-government related research in Oman was in the primary stages still identifying the various needs of the users most effectively. Oman's ICT and e-participation related the UNESCO program in Western Asia examined policies. They compared the efforts of Oman with other countries. Their research showed that Oman was average when compared to Saudi Arabia and below average when compared to UAE with respect to implementation of e-governance. The UN carried out the e- Government readiness survey in 2008. This survey showed that since 2005 Oman improved in their rankings moving up to eighty-five from one hundred and twelve. Among Arab countries it was ranked quite low (UN, 2008a, b, c).

It has also been noted that there is very little discussion, available with respect to the type of legal framework which is required to promote guidelines and regulations in terms of e-Government services (UN, 2005). There is a need for the government to promote effective laws in terms of regulation of the Internet as well as the type of service providers (Tigran, 2006). The country has a single service provider of internet throughout as a result of which there is lack of competition among the

different sectors of the country in terms of promoted internet services. E-Procurement, e-Payment as well as e-Privacy of the government have been promoted as a result of Oman digital policy of the government. This policy had enabled the country to present effective national ICT strategies whose primary aim is to improve the overall level of e-Government activities in the country. Still a number of sceptics strongly feel that Oman today lacks the overall detailed plans in order to implement comprehensive and effective e-Government services (Al-Jboori, 2006).

Another drawback for the country is that there is lack of effective software industries in the country, which can grow, with the needs of the government. It is important for the government to promote common issues like usability, information quality as well as e-government measures in order to identify efficiency of operations in the country (Abanumy *et al.*, 2005).

Dubai

   E-service Modules in Dubai:

The department of e-governance several synergistic services like Dubai.ae, mDubai, eLearn, Ask Dubai, ePay, eHost, eCitizen, eLibrary, eJob, eIntegration, and Web solution. The 'e' aspect of these functions helps it to reach a maximum part of the population of Dubai – citizens, residents, visitors, as well as businesses.

The DeG also works at the operational level in such a manner, to create synergies while enabling generally used (shared) services. In this way, individual departments are able to concentrate on providing their core competency – eServices to the people at large. Additionally, such synergistic services are provided to all the government bodies, which would benefit from them by way of reduced operational costs. This would also help them in enhancing their productivity quotient through faster and better implementation of timelines and effective utilization of resources.

Several benefits have been realized by the DeG through proper implementation of different synergies:

- Cost reduction: A penny saved is always a penny earned. The DeG has saved costs of about 37.1 million AED. In recent times, the

savings have increased to about AED 70 million and are now in the range of about 75% of the government services (1900+) (1);

- Lesser time taken in conducting marketing initiatives for several governmental sections;
- Top quality benchmarks laid down for the different departments of the government;
- Sharing of ideal practices.

The Positioning of e-Gov in Dubai:

Having reviewed several models of evolution, it was noticed that Dubai was firmly structured along the lines of the UN model as an alternate model. In more recent times, several activities were executed by the DeG, which is why it has ascended to the fifth stage, which is a flawless stage, marked by an overall integration.

Stage 1 Emerging: The presence of an official government is simply established on the internet in such a way that it can be reached online;

Stage 2- Enhanced: There is an increase of different sites of the government with up-to-date data, which is extremely useful and authentic;

Stage 3- Interactive: Users are now able to download information or forms. They can also interact with officials with the help of email;

Stage 4- Transactional: Users can pay for the different services used by them and also have different transactions online;

Stage 5- Seamless: There is an overall and entire integration of e-services, which means that they go beyond geographical or administrative boundaries.

Sustained leadership and Development:

In an attempt to achieve challenging goals, Dubai has largely set tough measures and benchmarks. An example of this is the HH vision which has proven to be a strong example to follow for Dubai's eGov attempt to realize goals and exceed expectations. Additionally, it has also brought in clarity, that in the period of a year and a half, all arrangements would be made for the eGov project. For the DeG to be officially operational there was a great deal of work done prior to 29 October 2001 –

the day it was formally announced. The period that followed experienced consistent leadership during the entire developmental process. In 2004, HH started a new target, which aimed at delivering 70% of the different government services in Dubai by way of new and innovative ideas around the end of 2005. There was also a keenness to push up that percentage to about 90% towards the end of the year 2007.

In 2005, approximately fifty-five per cent of all government services were available by way of modes that moved away from away from the traditional. A plan was prepared with a theme of 'Dubai…Where the Future begins' and this encapsulated the strategic aspects of creating a very dynamic economic sector within of the entirety of the Emirates. An important observation at this point would be that despite all these directions coming top-down, it was crucial to inculcate leadership values across all governmental bodies and initiatives for the eGov venture, as a whole, to become a hit (eServices director, Dubai Municipality director general).

Today, Dubai has all its systems developed to a level of maturity, which can be assessed and identified for its effectiveness with the help of different measures and indicators. Dubai pays a great deal of attention to detailed quality assurance measures. In fact, it has recently started assessing government performance with the help of electronic measures. This is largely being seen as an important step that has placed Dubai on an equal footing with other advanced countries with regard to governmental management. E-Gov is also regarded as fulfilling these objectives. In this, Dubai has started two important programs:

- The Dubai program for extraordinary performance of government;
- The performance of the government indicators program.

All this has helped the DeG to acquire the ISO 9001:2000 quality certification recognizing this dedication and inclination towards the cause of improving quality on a consistent basis and also ensuring that modern quality initiatives are incorporated, improving Dubai's eServices and maximizing the dependability quotient and performance of the important processes.

Effective implementation and management of strategy:

The foresight has been portrayed above can be acquired by way of above average performance in all-round aspects that relate largely to the delivery of eService. Some of the implementation strategies that would help to achieve this vision:

- Achieving focus of every customer by forming a virtual government by setting sole contact points for the different services of the government in every channel, then moving on to providing services of above average quality to its customers via several innovative channels;
- Ensuring that different government departments are able to concentrate on their core line of business of providing services and that of regulatory aspects (reform);
- Capturing different vibes going on in the eServices provisioning (cost savings, quicker run-time to the market and better levels of quality).

At the same time, other strategies were also formulated:

- Implementing several present-day public services by way of simplified administrative means and cutting down/removal of corruption completely;
- Improving customer satisfaction and increasing the awareness of eServices;
- Fostering feelings of better customer faith and trust;
- Innovating and implementing several (shared) or synergistic services to work on improving effectiveness and better implementation of strategy;
- Working on pre-requisite skills and qualities of human capital.

There were several challenges that the DeG implementation plan faced with regard to the provision of effective e-services in sync with the needs of customers. These challenges in Table 2.2 were summarized well by Lootah & Geray (2006).

Table 2. 2: Dubai e- government challenges

Customer expectation	Process challenge	People challenge	Technology change
Not in-line but on-line	1900+ services provided by 20+ government departments	Leadership at various levels	Rapid change in technology
24×7 e-services	Complex services with red tape	New skills to redesign services	Disruptive effect of technology
Integrated multichannel e-Services	Traditional innovative channels simultaneously	Management of new channels	Immature technologies that are not standardized
Secure and trusted e-services	Reengineering of Govt. Services	New skills for new technologies	Islands of information system in Govt. Depts.
One-stop shop e-services	Phased approach to implementation	New skills identification planning and training	Inter-operable systems integration
High quality and performance s-Services	Identifications of individual services	Lack of requisite skills globally	Provisioning of 24×7 e-services (process + technology)

Source: Lootah & Geray (2006)

E-Gov use:

The different services offered by the department are regularly monitored by the DeG. Some restrictions in terms of its use came into the way of users of different e-services:

1. Making use of portals by the citizens;
   a. People were often unwilling to utilize e-services and preferred actual exchanges, thereby spending much time in this manner;
   b. People and firms opt for websites of departments instead of going to a single portal (www.dubai.ae). It did not look like the eGov portal could do much addition of value to the customer who preferred to get the same service from the source itself;

c. There were some older people, most of who were over 50 years of age, where the DeG felt that their age was more of a hindrance to their adaptation of the electronic systems;

d. Doubts about eGov viability in which a few customers felt that the government would someday come back to the actual 'real' or traditional modes;

e. Resisting change has been part of every process of evolution: there are always people who somehow do not accept change in a positive manner. These people feel that changing over to electronic systems would deprive them of some of the advantages of the system of paper transactions.

The Business Integration of Dubai eGov business:

From the point that the DeG was able to reach its integration phase, it became vital to look at certain issues related to design and integration too. At first, there were certain gaps observed with regard to design orientation and became a matter of discussion between technical and business people. This was explained by the Director of e-services who stated that, 'as eGov is a matter of a high level of digital transformation and targeting of the people, it is important for it not to be dependent on the IT method of thought processes. Electronic transformation is and should be handled by business acumen and people who will be qualified and fit enough to be able to recognize the needs of the customer. A message was promptly sent to the CIOs informing them to pay more attention to the needs and wants of the customers and not just to the overall technical trends that were seen on paper. Additionally, to put the different departments of the government in line with the macro governmental strategy was also perceived as a great hurdle since these were at different stages of maturity in the eGov structure. Many challenges were seen in the technical aspect and were seen to be existent at the time of achieving integration of Dubai's eGov:

-The DeG saw a strong rise in the complexity at the time of bringing together more than two departments at a time;

-There was a lack of mechanisms seen at the time of promising delivery and successful transactions;

-There were no sufficient mechanisms for the measurement of value that was provided to the customers by the government of the land;

Therefore, in accordance with this, Dubai worked out several integration design aims:

    a. Focus on the business: the eGov solution that would be devised would have to be customer-centric and simultaneously, should empower business people to utilize systems to their maximum benefit.

    b. There would have to be very clear concepts and architectural designs with a clear focus on the common businesses rather than on any internal issues.

    c. Minimal time would need to be taken to reach the market and better technical integration arrangements for departments as well as the enablement of services.

    d. Adherence to reformed and re-formulated standards and the promotion of standards that are not just neutral but also appropriate platforms and cross-platforms along with the implementation of leading data, messaging and security benchmarks.

    e. Multi-channel delivery that has been streamlined for operations.

The EDS was selected as project consultants with Sun Microsystems providing technological expertise. The presence of Sun Consultants being a major player in the local market made it possible to wrap up the project in an almost impossible deadline of four months. What is also interesting is the kind of dedication to using technology by the Dubai eGov, which brought many IT MNC companies to Dubai to fuel better progress of the local IT and allied services companies. From then on, the DeG has been able to create and finalize an effective framework by also conducting several pilot integration projects (that is, Trade License, eDelivery) and by identifying a bank/database of information in the government. Additionally, also a well-developed information network links many remote intranets in Dubai that would work as collective applications with a committed channel to ensure smooth flow of information in the Dubai government.

Jordan

E-government still has a limited influence on Jordanian citizens. A survey was concluded by the Arab Advisors Group (AAG) which revealed that the percentage of Jordanian households connected to ADSL is 11.7% of total households in year 2008 (Arab Advisors Group). The survey also revealed that 20.5% of internet users in Jordan are e-commerce users. It has been estimated that the number of Jordan internet users who use e-commerce to be around 3.42% of the total population in Jordan (Arab Advisors Group: http://www.arabadvisors.com/).

The objective of the Jordan Digital strategy is that "to deliver government information, services, and processes, using information and communication technologies (ICT) to transform the way government engage with people and businesses " (a strategy of e-Government, 2006). Establishing a definition of E-Government for the organization is the first step in developing strategy. This definition can be different for different organizations based on the organization values, goals, and culture it is important to understand that e-government is more than website, email, or processing electronic transaction via internet. Once e-government is defined correctly, government can move to the next step, which is developing e-government strategy. The authors Blakemore & Dutton (2003) in their study on the strategies, theories practices and assessment of e-Government and e-Society in Jordan have made an attempt to discuss the balance of individual needs of a citizen and the global pressures that are faced by them.

An integrated society, where long distances and borders are no longer an issue, to the contrary, saving time and fast services will be the new trend (Heeks 2002), Information Systems and Developing Countries: Failure, Success and Local Information Society. Atallah (2001) presented how UNDP has been supporting several e-government initiatives in the Arab world. The researcher suggested four stages in launching the e-government site as well as presenting suggested actions that will advance e-government through the stages.Al-Omari &Al-Omari (2006), are two researchers who presented an E-Government Readiness Assessment general framework model recommended factors which represent the basic components to be assessed prior to launching the "e-initiative" to be sure that the implementation is in the correct way (Ministry of Information and Communications Technology, 2012).

This paragraph can be combined with the previous one as there is not main statement being made however together they make a stronger discussion.

Kuwait

In Kuwait the extent of e-services adoption was examined by Kostropoulus (2003), whereby their study showed that the government of Kuwait was entering into an outsourcing contract with a local private software company called as FAPCO. This company was useful in order to collaboratively develop a wide range of e-government related services for the country. They identified that a number of different languages was promoted by the website and a comprehensive list of duties were very clearly highlighted by this effort (Shuhaibar, 2004).

Bahrain:

The implementation of e-Government services in Bahrain can be related to the adoption of e-Voting measures, being adopted in February 2001. There was an efficient election carried out with more than 200,000 citizens making use of e-Voting measures. This was also used to bring to light different needs, views and opinion of the citizens with respect to a number of issues (Kostopoulos, 2003). The information of the voters was stored on a Central Population Registration Card. This card incorporated bar code system allowing two way accesses. It also had a large amount of information about voters. Another electronic program to be implemented in Bahrain is the e-Investor bringing to the light the effectiveness of the investment programs available in the local and foreign market (Nair, 2004).

2.11. Overview of Electronic Applications and Acceptance in Arabic countries

This section outlines various scholarly research reports that are relevant to the current study. The following studies gathered data from observation and other first-hand sources of information. Table 2.3 summarises several studies that explored e-Government services in Arab countries.

Table 2. 3: Studies dealing with e-Government services in Arab countries

Author	Location	The issue	The results
Al-Shafi &Weerakkody (2008).	Qatar	The factors affecting adoption of free wireless internet Parks (iPark) and using it in the electronic services.	The factors affected the adoption of iPark were usefulness, ease of use, internet safety and internet speed/response time.
Al-Busaidy &Weerakkody (2009).	Oman	Factors affecting diffusions of e-Government services.	The level of citizen confidence toward the e-Government is affected by accessibility, efficiency and availability. In addition, the capability of the workforce had an indirect effect on citizen confidence.
Al-Sobhi, Weerakkody & El-Haddedah (2010).	Saudi Arabia	The impact of intermediaries in facilitating e-Government services diffusion.	Intermediaries had a significant effect on the diffusion of e-Government via developing availability, accessibility, privacy and security.
Al-Busaidy &Weerakkody (2010).	Oman	Identifying factors facilitating e-Government services in the public sector in Oman.	The main factors in facilitating e-Governments initiatives were top management support; integration and IT staff skills and capabilities.
Al-Shafi & Weerakkody (2010).	Qatar	Factor affecting the adoption of e-Government services.	Effort expectancy and social influences are the main determinates of behavioural intention toward e-Government.
Rouibah *et al.*(2011).	Kuwait	Acceptance of the use of camera-mobile phone (CMP) for e-commerce.	Subjective norms, ease of use and usefulness were the main determinates of intention to use (CMP).only job relevancy among the external factors had a significant indirect effect on intention to use.
Abu-Shanab, Abu-Al-Rub, Khalid Md Nor	Jordan		

Al Qirim (2007) examined the different factors which directly impacted the diffusion of e-commerce as well as the adoption of e-features in developing countries. The aim of his research was to identify the overall flow of information into Jordan as well as the degree of internationalization of the Jordanian market. It was identified that overall the level of a positive relationship which was observed in terms of innovative adoption were related to the overall advantage, the overall compatibility of the promoted product, the image of the firm or the online portal, the degree of support which was provided by the management, the availability of time and money, the overall size of the organization, the quality and complexity of the IS used and the competition they face in the market. In contrast the innovative adoption was found to be negatively associated with the reliability of the product, the ability to observe the results, the involvement of the users, the promotion of the product, the type of supplier, the type of buyer and the overall technological skills of their vendors.

Al-Shafi &Weerakkody (2008)examined the impact of wireless internet and its use of electronic services by Qatari citizens. The study was done in public parks. It was identified from this study that the ease of use , perceived usefulness the safety of the internet, overall speed of the internet were directly related to the intention to use wireless internet provided on a public source.

Awan (2008) conducted a study to evaluate Dubai e-government's Government-to-Business (G2B). Different aspects have been employed to evaluate the Dubai e-government system, such as usability, services provided to businesses, website content, online security and communication with businesses. The study found that all these construct were reliable and valid to evaluate e-government.

Rouibah (2009) used TAM2 to examine the intention among a group of consumers to purchase mobile phones which had a camera. The results of the study identify that subjective norms have an impact on the intention to use such phones including the overall usefulness of the product and ease of use of the product. In contrast other external variables did not have a direct impact including different aspects such as image, relevancy of the job, overall quality of output and the ability to demonstrate the efficacy of the results. It is important to understand that the relevancy of the job in which the respondent is in also had an indirect effect on the intention to use the product.

The different factors which impact the overall adoption of e-Government by the citizens of Oman were examined by Al Busaidy *et al*., (2009). The study adopted a quantitative study approach which was conducted with three different government organizations. Thirteen different factors were identified which were found to have a direct influence on the overall progress of the nation's e governance. This was identified by examining the opinion of a number of government employees. Most studies examine the users only. This study was different and made an effort to attain the employee view. The most important factors which were highlighted in the study include the ability of the workforce in different departments, the level of citizen trust and their usability of e-services.

Al-Busaidy &Weerakkody (2009) examined the overall factors which are important to promote adoption of e-government services in Qatar. From this study the acceptance of the Unified Theory of Acceptance and Use of Technology was examined. The results of this study identified that the citizens' behaviour towards the use of e-Government services was found to be influenced by IT facilitating as well as behavioural intentions.

Al-Sobhi,Weerakkody &Kamal (2010) investigated the role of the intermediary in delivering public services from government departments to different stakeholders (business and citizens) and to highlight the challenges that face the development of e-government services in the context of Madinah City, in Saudi Arabia. The findings revealed that the digital divide and poor infrastructure to conduct payments (secure transactions) for e-government services was hindering citizens' adoption of e-services in Saudi Arabia. The intermediary concept was facilitating citizens' access to e-government services and helping to reduce the digital divide in Saudi Arabia. The findings revealed that intermediaries helped in increasing the availability of e-government services and apart from showing trust between the service provider (government) and service requester (citizens and businesses) it was found that an important factor that influences not only e-government adoption and diffusion, also plays a role of electronic intermediary (e-offices) in facilitating this adoption.AlAwadhi & Morris (2009) conducted a study to evaluate the attitudes and perceptions of the citizens of Kuwait, a developing country, towards the adoption of e-government services using UTAUT model. These factors are related to usefulness,

ease of use, reforming bureaucracy, cultural and social influences, technology issues and lack of awareness.

Al-Sobhi, Weekakkdoy & E-Haddedah (2011) evaluated the importance of intermediaries in the adoption of e-government from a citizens' perspective and the potential influence they have on bridging digital divide in societies using the Unified Theory Of Acceptance and use of technology (UTAUT)in the context of Madinah city in Saudi Arabia. The results revealed that the citizens' efforts towards using e-government services, their trust of the Internet and their trust of intermediary organizations contribute significantly towards their e-government adoption behaviour.

The above section identified the different factors that influenced the adoption of e-services in Arabian Countries. The findings revealed that most of the studies applied UTAUT model and only one recent study (Rouibah, 2009) applied TAM 2. The study by Rouibah did identify the factors used in assessing the intention to use Camera Mobile Phone (CMP) before retail shopping not from adoption of e-government perspective. The next section provides an overview of the electronic applications and acceptance in UAE context.

2.12. Overview of Electronic Applications and Acceptance in UAE

Among the Arab countries, the United Arab Emirates is considered a leader country in the e-Government sector. Many studies of the UAE have been conducted in the context of e-Government.Yaghoubi *et al.*(2011) believe that empirical studies on the acceptance of e-Government services in the UAE would assist governments in improving effectiveness and quality of services provided to end-users. In the case of the UAE, Ahmed (2006) emphasises that the maturity level of e-services in the UAE has vastly increased from 2004 to 2005. Recent evidence (Lootah & Geray, 2006) reveals that Dubai e-Government has enabled 81% of services—which are at different stages of implementation. participatory features were added to the website of the Ministry of Education to launch a discussion forum (Education, 2012).

2.13. TAM Model and E-Services in UAE

During the period 2011-2013, the UAE's Government strategy aims to focus on improving government services in order to align them with international standards (Cabinet, 2012)with specific attention directed to educational, healthcare and government services. In order to achieve this, Al-Khouri (2011) states that the UAE has remained ahead of other Arab countries in adopting advanced technologies in order to deliver improved and efficient governance.

Eleven different variables which act as barriers to the use of e-Government services have been identified by Shalan & Alnauaimi (2011). In their study, they identified that a number of users were amenable to using the e-Government services. The results also showed that a number of respondents did not trust the efficiency of the different government agencies to process their online request when compared to those that were made physically in the municipality. The participants also very clearly indicated that the overall quality of services presented by e-Government information systems was not something they could trust immediately as they could not verify the authenticity of the presented information.

The importance of automated service quality has been examined by Al Hawari (2011) in UAE. The study has been conducted among different banks in UAE.The results of their study very clearly indicate the lack of a direct relationship between a customer commitment and automation of facilities. An indirect relationship was identified between customer commitment and customer trust which in turn impacted their use of automated facilities. When automated facilities were available customers were quite happy with the presented services due to different factors including promptness, ease of access and any time access which in turn increased their commitment and trust with the bank. It was observed that the level of commitment customers had was also strongly influenced by their trust. These findings were found to significantly impact the overall service quality of the customers and thereby identify the importance of automation in UAE retail banks.

In researching the banking system in the UAE, a study by Al Shamsi *et al.*, (2009) identified that it is important to measure the overall efficiency of the banking system. The study identified the importance of technical efficiency of the banks, with the results of their study clearly showed that the problems in almost every bank in UAE

was not due to the effectiveness of the technical factors but the inability of the personnel to handle the technical factors properly. This highlighted that there is lack of proper implementation in a number of branches in UAE. It is seen that newer banks had a better system of operation with respect to improving their average performance in terms of technical efficiency.

In trying to identify the different barriers that are faced by citizens with respect to e-Government services it was proposed by Szermeta & Kerby (2005) that the overall value obtained from these services was not clearly known. Another aspect is that there is lack of clear perception of the difficulty in learning these operations and the relative benefit of the same. It was also observed by this research that a number of respondents found the municipal electronic website quite difficult to use. They felt that it is important to go through a lot of steps in order to get a simple service request in, which was found to be a time wasting factor.

A comparison of the citizen's adoption of e-Government services was carried out by Carter & Belanger (2005) by examining the impact of TAM and using the Innovation Diffusion Theory. In comparing the relevance of both the factors it was identified that the most important aspects which influenced the citizens' use of these systems were compatibility, trust and overall ease of use in relation to implementation of the e-Government service.

It is propagated by Welch (2005) that the overall use by a citizen of the different features of a single website is related to the amount of trust they have in the system they are using. The importance of an effective e-Governance system was also studied by Yao & Murphy (2007) by examining the influence of the electronic voting system. Their results yielded different factors like ease of use, mobility; privacy assurance and accuracy of the provided data are all factors contributing to the influence of the citizen's use of different e-Government services.

It was identified by Ibrahim(2004)that the adoption of different web based systems was dependent on the type of educational background the respondents had, the degree of exposure to IT, the overall level of e- literacy as well as their command over the English language in order to understand the use of complex web based systems (Ibrahim, 2004).The TAM was evaluated with respect to adoption of different web based learning paradigms which were found to impact the academic

performance of students (Selim, 2003). The resulting research identified that in such a scenario the overall performance of the student were dependent on the level of e-literacy, their ability to community, the interactive nature of the pedagogy of the academic work, the type of IT facilities available to them and the type of support which was given to them. In a study on the overall impact of digital information services on acceptance of scholarly use of web related services by Taha (2004a) it was seen that adaptability was the main factor. In another study by the same author it was observed that a theoretical model was proposed, with the aim of answering the different needs of information users by making use of a large number of networked channels (Taha, 2004b).

Different aspects have been employed to evaluate the Dubai e-Government system, such as usability, services provided to businesses, website content, online security and communication with businesses as identified by Awan (2008) ina study to evaluate Dubai e-Government's Government-to-Business (G2B).Badri & Alshare (2008)also found in the UAE e-Government services the business value of e-Government services was an important issue. From their sample of 189 firms operating in Dubai, it was concluded that the use of e-Government services leads to enhancement of an intelligent generation, new business development and time saving.

Aboelmaged (2010) used TAM in a study to predict the adoption of e-procurement. The results from this study identified that intention to adopt e-procurement is influenced by four factors: subjective norm, behavioural control, attitude and usefulness. Li(2010) furthered this with a study which found that there are associated issues facing e-procurement but there is little evidence of strategies or polices to resolve these issues. Other studies on issues facing e-Government in the UAE include the work of Sethi & Sethi (2009), Vodanovich *et al.*(2010), Al-Rashidi (2010) and Al-Raisi *et al*(2011).

Despite the large amount of research work that has been carried out on this topic, little information and research evidence is available with respect to e-Government acceptance in the UAE from the perspective of potential users; and TAM is expected to be an appropriate approach. The literature suggests that factors of Perceived Usefulness (PU), Ease of Use (EU), and interest in the government, financial safety and privacy may be important to users when selecting e-Government services.

Currently, it is unclear whether the same factors apply to the UAE. This study aims to address this gap and specifically concentrate on the seven emirates of the UAE to investigate, identify and develop a better understanding of factors influencing e-service acceptance.

To understand the different factors which affect the use of e-government by citizens from countries around the world (Choudrie *et al*. 2005) it is impossible to examine the different barriers and factors (Pilling &Boeltzig 2007) which inhibit the progress of the work(Dossani *et al*. 2005).

2.14. Factors Affecting the Acceptance of e-services using TAM Model

The main aim behind the development of e-government is to build a digital platform that is accessible to all citizens, and offers public services and information according to (Kostopoulos, 2003). E-government has the ability to facilitate the sharing of knowledge and to improve the internal and external relationships of the various stakeholders who are a part of the numerous government services delivery process (Choudrie *et al*., 2004). There are a number or developing nations where the government's main cause for concern is to reduce the cost of running the government services is a major concern (Bwoma &Huang, 2003). E-government aids these nations in cutting down costs related to building physical infrastructure and providing more effective and efficient automatic processes as opposed to staffing the buildings with employees and paying them regularly.

Another aspect that often creates an increased burden on the already taxed systems in developing nations is a poor and mismatched organization and this in turn leads to increased and unwarranted expenditures. E-government is quite beneficial when it comes to cutting costs online, and the presence of an e-government system will encourage more government departments to interact and communicate with each other (Kostopoulos, 2003). Another benefit of implementing an e-government system is that it will be available to the public 24 hours a day and all the days of the year (Bwoma &Huang, 2003).The need to directly come to the government offices through offering an online presence is greatly reduced and this in turn lessens the burden on the government officials, thereby providing better quality service (Awan, 2003; Stoltzfus, 2004; Martin, 2000).

E-government systems being implemented will greatly aid the current government services by improving their quality. The use of Information Communication Technology (ICT) will enhance the entire government process by providing steady and transparent processes that will enhance the trust between the government and its citizens (Choudrie *et al*., 2004). Other benefits include reducing the time that government employees will have to spend in their offices, enhance the existing organizational competiveness and aid in the creation of better policies within all government sectors. Choudrie *et al*., (2004) identified that e-government ultimately has two distinct benefits: They aid in gaining e-commerce advantages such as cost management and they improve the relationship between the people and their government.

As emphasized by Belanger and Carter (2004), there are many similarities between e-commerce and e-government. E-commerce involves the trading of goods and products between individuals, in the case of e-government, involves the exchange of information, and services among the government and its citizens. Just like in e-commerce, integration between two entities is important and in the case of e-government models, integration between different government agencies is essential. Belanger and Carter (2004), state that the network between government agencies and the standard system among the government agencies can be established via the e-government context for faster and more efficient information exchanges between them. In addition to this, the above mentioned state can be achieved using a standard computer code under a secure system in a bid to save the information within any type of online connection.

As early as 1990, Pinto and Mantel (1990) emphasised the acceptance of information technology by users for successful implementation of IT projects. User acceptance has been explained by Venkatesh *et al.*(2004) argued that there was an important role in the decision taken by individuals to inter-relate with technology.E-services are vital as they not only play a fundamental role in business to consumer (B2C) electronic commerce, but also act as a source ofa demand based solution provider which helps in strengthening the relationship between consumers and service providers (De Ruyter et al., 2001).Some important forms of e-services include online banking, travel planning and management of financial affairs (Featherman and

Pavlou, 2003). Even though there are a number of advantages when it comes to implementing an e-government system, there are also a great deal of issues and obstacles associated in setting up the system, which has been identified through a significant number of articles in the last five years recognizing these issues.

The various factors that have impacted on the implementation of e-government processes has been addressed by researchers (Adeshara *et al.,* 2004; Bélanger & Hiller, 2006; Burn, 2003; Choudrie & Dwivedi, 2005; Cross, 2007; Dwivedi *et al.,* 2006; Gefen *et al.,* 2005; Gilbert *et al.,* 2004; Hackney & Jones 2002; Huang, 2007; Thomas & Streib, 2003). In these studies, a wide range of models to study the influence of these factors has been utilised, among which, TAM has become the widely accepted model. Apart from the original TAM model proposed, various factors including trust (Gu, *et al.,* 2009; Luarn & Lin, 2005), perceived risk (Chung & Kwon, 2009, Donner & Tellez,2008), perceived uncertainty (Laukkanen,2007), perceived system quality (Kleijnen et.al. 2004, Luarn & Lin,2005), relative advantage (Puschel & Mazzon, 2010), personal innovativeness (Hung *et al.,* 2003) have been extended in TAM model as found valid in the previous e-government studies.

In addition to the constructs, this model is found to be integrated with other theories. The e-governance practices have been studied by incorporating Diffusion Of Innovation (DOI) and TAM in a study conducted by Belanger & Carter (2008) and Phang *et al*. (2005).Al-Adawi *et al*. (2005) and Warkentin *et al*. (2002) incorporated trust and perceived risk in TAM. It has also been identified that intentions of the users in using electronic tax-filing system can be predicted through TAM (Wang, 2002). In addition, the researchers have included adoption factors (performance expectancy, effort expectancy, social influence), trust factors (trust of the government and trust of the internet), and personal anxiety factors (computer anxiety and optimism bias) in their studies of e-government diffusion.

It has been proven that on two occasions TAM was extendedto include the influence of the society and cognitive instrumental processes which can be explained by the factors called Perceived Usefulness (PU) and Usage Intentions (Venkatesh & Davis, 2000). It has been identified that user acceptance intentions can be influenced by society (subjective norm, voluntariness and image) and cognitive instrumental processes (relationship with job, quality of the output, understands ability of the

results and ease of use). On the other hand, the foundations of ease of use such as anchors and adjustments have been included in the second phase of modification (Venkatesh & Bala, 2008). The real life experience of the respondents usewith the computers is represented through anchors while beliefs that are directly experienced are represented by adjustments which have determined their interests towards the usage of e-government practices. The computer literacy, computer anxiety, and computer playfulness are used to measure anchors while perceived joy and objective usability have been used to measure the adjustments. In line with the above literature, the present study on e-government practices posits that by integrating literature on technology adoption, trust, security, support, e-marketing, computer-self-efficacy, language and web skills, researchers can gain a more comprehensive understanding of e-government adoption.

The ability of these constructs in demonstrating factors on acceptance intentions of the users has been well documented in the previously discussed literature. This influence has been studied in various fields such as e-mail adoption, E-commerce adoption, virtual store context, online purchasing, payments done through mobile services and mobile banking adoption (Gefen & Straub, 1997; Gapar *et.al.*,2011; Chen *et.al.*, 2002; Koufaris & LaBarbera,2002; Amoako-Gyampah & Salam, 2004; Dahlberg *et al.*, 2003; Cheah *et al.*, 2011). In addition Hwang *et al.* (2011) and Almahamid & Rub (2011) studied the impact of TAM variables on the satisfaction of the customers. Has this been repeated from previous discussions?

The TAM model was extended by Davis *et al.* (1992) and Gefen *et al.* (2003) which has been mostly used only in industrialized countries however was not used as frequentlyin developing countries such as Arabic nations and Saudi Arabia. This has highlighteda serious research gap as consumer responses on acceptance of e-services vary between cultures. As a result, it has become necessary to assess the influence of cultural differences on the acceptance of shopping-services practices across various countries. This argument was supported through the research results that reported the influence of culture on the acceptance as well as interests towards technology (Veiga *et al.*, 2001). Further to this, a study by Moon & Kim (2001) also stressed the need for more research on the acceptance of e-services and application of TAM model in developing and underdeveloped economies. The major objective of this study is to identify the factors those influence the acceptance of e-government adoption in UAE

customers with the help of the TAM. The findings of the study will help to validate the conceptual model and the proposed research hypotheses.

2.15. Theoretical Framework

2.15.1. TAM Models

Several recent studies have applied the TAM model to assess the e-service adoption in both developed and developing countries. For instance, the degree to which the factors can influence the continuing interests of the customers in online shopping has been studied by Eid (2011). From this study, the inter-relationships between three e-commerce constructs and their precursors can be well understood through the theoretical framework. In this study, a structured self-administered questionnaire has been used to collect data from the customers those have been from Eastern part of Saudi Arabia. The study supports strong influence of the satisfaction of the customers as well as the weak influence of trust on B2C e-commerce customer loyalty has been identified.

Chen (2011) has identified the influence of TAM and e-service quality and risk perception on the intentions of the customers in continuing the online shopping. In accordance to this study, the dependent variable is e-brand identity, the mediators are brand attitude and satisfaction of the customers, the precursors are quality of the website and perceptions on risks and TAM factors are perceived usefulness and ease of use. It has been identified by the researchers that brand attitude, satisfaction of the customers and brand identity are positively influenced by TAM and e-service quality. As a result, the e-branding can be successfully built up by the online retailers through TAM and e-service quality.

The conceptual problems as well as the range of continuance intentions in terms of e-shopping can be well understood through a study conducted by Dennis and Halliday (2010), whereby an acceptance model which consists of expectation confirmation concept for the purpose of measuring the age differences in the context of the intentions to adopt e-shopping in Saudi Arabia has been proposed. This model is found to be well suited for this context, where the results identified that 65% of the participants are interested in continuing online shopping. In this model, the interests of the shoppers in continuing online shopping have been determined through various

factors such as perceived usefulness, enjoyment and subjective norms. The prolonged interests in continuing the online shopping has been assessed by the researchers using TAM and Expectation Confirmation Theory (ECT).It has been identified from this study that the prolonged interests in continuing the online shopping experience have been influenced by Perceived Usefulness (PU) and subjective norm, with the majority of the influence being found to be from enjoyment.

In addition, the prolonged interests in continuing the online shopping in Saudi Arabia can be extremely influenced by quality of the online site, loyalty, perceived usefulness, enjoyment and subjective norms. From this study it has been proven that continuance intentions in Saudi Arabia can be both directly and indirectly influenced by online strategies. This has been confirmed through achieving the same results through research by Bhattacherjee, 2001a; Childers *et al.,* 2001; Davis *et al.,* 1989; George, 2002; Shih & Fang, 2004; Taylor & Todd, 1995; Teo *et al.,* 1999; Venkatesh *et al.,* 2003. In addition, the continuous intentions can also be influenced by quality of site (0.620) and loyalty (0.318). Yamagishi & Yamagishi(1994) proved that the cultural factors of Saudi Arabia can also determine the continuous intentions.

Regarding the e-learning systems, the way with which e-retention and e-satisfaction of the e-learners of the United Arab Emirates (UAE) has been influenced by the TAM factors was examined in a study conducted by Al-Hawari & Mouakket (2010). In this study, the way through which e-satisfaction and e-retention of the students can be affected by a wide range of TAM factors such as enjoyment and blackboard design has been examined. In this study face to face interview has been conducted to collect data. The students who were using the blackboard system has been selected through convenient sampling and then interviewed. The research hypotheses have been tested through AMOS 6and from this study it has been understood that e-satisfaction and e-retention of the students has been directly influenced by perceived usefulness whereas e-retention of the students has been directly influenced by the ease of use. E-satisfaction of the students but not their e-retention has been considerably influenced by design features and enjoyment. In addition, e-retention of the students has been directly influenced by e-satisfaction of the students. The influence of TAM factors as well as other external factors on the e-satisfaction and e-retention of the UAE students has been well understood through this study.

The factors that influence the acceptance of social networking sites (SNS) have been studied by Lorenzo-Romero, Constantinides & Alarcon-del-Amo (2011). In this study, the extent to which these factors influence the practices as well as the behaviours of the online users in the Netherlands has been examined. It was found that the factors that affect the acceptance and adoption of social networking sites have been studied with the help of Technology Acceptance Model (TAM) which adopts Structural Equation Modelling Technique. Findings of this study highlight that the interests of the customers in using SNS are directly influenced by the ease of use and perceived usefulness of those sites. The influence of the perceived usefulness on ease of use has been studied.

There has been a study on the ways with which the interests of the users in adopting SNS are influenced by trust and perceived risk. It has been identified that the interests towards these sites are found to be either directly or indirectly influenced by the factor called trust. The perceived usefulness and ease of use can also be directly influenced by the trust. On the contrary, the interests towards websites have been influenced by perceived risks. The negative influence of ease of use on perceived risk has also been identified from this study. As a result, perceived risk will be high with the lower level of ease of use. In addition, two personal factors associated with the users of social websites (trust and perceived risk) and those are involved in enhancing the conventional TAM have also been identified from this study. In the TAM study, two types of internal factors such as trust and perceived risk has been incorporated while attempting to explain the factors those influence the interests of the users in using social sites.

In a study conducted on the extension of TAM, two factors such as Perceived Use Efficiency and Perceived Use Effectiveness have been included to study the factors that influence the interests of the customers in adopting online payment services (Yu & Gehrt, 2011). By considering the other risks and the past experience of the users those affected the interests of the users in adopting online payment services, perceived risk has been considered as a moderator in this study.

From this study, it has been understood that the link between innovative nature of the online payment websites and the interests of the users in adopting online shopping is found to be directly influenced by Perceived Use Efficiency and Perceived Use Effectiveness. As a result, the direct influence of innovative nature of the traditional

TAM is found to be lower when compared to the influence of the Mediating Model through the context of prediction of interests in adopting online payment services. On the other hand, innovation characteristics as well as the perceptions of the users are found to be the major determinants of the wish of the users in adopting online payment services. From the literature in TAM, the wide range of conflicting impacts of an innovative nature can be understood in the context of online payment services. It has also been identified from the literature that innovation acceptance has been predominantly influenced by past experience of the users in using online payment services.

In Jordan, there has been a study on the adoption of e-government adoption in business organizations (Al-Zoubi, Sam & Eam, 2011), which has shown determination of the level of implementation of e-government practices in the target location and the examination of the factors those influence the organizations to adopt such e-government practices are the two major objectives. In order to arrive at these objectives, the researchers have developed an integrated theoretical framework in order to examine the adoption of e-government practices. From this study, the role of technological, organizational, and external factors are those used to motivate the firms to adopt e-government practices have been examined. It has been identified that the knowledge transfer in the firms and the capacity in implementing innovative techniques is possible with the accumulation of technology.

A quantitative research study conducted in Malaysia, outlined the interests of the customers in using e-filing (Hussein, Mohamed, Ahlan & Mahmud, 2010). The researchers distributed 500 self-administered questionnaires, and among them, 411 provided valid data for analysing. In order to arrive at the solutions for research questions, the researchers have developed 14 hypotheses. In this, the interests of the individuals in using e-filing have been studied with the help of the factors including Ease of use and perceived usefulness, trust and quality of the website.

The way with which the e-commerce adoption techniques have been influenced by the perceived risks of the customers from Saudi Arabia was examined by Almousa (2011). Based on this study, the researcher of the current study has taken the Technology Acceptance Model (TAM) (Davis, 1989), and an Extended E-commerce Acceptance Model which incorporates the perceived risk factors as the reference models (Crespo, Bosque & Sanchez, 2009)to examine, financial, social,

performance, time, psychological, and privacy risks in this study. It has been identified that the intentions to adopt online shopping have been positively influenced by ease of use of the customers and usability of online shopping. In addition, purchasing intention has been positively influenced by a positive attitude. The attitudes of the customers and their interests in doing online shopping are found to be negatively influenced by perceived risks of the customers. The interests of the customers in doing online shopping are found to be reduced by the perceived risks of the customers. On the other hand, purchasing interests of the customers are found to be increased by ease of use of the customers. The research also identified that interests in online shopping, wish to purchase through online shopping are negatively influenced by the perceived risk in online shopping (O'Cass 2001, Shih 2004, and Heijen, *et al.,* 2003; Joines, Scherer & Scheufele 2003; Korgaonkar & Wolin, 1999; Salisbury, Pearson, & Miller, 2001).

The factors with which the interests of individuals from under developed communities in adopting online payment services have been examined in a study conducted by Sipior, Ward & Connolly (2011). The techno-disadvantaged public housing community or the neighbours who received training or exposure of the community computer lab have been provided with the questionnaires for data collection in this context. It has been understood from this study that the usage of computers is found to be related with Perceived Access Barriers and Perceived Ease of Use (PEOU) but not with Perceived Usefulness (PU). In addition, access barriers are found to be influenced by the demographic factors such as education, employment and socio-economic status of the users. The considerable level of the relationship between PEOU and PU has also been identified. It has been concluded from the outcomes of this study that professional training is the only way to develop awareness as well as interests towards e-government practices.

The extent of the utilization of e-banking services in Jordan has been studied by Al-Smadi (2012) utilizing TAM as well as the Theory of Planned Behaviour Model (TPB) and Incorporated Perceived Risk (PR) and Five Cultural Dimensions. The study findings reported that uncertainty avoidance has a significant and positive impact on ease of use and perceived usefulness and found that PR has strong impact on customer attitude to utilize use of e-services. A study on the factors that influence the perceptions of the customers towards e-banking services (Fonchamny, 2013)

with the help of extended Technological Adoption Model (TAM) was studied in Cameroon. In this study, 210 customers were respondents providing data that was analysed through pat regression analysis. The results emphasised and understanding that the interests of the users towards the adoption of e-banking services have been influenced by the perceived security, trust, and cost of service, usefulness and accessibility. The influence of these factors on the perceived usefulness of e-banking adoption has also been identified from this study. The importance of enhancing security, accessibility and loyalty and reducing the expenses in motivating the customers to engage in e-banking services has also been understood from this study.

The various factors that affect the adoption of e-Government are classified in two parts: organizational and individual (Bwalya & Healy, 2010). Barki & Titah (2006) proposed that despite of the organizational factors, individual adoption has a great influence on the e-Government services adoption. With strong reference to the Davis Technology Acceptance Model (TAM) of 1989, it is established that the individual adoption is considered as the dominant characteristic that would affect the intention to use or adopt the technology (Warkentin *et al.* 2002). The organizational adoption on the other hand, has two scopes technical and non-technical factors, the organizational adoption of the e-Government was selected as it involves the projects that are tackled to demonstrate the various technical factors that affect the organization adoption of the e-Government.

This section identifies the different social factors, which might influence citizens' intention to adopt e-government. Various factors play a vital role in the adoption of e-services generally as highlighted by many authors. The subsequent section is divided into four main parts based on previous literature.

1. The information system (Technical Infrastructure) ;
2. The socio-psychological Factors (individual characteristics) ;
3. The Behavioural factors (organizational behaviour);
4. E-Marketing.

2.15.2. Information System

The infusion of information technology into government services brought about a radical alteration in its bureaucratic structure by greatly increasing the role and

abilities of the public sector through modern communication media (Straford, 2000). The number of people who are making use of e-government services is still quite low (ICMA, 2004) andsome of the reasons as to why the adoption rate is low are:

1. The inherent uncertainty associated with employing an open transactional architecture;

2. The impersonal nature of online transactions which people find it hard to trust;

3. The inability to learn how to use them;

4. The extensive utilization of estranged communication technology as opposed to face-to-face interactions (Pavlou, 2001).

The issue of trust and security is a major motivating factor that keeps people away from using e-government services (Gefen*et al*, 2002; Lee *et al*, 2003; Tan *et al*, 2005; Warkentin*et al*, 2002). The following section reviews the importance of trust in an online environment and with particular reference to e-government.

2.15.2.1.   *Trust Relationship*

Trust is identified to be the promotion of expectation and willingness of an individual in a specific transaction. This transaction will proceed in a manner that the individual understands the different risks, which are associated with the process, and acts with the good faith that the expectations will be met. This is characterized in social psychology as the contextual factor, which helps in the enhancement and inhibition of positive expectation (Das, 1998). There have been wide ranges of definitions of trust in which most of have some similar baseline assumptions.

Cook & Wall (1980) propagate the idea that trust is the level of confidence expressed by one part in another party. The party who trusts is called as the truster and the party on whom the trust is placed is called as the trustee. Good faith and goodwill is promoted in trust. One party hopes that the other party will carry on the expected action. It is argued that trust is directly related to the number of previous interactions. The expectation that the previous behaviour of the trustee will continue into the next contact is binding. It is also important that trustee is often not in control or cannot monitor how the truster acts.

Trust is identified to be a system wherein there is the improved belief that there is faith in the characteristics, competence, dependence and security of the system even when the system is faced with uncertainty or risk (Kini&Choobineh, 1998). This definition of trust in a system was applied in a theoretical model by the authors. They identify that this model helps in predicting specific factors, which contribute to the overall trust of the user in the system of electronic commerce. It is also defined to be the ability of a commerce site to promote their reliability and integrity among consumer to enable them to purchase from their electronic portal (Belanger *et al*., 2002).

In the online shopping environment, there is hardly any sense of consumer trust as there is no face-to-face interaction between consumer and buyer as well as product and consumer (Cho *et al.* 2007). The trust in the online environments and situations is more than the familiar meaning of trust in socially and technically abstract systems (Sydow, 1998). The general perception of trust in the online environments is based on faith in the rightness of the principles that relate to personal interaction as well as to abstract systems (Giddens, 1990; Sydow, 1998). It is necessary that the online consumers trust online vendors and the internet as transaction mediums (McKnight & Chervany, 2002). Therefore, Rea (2001) proposed that the increased awareness of how to apply system designs that misuse user's semantic understanding of the electronic commercial process could be a beneficial technique to build trust in the electronic environments.Zuboff (1998) focused mainly on the information technology and observed that lack of trust in new technology might affect its usage. In fact, trust and belief are essential factors that influence the consumer behaviour as well as determine the success of the technological adoption such as e-commerce (Sasidharan &Holsapple, 2005). In addition Palvia, (2009) deems belief and trust having an important effect on the participation intention by usage attitude. In B2C e-commerce, developing trust between the parties is essential for companies that select to operate their business online (Chew, 2007; Chawdhry *et al*, 2002; Petre *et al*, 2006; Luarn &Lin, 2005). Many studies related to trust have found that the consumers trust is inextricably linked to the Website trust (Hwang, 2008; Flick, 2009; Vaidyan-Joseph, 2008).

In 2008, Vaidyan-Joseph conducted a study to recognize the factors that increased the consumer trust in the e-commerce sites as well as examined the factors that relate

to e-commerce success metrics. The study revealed that some functional, organizational, securities as well as infrastructural factors have a great impact on customer trust in the e-commerce sites that positively influence the success of e-commerce transactions. This finding is similar to prior studies conducted by Farah & Higby, (2001) and Sipior *et al.,* (2004) that confirmed that success of e-commerce is greatly related to the e-consumer's trust. A recent study conducted in 2008 by Hwang (2008) stated that trust has a positive effect on the buying intention of the consumer. Likewise, the trust and faith factor were found to be an essential predictor for adoption of m-commerce and e-commerce (Lin &Luarn, 2005; Cho *et al.,* 2007) and findings supported by Wei *et al*, (2009), proved that there is a very strong and positive relationship between belief and m-commerce adoption.

McKnight *et al.,* (2002) stated that the lack of faith in the institutional and technical environment hampers the adoption of the e-commerce. This was supported by Ha & Stoe (2009) who has conducted a study in consumer acceptance of e shopping by identifying factors impacting e-Shopping quality and enjoyment as well as trust in addition to original constructs of the TAM or Technology Acceptance Model. The study ascertained that shopping enjoyment as well as trust play a major role in the customer's adoption of e Shopping.

The ability of an individual to promote trust is directly related to trust in an e-commerce context. In some marketing studies (Gefen 2000; Gefen *et al*., 2003) which were conducted by Amazon.com, an online marketing website, it was observed that the overall ability of a customer to trust the operations of the business has a direct bearing on their trust as a consumer. This applies in particular to those consumers who are inexperienced in e-commerce transactions. Consumers that are new to the electronic purchasing system and have little or no experience with online retailers shift the focus   to their ability for socialized propensity to trust (Gefen, 2000).

It is promoted by Teo & Liu (2007) that in multi country studies involving USA, Singapore, China and UK most consumers who trust in electronic commerce activities were found to have an innate propensity to trust. It is also supported by the views of Wingreen &Baglie (2005).When one considers an e-commerce scenario the familiarity of the consumer with the surroundings is vital. The ability of the consumer to understand the procedures of websites, the procedures related to

purchasing and choosing of merchandise is vital (Gefen, 2000).It is also important that familiarity with an online vendor is vital in order to increase the overall trust in consumers. When a consumer is better associated with a particular type of retailer in terms of familiarity they have more trust in the retailer due to their previous experiences. Familiarity with the retailer by increased levels of exposure to an e-service promotes stronger trust with the business. It is also seen that the reputation of the business is vital in improving consumer trust, whereby reputation can be identified by the extent to which any customer expects a store to be honest (Doney &Cannon, 1997).Reputation which has a high propensity to be obtained through word of mouth is vital in attracting high numbers of consumers, especially those who are first time visitors to an online portal. When other consumers express positive experience then the user perception of risk is found to decrease.

The reputation of an online vendor and a retailer has a major impact on identifying if the business is considered trust worthy. This is supported by the views of Friedman (2000), Jarvenpaa (2000) and Siau & Shen (2003). It is important that the good reputation of the online vendor is maintained as it reduces the risk perception to the user. It also promotes the certainty of the user in revisiting the website and the store fostering better trust. One good example of this is the reputation of Amazon.com which has helped in overall increase in total sales (Barnes &Vidgen, 2002).

A large number of studies have presented empirical evidence of the reputation in an online vendor and their relevant ability to promote trust. In a study by Jarvenpaa *et al*., (2000) specific studies on books and travel related online shopping portals show a very high level of importance with respect to the reputation of the vendor. It is also postulated that the overall perception of reputation is found have a significant impact on the trust of the consumer when considered in an e-commerce context (Teo &Liu, 2007; Walczuch &Lundgren, 2004). In a traditional retail sector trust is defined differently. Trust is often characterized by the ability of the sales person to convince the consumer that the product they are purchasing is the best decision for them. The consumer trust is often completed relating to the expertise of the salesperson and his personality (Doney & Cannon, 1997).This cannot be applied to an online shopping environment, asthere are no sales people. Any query that the shopper would have is answered by help features and search options. This means the traditional basis of consumer trust in the vendor cannot be applied (Lohse& Spiller, 1998).When applied

in this context it is important that a website be designed in a manner that provides the consumers with the correct information which is required to ensure an effective purchasing decision is made. This will be promoted by presenting the consumer with information that is required to promote user navigation, interaction with vendors and ease of transaction process. The aim of the process is to present the consumer with enough trust to carry on their transactions. This trust should be similar to that provided by a salesperson in a traditional retailing environment.

A major aspect of trust in e-government involves the communication channel through which e-services are delivered online and data are transferred. Carter&Belanger (2005) emphasized that trust in the internet is required fore-government, as it represents the technology through which electronic transactions are executed.E-government, transactions entail considerable risk(Horst*et al*, 2007), which can be deemed as equal or even higher compared to that faced in e-commerce. This risk can involve monetary loss, in case of transactions related to financial issues or actual fund transfers, such as tax payment, which can usually be higher than payment for an online purchase. In addition, e-government transaction risk can also involve loss of data, which are of high importance to the citizen, beyond typical privacy concerns faced in e-commerce, such as tax or health information. Therefore, trust in electronic transactions can be identified as an important aspect for e-government.

Chopra & Wallace (2003) identify trust in information as an important form of trust in the electronic settings that the information is delivered through. This is largely manifested through information quality indicators, such as accuracy, currency and coverage. Information quality has been found to be necessary in earning the trust of the citizens that are using the technologyx for e-commerce transactions (Kim *et al*, 2005).The quality of information provided by e-government systems is also of paramount importance for building trust in e-government, as Gilbert*et al*, (2004) has identified that information quality is a significant determinant of the willingness to use e-government services. Trust in e-government will be largely dependent on the quality and level of information made available to the citizens.

When an electronic environment is considered, it is vital that the trust in the information system is discussed (Chopra &Wallace, 2003).The trust in e-government systems has been examined by Hung *et al*., (2006) through identifying the citizen's

response to the online tax filing system. The trust in the system translates to a belief that there will be an appropriate operation of the system, it will not be compromised and confidentiality will be strictly maintained. Where this type of trust promotion is observed it also identifies that a strong level of stability related to the response time to the online tax filing system is achieved (Carter &Belanger, 2005).An important aspect which promotes the use of trust in e-government settings is the trust in governmental activities (Welch *et al*., 2005) as this can impact on the image of the government as the citizens can identify that association and satisfaction with e-governance is directly governed by the overall trust in the government.

Trust in a government organization is vital as it forms the basis for trust in all the e-government services provided by the governmental organization (Horst *et al*., 2007), and only if trust is promoted in the governmental organization then will the e-government services will be able to function to provide the service for which it was designed to deliver. The government provides the actual implementation and provision of the e-government services, therefore the citizen attribution and their perception of trust with regards to the government as a whole is vital in influencing their participation in e-government activities. If there is lack of trust, even if the government continues to invest in e-government services, the citizens may continue to use traditional methods which they feel are more personal, including direct phone calls and personal visits to government departments (Gefen, 2002).

Researchers (Mayer *et al.,* 1995; Gefen & Straub, 2002; Gefen *et al.,* 2003; Jarvenpaa *et al.,* 2000; McKnight *et al.,* 2002; Pavlou, 2003; Tan & Theon, 2001; Van Slyke *et al.,* 2004; Warkentin *et al.,* 2002) have proven that additional constructs such as trust being included in adoption models can be used for studying acceptance and also recognising that trust is an indispensable element of a relationship when uncertainty or risk comes into the picture(Benbasat & Barki ,2007). A number of studies have investigated the role of trust in e-commerce (Belanger *et al.,* 2002; Gefen, 2002; Gefen *et al.,* 2003; Hoffman *et al.,* 1999; Jarvenpaa *et al.,* 2000; McKnight & Chervany, 2002; Van Slyke *et al.,* 2004).

Featherman and Pavlou (2003) have argued that it is integral to differentiate between one-time usage of e-services and its total acceptance by the users, andCarter & Bélanger (2005), Gefen *et al.* (2005), Welch *et al.* (2004) and Warkentin *et al.* (2002) furthered this discipline of study by examining the context of e-government.

Reichheld & Schefter (2000) stated that access to restricted transactions; violation of rules, opportunistic behaviour cannot be controlled by the sellers in this modern age as there has been a surge in the development of information technology. It has become necessary for firms to take extra precautions in areas of security as well as protecting the privacy of the citizens (Luo, 2002; Rifon *et al.,* 2005). It has also been identified by Jarvenpaa *et al*. (2000), Gefen (2000), Kovar *et al*. (2000) and Stewart (2003) that the perceived trust, traffic and sales through the use of e-commerce transactions can be well enhanced by minimizing such security and privacy issues.

In contrast to one-time usage of e-services, the decision to switch to e-services is a complex decision. From the consumer's perspective, a great deal is at risk as they enter into a trust relationship with businesses that are represented by the internet, rather than a physical person.Tan and Theon (2000, 2001) believe it is necessary for customers to trust both the agency providing the services and the channel through which they receive their services prior to the completion of each transaction. Two factors are found to be the vital components of trust towards an e-government program (Carter & Belanger, 2005; Pavlou, 2003b), being the trust towards the dependability of the applications (trust towards the internet) and the trust towards the agency (trust towards government).If the customers believe that the government agency can provide electronic services in an effective as well as confidential manner then only they will make use of such services.

The expectation in terms of the opportunistic behaviour of the others is known as trust. In the context of business, the feel that the product or services that has been offered as per the promise is known as trust. (Ganesan, 1994; Gefen 2004; Pavlou, 2003) Gefen (2004) and Chiu *et al.* (2009) have identified that the demands and expectations of the customers should be fulfilled by the internet retailers in order to gain a competitive advantage and develop a stronger customer base. This can be achieved by making the customers feel comfortable while using the online interfaces. It has also been identified by Hoffman *et al.* (1999) that the customers will show more interest in using online sites, but only if they have trust in the company they are interacting with. As stated by Gefen *et al*. (2003), if the customers are provided with a positive experience with their initial exposure to online retailers, then they will tend to use the online sites for purchases in the future.

The Technology Acceptance Model (TAM) along with subjective norms and technology trust has been identified as the important precursor for intention to adopt new technology (Lee & Wan, 2010). It has been identified that the individuals who have had limited exposure in terms of new technology will tend to be low level adopters of using that technology. The study reported a positive relationship between PU and subjective norm (SN) as well as PEU and PU. In addition, trust in ability to use the technology has been found to be positively influenced by PEU and familiarity. On the other hand, Festinger (1975) identified that trustful vendors will have direct influence on perceived usefulness. As a result, it has been proposed that:

H1. Trust is positively related to customer perceived usefulness

H2. Trust is positively related to customer ease of use

2.15.2.2.   Security

The significance of the need for IT security is growing constantly (Sharma *et al.,* 2005), with security concepts referring to the ability to protect and safeguard against the potential outside threats. In the online environment, security can be defined as the ability of an online company to protect its consumer information as well as their financial transaction data and information from being stolen at the time of transmissionas shown in Figure 2.13. The perceived security controls explains the extent to which any e-commerce website is supposed to be secure as well as protecting its corporate information from the potential threats (Hua, 2009).It is true that the adoption of such open public networks will be extremely useful for the citizens, however it is the responsibility of the government to ensure the security issues associated with this adoption are addressed (Pavlou, *et al.,* 2007)..
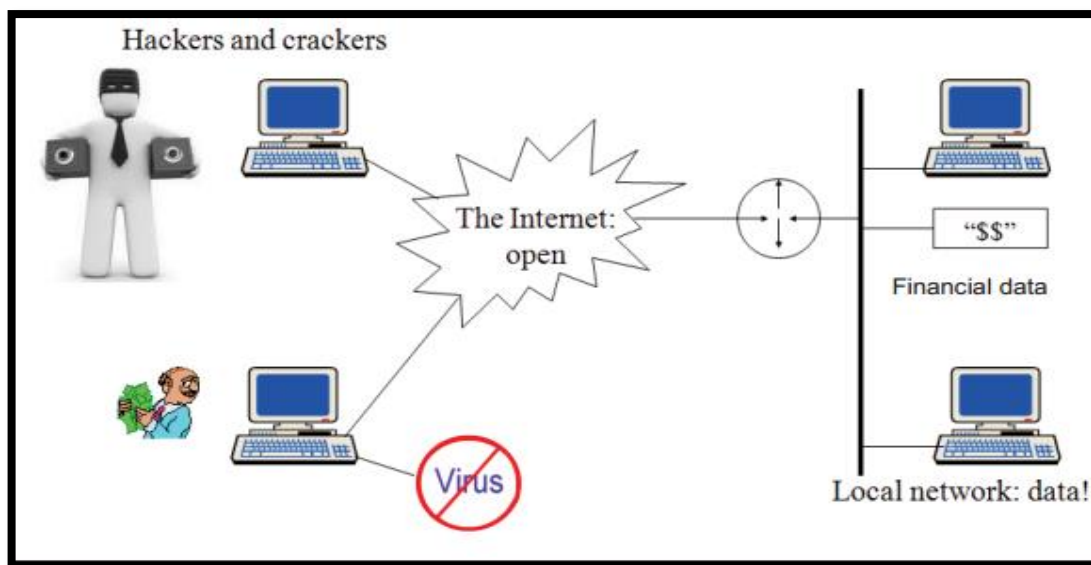
Figure 2. 12: Security risks of the internet

The online services which require security has become gradually more noticeable as an important issue since 2000, particularly after several well-publicized and exposed attacks on the highly guarded internet sites, CNN, eBay, Yahoo and Amazon. These companies resulted in a loss of approximately $1.2 billion USD following the attacks. Apart from the success of these electronics attacks, the on-going repercussions for these businesses included loss of business, reputation as well as customer trust (Stephen, 2001). To ensure that there is less loss of integrity within the businesses which require strong electronic security, the businesses and the government needs to ensure that all systems have the most up to date security for its systems to alleviate any potential damage from occurring in the future. Possible areas of attack on the business systems are caused by insecure online transactions, hacking and poor access control of all important data (Hesson & Alameed, 2007).

A study by Fram & Grady (1995) focused on a study of internet purchases from the perspective of online consumers. It was revealed that the major concerns were condensed into a collection of various transactional issues such as credit card security, and sellers not being properly identified, as well as a lack of payment options. In the same way, Then and DeLong (1999) stated that the fear of customers engaging in any financial transactions online is the most substantial barrier that prevents online shoppers browsing on shopping websites converting into online buyers. The security concerns in this regard refer to the consumers' beliefs that

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online firms do not protect the transaction information and data from being stolen at the time of transmission or during the information's storage (Salisbury *et al.,* 2001; Belanger *et al.,* 2002). These concerns and fears have a noticeable impact on a person's decision to purchase anything online (Yang & Jun, 2002).

The research findings have shown that the behavioural intention of the customer to utilize e-commerce websites is greatly influenced by their awareness regarding the website's level of security. Salisbury (2001) discovered that perceived security is a significantly stronger element of intention to shop online than ease of use.Miyazaki & Fernandez (2001) added to this when they revealed that the rate of purchasing online products is highly associated to the perceived security control.In 2009, Lee analysed the effects of identifying risk and benefits on the behavioural intention of the consumer to utilize online banking while establishing the influential factors that affect the decision of a person to utilize online banking. In this study, there were five identifiable risk facets examined - security/privacy, financial, social, performance and time risk. The research found that a person's intention of using online banking is negatively affected by the perceived privacy/security risk and financial risk.

A recent study by Hua (2009) into online banking in China revealed that the ease of use holds less importance than security and privacy and acknowledged that security is the greatest factor that influences adoption by the user. Belkhamza & Wafa (2009) had confirmed that the major factors that determine the adoption behaviour in Algeria are the various security protocols that have been put in place as well as the system risks of e-commerce. Additionally, Shafi (2002) conducted a study in Saudi Arabia to examine the impact of Internet technology used in different Saudi business organizations. The research discovered that businesses in Saudi utilize the internet primarily for conservative tasks such as communication as well as information gathering. However, due to the access issues and security concerns the use of internet in an advanced and developed form of e-commerce for the purposes of conducting online sales and purchase is not a primary use for internet technology.

Hoffman *et al*(1999) and Pavlou (2003) have pointed out that consumers are sometimes unwilling to complete small purchases on-line, due to security concerns thereby identifying the perceived risks are major barriers in the acceptance of e-services.Kesh *et al.*(2002) contends that system reliability and security are two major risks associated with the adoption of e-Government services. Issues related to the

performance of technology are considered as a perceived risk in determining the effective performance of the e-Government system whereby, internet users perceive financial and credit card fraud as risks. Pavlou (2003) points out that use of e-services' has long term implications for consumers and the risks associated with the use of e-services are of serious concern. To counter this, Srivastava & Teo (2005)believe that it is crucial for citizens to have confidence in government agencies and a lack of trust towards the government and the internet can both provide unconstructive development by the citizens that they have deemed to be unfavourable in the implementation of e-Government services.

E-Government services comprise a wide array of services including government forms, online services, research related information, employment and business opportunities, licence renewal and registration facility and the opportunity to submit comments pertaining to governmental services and Larsen and Rainie (2002) identified that for the use of online services to be successful depends on trust established between both the government and its citizens (Carter and Belanger, 2004). It is important for the government to understand the need to implement secure service delivery methods rather than using traditional service delivery methods in more encouraging ways. One of the issues that has been identified by Colesca (2009) is that both technical and non-technical barriers to the acceptance of e-Government services exist. As reiterated throughout the discussion of trust in this study, issues related to security and privacy over the Internet lead to lack of trust for customers, whereby the customers fear unwarranted access to their personal information; and issues of identity theft and Internet fraud are critical for the e-government agencies to address which will instil into its customers a stronger acceptance and adoption of e-Government services.

The major concern in the online world is that of security (Nikkhahan *et al.,* 2009). There is a widespread presumption related to privacy concerns when using global communication channels particularly where data disclosure to third parties is involved and where there is the potential of high data leakages.. As e-Government services tend to deal with huge amounts of private data (Zweers & Planque, 2001; Hermann *et al.,* 2009), IT security is an important technical factor that affects the adoption of the e-Government services and the e-Government project could fail thereby, due importance has to be given to protect all customer information as well

as providing a guarantee to obtain privacy, ability and honesty of information (Euting & Weimert, 2009; Alijfri &Navarro, 2003; Elmarie, & Elme 2000; National Institute of standards and Technology, 2000; Von Solms, 1999; Pfhleeger, 1997).This argument was substantiated by several recent studies. For instance, the eleven important customer-based factors that motivate the customers into adopting mobile banking services were proposed by Amoroso and Watanabe (2011). Theysuggested a model based on the strong theoretical underpinning developed in the literature of technology acceptance, and the study was extended by including attractiveness of alternatives and also the relationship between key constructs was highlighted in the extended TAM model. This study focused on the inter-relationships between those constructs that are associated with this context. In accordance to this study, the ease of use has been significantly influenced by an important factor, security. There has also been a study on the factors influenced by the acceptance of the tourists in adopting e-payment systems and this study is based on TAM model (Peng, Xiong & Yang, 2011). The interrelationship among perceived security, perceived compatibility, destination m-payment knowledge and vulnerability of the customers are strongly supported in this study.

The extreme influence of security concerns on the interests of the customers in using e-services has been examined in a study conducted by Chen & Barnes (2007), Hamlet and Strube (2000) and Hernandez & Mazzon (2007). In addition, the ways with which the acceptance of social networking web sites (SNWs) have been determined by the privacy concerns of the customers was studied through theTechnology Acceptance Model (TAM) (Xin, Qin, Kim & Hsu, 2011).The significantinfluence of security concerns on social networking website acceptance using theTechnology Acceptance Model can be observed in the literature by Xin Tan, Li Qin, &Hsu (2011). There is a statistically significant for the privacy concerns for each respondent as the report identified there was a direct influence of this factor on the users' acceptance of social networking website. On the other hand, the ways with which the intentions of the users using social networking sites can be enhanced by the perceived usefulness of the site, and ease of use was also studied. As a result of these studies it has been hypothesized that:

H3: Security significantly affects ease of use

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The factors influencing the interests of the Greek customers in using internet banking services was studied by Giovanis, Binioris & Polychronopoulos, (2012). In this study, theTechnology Acceptance Model (TAM) as well as the Innovation Diffusion Theory (IDT) and the Perceived Risks of Customers have been used to arrive at the research objectives. In this study, the researchers have developed a conceptual model which includes factors such as compatibility of internet banking services, ease of use, perceived usefulness, perceived security and privacy risk, demographic factors and IT knowledge of the customers. This has been based on a similar study conducted on the attitudes of off-line banking customers and those familiar with internet usage. In this study, with the help of using TAM constructs and perceived risk elements, it has been understood that behavioural intentions of the clients in terms of internet banking services are influenced predominantly by service compatibility. It has also been identified that the link between compatibility and behavioural intentions of the customers can be mediated through TAM as well as perceived security and privacy risk. On the other hand, the link between ease of use as well as the intentions of the customers is mediated by perceived usefulness. Therefore, it has been hypothesized that:

H4: Security significantly affects perceived usefulness

2.15.3. Website Skills

To become successful in the e-commerce market, e-commerce services should be developed using critical website features such as convenient navigation, proper content, contact information, and search option(Hong, 2002; Siekpe, 2003; Ndubisi & Sinti, 2006). It has been identified that the interests of the customers engaging in web activities have been directly influenced by thefeatures of the website. This has been furthered by studies conducted by (Shih, 2004) on the factors influencing the intentions of the customers in participating online purchasing (Shih, 2004), and Hong (2002); Moore, Stammerjohan & Coulter, (2005); Chen & Lee, (2005) and Mandel & Johnson, (2002) detecting the extent to which the success of the online sites has been determined by the attractive features available with online shopping sites. From these studies it has been understood that the sounds and displays used in the websites attract the online shoppers and motivate them to visit these shopping sites on a frequent basis.

The influence of website features on the purchasing intentions of the online shoppers has been well examined in the literature. Yeung and Lu (2004) conducted a study on the ways with which the frequent visits of the online shoppers to a particular shopping site can be enhanced through various mechanisms such as Frequently Asked Questions (FAQ), Feedback Forms and SEO friendly website content. In addition, the speed of transaction process, uploading as well as downloading speed, quality of the website and more importantly efficiency are also found to be influencing the interests of the customers in adopting online shopping and in visiting the online sites frequently (Tan & Teo, 2000; Turban *et al.*, 2004;Ndubisi & Sinti,2006).

Accessibility is found to be another important factor. A study on the techniques of website designing by (Taylor & England, 2006) discovered that the customers will show extreme interests towards purchasing goods and services through online sites if they are extremely attracted towards the innovative as well as attractive features those have been available in the online sites. It has also been proven that the trust of the customers and their purchasing decision scan be positively influenced through the attractive features of the online shopping sites (Benidir, 1991; Rattanawicha &Esichaikul, 2005). The needs and demands of the customers using the internet for online transactions can be satisfied through attractive website features (Fong, 2004) and that this level of satisfaction is reflected in loyalty of the customers. If the online retailers have filled their websites with attractive features and displays, there will be a heightened level of interest of the online shopper towards such sites and they will tend to visit such online sites more frequently. Understanding the importance of attractive features of online websites in developing a stronger customer base will also provide in enhancing the competitive advantage for the business, therefore, it is recommended that the online retailers are develop their online websites and profiles with attractive features.

The ways with which the loyalty of the customers towards website is influenced by the features of the websites has been studied by Mithas *et al.* (2005). In this study, 12,000 online customers have been surveyed to identify the influence that the features of websites, including their content and functionality, could provide a level of acceptance for the customers. The results identified that information-oriented websites have stronger relationship between website content and customer loyalty

when compared to transaction-oriented websites. In contrast, transaction-oriented websites have stronger relationship between functionality and customer loyalty when compared to information oriented websites.

Internet banking is the most commonly studied concept in the literature. The ways with which the interests of the customers in using Internet banking have been influenced by particular factors are studied by Jaruwa,Chirathanakul & Fink (2005). From this study, it is understood that the features of the bank websites are the most common determinants of the interests of the customers towards those sites. The results of this study have indicated that there is a level of importance of the features of the websites in determining the interests of the users in adopting online banking. Also the customers will feel comfortable with using the internet only if they are happy with the features of the bank website. There has been a positive relationship between the interests of the customers in adopting online banking and the features of the bank websites (Alhudaithy & Kitchen, 2009), and with (Shih & Fang, 2006) it was also acknowledged that quality of the website, the speed required for transactions, user-friendly systems and security concerns are collectively called as network quality attributes (Shih & Fang, 2006).

A strong relationship between perceived usefulness, usage and perceived complexity (Igbaria, *et al*. 1995), and ease of use are quite closely linked with the difficulty in understanding web related information (Davis, 1989). The less relevant experience, more complex technology and subsequently a weaker relationship exists between behavioural intention and perceived usefulness to use. Therefore, it has been hypothesized that:

H5: Web skill will significantly affects ease of use
H6: Web skills will significantly affects perceived usefulness

2.15.3.1. Support

It has been noted that there are some conditions external to the individual that can help users of e-services overcome hurdles to the use of new information technologies, Lu *et al.* (2003) referred tothese as facilitating conditions, and Ngai *et*

al. (2007) identified technical support as a critical external factor in the acceptance of WebCT for higher education. Through their research they defined technical support as "knowledge people assisting users of computer hardware and software products including help desks, hotlines and online support services". While Yaghoubi *et al.* (2011) observed that citizens perceive e-Government services to be easy to use when they recognise that there are environmental conditions to help them learn how to use the online service of internet bookstore.

Thompson*et al* (1991) and Davis *et al* (1989) reported that facilitating conditions, including organisational support for users, will have a direct effect on the technology adoption and utilization. Organizational support has been associated with greater system usage while a lack of technical support has been seen as a critical barrier to the effectiveadoption and utilization of computer technology (Furest & Cheney, 1982; Lucas, 1978). Trevion & Webster (1993) and Igbaria & Ilivari (1995)and Bhattacherjee & Hikmet (2008) also suggested that technical support is positively related to ease of use, the technologies perceived usefulness and the actual usage of the technology.

Therefore it has been hypothesized that:

H7: Support will significantly effect on ease of use

H8: Support will significantly effect on perceived usefulness

2.15.4. Education and Experiences Factors

User characteristics affect the acceptance e-Government services. According to studies conducted ((Holland & Menzel Baker, 2001);(Wind et al., 2002); (Wind & Rangaswamy, 2001) factors related to internet experiences influence the acceptance of e-Government, and users with a previous positive experience are more likely to return and use e-Government services. Fang (2002) believes that language can act as a major obstacle in the acceptance of e-services, whereby his United Kingdom study, demonstrates that some ethnic minorities who were unable to communicate in English were also unable to access e-services and those individuals from minorities prefer information in hard copy in their own language. Choudrie & Dwivedi (2005), through their study on the acceptance of e-Government services in the United Kingdom, established that the factors of gender, age, education and social

class play a vital role in spreading awareness amongst citizens with respect to e-Government services.

Baker & Bellordre (2004) believe that a lack of awareness of technology and its usefulness poses a principal concern towards the adoption of ICT. The potential utility of technology should be recognized by citizens in order to be acquainted with its value. Lack of familiarity by groups of people such as the elderly, economically disadvantaged, individuals with specific disabilities and those who belong to constricted cultural groups can find it difficult to familiarise themselves with IT and its benefits.

2.15.4.1.   *Computer Self-Efficacy*

To be successful in handling new IT applications, it is necessary for users to develop the basic principle of computer operations first. From this statement if can be understood that computer literacy of the users play an important role in ease of use. In addition, literacy as well as understanding the terms of the language used in the applications is also important (Maurer & Simonson, 1993). In the case of ICT, it is necessary to get clear idea of jargon that is used in order to communicate with ICT PAS. This knowledge will be useful in getting a clearer idea on the significance of inputs and outputs. The necessity of understanding the cultural significance of communication is reflected in the term literacy. On the other hand the capacity of understanding, analysing and criticizing the technology is known as technological literacy (Dale & Charles, 1993).

The anxiety of the users towards the utilization of new as well as innovative technologies is found to have been influenced by their prior experience with system based technologies (Ganzel, 1998). Simonson *et al*. (1987) defined the term computer anxiety as the discomfort faced by the individuals when they have a chance to make use of information systems. Hackbarth *et al.* (2003), furthered this by identifying that the performance of the users can be negatively influenced by their emotional status in accordance to social cognitive theory. The disinterest in using the technology can be effectively predicted through the factor called anxiety (Igbaria & Parasuraman, 1989).

In the literature the acceptance behaviour of the individuals has been measured based on the perceptions of them towards IT applications and services (Agarwal & Prasad, 1998). It has also been identified that acceptance of internet marketing tools by the individuals can be predicted through perceived usefulness and ease of use. From this study it has been understood that insertion of additional constructs and computer literacy play an important role in acceptance of new technology (Fenech, 1998). As a result, the precursors of ease of use such as anchors and adjustments have also been incorporated into the TAM model by Venkatesh and Bala (2008). This has been extended to in the literature on acceptance and ease of use, to include factors such as computer literacy, role external control and extra ordinary knowledge on computer are the most important determinants. These determinants of perceived enjoyment and objective usability have been used in the measurement of adjustments. In addition researchers (Ahmad *et al.,* 2010; Chen, 2010; Compeau & Higgins, 1995; Hayes, 2007; Venkatesh, 2000; Wong *et al.,* 2010; Wozney, Venkatesh & Abrami, 2006) identified an existing relationship between self-efficacy and perceived usefulness. As a result, it has been proposed that:

H9. Computer self-efficacy is positively related to customer perceived usefulness

Studies by Agarwal *et al.,*(2000); Venkatesh & Davis, (1996) and Venkatesh, (2000),Anandarajan *et al.,*(2002), Venkatesh and Bala (2008) acknowledge thatease of use of a technology can be effectively predicted and directly influenced through self-efficacy, computer knowledge andthat prior experience, educational qualification and IT knowledge are the major predictors of ease of use.. As a result, it has been proposed that:

H10. Computer self-efficacy is positively related to customer ease of use

2.15.5. Language (H13)

The extent to which innovation is in line with the existing values, prior experiences, and demands of potential adopters is known as compatibility (Rogers, 2003), and Carter (1997), Kolodinsky & Hogarth (2001) and Thirakanont (2000) have found that computer literacy as well as proficiency in English are major determinants of compatibility. A study in terms of the Diffusion of Innovations Theory (DOI) in an

online context (Al-Ghaith, Sanzogni &Sandhu, 2010) has determined the factors that pertain to the adoption and usage of e-service in Saudi Arabia. This study was conducted through the development of a survey questionnaire (651 respondents). From this study it has been understood that e-service adoption in Saudi Arabia is influenced by Perceived Complexity and in particular, language. It was found that the Saudi Arabians struggle in adopting e-services as they have been designed predominately in English in order to satisfy the demands of users from the western countries.

Similar to the citizens of the Middle East and Northern Africa, the Saudis are found to be comfortable with Arabic. As a result, they are not comfortable with the software and Internet applications that have been developed in English. It has been identified by Al-Ghaith, Sanzogni & Sandhu (2010) that the Saudis face many challenges while using Internet services as they may not be aware of the way in which to use the applications and they are not comfortable with using English with which the software applications have been developed(Al-Far,2005; Almobarraz, 2007). Another study was developed to determine the availability of the software interfaces in English and their impact on restricting the Saudis from utilizing the same (Al-Salih, 2004). Agarwal & Prasad(1997), Carter(1997), Kolodinsky & Hogarth (2001), Tan& Teo (2000), Thirakanont (2000),Al-Salih (2004), and Tan & Teo (2000) identified that the intention to adopt e-services will be determined by the compatibility, language and cultural factors of the users.

As a result, it has been hypothesized that:

.H11. Language is positively related to customer ease of use

H12. Language is positively related to perceived usefulness

2.15.6. E-Marketing Factors

The perspectives of public organizations are important and the e-government initiatives are developed on them. A study by (Löfstedt, 2007a) shows that e-government services are often built upon the needs of the organization rather than upon the needs of the people. In addition, studies such as Reddick (2005); Verdegem & Verleye, (2009) have focused on e-government from the perspective of the public sector. Even though citizens play a major role in the success of e-government, there

has not been great deal of research done from the perspective of the citizens. Slater & Narver, (1994) and Kotler, *et al*., (2008) have emphasized that keeping a customer centric approach is at the core of market orientation and the same orientation can be applied in public organizations.

2.15.6.1.   Market Orientation in the Public Sector

Slater and Narver (1994), defined market orientation as "an externally focused organizational culture that makes the creation of superior value for customers its top priority", therefore market orientation shows an alternative approach to the traditional approach to the development of e-services. While there has been a great deal of speculation as to the need for e-services to be more citizens centric, there is, in reality little attention paid to understanding of the needs and wants of the people (McDonald *et al*., 2007).In fact, most of the public organizations have shown a trend towards developing e-services that are more focused towards their own internal operations (Löfstedt, 2007b; Verdegem & Verleye, 2009) than that of supplying their citizens with access to relevant information of their operations.

Today the marketing area is dominated by the promotion of an effective market oriented approach by the public sector (Jaworski & Kohli, 1996; Kotler *et al*., 2008), and it has been observed that when any public sector unit makes an effort to promote marketing activities it is vital that it is adopted into a bigger culture. This culture needs to be adopted by the whole of the company instead of just the marketing department (Slater &Narver, 1994).   The importance of any company promotes marketing in a manner that stimulates the creation of value to the customer by improved its communication. This helps to cater to the needs of different customers. Apart from this there is also the promotion of the organizational needs along with its stakeholders (AMA, 2004).Focusing on all of these aspects is vital for private organizations as well as firms.

In the public sector marketing has been something which has been promoted only by specific non-profit organizations (Kotler &Levy, 1969). The importance of marketing in other sectors of the public service has been stressed by a number of scholars; the role played in this sector is relatively non common (Caruana *et al*., 1997; Laing, 2003).It has been observed from the studies of Cervera *et al*., (2001)

and Chapman &Cowdell (1998) that there is a change in this paradigm, as there are a number of private companies which now offer services similar to those the government offers as well there are also a number of services which employ outsourcing activities. Therefore it is important the public sector organizations take efforts to meet the needs of the citizen. For this, the role of marketing will play vital role (Laing, 2003).

Based on these concepts marketing in the public sector is not only discussed as a philosophy in motion but is also identified to be a function which needs to be implemented by different public sector organizations(Stokes &Lomax, 2008). There have been a number of misunderstandings which have cropped up in the public sector with respect to the importance of marketing as a number perceive it to be one which is extremely commercial and irrelevant to the functioning of the public sector (Laing, 2003). The misconceptions which are identified with respect to this include misinterpretation, misuse, misunderstanding and miscasting of the role of marketing (Chapman & Cowdell, 1998).

When marketing is misinterpreted it is identified as one which involves the manipulation of the target audience. A number of critics who are against marketing programs view it to be one where a company manipulates its consumers to take up their services. Those who feel that marketing has been misused, think it is something which only contributes to sales, with respect to commercial and advertising features. On the other hand marketing is misunderstood, as a number of firms have taken a very narrow approach and have not concentrated on their customers, being more customer focus than customer centric view. According to Chapman & Cowdell (1998) marketing is also often miscast in the role as one which promotes competitiveness of the firm and its growth by reducing the overall expenditure. Researchers Chapman & Cowdell (1998) promote the idea that there is a need to overcome these typecasts as the main role of marketing and to achieve this is to ensure cutting of costs. As shown in Figure 2.14.
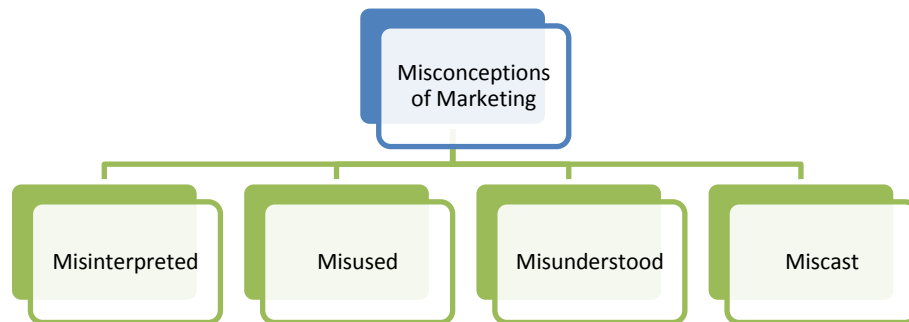
Figure 2. 13: Misconceptions of Marketing (4Ms**)**

Source: Adopted from Chapman &Cowdell (1998)

The need of the customers in the public sector is often not given a lot of importance. Due to the growing bureaucracy of the public organizations there is a greater focus on following rules as presented by the government rather than building up a rapport with their citizens. This results in increasing levels of impersonal relations with customers (Chapman & Cowdell, 1998). The main problem in marketing programs for public sector departments is that it incurs expenditure of public money where it is believed it should not be wasted on promotion programs but should be spent for better endeavours.

The strategies which are applied in a private scenario cannot be applied as such in a public scenario. It has been observed that the basics of marketing only can be applied to government operations. This makes it vital to revisit the specifics of the marketing mix programs in the public sector. The basics of marketing need to be applied only after specific characteristics are altered as the objectives are more political rather than economical when it comes to marketing in the public sector (Laing, 2003).

A wide range of definitions are available on the term E-marketing, with Smith & Chaffey (2005) defining E-Marketing as "the achievement of marketing objectives with the help of digital technologies", and Strauss & Frost (2001) defining E-Marketing as "the process of utilization of electronic data and applications with an intention to plan and execute their business ideas pricing strategies and product promotions in order to arrive at business goals". This is shown in Figure 2.15.
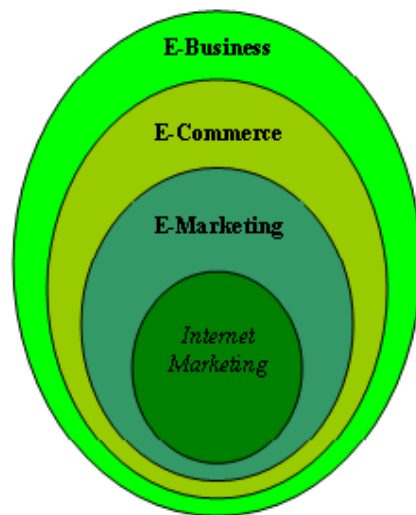
Figure 2. 14: Differences between Internet-marketing, E-Marketing, E-commerce and E-Business

Source: El-Gohary (2010)

The study by DiClemente & Hanutual (2003) reported the significant and positive effect of discounts in online shopping and this research highlighted the difference where it reflected a heightened area of privacy between online and traditional commerce. The importance of permission seeking in online marketing efforts particularly before sending promotional packages or personal information has been proposed by Bryne (2003) and Milne & Rohm (2003) has suggested that there exists a difference in consumer privacy concerns related with the internet and commence between traditional and online marketing contexts which retailers need to be prompted to ensure remains as a viable option in their online presence. The two marketing elements such as the use of intrusive promotions and the use of customer information are related in the minds of consumers and it shows that consumers want to control their personal information. Therefore, it is imperative that respectfulness is provided to protect consumers and consumers concerns in online marketing. It has been hypothesized that

**H13: E-*marketing significantly affects the ease of use*
H14: E-marketing significantly affects the perceived usefulness*

Perceived Usefulness and Intention to Use

ResearchersDavis *et al.,*(1989); Mathieson, (1991); Igbaria, (1993); Taylor & Todd, (1995); Bhattacherjee & Premkumar, (2004) and Kuo & Lee, 2009 proved the

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existence of a direct relationship between perceived usefulness and intention to use in online transactions. There has been an analysis conducted on 74 studies relating to the relationship between perceived usefulness and intention to use the internet (Lee *et al.*, 2003). From this analysis a significant link between these two factors has been recognized. It has been identified that the role of technology in improving or enhancing the quality of work will determine the wish of customers in using that technology instead of their views towards that technology. In other words, the capability of the technology in helping the individuals to arrive at their goals will motivate the customers to use the technology (Castaneda *et al.,* 2007). Therefore, it has been proposed that:

H15. The perceived usefulness of e-service has a positive and significant effect on the intention to use them.

It has been proven that ease of use and the intention to use are indirectly related (Davis, 1989) as A wide range of studies (Davis *et al.,* 1989; Karahanna & Straub, 1999) have confirmed this indirect relationship. It has been identified by Lee *et al.* (2005), Ramayah (2006) and Kuo & Lee (2009) that the interests of the customers in using a particular product can be directly influenced by their ease of use. As stated by Chung (2005), the interests of the customers in using the services can be directly influenced by the positive relationship between the interactions with the technology and ease of use. It has been identified that in addition to intention, the other factor called continuance can be predicted through perceived usefulness (Premkumar &Bhattacherjee, 2008; Maghrabi & Dennis, 2011). As a result, it has been proposed that:

H16. The ease of use of e-services has a positive and significant effect on the intention to use them.

It has been proven that for the acceptance of mass market technology, the important requirement is perceived usefulness (Burke, 1996). As stated by Peterson *et al.* (1997), the perceived usefulness is determined by the view of the customers on the role of technology in enhancing the quality of their lives. Bhattacherjee (2001b) identified that users will continue using e-commerce services even though they might not be satisfied with the previous experience. It has been identified that prior

to starting the purchase, the customers will start evaluating the information related to the products and services. As a result Babin *et al*. (1994) states that the perceived usefulness is more important than the hedonic experience of the customers. From the literature (Adams *et al.,* 1992; Agarwal & Prasad, 1999; Gefen & Keil, 1998; Gefen & Straub, 1997; Hendrickson *et al.,* 1993; Igbaria *et al.,* 1995; Subramanian, 1994) it has been understood that IT use and intention to use can be predicted through perceived usefulness. The extent of utilization of e-commerce services can also be predicted through the same (Gefen & Straub, 2000) and approximately 90% of research completed using TAM shows the direct effects of ease of use on actual use (Schepers & Wetzels, 2007) as a result, this study proposes:

H17: Ease of use significantly affects perceived usefulness

Gap in Literature Review

The present review clearly identified several gaps in the literature on e-government. Firstly, there are few studies that had tested TAM 2 particularly in a developing country context and none in UAE. Secondly, studies used TAM and UTAUT models have identified different factors that influence e-government usage but only a few had tested web-skills, computer self-efficacy and none have tested the role of e-marking on usage perspective which is considered as an important factor to reach the majority of citizens. Thirdly, most of the studies were conducted with limited sample size focusing on either of the Emirates, however, the present study concentrated on the seven Emirates of the UAE .The review conducted supports the need for more studies with reference to UAE context particularly testing the TAM 2 model and based on the above review, the following framework was developed.
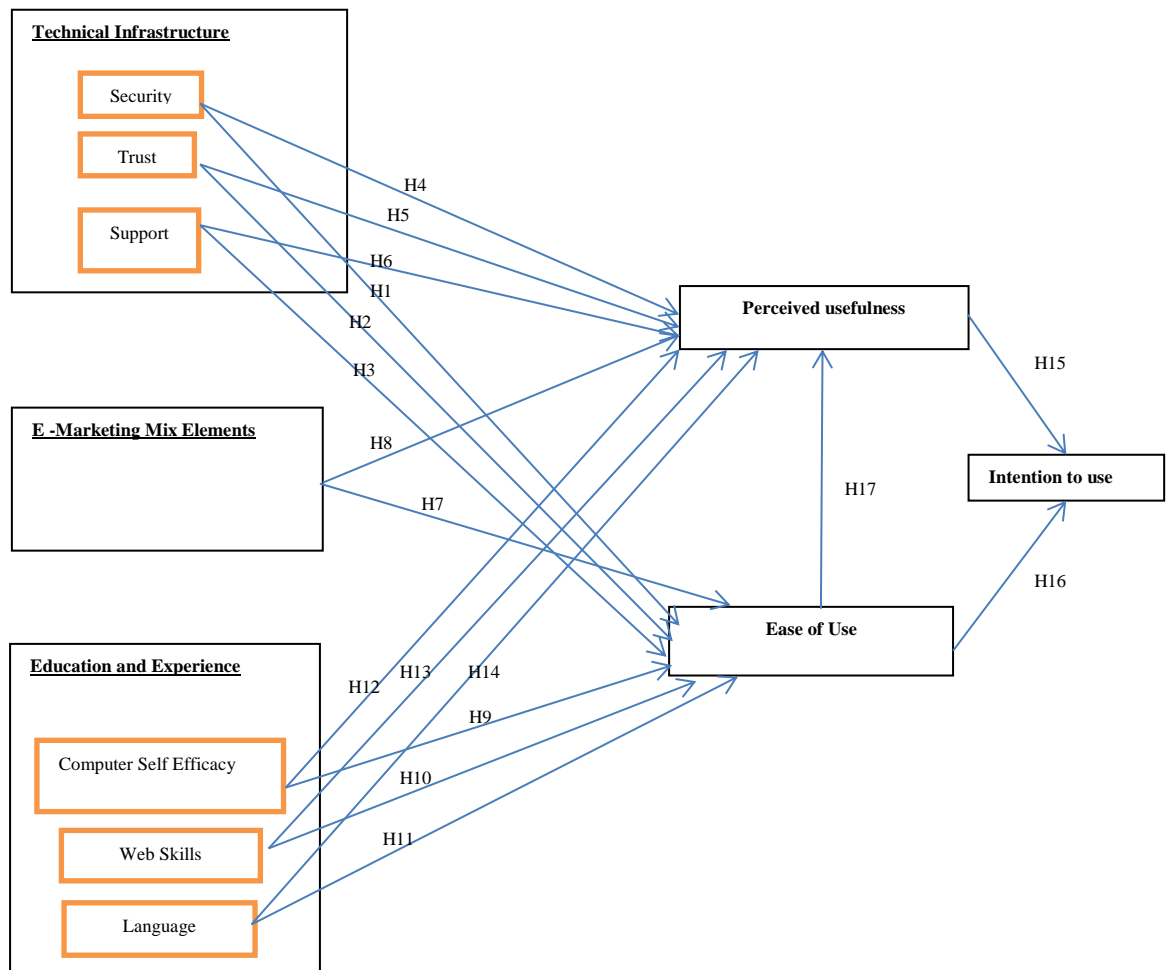
Figure 2. 15: Theoretical Framework Proposed

Source: Author, 2013

2.16. Conclusion

The growing bodies of research have proven the validity of the TAM model in e-services. Researcher also advocated adding different factors to the TAM model that was found to influence the e-government processes. As indicated in this review, TAM has been used extensively in e-government adoption research however, there are few studies referencing the TAM2 model except the study by Sang *et,. al* (2009, 2010) and Wang (2002) in Taiwan. The studies by Al-adawi *et al.*, (2005); Colescal & Dobrica (2008), Sang *et al.,* (2009), and Jaeger & Matteson (2009), Awan (2008) in Dubai, Al Busaidy et al., (2009) in Oman, Al-Sobhi, Weerakkody, Mustafa Kamal (2010) in Saudi Arabia*,* have all investigated TAM in the e-government context. The studies by AL Awadhi& Morris (2009) and Al-Sobhi, Weekakkdoy & E-Haddedah

(2011), Al-Busaidy & Weerakkody (2009), have tested the UTAUT model in the e-government adoption in Kuwait, Saudi Arabia and Qatar respectively. In UAE, context studies have also identified both the influencing factors and issues facing e-Government have been developed by Sethi & Sethi (2009), Vodanovich et al.(2010), Al-Rashidi (2010) and Al-Raisi et al(2011).

The current major debates in the field of e-government adoption are to identify the different factors, both the barriers and influencing factors of e-services by the adoptees around the world, and it has been found impossible to examine these factors which in turn inhibit the progress of different e-government services, therefore, providing a possible reason for failure of many e-services. The literature suggests that factors of perceived usefulness (PU), ease of use (EU), interest in the government, financial safety and privacy may be important to users when selecting e-Government services. This was supported by a body of published evidence that Trust, Privacy, Support, e-Marketing, Internet Skills, Computer Self-Efficacy and Language are the important factors in the acceptance of e-government. Although there are many studies on trust, privacy and web skills, computer self-efficacy, and language, there has been little research conducted into e-marketing to investigate the influence of this factor on acceptance the online services.

As e-marketing is still in its infancy stage, there has not been a definitive definition developed and only a few studies as indicated in the review have shown e-marketing tactics having a positive effect on e-service adoption. Studies conducted have a advocated for more in-depth studies to prove their findings. None of the earlier studies have been conducted from an e-government adoption context. This study would be a first study to incorporate a new factor, e-marketing using the TAM2 model. Currently, it is unclear whether the same factors apply to the UAE. The study aims to address this gap and specifically concentrate on the seven Emirates of the UAE to investigate, identify and develop a better understanding of factors influencing e-service acceptance.

Several studies of the UAE have been conducted in the context of e-Government but little information and research evidence is available with respect to e-Government acceptance in the UAE from the perspective of potential users and TAM is expected to be an appropriate approach. The literature review conducted supports the need for more studies on the acceptance of e-Government services in the UAE especially

incorporating different factors that would assist governments in improving effectiveness and quality of services provided to end-users, apart from the enhancement of an intelligent generation, new business development and time saving. The study aims to address this gap and specifically concentrate on the seven emirates of the UAE to investigate, identify and develop a better understanding of factors influencing e-service acceptance.

Research Methodology

3.1. Introduction

The literature review, study model, and the theoretical grounds to design the study model were presented in chapter 2. In this chapter more details about the study model, procedures to test this model, and the stages of conducting this study will be provided. This chapter gives an overview of the research approach, design, sampling design, data collection and interpretation methodologies involved in conducting the research. The statistical tools used to test the fitness of the whole model; reliability and validity of the model, and the proposed research hypothesis are identified and explained in this chapter.

3.2. Research paradigm

According to Charles and Mertler (2002) a research paradigm is a prospect about research held by a researcher's community that is based on a series of shared concepts, values, practices and considerations. Simply, it is an approach to thinking about and doing research. The research paradigm is also referred as the basic worldview or belief system that directs the investigator not only in options of method but in epistemologically and ontologically fundamental ways. Research paradigms fall into three categories by name (1) Positivism and (2) Interpretivism and (3) Critical Theory. The following figure 3.1 illustrates the same:

Paradigm	Positivism	Interpretivism	Critical Theory
Nature of reality	Objective	Subjective	Social
Purpose of research	Explain and predict	Interpret and understand	Disclose and empower
Research perspectives	Survey	Naturalistic	Transformative
Methodology	Experimental	Ethnographic	Case study
Focus	Comprehension	Interpretation	Exploration
Methods	Quantitative Statistical	Qualitative Descriptive	Dialectical Grounded

Figure 3. 1: Forms of research paradigms

Source: (Taylor, 1996)

Lee (1991) has defined that positivism "means scientific and positivist methodologies are possible and desirable to study social behaviour in ways similar to those used by natural scientists to study behaviour in the natural world". Positivism is said to be the underpinning methodology of experimental and survey research approaches, though in explaining it there is a conflation between social approaches, scientific approaches and the specific positivism position. Positivism is also known as quantitative research. Interpretivism is the interpretation method providing for the understanding or creation of meaning. Interpretivism is concerned at the idea that people study better through engaging with the world around them and study from experiencing the world. Interpretivism is also known as qualitative research (Hirschheim & Klein, 1989).

A third form of the research paradigm that has recently emerged is the Critical Theory. The critical theory argues that reality is a combination of both positivism and interpretivism and it is neither subjective nor objective as claimed by interpretivism and positivism respectively. This theory concludes that social reality can be understood only by having a critical consciousness towards the social world (Harvey. *et. al*, 2000). In other words, critical theory intends to examine the conditions that make a reality before blindly accepting the reality.

The management and the business scholars required to make sure an efficient philosophical obligation at the time of the approval of a research design as it possesses an important collision on what method that one pursue and also what one it going to investigate. The three major ideas of consideration behind the purpose of a research philosophy comprise of Interpretivism, Positivism and Realism (Bond, 1993).

The research philosophy of positivism was applied to this research as it focuses on the preceding associations is fundamental to improving the understanding of the phenomenon by the use of the scientific approach (Clarke, 1998). This philosophy style will ensure that there is recognition of the features that affect the acceptance of the e-services and the associations between the features in the recommended model by utilizing a planned instrument. At the same time, when the adoption of e-services in the public sector are analysed over a period of time, the implementation of the same in the Arab nations should be considered a comparatively young field of research. The aim of this study is to address this gap by discovering the successfulness of the implementation of e-services by government through consumers visiting the government offices in UAE. For this, the researcher will implement the personalized TAM model in order to find out the same.

The Ontology and Epistemology are the two branches of philosophy that attempts to define the presence of a firm. With view to the information systems, the ontology can be utilized to institute the information systems and find out the relationships, interaction and constructs in the real world. The philosophical restraint of ontology identifies the most persistent factors of reality including change, causation, life, society, real existence, time, chance, and mind. The ontology is the division of philosophy that provides the answers regarding how a firm came to the survival, its character and its being. Often ontology answers the question of 'what'. It is in this study, this philosophy is adopted in order to find out the features that affect the acceptance of e-services in the government sector and to study the causality among the constructs of the proposed model. Through using the ontological philosophy, this research attempts to define and describe the nature of the different features that impact on the recognition of the e-services in the government sector. Furthermore, this approach also attempts to discover t the probable attributes that might yield optimistic outcomes in the particular technology.

On the other hand, the epistemology is the division of the philosophy that considers the theory of knowledge that explains a phenomenon and how it will take place. Positivism and interpretivism are the two types of philosophy in Epistemology. Often the philosophy of epistemology answers the questions regarding how and why a particular phenomenon happens. The assumption that is positivist of a measurable reality, and an objective with fixed causal associations, persuade the utilization of more structured interview questions to gather the data for the applicable variables.

The positivist philosophy claims that the firms that are intrinsically ordered are independent firms that could be developed as a type of social structure by the empirically testing behaviour of the organization with the eventual objective of predicting and controlling behaviour of the organization.

The studies of interpretivism assume that the people associate and create their own meanings of inter subjective and subjective as they correspond with the world around them in an effort to get the knowledge of the phenomena. This is achieved through the access of meanings that the participants assign to them and refusing the probability of the factual or the objective account of the happenings and circumstances, while looking for an alternative to enable it shared generalization to a population. This is not a sought, relativistic, understanding of the phenomena and the framework depth of the phenomenon could be utilized to inform other settings. The philosophy of interpretivism is one of the three main approaches to the social research action, value relativism and socially constructed meanings. This is a constructive approach for the communal phenomena that requires to be learned subjectively in order to get the information that sometimes could not be examined objectively.

The philosophy of positivist would be used in this research as it focuses on the prior association. Also, it is useful in attempting to improve the understanding of the phenomenon. This philosophy will help in identifying the features that affect the recognition of the e-services and the associations among these features in the proposed model by utilizing a structured instrument. Based on the explanation mentioned above, utilizing the positivist philosophy will provide light to the research model offered by the researcher. In the positivist philosophy, the various features of e-services offered by the public sector could be studied to conclude the organizational behaviour.

3.2.1. *Paradigm adapted:*

This study undertakes *positivism* as the research paradigm. According to Letourneau and Allen (1999) positivism has a rich and historical tradition. It is so fixed in society that the claims of knowledge are not refused in positivist thought, but are dismissed simply as scientific and therefore invalid. From an objective viewpoint, positivists believe that reality is consistent and can be stable and noticed and explained i.e. without interfering with the studied phenomena. Positivists believe that phenomena must be separated and that observations must be repeatable. This always consists of reality manipulation with variations in only an individual independent variable so as to recognize regularities in, and to constitute relationships between some of the formed components of social world.

3.3. Research approach

Howe (1992) described that the research approach is referred to as the methodological examination into a subject to schedule an action plan based on the discovered facts. A research approach can differ essentially depending on what is to be researched, if it would be appropriate to research methods, is it a scientific method or have other scientists finished the experiment. The two common research approaches adapted by researchers are the inductive and deductive approaches.

3.3.1. *Deductive Approach:*

According to Jick (1983), a Deductive Research Approach develops hypotheses or theories and then tests these hypotheses or theories through empirical observation. It is significantly a set of techniques for applying real world theories in order to assess and test their validity. Essentially the deductive research process is theory development that is subject to a rigorous test. Deductive research is the most widely used research approach in natural sciences. The below figure 3.2 shows the deductive research approach steps:
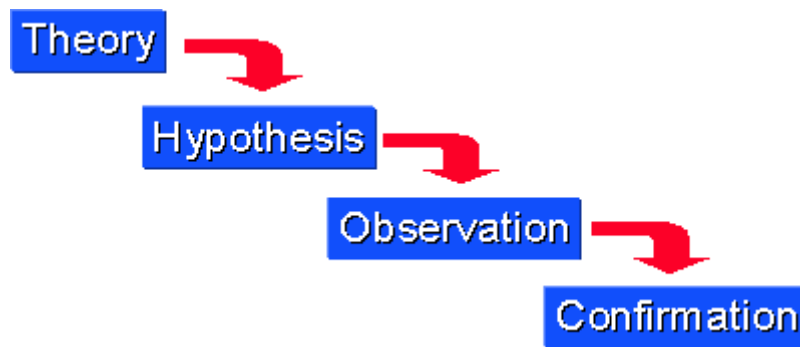
Figure 3. 2: Deductive Approach Steps

Source: www.socialresearchmethods.net

3.3.2. Inductive approach:

The inductive research process significantly reverses the process found in deductive research. Here the researcher develops theories and hypothesis with a view to describe empirical observations of the real world. These empirical observations can be concerned with several factors. Therefore the study of small sample subjects might be more appropriate with a large number as with the deductive approach (Kincaid, 1996). The below figure 3.3shows the steps of inductive approach:
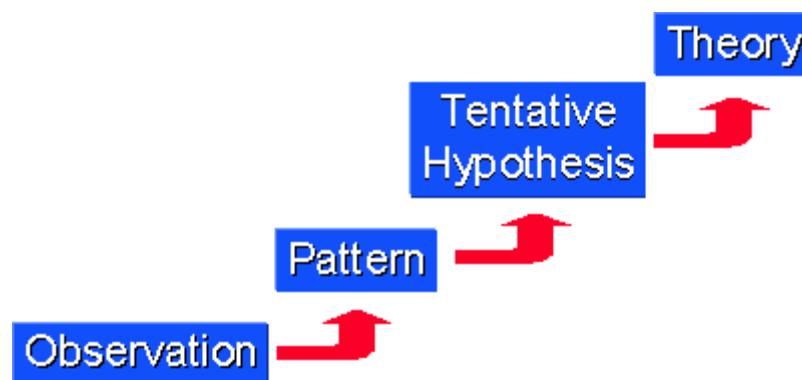
Figure 3. 3: Inductive Approach Steps

Source: www.socialresearchmethods.net

3.3.2.1.   *Research Approach Adapted:*

This study has adopted the use of the ***deductive approach.*** The deductive approach initiates with and applies a well-known theory and is concerned with developing a

hypothesis based on the occurring theory and then designing a research strategy to test the hypothesis. In this research, hypotheses and theory are built this approach, exist first and impact the remaining process of research. This kind of research is always associated with the quantitative kind of research (Ghauri & Grohaug, 2005).

3.4. Research strategy

A research strategy can differ essentially relying on what is to be researched, if it is a scientific method, it would be proper to research common methods or other scientists who have conducted the experiment (Hammersley, 2000). The two common research approaches vastly adapted by researchers are Qualitative and Quantitative research.

According to Buchanan (1992) Qualitative research is a multi-method process focusing on the involvement of the naturalistic and interpretive approach to its subject matter. This means that the qualitative researchers gain information in their natural settings attempting to make sense of or determine the phenomena in terms of the meanings people bring to them. Usually Qualitative research takes place in naturally existing situations as contrasted with quantitative research in which settings and behaviours are evaluated and controlled. Qualitative research has its origins in descriptive analysis and is necessarily inductive process reasoning from the particular situation to a general conclusion. According to Maxcy (2003) qualitative research is the process of inquiry of understanding concerning the unique traditions of methodology of inquiry that implements a human or social issue. The researcher develops a holistic and critical picture, reports brief informant's views, and analyses words and conducts a natural setting study.

On the other hand Wholey, Hatry and Newcomer (2004) have described that the studies that use mathematical analysis that can reveal statistically significant differences is called quantitative research. Quantitative research focuses on the considerations that underlie the positivist tradition within which educational research was located originally in terms of being applied deductive logic, hypothesis driven, achieving objectivity and casual relationships. The quantitative research characterizes the phenomena numerically to respond to a particular hypotheses or questions. Quantitative researchers often use what might be known as a narrow angle

lens because the focus is on only one or a few causal factors during a similar time. Quantitative research is a scientific investigation that includes both experiments and other systematic methods that emphasizes control and quantified measures of performance and is used to describe the phenomena numerically, to answer specific questions or hypotheses. .

3.4.1. *Research approach adapted:*

This study has adopted a ***quantitative research approach.*** According to Deacon, Bryman & Fenton (1998) Quantitative research involves the studies that make use of statistical analyses to obtain their findings. The key features of quantitative research include formal and systematic measurement and the uses of statistics. Quantitative research is more closely associated with deduction, reasoning from general principles to specific situations. Quantitative research has its roots in positivism and is more closely associated with the scientific method than is qualitative research. The emphasis is on the facts, relationships and causes. Quantitative researcher's places great value on the researches outcomes and productsand they look for more context free generalizations. Typically quantitative researchers separate facts and values and are more attuned to standardized research procedures and predetermined designs than are qualitative researchers.

3.5. Research Design

Groenewald (2004) described that a research design is a set of advance decisions that make up the master plan specifying the methods and procedures for collecting and analysing the needed information. Research design is a logical structure that provides the logical structure that guides the investigator to address research problems and answer research questions. It is one of the most important components of the research methodology. The research design not only details the type of research design to be implemented but includes the approach to measure the variables and collect the data from participants, devising a strategy to sample participants to be studied and planning how the data will be analysed. These methodological decisions are informed and guided by the type of research design selected. The research design lays the foundation for conducting a project. A good research design will assure that

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the research project is conducted efficiently and effectively. The below figure 3.4 shows the types of research design:
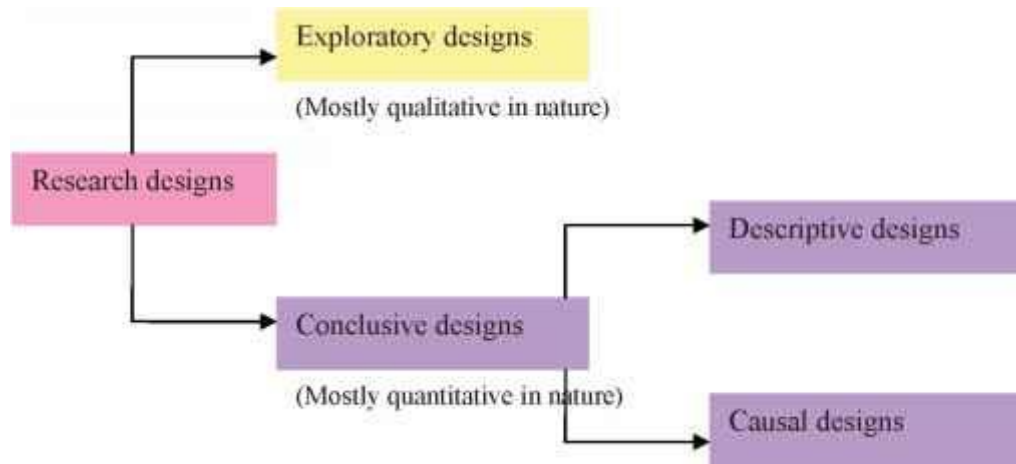
Figure 3. 4: Types of Research Design

Source: Gupta & Gupta, 2011

3.5.1. *Exploratory research design*

According to Gall, Gall & Borg (2007) an exploratory research is a study being undertaken with the objective to either explore an area where little is known or to investigate the possibilities of undertaking a particular research study. When a study is carried out to determine its feasibility it is also called feasibility study or a pilot study.

3.5.2. *Conclusive research design*

Conclusive research is meant to offer information that is useful in attaining decision-making or conclusions. It tends to be quantitative in nature that is to say in the form of numbers that can be summarized and quantified. The conclusive research need is to offer a representative or reliable picture of the population through the valid research instrument used. As shown in the above figure 3.4 the conclusive research design may be either descriptive or casual in nature.

3.5.3. *Research Design adapted:*

This study adapts ***causal design and case study***. This type of research targets the causal relationship between events. The main objective of this study is to identify factors affecting the acceptance of e-government services. This research is said to have adapted case study research design since it is conducted with specific reference

to a single entity the General Directorate of Residence and Foreigners Affairs of the United Arab Emirates.

3.6. Sampling Design

A sampling plan or design is the method used to choose significant participants from the accessible population. A good sampling design must meet specific needs such as measurability, economy, goal orientation and practicality (Onwuegbuzie & Collins, 2007). A complete sampling design represents many samples and recognizes specific samples for instance the geographic positions or the time points where those samples will be gathered. A well prepared sampling design is directed to assure that resulting data are sufficiently representative of the target population and justifiable for their intended use. There are two main types of sampling techniques; probability sampling and non-probability sampling technique.

Probability sampling applies the theory of sampling and consists of random sampling unit's selection. An important feature of probability sampling is that every member of the population from which the sample was chosen has an equal probability of being selected for the survey.. Each probability of selection may be unequal or equal but it must be non-zero and should be known. In probability sampling every unit of the population has a probability of being chosen as a unit of the sample. However, this probability measure differs from one method to another method of probability sampling, which is free and more rigorous from biases. The methods of probability sampling are: **1)** Simple random sampling; **2)** Cluster sampling; **3)** Systematic sampling; **4)** Multi stage sampling; and **5)** Stratified sampling (Paneerselvam, 2004).

Conversely, non-probability sampling is where the samples are not chosen randomly. Here one chooses customers based on the judgment of the researcher, convenience or other non-random processes. Since subjectivity is involved in the process of sampling, every customer's probability is not decided as being included in the sample. As an outcome the sampling error cannot be measured and there is a high risk that statistical inference concerned on a non-probability sample will be biased. In non-probability sampling there may be examples that specific units of population will have 0 probability of selection because judgment, convenience and biases of the interviewers are assumed to be the criteria for the sample units' selection of such sampling. The methods of non-probability sampling are: 1) Convenience sampling;

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2) Snowball sampling; 3) Quota sampling; and 4) Judgment sampling (Levy & Lemeshow, 2011).

3.6.1. *Sampling design adapted in this research*

This research makes use of *simple random sampling*. According to Austin and Pinkleton (2006) simple random sampling is the most similar probability sampling technique. Several statistical inferences consider that observations are gathered by simple random sampling. One procedure for choosing a simple random sample from a finite population is to select the sample elements one at a time in such a way that at every step the elements remaining in the population has same probability of being chosen. Sampling elements in this way will satisfy the simple random sample definition from a finite population.

3.6.2. *Target population*

The population of this research are the end-users (customers) of e-services or the public sector of General Directorate Residency and Foreign Affairs (GDRFA). In respect to the questionnaire, it is observed that there were 1,818,054 GDRFA website visitors in Dubai only and the number of visitors in GDRFA—UAE is estimated to be 600 visitors daily in every main department in each emirate. This presents a total sample of 4200 end users visiting the department every day. As indicated by the researcher, there was an expectation response rate of 10% thereby targeting a sample size of 500. Hard copies were delivered to the end users by volunteer staff from the main GDRFA departments in Dubai; and a hard copy of the survey questionnaire was distributed around offices in each of the 7 Emirates.

3.6.3. *Sample for the research*

The respondents of this study are the experts in the e-services and they were selected using the simple random sampling.

It is pointed in this research that the development of the e-government services are still in its infancy in the United Arab Emirates. The services of e–government are being offered by various departments and ministers in the UAE, for example, the Ministry of Treasury, Ministry of Interior, Ministry of Health, Ministry of Labour and Ministry of Higher Education. All offered their e-services to the users through the centres and departments that have been recognized for this rationale. From the beginning and execution of the e-services, the Ministry of Interior has been seen to be one of the pioneers. The department General Directorate of Residency and

Foreigners Affairs (GDRFA) is a critical segment of the Ministry of Interior in the United Arab Emirates because of the significant and indispensable performance carried out by this department. In UAE there are seven departments under GDRFA. The users of all the departments are offered e–services .It is in this research, these departments were focussed on for the study and there are some major reasons behind choosing these departments.

These are the departments that have a significant number of users visiting to have the relevant services provided in the office directly from the staff or through the electronic format. All the departments of GDRFA are pioneers in the utilization of e–services. All the employees working in these departments have the knowledge and experience in e-services and the associated systems that are used to offer their clients the necessities through the electronic channels. This was very useful in the collection of valuable details regarding the constructs of the study. Also these departments offer the various e-services to different groups of users like the residents, of the UAE, Gulf Cooperation Council National (Saudi Arabia, Qatar, UAE, Oman, Bahrain and Kuwait) and tourists. There is a variety of services offered through e-services such as renewal of the entry permit, e–gate card for the citizens of UAE or the individuals who are friends of the citizens of UAE, the issuing of passports and the provision of substite passports that have been lost, and payment of fines imposed upon defiance of immigration regulations.

Also the departments of GDRFA are indispensable for every resident and citizen of UAE since these departments is responsible for the most significant activities of the government of UAE. TheUAE is a multicultural city with nationalities from all over the world. The departments of GDRFA control all the major and significant departments in the United Arab Emirates, for instance, the Department of Airports and Land Border Points. The major function of this Department of Airports and Land Border Points is processing of the entry and the departure of the passengers' and also providing the visitors with visas, business transits and promoting of tourist and commercial functions in the country. Finally, one of the major reasons for the selecting of GDRFA for the case study is that the researchers is one of the employees in the GDRFA in Dubai and has the complete support of the administration of this department to gather the data by accessing the system from employee through the survey.

As stated previously, simple random sampling is utilized in selecting of the respondents for the survey. The users of the public sectors are used as the major source of respondents for the evaluation of the e-services. The evaluation of e-services would be made by measuring the functionality of the e-services in the GDRFA in UAE. The major purpose behind choosing the end–users is influenced by e–services. The end–users could assess the acceptance of the e-services and the features that disturb the recognition in immigration departments in UAE. According to the sample size, for the purposes of this study the decision has been taken for the use of the SEM technique to be employed during the data collection stage. It is according to the technique of SEM, the size of the sample always should be more than 10 times the number of the free model of the parameters.

The number of staff in the departments of GDRFA in UAE was estimated to be 15,000 during the year 2011, the number of visitors to the GDRFA website were 1,818,054 (*GDRFA-D*, 2012) specific to Dubai and the number of visitors on the daily basis in GDRFA of UAE is estimated to be 600 in all the major departments in each of the Emirates.

3.6.4. Sampling unit
The sampling unit considered for the study is The General Directorate Residency and Foreign Affairs, being a division of Abu Dhabi government that is in charge of formulating and proposing the amendments of policies and laws associated with residency as well as entry of foreigners to the United Arab Emirates. The General Directorate Residency and Foreign Affairs also monitors if those laws are implemented properly with the UAE and in addition, monitors the procedures and rules for entrance and exit of foreigners by coordinating with the associated bodies. It works towards making the United Arab Emirates one of the safest and secured nations to reside in the world.

3.6.5. Sample size
Sample size is believed to be an important issue in the research because its effects on the selecting the suitable statistical methods and the results of study. Structural Equation Modelling will be used to analysis the data of this study. This technique is affected by the sample size (Hair et al. 2010). In this regard, Hair et al. (2010) identified five considerations influencing the required sample size of SEM: multivariate normality; estimation technique; model complexity; missing data; and

average error variance of indicator. There are different rules of thumb suggested to determine the suitable sample size to use SEM. Most of these were prepared based on the number of constructs and observed variables developed by Muthén & Muthén(2002) which implied that 5 observations per parameter, 10 observations per parameter, 50 observations per variable, and no less 100 as a suitable sample size for SEM. Bentler & Chou (1987) accept the rule of thumb that 5 subjects per variable but the distribution of data should be normal. Schumacker & Lomax (2004) examined some articles and concluded that the sample size should be between 250 and 500 subjects, however Hair et al. (2010) suggested that the minimum sample size should be 300 when models have a large numbers of constructs. The commonalities of some factors can be lower, and/or having fewer than three measured items. As the study model is considered to be complex, it includes 10 constructs and 17 relationships between the constructs, and it was planned to collect data from 500 customers who avail the e-services offered by the General Directorate Residency and Foreign Affairs.

3.7. Research instrument

According to Robertson (1993) primary data is collected directly from the researcher for some specific purpose or study. It may be collected by methods such as personal investigation and/or questionnaires. There is a greater degree of control for the researcher in primary data. The control could be over the budget for the study, the size of the sample, the method of sampling, etc. the accuracy/error can be controlled by the researcher by increasing or decreasing the resources used for data collection. The accuracy of the data is generally determined by the nature and depth of the study. For this research, the primary data is gathered through the use of questionnaires (Appendix 1). A questionnaire is the vehicle used to pose the questions that the researcher wants the respondents to answer and is used as a quality control measure. This particular research project makes use of questionnaires to gather primary data, where by the research instruments adopted in this study are closed ended questions. The survey method is the main instrument that was utilized to collect the data from the end users, with the data being collected from the survey to test the study model and apply recognition to the factors that affect the acceptance

of the services of e–government. Also, added to that, specific questions were asked to identify the reasons why the end users are not frequently using the e–services offered.

Likert scale is the common scale to measure beliefs and people's perceptions about topics under investigation (Stangor, 2011). Zikmund et al. define Likert scale as 'A measure of attitude to allow respondents to rate how strongly they agree or disagree with carefully constructed statements, ranging from very positive to very negative attitudes toward some object' (2009, p. 318). Likert scale is appropriate for this study because its main purpose is to investigate the factors that impact the acceptance of e-services via the attitude and opinions of customers. In the questionnaire, a seven-point Likert scale has been utilized (7 = strongly agree or high and 1 = strongly disagree or low) in order to compute the views of the respondents regarding their views and usage of e–services. The instrument is shown in Appendix 1. The main justification to adopt the seven-point Likert scale is that the psychometric literature suggests that having more scale points is better than the narrow range scale (Nunnally & Bernstein, 1994). The seven-point Likert scale is the most widely used measurement technique as it is highly reliable, simple and has a wide range of possible alternative responses (Clark, et.al, 2001). Questionnaires using Likert scales have been used successfully in similar types of research as previously mentioned, and provide a high degree of validity, providing single scores for a set of items. They also have a very high reliability, allowing for the ranking of the respondents and are easy to construct. The approximate time to complete the questioner by customers is 15 minutes.

Due to the nature of the questionnaire, it was important that it be adequately piloted, to check for ambiguity and accuracy, to monitor the length of the questionnaire and assess the ease with which the correct respondents could be identified (Clark, et. al, 2001). This ensured the content validity of the questionnaire, with a range of advice providers and other agencies with relevant expertise consulted in the design stage of the research.

The appropriate government department executives have accepted and approved this study being undertaken. The appeal will provide details that contribution is intended, all data will be nameless and anonymous and that participants can leave at any time devoid of any repercussions. The data obtained will not be used if the participants

leave the research process. The obtained data will be securely stored and none of the individual participants will be documented. The support of ethics will be obtained before the data is collected. Also this will be circulated to the customers who are coming to take advantage of the services offered by the government offices.

All the items of the study questionnaire used in this study were adopted from previous studies and the reliability and validity have been tested previously. The items were used to measure each construct as follows.

- **Technical Infrastructure**

Three constructs were adapted to measure the technical infrastructure in the study model: security; trust; and support. These constructs were used to identify the role of technical infrastructure in the acceptance of e-services. The items were used to measure these three constructs as shown in Table 3.1.

The selection of these was based on the validity and reliability of these items to measure study constructs. All these were empirically examined and the validity and reliability of them were confirmed. For example, Gefen *et al.* (2003) proposed the items of trust construct be based on the empirical study conducted in the online shopping field. The composite construct reliability for this construct was 0.83. Furthermore, the items used to measure the support were established by Parasuraman et al. (2005) based the wide range of literature and the review of the literature was supported by a qualitative study. The validity and reliability of this instrument has been empirically tested by Parasuraman et al. (2005)and the results prove that the scale achieves good psychometric properties.

Table 3.1: Measurements of Technical infrastructure constructs

Construct	items	Reference
Security	I feel secure in providing personal information for GDRFA online services.	Jun et al. (2004)
	I feel the risk associated with GDRFA transactions is low.	
	GDRFA website does not share my personal information with other sites	Parasuraman et al. (2005).
	GDRFA website protects information about my credit card.	
Construct	**items**	**Reference**

Construct	items	Reference
Trust	Based on my experience with GDRFA online services, I know it is honest.	Gefen et al. (2003)
	Based on my experience with GDRFA online services, I know it cares about customers.	
	Based on my experience with GDRFA online services, I know it provides good service.	
	Based on my experience with GDRFA online services, I know it is trustworthy.	
	Based on my experience with GDRFA online services, I know it is not opportunistic.	
Construct	**items**	**Reference**
Support	GDRFA website tells me if my transaction is not processed (completed).	Parasuraman et al. (2005).
	Help Desk take care of technical problem promptly.	
	GDRFA website offers ability to speak to a live person if there is a problem.	
	The online response time from GDRFA support staff to remedy problems is fast.	
	The responses to your enquiries through GDRFA online channels are given in acceptable time.	

- **E-Marketing Mix**

The E-marketing mix was selected as an essential construct in the study model to investigate factors that influence the acceptance of e-services. This construct focuses on the measuring product, price, distribution, and promotion of e-services. Nine items were employed to assess the E-marketing mix construct and these items are shown in Table 3.2.

Table 3.2: Measurements of marketing mix

Construct	items	Reference
E-Marketing Mix	All information related to GDRFA online services are available at their website.	Sigala (2003)
	I can receive all the services I need from GDRFA via electronic channels.	
	I find that the e-mail facility in the GDRFA online services is useful.	
	Secured online payment is available in the GDRFA web site.	
	I can track my transaction via GDRFA website.	
	GDRFA website provides customers with online communication channels.	
	Information about services fees is available in the GDRFA website.	
	GDRFA advertises its online services well.	

	Online promotion of GDRFA provides me sufficient information about their online services.	

All the items were adopted form Sigala (2003). These items were prepared by Sigala (2003) based on the literature of marketing and internet marketingexamined using the premise of an Internet marketing mix based on hotels in Greece and the results were tested using a nonparametric technique of Data Envelopment Analysis (DEA). These items focused on the online channels of marketing activities looking at factors such as online prices and online promotion. These measures were adopted into this study asthey are related to the marketing activities performed by GDRFA to provide customers with e-services. The impact of electronic marketing activities (e-marketing mix) will measure these items to assess the impact of e-marketing mix on acceptance of e-services.

- **Education and experience**

Education and experience were investigated in previous studies as a factor affecting the acceptance of e-services, as shown in the literature chapter. The results show that education and experience can be considered the main determinant of the acceptance of e-services. Three constructs were adopted as determinants of education and experience: computer self-efficacy; web skills; and language. Table 3.3 shows the items were used to measure these constructs.

Table 3.3: Measurements of education and experience constructs

Construct	items	Reference
Computer Self-efficacy	I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself.	Compeau & Higgins (1995); Compeau D. (1995); Venkatesh, (2000).
	I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck.	
	I could complete the transaction using the GDRFA online services, if someone showed me how to do it first.	
	I could complete the transaction using the GDRFA online services, if someone else had helped me to get started.	

Construct	items	Reference
Language	I can complete the GDRFA online services without online translation.	Created by the researcher
	I can complete the GDRFA online services without the help of Arabic speaking translator.	
	Language is not a key barrier for me to use GDRFA online services.	
	GDRFA provides sufficient language facilities its clients.	
Construct	**items**	**Reference**
Web Skills	I am very skilled at using the GDRFA website.	Koufaris (2002)
	I know how to find what I want on the GDRFA website.	
	I know more about using the GDRFA website than most my colleagues.	
	I have experience to deal with complicated websites.	

Computer self-efficacy was measured using four items adopted from Compeau & Higgins (1995) and Compeau (1995).Compeau & Higgins (1995, p. 193) state that "The measure is task focused. That is, it does not reflect simple component skills like starting software packages and saving files. The measure also incorporates elements of task difficulty (in the different levels of support presented in each item) that capture differences in self-efficacy magnitude". This measurement was also adopted by Venkatesh (2000) who confirmed the validity of this measure.

Internet skills were selected to be a determinant construct of e-service acceptance and there werefour items adopted from Koufaris (2002) to measure internet skills. This measurement was conducted by Koufaris (2002) on the online shopping environment, therefore this provided a strong evaluation toto measure the internet skills of e-service consumers.

- **Perceived usefulness, ease of use and intention to use**

Perceived usefulness, ease of use and intention to use are the main pillars of TAM. Most of the studies measuring the acceptance of e-service have adopted these construct as show in Chapter 2 (Literature Review). These three constructs were measured in TAM1, TAM2, and TAM3. Furthermore, the modern models such as UTAUT also adopted and measured these constructs. The measurement provided by Davis (Davis, 1989) can be considered the common instrument to gauge these

constructs, with the reliability and validity of these constructs tested by Davis (Davis, 1989), and Venkatesh & Davis (2000) retested the reliability and validity of these constructs providing results that strongly supported both aspects. Therefore, the measurements of Davis(1989) were considered the main reference points to adopt the suitable items to measure these constructs. Furthermore, other studies also used to support the selection of items to measure these constructs. Table 3.4 show the items that used to measure these constructs.

Table 3.4: Perceived usefulness, ease of use and intention to use

Construct	items	Reference
Perceived usefulness	Using online services gives me greater control over my transaction with GDRFA.	Davis (1989)
	The online services address my transactions needs.	
	Using GDRFA online services saves me time.	
	I find GDRFA's online services add value.	
	GDRFA online services support critical aspects of my transactions.	
	Overall, I find the GDRFA e-services useful to accomplish my transactions.	
Construct	**items**	**Reference**
Ease of Use	I make less error when I use the GDRFA online service.	Venkatesh & Davis 1996; Igbaria & Iivari (1995); Guthrie & Schwoeter (1994); Fishbein & Ajzen 1975
	I do not need to consult the user manual when using the GDRFA online services.	
	Interacting with the GDRFA online services requires less mental effort.	
	I find it easy to recover from errors encountered while using GDRFA online services.	
	I find it easy to use the GDRFA online services to do what transactions I need.	
	It is easy to navigate around the GDRFA' site.	
	The GDRFA online services provide helpful guidance in performing tasks.	
	Overall, I find the GDRFA e-services easy to use.	
Construct	**items**	**Reference**
Intention to Use	I become clearer about services available when I use the GDRFA on-line service.	Van Dijk et al. (2008); Titah & Barki, 2006; Davis, 1993; Venkatesh et al., 2003; Kunstelj et al., 2007
	If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online services again.	
	I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions.	

Before to the distribution of the questionnaires, a pilot test was carried out among the target cluster of 50 e-service users and would be approached at the GDRFA in

Dubai. The chief rationalization for selecting the GDRFA in Dubai to conduct the pilot study is to ensure the questionnaire can stand up to scrutiny, is worded without ambiguity, uses simple terms and will receive the final approval to conduct the research. The research study process was provided with great support accessible from the staff members and upper level management of GDRFA in Dubai. The fundamental intention behind carrying out this pilot study is to ensure the content and formatting of the survey has been finalised and is without error before embarking on the major study.

3.8. Analysis and Interpretation of data

As with data collection, the procedures for analysis are unique and specific to quantitative methods. Bogdan and Biklen (1982) have suggested "analysis involves working with data, organising it, breaking it down, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others". The human inquirer serves not only to as the instrument of data collection but also as the tool for data analysis, and Miles and Huberman, 1984:49) believe "the two remain intertwined because data analysis begins during data collection".

It is important here to distinguish whether specification and measurement error may exist in the results. If measurement or specification error did exist in the variable selection then it can result in an imprecise model, weakened correlations and difficult to achieve model significance (Hair, et.al. 1998). The survey results were checked for specification and measurement error whereby the screening the sample data involved the following steps:

1. Is the data in the data file accurate?
2. What is the extent of the missing data?
3. Are there any outliers in the data?
4. Is there any perfect or near perfect correlations among the independent variables?

3.9. Statistical tools employed:

The information that is obtained in this study have been analysed using the descriptive statistical measures. The data that is in its raw form, which were obtained from the survey questionnaire, is then recorded into Microsoft Office and Excel 2007 spreadsheet. This is followed with the analysis of both the descriptive and inferential statistics. The adoption of e–service was found through the application of factor analysis. The outcomes of the EFA were once again confirmed by the CFA (confirmatory factor) by using AMOS 19. Then the procedure of Structural Equation Modelling (SEM) was used to consider all the items that are obtained through CFA. In the analysis the software SPSS version 20.0 was used and the P value <0.05 was considered to be significant. The reliability of the factors that are used were analysed by the use of the Cronbach's alpha.

The SEM technique is mainly used for the purpose of identifying the validity and reliability of each construct in the model. This is the main rationale behind using this technique. It is considered that the SEM technique is necessary, however before use it was necessary that training be undertaken. Separately Confirmatory Factor Analysis was conducted in the development of the model. The pointer of model fit will be offered by the use of the SEM that will be helpful in the evaluation of the model. There are three main Fit Indexes included in the indicators. They are Incremental Fit, Absolute Fit, and Parsimonious Fit. SEM can be used to test the whole model fit and provides comprehensive statistical indicators for assessing and modifying the models (Kline, 2011; Anderson & Gerbing, 1988). Furthermore, SEM allows researchers to obtain answers to interrelated research questions at three levels: single; systematic; and comprehensive analysis (Gefen et al., 2000). Therefore, this method is adopted in this study. SPSS/AMOS (Analysis of Moment Structures) is used to conduct the analysis.

3.10. Software tool used

The following tools are used to analyse the primary data collected and test the proposed research hypothesis

   i.   **Microsoft Excel 2007**

To produce graphs for the calculated percentages from the gathered primary data Microsoft Excel 2007 is used.

ii. SPSS

SPSS is the acronym for Statistical Package for Social Sciences.. SPSS is a vastly used program for undertaking statistical analysis in research and social science practices. Areas which use this program for product research include: , marketing research, government research, marketing organizations, medical and health research, companies survey, educational research, etc. SPSS is a comprehensive system, which is used for analysing data. The data analysis and management was well handled usingSPSS.

iii AMOS

AMOS is a software tool that was distributed by the SPSS Inc. The abbreviation of AMOS is Analysis of Moment Structures. There is an exclusive graphical interface in the AMOS and was particularly planned to formulate fitting SEMs (Structural Equation Modelling) easier (Arbuckle, 1997). The insight from AMOS provides the significance of the drivers almost certainly should not be contrasted directly since the data are not actually computing the similar variables in the sections. . The objective of AMOS is to offer the estimates of the freely changeable parameters based on reducing a function that guides how well the framework or the model fits, and subject to the moderation that have defined. AMOS also provides a measure of goodness – of – fit in order to assist in the evaluation of the fit of the model (Tanaka, 1993).

3.11. Strategies for validating findings:

In any research, the obtained results are validated with the help of two parameters using reliability and validity. More attention is given to validity and reliability of observed variables by the SEM approach through incorporating measurement error adjustments in the analysis (Schumacker & Lomax, 2004).

3.11.1. Reliability:
According to Jope (2000) Reliability is defined as the degree to which the finding is independent of accidental situation of the research. Reliability is also the consistency degree between two measures of common item or factor of the research being

undertaken. It is also the measure of how dependable, consistent, stable and trustworthy a test is in measuring common thing every time. The reliability of the research outcomes enhances whether or not the ethnographer would expect to acquire similar finding if she or he tried again in similar way. The researcher has ensured reliability by confirming that all respondents who had participated in that survey had answered all questions only once.

- **Construct reliability (composite reliability)**

Construct reliability is adopted to assess the reliability of observed variables that are represented within the construct. This indicator is used to test the internal consistency of the measures (Holmes-Smith, 2011). The rule of thumb of construct reliability is 0.70 (Hair et al., 2006).

- **Cronbach's alpha**

Cronbach's alpha is used to measure and test internal consistency (Van Zyl et al., 2000). Cronbach's alpha is the most commonly used index of internal consistency. Its values range from 0 to 1, where '0' means no relationship and '1' means a perfect positive relationship between the constructs (Saunders et al., 2012). The rule of thumb is that the reliability of a commonly used scale should be at least a = .70 (Stangor, 2011). 0.60 is acceptable for exploratory research (Hair et al., 2006).

3.11.2. Validity:

Validity is defined by Zikmund et al. (2009) as 'The accuracy of a measure or the extent to which a score truthfully represents a concept'. Validity needs to ensure that the material gives a true picture, as beliefs and actions (saying and doing), are not always consistent and this is furthered by De Vaus (2001) who believes that "validity is the extent to which the data collected truly reflect the phenomenon being studied. Phillips (1987), Lincoln & Guba (1985) and Patton, (1990) have suggested that researchers are concerned with (a) credibility (internal validity) of their findings, (b) the transferability or how well their working hypotheses would 'fit' in another contexts (external validity), (c) the dependability (reliability) or testing for consistency by a second evaluator, and (d) the confirmability (objectivity) of the data.The researcher has ensured validity by designing questionnaires with questions related to the research objectives.

- **Convergent validity**

Convergent validity is defined by William et al. (2001, p. 164) as "The extent to which different measures that are designed to tap the same construct correlate with each other". As this study is using SEM techniques, this type of validity is considered as important as it evaluates the relationships between the observed variables and the constructs (Schumacker & Lomax, 2004). Therefore, convergent validity measures the ability of the observed variables working together and measure specific constructs (Neuman, 2006). The convergent validity can be examined by the significance of factor loading which should be more than 0.50(Gefen & Straub, 2005); (Hair et al., 2006)).

- **Discriminant validity**

Discriminant validity is used to confirm that there is no overlap between a specific construct and others (Holmes-Smith, 2011). Malhotra et al. (2002, p. 801) defines Discriminant validity as "a type of construct validity that assesses the extent to which a measure does not correlate with other constructs from which it is supposed to differ". The advantages of assessing validity through CFA are: 1) Along with construct validity, discriminant validity can also be assessed, 2) Independent specification of the correlation among the factors, not specified to be simply an orthogonal or oblique structure, 3) each observed variable may be constrained to be determined by any limited number of factors, not necessarily all factors in the model (Ladd, 2005).

- **Construct validity**

Construct validity "refers to the extent to which your measurement questions acutely measure the presence of those constructs you intended them to measure" (Saunders et al., 2012). The construct validity can be examined by the indicators of model-fit-goodness, if the model meets these indictors that mean the model achieved the construct validity (Holmes-Smith, 2011). Another way of measuring construct validity is through the examination of the correlations among measured variables. Correlation coefficients are plotted to evaluate the linear relationship between the items in a questionnaire (Saunders et al., 2012). In business research it is rarely possible to obtain perfect correlations (Saunders et al., 2012). Numbers between -1 and +1 represent the strength of the relationship between two variables. A value of +1 represents a positive correlation whereas a value of -1 represents a negative correlation (Saunders et al., 2012).

- **Content validity**

Content or face validity "refers to the extent to which the measurement device, in our case the measurement questions in the questionnaire, provides adequate coverage of the investigative questions" (Saunders et al., 2012) and relies on the theory that a good description of the matter being analysed exists and also the tool employed in the study (survey) has the capability to give sufficient depth to the research inquiry driving the research (Knight, 2002). This type of validity is often measured by taking expert opinion from the experts in the field.

3.12. Ethical considerations

Privacy, informed consent, confidentiality and anonymity have been identified as key ethical issues that need to be considered before, during and after the research has been completed as has been identified the confidentiality of responses, open scrutiny of results and methods and secrecy are ethical considerations. Informed consent identified by Homan (1991:32) rests on the idea that "human research subjects should be able to agree to participate or to not participate in research in the light of comprehensive information about the nature and purpose of the research". It is based on the assumption that individuals have a right to know what is happening to them. Problems identified with informed consent is the right to not know it can be deployed as an exercise in persuasion, with the researchers desire to get a good response rate and the individuals right to refuse. In social research according to Homan (1991) is about protecting the identity of the researched, however they can also be used as a method to secure cooperation from the respondents. These factors were addressed to the respondents of the maintenance of anonymity, confidentiality and consent during the initial stages of the interview. The researcher for this study took prior permission from the General Directorate of Residence and Foreigners Affairs of the United Arab Emirates and from University of Southern Queensland before conducting the research

3.13. Summary

This chapter has documented the theoretical and procedural aspects of the research process. The research design adapted in this study is descriptive research and the

sampling technique involved is simple random sampling. This section besides explaining the statistical tool required for testing the proposed research hypothesis has explained how the researcher has managed to maintain validity and reliability despite several limitations involved in conducting the research.

CHAPTER 4

Data Analysis

4.1. Introduction

Data analysis is an essential step in the collection and interpretation of study results. Procedures need to be followed to ensure analysis of data is appropriate and accurate. Some of these procedures include cleaning data, treating missing data, and testing the normality of data (Hair et al. 2010). This chapter analyses the results from data gathering to answer the research questions developed in Chapter One. It is divided into three sections. Section 4.2 presents the procedures that were employed to clean data and identify missing data. Section 4.3 is devoted to descriptive statistics. Section 4.4 tests the study model using structural equation modelling (SEM). The results of hypothesis testing are provided in Section 4.5. Section 4.6 gives the final summary of the results. The model was designed and developed drawing from the Technology Acceptance Model (TAM) to explore users' intentions to adopt the technology (Davis, 1989). As TAM identifies only two perceived constructs that influence innovative adoption: perceived usefulness and ease of use. The research combined 8 more constructs from a growing body of literature associated with information technology acceptance to explore factors impacting users' perceptions of intention to use the online services of GDRFA. Part I contained questions on A closed ended questionnaire based on a seven-point Likert scale (1 = strongly disagree and 7 = strongly agree) was used to test the study model. The survey instrument consisted of 52 items divided among 10 constructs. Exploratory factor analysis and Structural Equation Modelling was applied to confirm the factors that affected the acceptance of the services of e-government. The survey instrument was administered to 500 respondents. The procedures were adopted to distribute the questionnaire to the respondents.

- To avoid the bias in collecting the data volunteer staff from the main GDRFA departments in Dubai were take the responsibility to collect the data from the customers each of the 7 emirates.

- A workshop was hold by the researcher for the volunteer staff to provide them with information about the nature, objective, importance of the study. In addition, provide them sufficient details about each item in the questioner.

- The researcher provided the volunteer staff with details about the instructions to distribute the questionnaire to the respondents and let the respondents know that "The participation in this study is voluntary and they free to participate or not".

- The distribution of questionnaire needed two days in each Emirate (7 Emirates = 14 days).

- At the first stage the volunteer staff introduce them self to participation and provide them with some information about the study such as objectives and importance of study, explain for them the importance of their participation in this study, and let them that the. Then, participation in this study is voluntary and they free to participate or not.

Only 476 returned the questionnaire, and of these 10 were unusable so they were not included in the analysis. In all 466 questionnaires were used in the study resulting in a response rate of 97.8%. This response rate can be considered high and that reflects the clarity, simplicity, and understandability of the questionnaire items. Moreover, the high response rate can enhance the research findings through support the validity and reliability of the study (Baruch & Holtom, 2008).

The main justification to get this high response rate is that:

- The questionnaire is relatively short and the language used to write it was plain.

- The questionnaire does not have any personal questions such questions about the income or about the family members.

- The questionnaire distributed by the volunteer persons when the participants were waiting at the GDREFA to finish their business in this department.

- The items of questionnaire were easy to understand and to answer by the respondents and that assisted to reduce the number of unusable questionnaires.

- The high rate percentage in the e-government field was achieved before by studies of Hussein et al. (2011) 82.2%, and Tjostheim 80%.

The response rate of this study can be taken to confirm the quality of preparing the study survey and the selection of items were used to measure the model constructs.

4.2. Cleaning the data

Data analysis is an essential step in the collection and interpretation of study results. Data needs procedures before it is analysed to make it more acceptable and accurate for analysis. Some of these procedures include cleaning data, treating missing data, and testing the normality of data.

The data obtained from the survey was checked before, during and after logging to ensure its integrity and reliability. The descriptive procedures are often useful for data "cleaning" as they provide tools to look for missing data, identifying outliers or erroneous values, and provide an overall sense of the data (DiMaggio, 2013). The data accuracy was double checked and transferred to PASW Version 18. The term "Don't know" was used in the questionnaire to provide the respondents with more options especially with items where they cannot provide a true answer about themselves (Krosnick et al. 2002). Holman & Glas (2005) recommended treating the "Don't know" responses as missing data, however in the case of this study the 'Don't know' responses were extremely low and found in only three items with percentage not exceeding 2%: Q21; Q35; and Q 44.

4.2.1. Missing data treatment

Item non-response is the technical term for an unanswered question on an otherwise incomplete questionnaire (Zikmund et al., 2009), and it was foundin the demographic data, missing values that were very minor and did not affect the accuracy of the data so they were left as is. Data on the scale items was examined for missing values and the results of the analysis showed that there were no missing values. The reason for no missing values identified that the questionnaire was clear, understandable by the respondents, and there no ambiguity in the items. Moreover, the research was available for the respondents if they need any assist or explanation about the items of questionnaire. As mentioned in Section 4.2 the "Don't know" option was treated as missing data using the "Mean Substitution". The main

justification to use this method is when the missing data is relatively low (Hair et al. 2010) and not exceeding 2% therefore this method was deemed suitable and adopted.

4.2.2. Normality test

Outliers defined by Pallant are 'Cases with values well above or well below the majority of other cases' (2011). The value out of the range (scale points) can be considered outlier value. The frequency distributions was used to check the outliers and the results confirmed there is no outliers as all the values were between 1and 7 which is the range of scale used in this study.Outliervalues that lie outside the normal range of the data where the data has been distributed irregularly can distort statistical analysis (Zikmund et al., 2009) and were identified that they needed to be treated.

Skewness and kurtosis were used to test the distribution normality. Appendix B shows the skewness and kurtosis of each items employed to test the constructs of study model. The values above +2 or below -2 are a good indication that the variables are not normally distributed (Garson, 2012). All the values of questionnaire items in this study were between +2 and -2 and that confirmed the data were normally distributed.

4.3. Descriptive statistics

Description of demographic data preliminary analysis includes the descriptive statistics to provide the respondents characteristics, such as age, gender, education, employment status and nationality. Descriptive statistics can be used to describe the data in a simple and understandable manner' (Zikmund et al., 2009). The descriptive statistics are shown from Table 1 through Table 4.The characteristics of the respondents who participated in the questionnaire could be different from the characteristics of those who did not participate in the survey. Therefore it was deemed appropriate that there was a comparison of gender**,** age and education experiences between the sample and the population was made in this section.

Table 4.1 shows the percentage of male and female respondents visiting the GDRFA. It can be observed from the results that around 60.0% of the participants were males

and 39.3% were female. The annual data taken from GDRFA revealed no significant difference in gender between the sample and the population. The gender distribution of the sample was similar to that of the annual data on clients visiting the GDRFA.

Table 4. 1: Gender of study sample

Gender	Frequency	Percent
Male	275	59.0
Female	183	39.3
Total	458	98.3
Missing	8	1.7
Total	466	100.0

Table 4.2 shows the nationality of the respondents who participated in the survey. It was observed that the highest percentage of respondents were of Asian origin (47.2%) followed by African and Arabs: 13.5% for each nationality. The other nationalities were formed about 15% of the respondents, whereas the Europeans were about 15%. The annual data generated by GDRFA also showed a similar trend where most of the visitors were of Asian origin. These results indicate that nearly 73% of the customers were from Asia, Middle East and Africa. These characteristics of nationality can impact the acceptance and ease of use of the e-services. Research indicates that language can act as a principle barrier in the use of e-services (Al-Salih, 2004). As indicated by these results, the first language of the majority of the customers is not English. As the e-services are provided in English, customers who are not able to correspond in English can have difficulty in using these services. The results also indicate that the number of female customers was comparatively much lower as compared to male customers. This relatively low percentage of female clients could be linked to the nationality of the respondents. A large percentage of the respondents are of Asian and African origin where due to cultural norms women are not as emancipated as in the west.

Table 4. 2: Nationality of study sample

	Frequency	Percentage
UAE	3	.6
Arab	63	13.5
European	47	10.1
Asian	220	47.2
African	63	13.5
Others	70	15.0
Total	466	100.0

The employment details of the respondents in Table 4.3 show that 29.4 of the respondents were unemployed, 29.8% were employed in private establishments and 28.1 percent were self-employed. The 'not employed' respondents may visit the UAE for study, treatment, are tourists or visiting family members of expatriate workers. Only 12.2% were government employees. It was not possible to get a gender-segregated percentage on unemployment to decipher the difference in percentage of unemployment among male and female respondents.

Table 4. 3: Employment of study sample

Employment status	Frequency	Percentage
Not employed	137	29.4
Self Employed	131	28.1
Government employment	57	12.2
Private employment	139	29.8
Total	464	99.6
Missing	2	.4
Total	466	100.0

The age of the participants is shown in Table 4.4. Nearly 43% of the participants were in the age group of 26–35 years. The respondents with lowest levels of participation were aged above 60 years (4.5%).

	Frequency	Percent
18 – 25	111	23.8
26 – 35	200	42.9
36 – 45	104	22.3
46 – 60	28	6.0
Above 60	21	4.5
Total	464	99.6
Missing	2	.4
Total	466	100.0

The level of education is considered to be one of the most important pieces of demographic information. The importance of this aspect is that it may reflect the level of education of customers, which could indicate the internet skills and self-efficacy that were adopted as essential constructs in the study model. Table 4.5 depicts the education of the study sample. About 66% of the respondents had completed Secondary school education. Whereas, 29.8% were graduates and only 3.9% had a postgraduate degree.

Table 4. 5: Education level of study sample

	Frequency	Percent
Secondary school Certificate	154	33.0
Under Graduate (unable to finish college)	155	33.3
Graduate (able to finish college)	139	29.8
Post Graduate (masters doctorate)	18	3.9
Total	466	100.0

This section was allocated to describe the study samples demographic information about the respondents such as gender, age, nationality, and education. The results of sample description highlighted that most of the customers are male, the majority of the customers were of Asian nationality, the high percentage of customer was private employment, and all the respondents have educational certificate.

4.3.1. Item means and standard deviations

Describing the items and constructs used in this study it is necessary to identify the general trend of customers who participated in this study toward these constructs and items.

In all 10 constructs with 52 items selected to examine the factors that impact the acceptance of online services in GDRFA are described in this section. At this stage each of the ten were described separately to find out the perceptions of the respondents towards the items in these constructs.

Intention to use

This study adopted TAM to understand the intentions of people towards the use ofGDRFA services. Accordingly, intention to use was measured using three items. These items focused on the possibility of using these services by the respondents in the future. Table 4.6 shows the means and standard deviations of constructs determining intention to use. Item 16, "If a similar transaction need arises in the

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future, I would feel comfortable using the GDRFA online service again", and item 15, "I become clearer about services when I use the GDRFA online service", had high mean scores of 5.03 and 5.02 respectively. Whereas, item 17, "I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions" had a relatively lower mean score of 4.99. These scores demonstrate that the respondents felt comfortable using the GDRFA online service and these services facilitated them in understanding the online service because of its ease of use. It can be inferred from this result that the customers have an intention to use the service in future.

Table 4. 6: Descriptive statistics of intention to use

	N	Mini	Max	Mean	SD
15 I become clearer about services when I use the GDRFA online service	466	1	7	5.02	1.678
16 If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online service again	466	1	7	5.03	1.487
17 I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions	466	1	7	4.99	1.564
Total mean score				**5.01**	

Perceived usefulness

Perceived usefulness is central construct in the study model. This construct is used to measure the role of GDRFA system to serve the customer effectively, efficiency, and timely. Six times were used to measure this construct.

Table 4.7 presents the mean values of items measuring perceived usefulness. Item 5, "GDRFA online services support critical aspects of my transactions" had the lowest mean of 4.85 compared to other five items with mean scores higher than 5. The scores show that the respondents acknowledged the usefulness of online services in terms of value addition, time saving and addressing their transaction needs. The

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customers felt greater control over their transactions with GDRFA by using the online service. The total mean score of perceived usefulness confirmed the usefulness can be received by the customers due to use electronic system of GDRFA.

Table 4. 7: Descriptive statistics of perceived usefulness

	N	Min	Max	Mean	SD
1 Using online services gives me greater control over my transaction with GDRFA	466	1	7	5.28	1.742
2 The online services address my transaction needs	466	1	7	5.20	1.712
3 Using GDRFA online services saves me time	466	1	7	5.08	1.679
4 I find GDRFA online services add value	466	1	7	5.05	1.734
5 GDRFA online services support critical aspects of my transactions	466	1	7	4.85	1.744
6 Overall, I find the GDRFA e-services useful to accomplish my transactions	466	1	7	5.22	1.774
Total mean score				**5.11**	

Ease of use

Ease of use of the electronic system in the GDRFA was selected as an essential construct to identifying factors affecting the acceptance of electronic services. This construct was used by Davis (1989) as a main construct to establish TAM.

Eight items were used to measure ease of use GDRFA online system. The items indicating ease of use, as shown in Table 4.8, had mean scores above 5. These results show that the respondents using the GDRFA service found the online service much easier to use because it required less effort and was uncomplicated as there was less chance of making errors and more chance to recover from errors while using the service.

Table 4. 8: Descriptive statistics of ease of use

	N	Min	Max	Mean	SD
7 I make less error when I use the GDRFA online service	466	1	7	5.55	1.523
8 I do not need to consult the user manual when using the GDRFA online services	466	1	7	5.24	1.513
9 Interacting with the GDRFA online services requires less mental effort.	466	1	7	5.56	1.562
10 I find it easy to recover from errors encountered while using GDRFA online services	466	1	7	5.31	1.542
11 I find it easy to use the GDRFA online services to do what transactions I need	466	1	7	5.15	1.523
12 It is easy to navigate around GDRFA site	466	1	7	5.49	1.544
13 The GDRFA online services provide helpful guidance in performing tasks	466	1	7	5.23	1.587
14 Overall, I find the GDRFA e-services easy to use	466	1	7	5.33	1.444
Total mean score				**5.35**	

E–Marketing mix

According to the researcher knowledge, E-marketing is rarely used as a factor impacting the acceptance of online services. Therefore, this construct is adopted in this study to investigate it is role in the acceptance of online services.

Nine items were used to measure the e-marketing mix. Items 18, 19, 26 represented the products that are provided by GDRFA. In addition, items 20, 22, and 23 related to the distribution of online services via electronic channels. The price element was represented by items 21and 24. The Promotion element was measured using items 25 and 26.

Table 4.9 shows the means of items determining E – marketing mix. The respondents' perceptions exhibited mean values ranging from 4.57 to 4.82. These means confirmed that the element of marketing mix, product, price, promotion, and distribution, are considered by the GDRFA.

Table 4. 9: Descriptive Statistics of E-marketing mix

Items	N	Min	Max	Mean	SD
18 All information related to GDRFA online services are available at their website	466	1	7	4.57	1.961
19 I can receive all the services I need form GDRFA via electronic channels	466	1	7	4.73	1.978
20 I find that the e-mail facility in the GDRFA online services is useful	466	1	7	4.58	1.844
21 Secured online payment is available in the GDRFA website	466	1	7	4.67	1.902
22 I can track my transaction via GDRFA website	466	1	7	4.72	1.968
23 GDRFA website provides customers with online communication channels	466	1	7	4.75	1.901
24 Information about services fees is available in the GDRFA website	466	1	7	4.60	1.932
25 GDRFA advertises its online services well.	466	1	7	4.70	1.982
26 Online promotion of GDRFA provides me sufficient information about their online services	466	1	7	4.82	1.870
Total mean score				**4.68**	

Computer self-efficacy

This study assumed that conducting the new IT applications requires the users to have at least basic skills in computer literacy first. Computer self-efficacy is

considered in this model as a main determinant of the acceptance of online services. Four items were used to measure this construct.

The means of items determining computer self-efficacy as shown in table 4.10 indicate that the users of the online service were quite familiar with the use of computer technology as they could use the facility either on their own or with help from others. The results also indicate that the on line services were easy to use if the customers were given simple instructions on how to use the service.

Table 4. 10: Descriptive statistics of computer self-efficacy

	N	Min	Max	Mean	S D
27 I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself.	466	1	7	5.48	1.694
28 I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck.	466	1	7	5.43	1.632
29 I could complete the transaction using the GDRFA online services, if someone showed me how to do it first.	466	1	7	5.32	1.644
30 I could complete the transaction using the GDRFA online services, if someone else had helped me to get started.	466	1	7	5.43	1.720
Total mean score				**5.41**	

Language

According to the study model, language is considered one of the most important factors that affect the acceptance of e-services. Based on this assumption, language is a determinant of the intention to adopt e-services of GDRFA. This construct was measured using four items.

The mean scores of the items determining Language ranged between 4.64-4.42 as shown in Table 4.11. These scores indicate that the respondents moderately agreed

that language did not hamper their use of GDRFA and it provided sufficient language facilities to its clients.

Table 4. 11: Descriptive statistics of language

	N	Min	Max	Mean	SD
I could complete the GDRFA online services without online transaction	466	1	7	4.47	1.849
I can complete the GDRFA online services without the help of Arabic speaking translator	466	1	7	4.63	1.716
Language is not a key barrier for me to use GDRFA online services	466	1	7	4.64	1.826
GDRFA provides sufficient language facilities its clients	466	1	7	4.42	1.863
Total mean score				**4.54**	

Web skills

One of the most important constructs selected to establish the study model is web skills. This construct has been used to identify the skills of users to use websites and specifically the GDRFA web site. Four items were employed to measure this construct. Table 4.12 shows the mean scores of items determining web skills. Item 35, "I am very skilled at using the GDRFA website," had a highest mean value of 5.66, indicating that the users of GDRFA had moderately high web skills. The results also indicate that respondents were comfortable with using Internet service, as they were familiar with it.

Table 4. 12: Descriptive statistics of web skills

	N	Min	Max	Mean	SD
35 I am very skilled at using the GDRFA website	466	1	7	5.66	1.734

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	N	Min	Max	Mean	SD
36 I know how to find what I want on the GDRFA website	466	1	7	5.49	1.577
37 I know more about using the GDRFA website than most my colleagues	466	1	7	5.44	1.572
38 I have experience to deal with complicated websites	466	1	7	5.50	1.639
Total mean score				**5.52**	

Security

Security is considered to be one of the most important issues confronting organisations and customers in the online commerce and services. This issue should take into account the acceptance of electronic systems. Based on that, this construct has been included in the study model as an essential construct, which has impacted the acceptance of GDRFA online services. The mean values of items of Security were above 5. The result shows in table 4.13 that the respondents felt reasonably secure in providing personal information. They felt that the GDRFA to some extent protected their personal information. Therefore the risks in doing online transactions with GDRFA could be considered moderately low.

Table 4. 13: Descriptive Statistics of security

	N	Min	Max	Mean	SD
I feel secure in providing personal information for GDRFA online services	466	1	7	5.27	1.645
I feel the risk associated with GDRFA transactions is low	466	1	7	5.26	1.669
GDRFA website does not share my personal information with other sites	466	1	7	5.19	1.562
GDRFA website protects information about my credit card	466	1	7	5.22	1.595
Total mean score				**5.23**	

Trust

Trust between the service provider (government) and service requester (citizens and businesses) is considered to an important construct that influences e-government adoption (Al-Sobhi, Weerakkody, Mustafa, & Kamal 2010). Based on the importance of this construct in the acceptance of online services it was selected to be a part of the study model. Five items were used to measure this construct. The items describing trust are shown in table 4.14. The scores on trust ranged between 4.38 and 4.26. These results indicate that the clients trust in the services provided by GDRFA was not high. The main reason could be the problems facing clients while following the procedures involved during the transaction. Online transactions could take a long time to process the information fed into it maybe because of the lack of customers support, the speed of internet connections and the lack of adequate resources to handle the number of users.

Table 4. 14: Descriptive statistics of trust

	N	Min	Max	Mean	SD
43 Based on my experience with GDRFA online services, I know it is honest	466	1	7	4.26	1.865
44 Based on my experience with GDRFA online services, I know it cares about customers.	466	1	7	4.41	1.778
45 Based on my experience with GDRFA online services, I know it provides good service.	466	1	7	4.38	1.817
46 Based on my experience with GDRFA online services, I know it is trustworthy	466	1	7	4.27	1.805
47 Based on my experience with GDRFA online services, I know it is not opportunistic	466	1	7	4.38	1.740
Total mean score				**4.34**	

Support

Support has been identified as a crucial factor affecting the adoption and acceptance of web-based systems. The role of support in the use and acceptance of online service has been confirmed by studies of Igbaria & Ilivari (1995) and Bhattacherjee & Hikmet (2008). This construct has been adopted in the study model as a central construct impact the acceptance of online services of GDRFA. Five items were used to measure this construct. On examining the items determining support, item47, "GDRFA website tells me if my transaction is not processed (completed)" had the highest mean of 4.89 and item 48, "Help desk take care of technical problem promptly" had the lowest mean value of 4.39. The results indicate that the level of satisfaction among the customers using the on line service was moderately low. This could be attributed to the slow processing of the complaints and problems associated with the transactions that the customers do through the online service. As shown in table 4.15.

Table 4. 15: Descriptive Statistics of support

	N	Min	Max	Mean	SD
47 GDRFA website tells me if my transaction is not processed (completed)	466	1	7	4.89	1.828
48 Help desk take care of technical problem promptly	466	1	7	4.39	1.737
49 GDRFA website offers ability to speak to a live person if there is a problem	466	1	7	4.75	1.744
50 The online response time form GDRFA support staff to remedy problems is fast	466	1	7	4.47	1.710
51 The responses to your enquiries through GDRFA online channels are given in acceptable time	466	1	7	4.62	1.735
Total mean score				**4.62**	

The total mean scores of each of the ten constructs indicated that the customers responses for constructs, "computer self-efficacy (m=5.41), "ease of use" (m=5.35) and "web skills" (5.25) were the highest. These results demonstrate that the customers had sufficient web skills and indicated good knowledge of using the internet and computer based on-line programs. On the other hand, the respondents exhibited the lowest mean scores for, "trust" (4.34), "language" (4.54) and support (4.62). These results indicate that the customers were not that satisfied with the service providers' support and performance in building a relationship of trust with the customers. This result indicates that the GDRFA online services would require improvement to increase the level of trust and support to facilitate the customers. The language was also a barrier to accomplish the online transactions with ease by the customers.

4.3.2. Difference in perceptions according to the education and nationality

Ten constructs were selected to measure the acceptance of e-government in the GDRFA. These constructs were measured using the questionnaire distributed to different customers of the GDRFA. As shown in the description section (Section 4.3), there is a variety in respondents who participated in this study according to the nationality, age, education, and gender. Accordingly, the difference between the perceptions of respondents in this study toward the model constructs will be investigated based on the two criteria: education and nationality.

The key justification of those two criteria is that the people who participated in this study have different nationalities and educational background and that may leads to different perception toward the factors affecting the acceptance of e-government.

To achieve this purpose, the ANOVA test is used to analyse the difference in the respondents' perceptions towards the constructs of study model. Based on the education criteria, the sample divided into two categories: secondary and unable to finish college" and "graduate and post graduate". The ANOVA results regarding to education are shown in Table 4.16.

Table 4. 16: ANOVA Results of Education

Constructs	Education	N	Mean	Std. Deviation	F	Significance
Usefulness	Secondary and Unable to finish college	309	5.1904	1.56387	2.448	.118
	Graduate and Post Graduate	157	4.9544	1.49007		
	Total	466	5.1109	1.54185		
Ease of use	Secondary and Unable to finish college	309	5.3467	1.35388	.080	.778
	Graduate and Post Graduate	157	5.3822	1.12413		
	Total	466	5.3586	1.27998		
Intention to use	Secondary and Unable to finish college	309	5.0777	1.47211	1.818	.178
	Graduate and Post Graduate	157	4.8832	1.46996		
	Total	466	5.0122	1.47268		
E-marketing	Secondary and Unable to finish college	309	4.7368	1.80385	.882	.348
	Graduate and Post Graduate	157	4.5740	1.69706		
	Total	466	4.6819	1.76844		
Self-efficacy	Secondary and Unable to finish college	309	5.4636	1.62808	.868	.352
	Graduate and Post Graduate	157	5.3201	1.45467		
	Total	466	5.4152	1.57169		

Language	Secondary and Unable to finish college	309	4.5890	1.71775	.837	.361
	Graduate and Post Graduate	157	4.4347	1.72629		
	Total	466	4.5370	1.72032		
Web skills	Secondary and Unable to finish college	309	5.4960	1.59754	.282	.596
	Graduate and Post Graduate	157	5.5764	1.43800		
	Total	466	5.5231	1.54455		
Security	Secondary and Unable to finish college	309	5.2953	1.53119	1.436	.231
	Graduate and Post Graduate	157	5.1146	1.55237		
	Total	466	5.2344	1.53906		
Trust	Secondary and Unable to finish college	309	4.4065	1.75912	1.449	.229
	Graduate and Post Graduate	157	4.2038	1.63370		
	Total	466	4.3382	1.71880		
Support	Secondary and Unable to finish college	309	4.6175	1.64335	.023	.879
	Graduate and Post Graduate	157	4.6408	1.39573		
	Total	466	4.6253	1.56284		

The ANOVA analysis shows that there are no significant statistical differences at level 0.05 between the perceptions of respondents according to education level "secondary and unable to finish college" and "graduate and post graduate".

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Accordingly, the perception of respondents toward the ten constructs of study model show no difference according to the variations in the educational level of the customers.

Through the use of ANOVA, also conducted was an analysis based on the nationalities of participants to identify the differences in perceptions towards the study model constructs. The results of ANOVA are shown in Table 4.17. The results of ANOVA show that the no difference was found in the perceptions of participants toward five constructs: perceived usefulness; ease of use; web skills, security; and trust. The F values of these constructs were between 0.221 and 1.842 and all these values were not significant.

Table 4. 17: ANOVA Results of Nationalities

Constructs	Nationality	N	Mean	Std. Deviation	F	Significance
Usefulness	Arab	66	5.0429	1.57852	1.842	0.139
	European and Others	117	4.8476	1.61420		
	Asian	220	5.2515	1.52083		
	African	63	5.1799	1.40062		
	Total	466	5.1109	1.54185		
Ease of Use	Arab	66	5.4659	1.16531	0.221	0.882
	European and Others	117	5.3632	1.28276		
	Asian	220	5.3205	1.32121		
	African	63	5.3710	1.26562		
	Total	466	5.3586	1.27998		
Intention to use	Arab	66	4.9545	1.39827	2.598	0.052

	European and Others	117	4.8177	1.59471		
	Asian	220	5.2045	1.40488		
	African	63	4.7619	1.48882		
	Total	466	5.0122	1.47268		
E-marketing	Arab	66	4.5690	1.88275	3.587	0.014
	European and Others	117	4.2735	1.90937		
	Asian	220	4.9217	1.67740		
	African	63	4.7213	1.56384		
	Total	466	4.6819	1.76844		
Self-efficacy	Arab	66	5.1402	1.69395	5.375	0.001
	European and Others	117	5.0150	1.69218		
	Asian	220	5.6534	1.47507		
	African	63	5.6151	1.36031		
	Total	466	5.4152	1.57169		
Language	Arab	66	4.0833	1.62453	2.765	0.041
	European and Others	117	4.4402	1.72258		
	Asian	220	4.6227	1.77268		
	African	63	4.8929	1.54484		
	Total	466	4.5370	1.72032		
Web skills	Arab	66	5.7689	1.24136	0.711	0.546
	European and Others	117	5.4359	1.62720		

	Asian	220	5.5114	1.56878		
	African	63	5.4683	1.59605		
	Total	466	5.5231	1.54455		
Security	Arab	66	5.1515	1.48057	0.798	0.518
	European and Others	117	5.1197	1.65004		
	Asian	220	5.3477	1.49794		
	African	63	5.1389	1.53637		
	Total	466	5.2344	1.53906		
Trust	Arab	66	4.4030	1.57147	0.816	0.485
	European and Others	117	4.2103	1.74313		
	Asian	220	4.4445	1.77183		
	African	63	4.1365	1.63621		
	Total	466	4.3382	1.71880		
Support	Arab	66	4.4818	1.39095	4.969	0.002
	European and Others	117	4.2068	1.58439		
	Asian	220	4.8718	1.56705		
	African	63	4.6921	1.53195		
	Total	466	4.6253	1.56284		

However, there are differences between the participants based on their nationalities towards five constructs: intention to use; E-marketing; self-efficacy; language; and support. To identify the source of differences toward these constructs, an LSD test was conducted and the results as shown in table 4.18. It is worth mentioning that the

LSD test was conducted only with the constructs that have significance differences based on the nationalities of participants.

Table 4. 18: LSD Results Nationalities

Dependent Variable	Nationality	Nationality	Mean Difference	Std. Error	Sig.
Intention to Use	Arab	European and Others	.13688	.22555	.544
		Asian	.25000	.20563	.225
		African	.19264	.25807	.456
	European and Others	Asian	.38688[*]	.16765	.021
		African	.05576	.22896	.808
	Asian	African	.44264[*]	.20936	.035
E-marketing	Arab	European and Others	.29552	.27000	.274
		Asian	.35269	.24615	.153
		African	.15232	.30892	.622
	European and Others	Asian	.64821[*]	.20068	.001
		African	.44784	.27407	.103
	Asian	African	.20038	.25062	.424
Self-efficacy	Arab	European and Others	.12519	.23861	.600
		Asian	.51326[*]	.21753	.019
		African	.47493	.27301	.083
	European and Others	Asian	.63845[*]	.17735	.000
		African	.60012[*]	.24221	.014
	Asian	African	.03833	.22148	.863
Language	Arab	European and Others	.35684	.26334	.176

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		Asian	.53939[*]	.24008	.025
		African	.80952[*]	.30130	.007
	European and Others	Asian	.18256	.19573	.351
		African	.45269	.26732	.091
	Asian	African	.27013	.24443	.270
Support	Arab	European and Others	.27498	.23757	.248
		Asian	.39000	.21658	.072
		African	.21025	.27182	.440
	European and Others	Asian	.66498[*]	.17658	.000
		African	.48523[*]	.24116	.045
	Asian	African	.17975	.22051	.415

Regarding to intention to use the GDRFA online system the differences were between Asian and European and others, were analysed. The main justification to these differences was that most Asian people intend to stay at the UAE to work for a long period of time, however the African and European and others may visit UAE for short visit. Therefore, the intention to use this system is different between these groups of stakeholders.

One difference was found regarding the e-marketing and was between Asian and the group of European and others.

The results of the LSD analysis showed that there is significance difference between the Asian group and the group of European and others toward the E-marketing construct. The ANOVA results highlighted that the Asian group paid more attention to the e-marketing construct. According to the report of the GDRFA the number of people who visit the UAE they are from Asia and some of them try to renew their visa to stay for a longer period of time. The Asian group paid more attention to the e-marketing elements to collect information about the types of visa, fees, and channels to apply the visa, and the updated information about visa regulations.

Most of the differences in the perceptions were in the self-efficacy construct. The differences were between Asian and Arab, European and others and Asian, and European and others and African. Self –efficacy maybe affected by different factors for example, previous successful experience and the frequency of access to computers (Topkaya, 2010). These differences in perceptions towards the self-efficacy can be justified by the background of the participants, and frequency of use of the computer and the online systems.

The differences towards the language construct were between the Arab and Asian and Arab and African. The essential reason behind these differences is that the web-site of the GDRFA is available with Arabic and English languages and does not support Asian and African languages.

Finally, the differences towards support constructs were between the European and others and Asian, and European and others and African. The differences in the support may cause due to the language barriers or the differences in the experiences to deal with GDRFA online systems.

4.4. Test study model and hypotheses

This section deals with the steps taken for analysing the research model. Four steps were undertaken to examine the study model. These were exploratory factor analysis; measurement model; validity and reliability; and structural model. The results from hypothesis testing are also included in the section.

4.4.1. Principal component analysis

Exploratory Factor Analysis (EFA) is used to reduce the number of variables from a larger number of measured variables (Stangor, 2011; Zikmund et al., 2009). EFA is often used as a data reduction method before testing the hypothesis and subjecting the model to the Confirmatory Factor Analysis (CFA). For Factor Analysis, a sample size of 300 is considered appropriate (Bruin, 2006; Comrey & Lee, 1992). The sample size of this study was 466.

The EFA indicated 10 dimensions. These were: Perceived usefulness; Ease of use; Intention to use; E – marketing mix; Computer self-efficacy; Language; Web skills; Security; Trust; and Support

Varimax Orthogonal Rotation was employed to check the unidimensionality among the items. Varimax Rotation simplified the interpretation of factors and maximized the dispersion of loadings within these factors. Principal Component's analysis was performed on the scale to obtain the constructs in the scale. The researcher conducted two Principal Component analyses. In the first instance, the factors were extracted naturally, to determine how the variables loaded onto each factor regardless of their similarity with the predetermined constructs in the pre-tested and already validated scale. The factors were extracted according to how certain variables described each construct within the study's context. In this case, the factors were extracted according to how consumers perceived certain constructs. In the second instance, the researcher employed Factor Analysis by specifying the number of extracted factors as they existed in the original scale. The factors extracted matched the factors in the original scale and were labelled accordingly.

The ten constructs had Cronbach's alpha Coefficient of more than 0.71. Since the reliability was more than 0.7, the internal consistency between the constructs was deemed to be good as shown in Table 4.19. The factor loadings for most of the constructs were above 0.4. Hence, all the factors were considered in the final model of CFA.

Table 4. 19: Factor loadings and reliability values for constructs

Variable	Item code	Items	Factor loadings	Variance	(α)
Perceived usefulness	Q1	Using online services gives me greater control over my transaction with GDRFA	0.941	79.444%	0.948
	Q2	The online services address my transaction needs	0.902		
	Q3	Using GDRFA online services saves me time	0.886		
	Q4	I find GDRFA online services add value	0.895		
	Q5	GDRFA online services support critical aspects of my transactions	0.835		
	Q6	Overall, I find the GDRFA e-services useful to accomplish my	0.886		

			transactions			
Ease of use	Q7	I make less error when I use the GDRFA online service	0.924	70.138%	0.939
	Q8	I do not need to consult the user manual when using the GDRFA online services	0.834		
	Q9	Interacting with the GDRFA online services requires less mental effort.	0.812		
	Q10	I find it easy to recover from errors encountered while using GDRFA online services	0.823		
	Q11	I find it easy to use the GDRFA online services to do what transactions I need	0.826		
	Q12	It is easy to navigate around GDRFA site	0.861		
	Q13	The GDRFA online services provide helpful guidance in performing tasks	0.806		
	Q14	Overall, I find the GDRFA e-services easy to use	0.807		
Intention to use	Q15	I become clearer about services when I use the GDRFA online service	0.948	87.196%	0.926
	Q16	If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online service again	0.922		
	Q17	I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions	0.931		
E – Marketing Mix	Q18	All information related to GDRFA online services are available at their website	0.940	84.269%	
	Q19	I can receive all the services I need form GDRFA via electronic channels	0.911		0.977
	Q20	I find that the e-mail facility in the GDRFA online services is useful	0.923		
	Q21	Secured online payment is available in the GDRFA website	0.916		

	Q22	I can track my transaction via GDRFA website	0.921		
	Q23	GDRFA website provides customers with online communication channels	0.921		
	Q24	Information about services fees is available in the GDRFA website	0.911		
	Q25	GDRFA advertises its online services well	0.904		
	Q26	Online promotion of GDRFA provides me sufficient information about their online services	0.915		
Computer self-efficacy	Q27	I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself.	0.958	88.309%	0.956
	Q28	I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck.	0.940		
	Q29	I could complete the transaction using the GDRFA online services, if someone showed me how to do it first.	0.930		
	Q30	I could complete the transaction using the GDRFA online services, if someone else had helped me to get started.	0.931		
Language	Q31	I could complete the GDRFA online services without online transaction	0.975	90.021%	0.963
	Q32	I can complete the GDRFA online services without the help of Arabic speaking translator	0.944		
	Q33	Language is not a key barrier for me to use GDRFA online services	0.948		
	Q34	GDRFA provides sufficient language facilities its clients	0.928		
Web skills	Q35	I am very skilled at using the GDRFA website	0.968	89.664%	0.961
	Q36	I know how to find what I want on the GDRFA website	0.941		
	Q37	I know more about using the GDRFA website than most my	0.936		

		colleagues			
	Q38	I have experience to deal with complicated websites	0.942		
Security	Q39	I feel secure in providing personal information for GDRFA online services	0.968	90.477%	0.965
	Q40	I feel the risk associated with GDRFA transactions is low	0.954		
	Q41	GDRFA website does not share my personal information with other sites	0.935		
	Q42	GDRFA website protects information about my credit card	0.948		
Trust	Q43	Based on my experience with GDRFA online services, I know it is honest	0.972	91.065%	0.975
	Q44	Based on my experience with GDRFA online services, I know it cares about customers.	0.954		
	Q45	Based on my experience with GDRFA online services, I know it provides good service.	0.955		
	Q46	Based on my experience with GDRFA online services, I know it is trustworthy	0.942		
	Q47	Based on my experience with GDRFA online services, I know it is not opportunistic	0.947		
Support	Q48	GDRFA website tells me if my transaction is not processed (completed)	0.917	79.650%	
	Q49	Help desk take care of technical problem promptly	0.892		
	Q50	GDRFA website offers ability to speak to a live person if there is a problem	0.872		0.936
	Q51	The online response time form GDRFA support staff to remedy problems is fast	0.887		
	Q52	The responses to your enquiries through GDRFA online channels are given in acceptable time	0.895		

4.4.2. Improvement of the measurement model

AMOS was used to estimate the preliminary model for each group. The preliminary model enabled the researcher to examine each group and the best fit as per parsimony and substantive meaningfulness (Byrne, 2010). The fit indices indicate how the underlying structure fits the data across the group.

This model was evaluated by using Model Fit Indices, such as the Chi-square statistic, Degrees of Freedom (DF), Chi-square statistic (CMIN)/DF, CFI, and RMSEA. Different indices were calculated and their values for the model fit are shown in Table 4.20.

Table 4. 20: Guidelines of overall model fit

GOF criterion	Value Range	Acceptable Level
Absolute fit		
Chi-square (χ^2)	Tabled χ^2 value	Compares with tabled value for given df
Goodness of fit (GFI)	0 (no fit) to 1 (perfect fit)	Value close to 0.90 reflects a good fit
Adjusted GFI (AGFI)	0 (no fit) to 1 (perfect fit)	Value > 0.90 reflects a good model fit
Root-mean-square error of approximation (RMSEA)	<0.10	<0.10 reflects good fit <0.05 reflects very good fit <0.01 reflects outstanding fit
Normed fit index (NFI)	0 (no fit) to 1 (perfect fit)	Value close to 0.90 reflects a good fit
Non-normed fit index (NNFI)	0 (no fit) no upper bound value	Value close to 0.90 reflects a good fit
Comparative Fit		
Comparative fit index (CFI)	0 (no fit) to 1 (perfect fit)	Value close to 0.90 reflects a good fit
Incremental fit index (IFI)	0 (no fit) to 1 (perfect fit)	Value close to 0.90 reflects a good fit
Relative fit index (RFI)	0 (no fit) to 1 (perfect fit)	Value close to 0.90

		reflects a good fit
Parsimonious Fit		
Parsimonious goodness of alternative model-fit index (PGFI)	0 (no fit) to 1 (perfect fit)	Compares values in alternative model-fit index (PGFI)
Parsimonious normed fit	0 (no fit) to 1 (perfect fit)	Compares values in alternative models index (PNFI)

(Source: Schumacker and Lomax, 1996)

The constructs and items extracted from the Exploratory Factor Analysis were used to establish the measurement model and to test the reliability and validity of this model.

4.4.3. *Measurement model, reliability and validity*

The general Structural Equation Model consists of two complementary models: the Measurement Model using Confirmatory Factor Analysis (CFA), and the Structural Model, which concerns relationships among independent and dependent variables. Each of these components was analysed by following two steps.

The measurement model defines by Hair (2010, p. 690) as "Specification of the measurement theory that shows how constructs are operational zed by sets of measured variables. The specification is similar to an EFA by factor known and specified before the analysis can be conducted". . The measurement model was tested for convergent and discriminate validity. CFA and reliability analysis were performed on the 52 items representing the 10 latent constructs. Secondly, the initial structural model defined in the Final Measurement Model was then tested for explanatory power and goodness of fit. The model fit indices of the measurement model showed the Chi square of 1931.754, DF of 1229 and CMIN/DF of 1.572, RMSEA of 0.035 and CFI of 0.975 indicating a good fit as shown in Table 4.21. Since lambda weights from the factor analysis had factor loadings of more than 0.4, all items were retained in the model. Figure 4.1 show the indicators of measurement model fit.

Table 4. 21: Model fit indices of measurement model

	Model fit	Desired score
Chi-square	1931.754	NA
Degrees of Freedom	1229	NA
CMIN/DF	1.572	</=2.00 or <5 moderate fit
CFI	0.975	=/>0.90
RMSEA	0.035	</=0.06

After confirming the model fit, the reliability and validity of the indicators was examined to determine how well the sets of indicators identified the constructs (Steenkamp & Baumgartner, 2000) by using the final measurement model.

Reliability means consistency (Saunders et al., 2012). Internal consistency involves correlating the responses to each question in the questionnaire with those to the other questions in the questionnaire (Saunders et al., 2012).

Cronbach's alpha is the most commonly used index of internal consistency. Its values range from 0 to 1, where '0' means no relationship and '1' means a perfect positive relationship between the constructs (Saunders et al., 2012. The rule of thumb is that the reliability of a commonly used scale should be at least a = .70 (Stangor, 2011).The Chronbach's alpha coefficient was more than 0.9 for all the constructs indicating the existence of uni dimensionality for each construct (Hair et al., 2010). The Cronbach's alpha of each construct in this study ranged between 0. 926 (intention to use) and 0.977 (e-marketing), indicating good internal consistency of the latent constructs.

Different statistical procedures can be used to measure the validity of the constructs in a scale. Validity mainly refers to measuring the results accurately to reflect the concept being measured (Saunders et al., 2012). The validity is measured as content or face validity and also in terms of construct validity during the examination of psychometric properties.

Content validity relies on the theory that a good description of the matter being analysed exists and also the tool employed in the study (survey) has the capability to give sufficient depth to the research inquiry driving the research (Knight, 2002).

Content validity is often measured by taking expert opinion from the experts in the field. The researcher piloted the survey questionnaire with 50 respondents. The respondents of the pilot study easily understood the questionnaire confirming its content validity. Construct validity was also adopted in this study. One way of measuring construct validity is through the examination of the correlations among measured variables. Correlation coefficients are plotted to evaluate the linear relationship between the items in a questionnaire (Saunders et al., 2012). In business research it is rarely possible to obtain perfect correlations (Saunders et al., 2012). Numbers between -1 and +1 represent the strength of the relationship between two variables. A value of + 1 represents a positive correlation whereas a value of -1 represents a negative correlation (Saunders et al., 2012). Each item in the questionnaire was correlated with other items using Spearman's correlation coefficient which is used in ordinal scales. The correlation coefficient between the variables in each construct showed a high positive correlation. The correlation coefficient was between r= .917 to .573 as shown in Appendix 2.

The convergent and discriminant validity was assessed by using the Confirmatory Factor Analysis (CFA) in this study. The convergent validity of the constructs was assessed using the factor loadings of latent constructs in CFA (Anderson & Gerbing, 1988). All the study items achieved significant and high loadings and it was between 0.806 for Q13 and 0.975 for Q31. Furthermore, all the factors had significant p-value of less than 0.001. The reliability in this study was assessed using the composite validity and average variance extracted for all the items of each construct. The composite reliability was more than 0.9 and the average variance extracted was 0.9 in this study indicating that each construct had convergent validity. The correlations among latent constructs were used to assess the discriminant validity and were significantly less than 1.

These results show that the model is valid and reliable and all the constructs are suitable to measure the acceptance of online services. In addition, the indictors are valid and reliable to measure the constructs. These results also confirmed the validity of selection the constructs and items were used in this study.
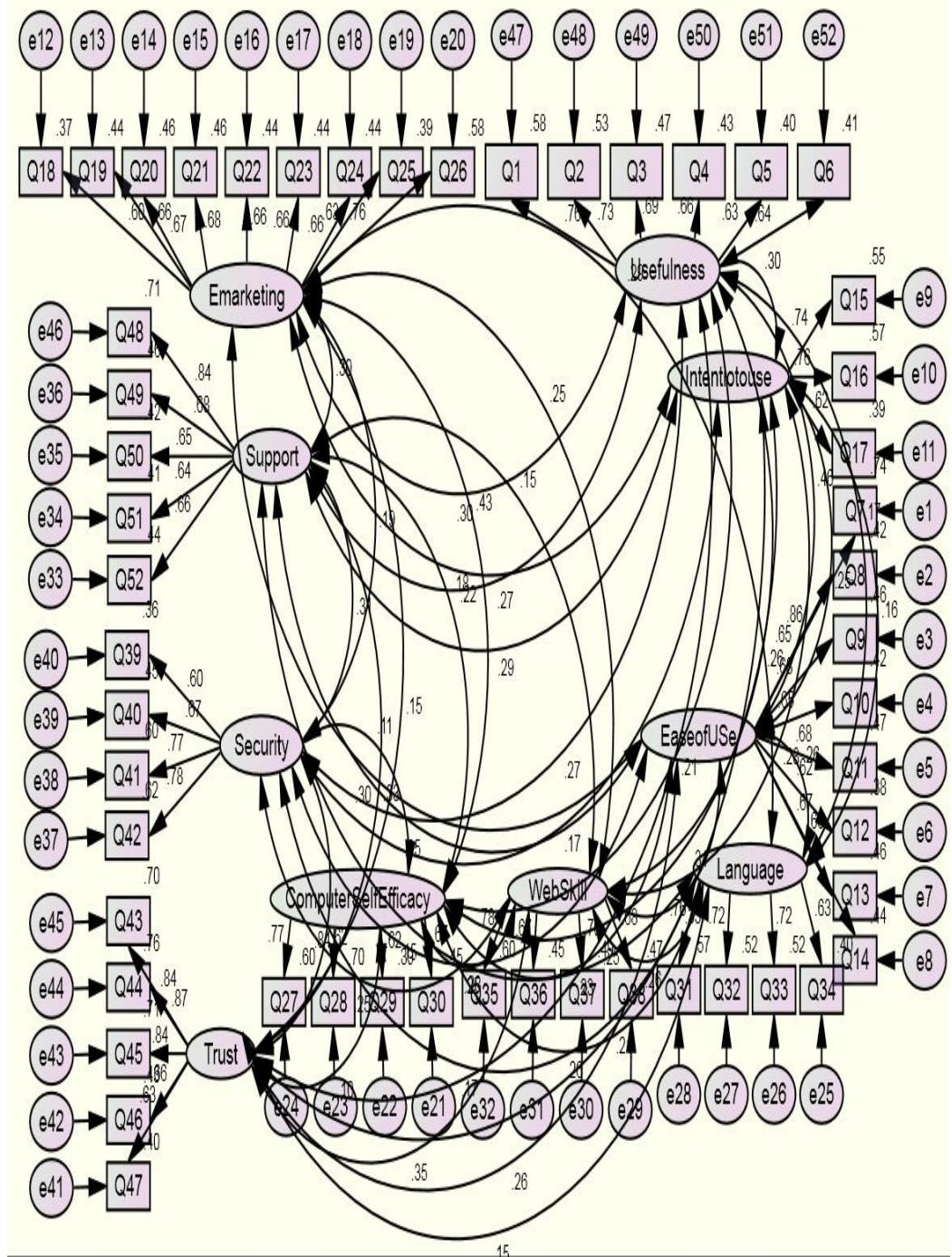
Figure 4. 1: Measurement model on factors impacting e-Government acceptance Variable

Table 4. 22: Results of reliability

	Item code	Items	SRW	SMR	CR	VE	(α)
Perceived usefulness	Q1	Using online services gives me greater control over my transaction with GDRFA	0.945	0.894	0.977	0.97	0.948
	Q2	The online services address my transaction needs	0.886	0.785			
	Q3	Using GDRFA online services saves me time	0.848	0.719			
	Q4	I find GDRFA online services add value	0.865	0.748			
	Q5	GDRFA online services support critical aspects of my transactions	0.786	0.617			
	Q6	Overall, I find the GDRFA e-services useful to accomplish my transactions	0.873	0.762			
Ease of use	Q7	I make less error when I use the GDRFA online service	0.925	0.856	0.949	0.95	0.939
	Q8	I do not need to consult the user manual when using the GDRFA online services	0.81	0.657			
	Q9	Interacting with the GDRFA online services requires less mental effort.	0.778	0.606			
	Q10	I find it easy to recover from errors encountered while using GDRFA online services	0.796	0.634			
	Q11	I find it easy to use the GDRFA online services to do what transactions I need	0.801	0.642			
	Q12	It is easy to navigate around GDRFA site	0.843	0.711			
	Q13	The GDRFA online services provide helpful guidance in performing tasks	0.769	0.591			
	Q14	Overall, I find the GDRFA e-services easy to use	0.77	0.593			

Intention to use	Q15	I become clearer about services when I use the GDRFA online service	0.937	0.877	0.988	0.99	0.926
	Q16	If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online service again	0.868	0.753			
	Q17	I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions	0.894	0.799			
E – Marketing Mix	Q18	All information related to GDRFA online services are available at their website	0.935	0.875	0.99	0.99	0.977
	Q19	I can receive all the services I need form GDRFA via electronic channels	0.9	0.809			
	Q20	I find that the e-mail facility in the GDRFA online services is useful	0.915	0.836			
	Q21	Secured online payment is available in the GDRFA website	0.904	0.817			
	Q22	I can track my transaction via GDRFA website	0.91	0.829			
	Q23	GDRFA website provides customers with online communication channels	0.912	0.831			
	Q24	Information about services fees is available in the GDRFA website	0.898	0.806			
	Q25	GDRFA advertises its online services well	0.889	0.79			
	Q26	Online promotion of GDRFA provides me sufficient information about their online services	0.902	0.814			

					0.992	0.99	
	Q27	I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself.	0.953	0.908			
Computer self-efficacy	Q28	I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck.	0.918	0.843			0.956
	Q29	I could complete the transaction using the GDRFA online services, if someone showed me how to do it first.	0.903	0.816			
	Q30	I could complete the transaction using the GDRFA online services, if someone else had helped me to get started.	0.902	0.813			
	Q31	I could complete the GDRFA online services without online transaction	0.982	0.965	0.995	0.99	
Language	Q32	I can complete the GDRFA online services without the help of Arabic speaking translator	0.919	0.845			0.963
	Q33	Language is not a key barrier for me to use GDRFA online services	0.929	0.864			
	Q34	GDRFA provides sufficient language facilities its clients	0.895	0.802			
Web skills	Q35	I am very skilled at using the GDRFA website	0.969	0.939	0.994	0.99	0.961
	Q36	I know how to find what I want on the GDRFA website	0.917	0.842			
	Q37	I know more about using the GDRFA website than most my colleagues	0.909	0.826			
	Q38	I have experience to deal with complicated websites	0.92	0.847			

Security	Q39	I feel secure in providing personal information for GDRFA online services			0.995	0.99	0.965
			0.967	0.935			
	Q40	I feel the risk associated with GDRFA transactions is low	0.941	0.886			
	Q41	GDRFA website does not share my personal information with other sites	0.903	0.815			
	Q42	GDRFA website protects information about my credit card	0.927	0.859			
Trust	Q43	Based on my experience with GDRFA online services, I know it is honest	0.972	0.944	0.973	0.99	0.975
	Q44	Based on my experience with GDRFA online services, I know it cares about customers.	0.942	0.888			
	Q45	Based on my experience with GDRFA online services, I know it provides good service.	0.945	0.893			
	Q46	Based on my experience with GDRFA online services, I know it is trustworthy	0.925	0.855			
	Q47	Based on my experience with GDRFA online services, I know it is not opportunistic	0.93	0.864			
Support	Q48	GDRFA website tells me if my transaction is not processed (completed)	0.898	0.807	0.968	0.98	
	Q49	Help desk take care of technical problem promptly	0.86	0.74			
	Q50	GDRFA website offers ability to speak to a live person if there is a problem	0.838	0.703			0.936
	Q51	The online response time form GDRFA support staff to remedy problems is fast	0.854	0.729			
	Q52	The responses to your enquiries through GDRFA online channels are given in acceptable time	0.868	0.754			

4.5. Structural Model and hypotheses testing: Model – fit indices of study model

At this stage the structural model is tested. Structural model defines by Hair (2010, p. 634) as a "Set of one or more dependence relationships linking the hypothesized model's construct. The structural model is most useful in representing the interrelationships of variables between constructs" The structural model was established based on the on the relationships between the constructs of study that are represented via the study hypotheses. These hypotheses and relationships, as mentioned before, were established based on the theoretical justifications and prior empirical studies.

The model fit indices of the study model suggested that it is a good fit model. The model fit indices showed the Chi square of 2323.341, DF of 1258 and CMIN/DF of 1.847, RMSEA of 0.043 and CFI of 0.962 indicating a good fit. Since lambda weights from the Factor Analysis had factor loadings of more than 0.4, and reliability of more than 0.9 as shown in Figure 4.2 all items were retained in the model. Also Appendix 3 shows the covariance between constructs of the study and all the relationships were significant.

Table 4. 23: Model fit indices of structural model

	Model fit	**Desired score**
Chi-square	2323.341	NA
Degrees of Freedom	1257	NA
CMIN/DF	1.884	$</=2.00$ or <5 moderate fit
CFI	0.962	$=/>0.90$
RMSEA	0.043	$</=0.06$
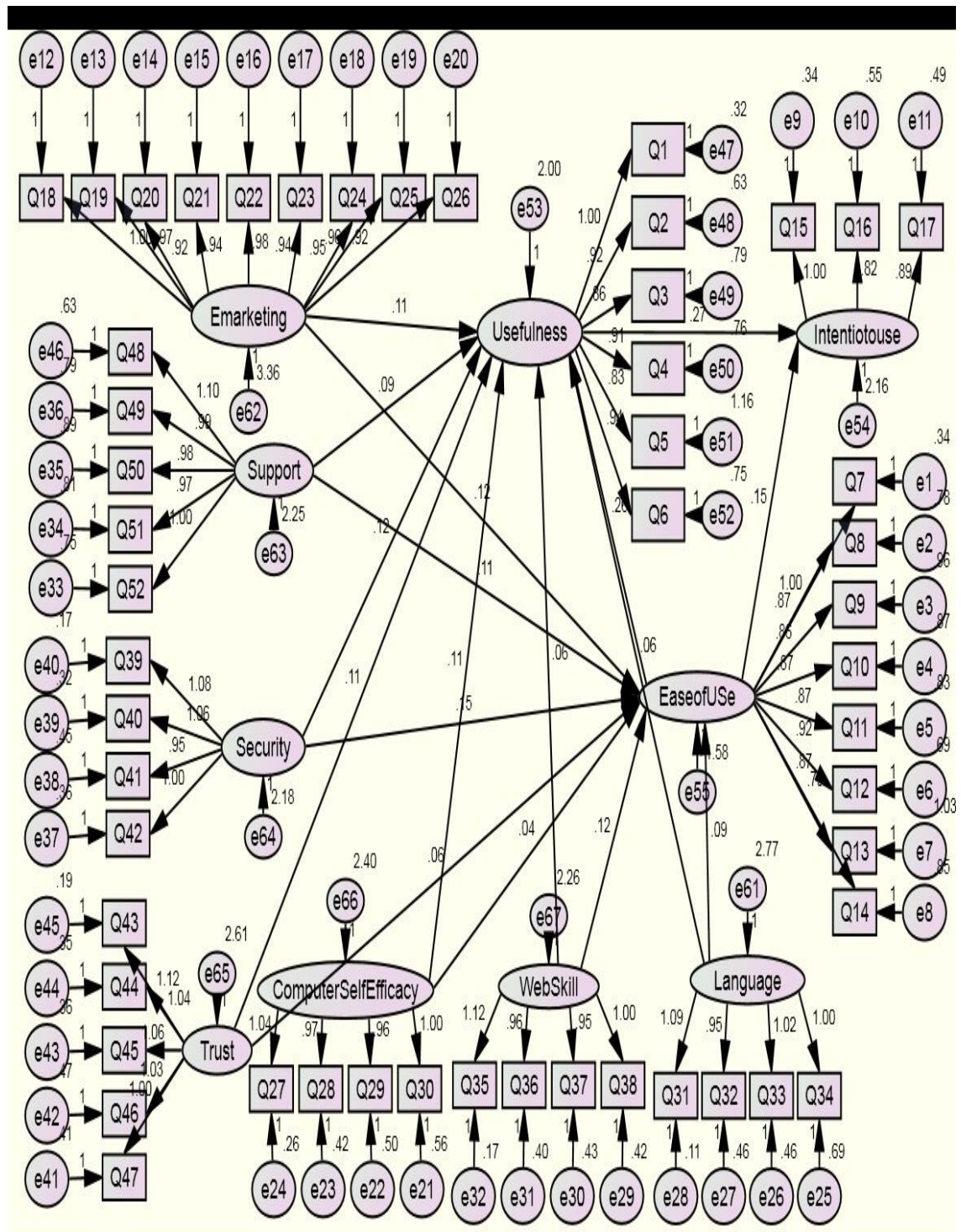
Figure 4. 2: Structural model to determine factors impacting e-Government acceptance

The structural model focuses on testing paths between the constructs of the study model and makes decisions about the hypotheses. The hypotheses cited in earlier chapters were tested by using the Structural Equation Model. The Heywood case was

used to fix a negative value of error variables of TI and EE (Bentler & Chu, 1987). This included substitution of a small positive value of 0.005, setting the error variable. After changing the error variance, the hypotheses were tested using the final model.

The hypotheses were tested based on the SEM results. The results of regression analysis among the constructs of study model are shown in Table 4.24.

Table 4. 24: Results of regression analysis of study model

			Estimate	S.E.	C.R.	P
Ease of Use	<---	Security	.147	.042	3.540	***
Ease of Use	<---	Trust	.059	.038	1.553	.120
Ease of Use	<---	Support	.111	.042	2.662	.008
Usefulness	<---	Security	.120	.047	2.538	.011
Usefulness	<---	Trust	.111	.043	2.600	.009
Usefulness	<---	Support	.093	.047	1.964	.050
Ease of Use	<---	E-marketing	.120	.033	3.577	***
Usefulness	<---	E-marketing	.110	.038	2.879	.004
Ease of Use	<---	Computer Self-efficacy	.040	.040	.995	.320
Ease of Use	<---	Web Skill	.121	.041	2.972	.003
Ease of Use	<---	Language	.088	.037	2.407	.016
Usefulness	<---	Computer Self-efficacy	.110	.045	2.459	.014
Usefulness	<---	Web Skill	.056	.046	1.201	.230
Usefulness	<---	Language	.060	.042	1.439	.150
Intention to use	<---	Usefulness	.272	.050	5.434	***
Usefulness	<---	Ease of Use	.264	.056	4.704	***
Intention to use	<---	Ease of Use	.147	.058	2.528	.011

4.5.1. *Hypotheses of Technical Infrastructure variables:*

Security significantly affects ease of use

Trust significantly affects ease of use

Support significantly affects ease of use

Security significantly affects usefulness

Trust significantly affects usefulness

Support significantly affects usefulness

The First three hypotheses examined the impact of Technical Infrastructure variables including Security, Trust and Support on ease of use. Regarding the security, the research findings confirmed that the behavioural intention of the customer to adopt web-based systems is significantly influenced by their awareness regarding the website's level of security. The results of Salisbury (2001) showed that the perceived security is a considerable element of intention to shop online at any website. Accordingly, security hypothesized to impact two constructs: ease of use and usefulness.

Trust in information reflects the extent to which the information obtained in an online environment can be trusted. Trust in online services can be considered as an important type of trust in electronic settings, trust in e-government will be largely dependent on the trust that citizens can exhibit in the information made available to them. Based on the study model, perceived usefulness and ease of use hypothesized to affect the trust.

Support is considered to an essential requirement that can help users of e-services overcome hurdles to the use of new information technologies. They referred to these as facilitating conditions. The availability of support to users to learn how to use e-services can assist in inspiring the users to adopt these technologies. Igbaria & Ilivari (1995) reported that technical support proposed to affect ease of use and perceived usefulness. Accordingly, ease of use and perceived usefulness are hypothesized to be impacted by support.

The results show that security and support significantly impacted the ease of use of e-government services and the results were (Estimate 0.147, C.R. 3.540, P 0.001) and (Estimate 0.111, C.R. 2.662, P 0.008) respectively. However, the influence of trust on ease of use was insignificant and the results were (Estimate 0.059, C.R.

1.553, P 0.120). These results support two hypotheses: "*Security significantly affects ease of use*"; and "*Support significantly affects ease of use*". However, hypothesis that "*Trust significantly affects ease of use*" is rejected

The effect of security, trust, and ease of use on perceived usefulness was examined. According to results of SEM paths showed that security, trust, and support were essential determinants of usefulness. These three factors significantly impacted perceived usefulness and the results were (Estimate 0.120, C.R. 2.538, P 0.011), (Estimate 0.111, C.R. 2.600, P 0.009), (Estimate 0.093, C.R. 1.964, P 0.050) respectively. Accordingly, three hypotheses are accepted: "*Security significantly affects usefulness*"; "*Trust significantly affects usefulness*"; and "*Support significantly affects usefulness*".

4.5.2. *Hypotheses of Marketing Mix elements variables*

Marketing Mix elements significantly affect ease of use
Marketing Mix elements significantly affect usefulness

A study by (Löfstedt, 2007a) shows that e-government services are often built upon the needs of the organization rather than upon the needs of the people. Slater and Narver, (1994) and Kotler, *et al*., (2008) emphasized that keeping a customer centric approach is at the core of market orientation and the same orientation can be applied in public organizations. Additionally, there are rare studies that considered this construct in investigating the acceptance of online services. This construct is included in the model of this study.

The study model assumed that the ease of use and perceived usefulness are determined by e-marketing mix. To examine this claim, these two hypotheses were tested in the context of SEM. The results in Table 4.20 show that e-marketing mix significantly influences ease of use and perceived usefulness of e-government and the results were (Estimate 0.120, C.R. 3.577, P 0.001) and (Estimate 0.110, C.R. 2.879, P 0.004) respectively. These results support the critical role of e-marketing in the acceptance of the e-government services by its customers. Hence, two hypotheses are accepted based on the results of examining study model: "*Marketing*

Mix elements significantly affect ease of use"; and *"Marketing Mix elements significantly affect usefulness"*.

4.5.3. Hypotheses of Education and Experience variables

Computer self-efficacy significantly affects ease of use

Web skills significantly affect ease of use

Language significantly affects ease of use

Computer self-efficacy significantly affects usefulness

Web skills significantly affect usefulness

Language significantly affects usefulness

One of the most important concerns towards the adoption of ICT is the lack of awareness of technology and its usefulness. The potential benefits of technology should be recognized by the citizens in order to be acquainted with their value. Accordingly, the successful adoption of IT applications requires that the users should at least have basic ideas on the computer operations. As has been identified in Chapter 2 there have been some studies conducted to investigate the effect of language and cultural factors of the users on intention to use the e-services.These studies confirmed the importance of these constructs in the success of web-based services. Accordingly, the constructs related to computer self-efficacy, web-skills, and language were included in the study model.

According to the study model, ease of use and perceived usefulness are not only impacted by Technical Infrastructure variables and the E-marketing mix but are also influenced by education and the experience of users. As shown in the study model, three variables were used to present the education and experiences of users: computer self-efficacy; web skills; and language.

Analysis of data showed that ease of use was significantly impacted by web skills and language and the results were (Estimate 0.121, C.R. 2.972, P 0.003) and (Estimate 0.088, C.R. 2.407, P 0.016) respectively. Therefore, two hypotheses are accepted: *"Web skills significantly affect ease of use";* and *"Language significantly affects ease of use"*. However, the impact of computer self-efficacy on ease of use

was insignificant (Estimate 0.040, C.R. 0.995, P 0.320) respectively). Based on these results the hypothesis that *"Computer self-efficacy significantly affects ease of use"* is rejected.

In the study model computer self-efficacy, web skills, and language are hypothesized to be determinants of perceived usefulness. However, web skills and language insignificantly impacted perceived usefulness: (Estimate 0.056, C.R. 1.201, P 0.203) and (Estimate 0.060, C.R. 1.439, P 0.150) respectively. Based on these results two hypotheses are not supported: *"Web skills significantly affect usefulness"*; and *"Language significantly affects usefulness"*. The impact of computer self-efficacy on perceived usefulness was significant (Estimate 0110, C.R. 2.459, P 0.014). In other words, users who have a sufficient computer self-efficacy can collect the e-government services quickly and effectively. Thus, the hypothesis that *"Computer self-efficacy significantly affects usefulness"* is accepted.

4.5.4. Hypotheses perceived usefulness, ease of use and intention to use

Perceived usefulness significantly affects intention to use

Ease of use significantly affects intention to use

Ease of use significantly affects perceived usefulness

The last three hypotheses are related to the relationships between perceived usefulness, ease of use, and intention to use. These hypotheses were formulated to identify the factors that influenced the intention to use.

Ease of use significantly impacted perceived usefulness and intention to use, where it was identified that the expected advantages of e-government systems and the intention to re-use this system depends on the ease of its use. These results supported two hypotheses: *"Ease of use significantly affects intention to use"* (Estimate 0.147, C.R. 2.528, P 0.011) and *"Ease of use significantly affects perceived usefulness"* (Estimate 0.264, C.R. 4.704, P 0.001). Furthermore, intention to use was influenced by perceived usefulness and this result supports hypothesis *"Perceived usefulness significantly affects intention to use"* (Estimate 0.272, C.R. 5.434, P 0.001). As

shown in the results, intention to use e-government systems is influence by two constructs: ease of use and perceived usefulness.

4.6. Chapter summary

The current study aimed to examine the factors that impact the acceptance of e-services in the public sector in the UAE. Chapter four reported the results and the procedures used to examine the study model. Before testing the model, data was cleaned, the missing data was treated and its normality was tested. Then, the sample was described in terms of gender, age, and education. SEM was adopted to examine the study model in two steps. The first step established the measurement model and tested the validity and reliability of constructs and items. The second step tested the study hypotheses by performing the structural model. Seven constructs were selected as factors that impact the acceptance of e-services: security; trust; support; e-marketing mix elements; computer self-efficacy; web skills; and language. The study model was valid and reliable to measure the acceptance of e-services. Five constructs were significantly affected ease of use e-services: security; support; e-marketing; web skills; and language. However, two constructs were affected ease of use insignificantly: trust and computer self-efficacy. Regarding factors that impact perceived usefulness, the results showed that there were five constructs significantly impacted usefulness: security; trust; support; e-marketing; and computer self-efficacy. On the other hand, web skill and language insignificantly impacted usefulness. Intention to use was significantly determined by ease of use and perceived usefulness.

Discussion

5.1. Introduction

This section discusses the results that emerged from the data analysis and explore the results related to the findings from previous studies. The approach adopted in this section follows that the discussion will reiterate the highlights if the results are as expected. If the results are unexpected, the discussion will provide an attempt to reconcile. The results will be discussed and this will be followed by a discussion on the factors associated with e-government adoption.

The primary objective of this study is to investigate and identify the perceptions of potential end users relating to factors which impact on e-services acceptance. Secondly, this research validates the developed TAM model and evaluates the variance of the outcome variable (acceptance of e-services). Since TAM has been adopted in this study as it can be extended when technologies are introduced (Shih, 2003). Depending on the specific technology context, additional domain-specific constructs and explanatory variables may be needed beyond the ease of use and usefulness constructs as identified by King & Gribbins, (2002); Al-adawi *et al.* (2005), Colesca & Dobrica (2008), Sang *et al.* (2009) and Jaeger & Matteson (2009).

The study adopted a quantitative survey methodology, whereby 466 customers who visited the web pages of government departments to obtain information and use the e-services became the studies respondents. To our knowledge this is the first study to examine the relationship of the electronic service usage utilizing the TAM model and e-service adoption using the SEM model in the UAE. The overall findings revealed that security, e-marketing mix, language, web skills and support significantly affected ease of use and perceived usefulness. However, the trust and computer self-efficacy did not affect the ease of use. Further, ease of use significantly affected the intention to use and perceived usefulness while in turn intention to use was influenced by perceived usefulness. The results and model

developed within this study, corroborates the previous study findings (theories) of Venkatesh *et al.,* (2000, p.187) and Davis (1989) that perceived usefulness and ease of use affect a person's intention to use the technology (in this case e-government system), which in turn affect the usage behaviour. It was also shown through this study that validity and reliability of TAM has been confirmed and proved.

The model included in the TAM research model are Trust, Support, Security, language, web skills, computer self-efficacy and marketing mix. The results of this study provide support for a majority of the studies and elaborated as follows:

5.2. Demographic characteristics of e-service users

The subsequent effects to increase the TAM model were devoted to finding the boundary conditions of TAM along with, the culture and voluntary versus required setting were investigated. The statistics, which need to be considered, are education, age, gender, experience and this would be directed to moderators for creating relationships to the models (Lee *et al.,* 2003). This, developed in line with the previous studies, identifies in the present study the inclusion of age, gender, education and employment. The majority of the study participants are male and are of Asian Origin followed by African and Arabs with an average age group 26-35 years. The annual data generated by the GDRFA also showed a similar trend where the majority of visitors were of Asian origin. These results indicate that nearly 73% of the customers were from Asia, Middle East and Africa. These characteristics of nationality can impact the acceptance and ease of use of the e-services. The results also indicate that the number of female customers was comparatively much lower as compared to male customers. This relatively low percentage of female clients could be linked to the nationality of the respondents. A large percentage of the respondents are from Asian and African origin where due to cultural norms women are not as emancipated as in the west.

The study had failed to show any significant association between the adoption of perceptions and the education level and nationality. However, significant differences were observed for certain adoption factors such as e-marketing, self-efficacy and support where Asian ranked higher compared to other nationalities. This may be perhaps to the higher sample size in the Asian group compared to those of Arab

origin. Regarding the intention to use, the GDRFA online system the differences were between Asian and European and others, and Asian and African. The main justification to these differences is that most of the Asian population intend to stay in the UAE for work purposes; however the African, European and others may visit UAE for short visit. The findings of the study also revealed that e-marketing was ranked by Asians. These findings are in line with the report of the GDRFA, where the numbers of people who visit the UAE are from Asia and use the facilities to try to renew their visas to stay for longer periods of time. The Asian population may be paid more attention to the e-marketing elements to collect information about the types of visa, fees, channels used for visa applications, , and the updated information about visa regulations.

Most of the differences in the perceptions were in the self-efficacy construct. The differences were between Asian and Arab, European and others and Asian, and European and others and African. Self –efficacy may be affected by different factors for example, previous successful experiences and the frequency of access to computers (Topkaya, 2010), and these differences in perceptions towards the self-efficacy can be justified by the background of participants, and frequently of use the computer and the online systems.

The differences towards the language construct were between the Arab and Asian and Arab and African. The essential reason behind these differences is that the website of the GDRFA is available with Arabic and English language and does not support Asian and African languages. Finally, the differences towards support construct were between the European and others and Asian, and European and others and African. The differences in the support may be cause due to the language barriers or the differences in the experiences to deal with the GDRFA online systems. As noticed, the age of customers', the educational qualifications and computer knowledge has little influence on customers' intent to utilize e-Government public facilities in the UAE. This finding is in contrast to certain research papers that reiterate the significance of the digital divide and awareness in utilizing computers and the internet as obstacles for utilizing e-Government facilities (Chadwick & May 2003; Cartar & Belanger, 2007). In the instance of the UAE it is possible that the information available in the Global Information Technology Report 2010–2011 has identified that ninety percent of the populace has knowledge of

computer usage and the internet. The findings may further reveal that the impact of demographic variables over customers' intent to utilize e-Government facilities varies from nation to nation and there is immense scope for investigation in this field.

5.3. Measurement model of the study

The model in this study was designed and developed based on the Technology Acceptance Model (TAM) to explore users' intention to adopt the technology (Davis, 1989). Initial perceived constructs of TAM that influence innovative adoption are perceived usefulness and ease of use. The researcher combined 8 more constructs from a growing body of literature associated with information technology acceptance to explore factors impacting on the users' perceptions of intention to use the online services of the GDRFA. The items under each of the eight constructs and the original two constructs are identified from the previous studies. The factor loadings of the constructed items showed high validity.

Intention to use

This study adopted 'Intention to use' to understand the intentions of people towards the use of the GDRFA services. Accordingly, intention to use was measured using three items. item 15, "I become clearer about services when I use the GDRFA online service" (0.948), item 17, "I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions" (0.931) and item 16, "If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online service again" showed factor loadings of 0.922. This construct showed 87.196% variance with the high reliability of 0.926.

Perceived usefulness

Perceived usefulness is a central construct in the study model. This construct is used to measure the role of GDRFA system to serve the customer effectively, efficiency, and timely. Six items were used to measure this construct. Item 5, "GDRFA online services support critical aspects of my transactions" had the lowest factor loading of 0.835 compared to other five items with mean scores higher than 0.85. item 1 "Using online services gives me greater control over my transaction with GDRFA" (0.941),

item 2, "The online services address my transaction needs" (0.902), item 3 "Using GDRFA online services saves me time" (0.886), item 4 "I find GDRFA online services add value" (0.895), and final item 6 "Overall, I find the GDRFA e-services useful to accomplish my transactions" showed factor loading of 0.886. This construct together showed 79.444% variance with the high reliability of 0.948. The scores show that the respondents acknowledged the usefulness of online services in terms of value addition, time saving and addressing their transaction needs.

Ease of use

Ease of use in electronic system in the GDRFA was selected as an essential construct to identify factors affecting the acceptance of electronic services. This construct was used by Davis (1989) as a main construct to establish TAM. Eight items were used to measure ease of use of the GDRFA online system. The items indicating ease of use, as shown in Table 4.8, had mean scores above 5. The results show that the respondents using the GDRFA service found the online service much easier to use because it required less effort and was uncomplicated as there was less chance of making errors and more chance to recover from errors while using the service. Item 13 "The GDRFA online services provide helpful guidance in performing tasks" and the Item 14 "Overall, I find the GDRFA e-services easy to use" both had the lowest factor loading of 0.806 and 0.807 compared to the other six items with mean scores higher than 0.846.

Item 7 "I make less error when I use the GDRFA online service" (0.924), Item 8 "I do not need to consult the user manual when using the GDRFA online services" (0.834), Item 9 "Interacting with the GDRFA online services requires less mental effort" (0.812), Item 10 "I find it easy to recover from errors encountered while using GDRFA online services "(0.823), Item 11 "I find it easy to use the GDRFA online services to do what transactions I need" (0.826) and item 12 "It is easy to navigate around GDRFA site" (0.861) together showed 70.138% variance with the high reliability of 0.939.

E–Marketing mix

According to the researcher knowledge, E-marketing is rarely used as a factor impact the acceptance of online services. Therefore, this construct is adopted in this study to investigate it as a role in the acceptance of online services. Nine items were used to

measure the e-marketing mix. Items 18, 19, 26 represented the products provided by the GDRFA. In addition, items 20, 22, and 23 related to the distribution of online services via the electronic channels. The price element was represented by items 21and 24. The Promotion element was measured using items 25 and 26. Among the nine items one of them had low loading factor of 0.904 "GDRFA advertises its online services well" compared to the other eight items with mean score higher than 0.910, item 18 "All information related to GDRFA online services are available at their website" (0.940), item 19 "I can receive all the services I need form GDRFA via electronic channels" (0.911) item 20 "I find that the e-mail facility in the GDRFA online services is useful" (0.923), item 21 "Secured online payment is available in the GDRFA website" (0.916), item 22 "I can track my transaction via GDRFA website" (0.921), item 23 "GDRFA website provides customers with online communication channels", item 24 "Information about services fees is available in the GDRFA website" (0.911) , item 26 "Online promotion of GDRFA provides me sufficient information about their online services" This construct together showed 84.269% variance with high reliability of 0.977.

Computer self-efficacy

This study assumed that using the new IT applications required the users to have at least a basic idea on the computer operations first. Computer self-efficacy is considered in this model as a main determinant of the acceptance of online services. Four items were used to measure this construct. The means of items determining computer self-efficacy as shown in table 4.10 indicate that the users of the online service were quite familiar with the use of computer as they could use the facility either on their own or with help from others. The results also indicate that the on line services were easy to use if the customers were given simple instructions on how to use the service. Among the four items one had low loading factor of 0.930 "I could complete the transaction using the GDRFA online services, if someone showed me how to do it first". Compared to the other three items with mean score was higher than 0.943, item 27 "I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself." (0.958), item 28 "I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck." (0.940) and item 30 "I could complete the transaction using the GDRFA online services, if someone else had helped me to get

started." (0.931). thus construct together showed 88.309% variance with high reliability of 0.956.

Language

According to the study model, language is considered to be one of the most important factors that affect the acceptance of e-services. Based on this assumption, language is a determinant of the intention to adopt e-services of the GDRFA. This construct was measured using four items where item 34 had the lowest loading factor 0.928 "GDRFA provides sufficient language facilities its clients" compared to the other three items of higher mean value of 0.948, item 31 "I could complete the GDRFA online services without online transaction " (0.975), item 32 "I can complete the GDRFA online services without the help of Arabic speaking translator" (0.944), item 33 "Language is not a key barrier for me to use GDRFA online services" (0.948). Therefore, the construct together showed 90.021% variance with high reliability of 0.936.

Web skills

One of the most important constructs selected to establish the study model is web skills. This construct has been used to identify the skills of users to use website and specifically GDRFA web site. Four items were employed to measure this construct among them item 36 had the lowest loading factor of 0.936 "I know more about using the GDRFA website than most my colleagues" compared to the other three items of higher mean value than 0.956, item 35 "I am very skilled at using the GDRFA website" (0.968), item 37 "I know more about using the GDRFA website than most my colleagues" (0.936), item 38 "I have experience to deal with complicated websites" (0.936) . The construct together showed 89.664% variance with high reliability of 0.961.

Security

Security is considered to be one of the most important issues confronting organisations and customers in the online commerce and services transactions. This issue be should take into account to assess the acceptance of electronic systems. Based on this, the construct has been designed to include in the study model as an essential construct impacting the acceptance of the GDRFA online services. Four items were employed to measure this construct among them item 41 had the lowest

loading factor of 0.935 compared to other three items of higher mean value than 0.956, item 39 "I feel secure in providing personal information for GDRFA online services" (0.968), item 40 "I feel the risk associated with GDRFA transactions is low" (0.954), item 42 "GDRFA website protects information about my credit card" (0.948). This construct together showed 90.477% variance with high reliability of 0.965.

Trust

Trust between the service provider (government) and service requester (customers and businesses) is considered to be an important construct that influences e-government adoption (Al-Sobhi, Weerakkody, Mustafa, & Kamal 2010). Based on the importance of this construct in the acceptance of online services it was selected to be a part of the study model. Five items were used to measure this construct among them item 45 had the lowest loading factor of 0.942 compared to the other four items of higher mean value than 0.957, item 43 "Based on my experience with GDRFA online services, I know it is honest" (0.972), item 44 "Based on my experience with GDRFA online services, I know it cares about customers." (0.954), item 45 "Based on my experience with GDRFA online services, I know it provides good service." (0.955), item 47 "Based on my experience with GDRFA online services, I know it is not opportunistic" (0.947). The construct together showed 91.065% variance with high reliability of 0.975.

Support

Support has been identified as a crucial factor affecting the adoption and acceptance of web-based systems. The role of support in supporting the use and acceptance of online service has been confirmed by the studies of Igbaria & Ilivari (1995) and Bhattacherjee & Hikmet (2008). This construct has been adopted in the study model as a central construct impacting the acceptance of online services of the GDRFA. Five items were used to measure this construct among them item 50 had the lowest loading factor of 0.872 "GDRFA website offers ability to speak to a live person if there is a problem" compared to the other four items of higher mean value than 0.897, item 48 "GDRFA website tells me if my transaction is not processed (completed)" (0.917), item 49 "Help desk take care of technical problem promptly" (0.892), item 51 "The online response time form GDRFA support staff to remedy

problems is fast" (0.877), item 52 "The responses to your enquiries through GDRFA online channels are given in acceptable time" (0.895). The construct together showed 79.650% variance with high reliability of 0.936.

5.4. Reliability and Validation of TAM model (Study Model)

The first objective of this study is to validate the TAM. This required the inclusion of specific items which are not in the original TAM model (Davis, 1989) such as security, self-efficacy, support, web skills, language, trust, and there has been the addition of a new construct the e-marketing mix, resulting in the requirement for the study to use confirmatory analysis.

Factor analysis and reliabilities provided support for the construct validity of the constructs used in this study. Exploratory Factor Analysis (EFA) is used to reduce the number of variables from a larger number of measured variables (Stangor, 2011; Zikmund *et al.,* 2009) and subjecting the model to the Confirmatory Factor Analysis (CFA).The further extended TAM model was tested using path analysis. The model had 10 dimensions including Perceived usefulness; Ease of use; Intention to use; the E–marketing mix; Computer self-efficacy; Language; Web skills; Security; Trust; and Support.The results of the investigation are authenticated with Cronbach's Alpha as seen with the following results: perceived usefulness 0.97, ease of use 0.939 and intention to use 0.929 that are adequate in accordance to Hair *et al.* (2006). The SEM model showed reasonable good fit indices (Chi square of 1931.754, DF of 1229 and CMIN/DF of 1.572, RMSEA of 0.035 and CFI of 0.975). Therefore the TAM and all of its constructs are significantly positively related to predicting a user's acceptance of e-government services.

This high validity reveals that participants are of the opinion that utilizing the e-services Web site could assist them complete their work with more proficiency in comparison to an offline procedure, and this would augment their work efficiency. Attaining all the benefits allows them to decide if utilizing this e-government web site is helpful for them. In regards to the ease of use, the participants believed that the website provides a lucid and effortlessly comprehensible procedure. The other significant feature in establishing effortlessness of usage revealed that participants are of the opinion that the e-government websites are simple for their needs.

Therefore, the tool utilized by the investigator in the method could be helpful to investigators in times to come. The ultimate procedural inference of the current investigation is its justification of various features based on the research paper examination and its incorporation to TAM to e-services adoption

5.5. Technical Infrastructure

5.5.1. *Trust affects ease of use and perceived usefulness*

In this study, Trust has been identified as part of the system wherein there is an improved belief of faith in the characteristics, competence, dependence and security of the system, even when the system is faced with uncertainty or risk (Kini & Choobineh, 1998). Similar to other studies (Mayer *et al.,* 1995; Gefen & Straub, 2002; Gefen *et al.,* 2003; Jarvenpaa *et al.,* 2000; McKnight *et al.,* 2002; Pavlou, 2003; Tan & Theon, 2001; Van Slyke *et al.,* 2004; Warkentin *et al.,* 2002) the present study also proved that addition of trust into adoption model can be used for studying the acceptance.

Previous research that examined trust, ease of use and perceived usefulness showed positive relationship. For instance, the study by Horsted *et al.,* (2007) showed that trust in e-government services is a determinant of perceived usefulness and ease of use. However, the present study results failed to support this hypothesis which assumes that trust does not support the ease of use and therefore failed to predict behaviour intention to use e-government services(regression weight=0.059, C.R.=0.120). In other words, the information that appears in the e-government website doesn't create the trust. The untrusted environment will limit the adoption of e-government services and will delay the take up of the e-government system. While, trust significantly affected the perceived usefulness (regression weight=0.111, C.R.=0.009) the results also identified that individuals who are well trained in terms of new technology will not suffer while using that technology. Further, they are willing to conduct transactions but are less likely to look for the information quality. These results were consistent with the previous study findings by Gefen *et al.* (2003), Lee & Wan (2010), Ganesan, (1994), Gefen (2004) and Pavlou, (2003).

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5.5.2. Security affects ease of use and perceived usefulness

The issue of security in this study has been defined as the controls explaining the extent to which any e-commerce website is supposed to be secure as well as protecting other information from the potential threats (Hua, 2009). In this study security was significantly affected by ease of use (regression weight=0.147, C.R.=0.001) and perceived usefulness(regression weight=0.120, C.R.=0.011). These results are inconsistent with the previous studies by Salisbury (2001) and Miyazaki & Ferandez (2001) who reported that intention to use e-government services has a high level of association with perceived security control which in turn is related to ease of use as well as usefulness of any websites. The recent study by Amoroso & Watanable (2011) in his extended TAM model showed that ease of use has been significantly influenced by security. This confirms that behavioural intention of the client in terms of e-government services are influenced predominantly by service computability. These findings corroborates with the present study and implies that in relation to e-government services,IT security is an important technical factor that affects the adoption of the e-Government and the e-Government project could fail. I has also been noted that due importance has to be given to protect the information as well as a guarantee to obtain privacy, ability and honesty of information (Euting & Weimert, 2009; Alijfri &Navarro, 2003; Elmarie, & Elme 2000; National Institute of standards and Technology, 2000; Von Solms, 1999; Pfhleeger, 1997). This argument was substantiated by several recent studies including the present study. This result is significant as it offers helpful tactical inferences for the execution of e-government facilities in times to come. To take on e-government procedures, residents should have the objective to "engage in e-government" that comprises the target to obtain information, to present information, and to ask for eGovernment facilities.

5.5.3. Support affects ease of use and perceived usefulness

In this study, Support is defined as any facilitating conditions to customers that can help users of e-services overcome hurdles to the use of new information technologies. Studies have revealed (e.g., Yaghoubi *et al.* 2011) that customers perceive e-Government services to be easy to use when they recognise that there are environmental conditions to help them learn how to use e-services. In line with this, the present study included the support as one of the constructs in the TAM model and found that the e-government support significantly influenced ease of use(regression weight=0.147, C.R.=0.001) and perceived usefulness(regression

weight=0.093, C.R.=0.05). These results support the previous study findings of Davis *et al.,* (1989); Igbaria & Ilivari (1995) and Bhattacherjee & Hikmet (2008), and confirms that any facilitating conditions, including support for users, will have a direct effect on utilization of e-government services. Therefore, these previous findings have now been replicated in a sample of e-government customers.

5.5.4. E-Marketing Mix affects ease of use and perceived usefulness

In this study the e-marketing mix has been defined as the process of utilization of electronic data and applications with an intention to plan and execute their business ideas, pricing strategies and product promotions in order to arrive at business goals (Strauss and Frost, 2001). In considering the digital environment and high penetration of the internet, the present study included the e-marketing mix as one of the variables in the TAM construct. This is the first of its kind to include such a construct and validated among customers in GDRFA in the UAE. The findings revealed that marketing mix significantly affected the ease of use (regression weight=0.120, C.R.=0.001) and perceived usefulness(regression weight=0.110, C.R.=0.004). Since this is the first study to include the construct in the TAM model, its poses difficulty in the ability to compare results with previous study findings. However, few studies have revealed a positive effect on features between traditional and online commerce (DiClemente & Hanutual, 2003). In contrast, studies have reported general dislike among consumers on intrusive, annoying marketing and pop-up advertising (Milne and Rohm (2003).

5.5.5. Computer Self-efficacy affects ease of use and perceived usefulness

The computer self-efficacy is important variable to successfully handle the IT applications, and it is necessary for any users at least to have a basic idea on the computer operations. Researcher in this study inserted additional constructs to identify whether the role of computer self-efficacy plays an important role in the acceptance of new technology (Fenech, 1998). As a result, the precursors of ease of use such as anchors and adjustments have also been incorporated into the TAM model by Venkatesh & Bala (2008).

Studies have revealed that computer self-efficacy is influenced by their prior experience with system based technologies (Ganzel, 1978) and customers who lack prior experience face discomfort when they have a change to make use of information systems. Computer self-efficacy affects the ease of use and perceived

usefulness and in specific studies reports have highlighted that computer self-efficacy has asignificant effect on ease of use (Agarwal *et al.,* 2000; Venkatesh & Davis, 1996; Venkatesh, 2000) and in turn ease of use of a technology can be effectively predicted through self-efficacy. In contrast, this present study failed to show this relationship(regression weight=0.040, C.R.=0.320). This may be perhaps that participants lack prior experience, or education qualification, and or IT knowledge, which are the most important determinants that in turn affect the relationship as indicated by previous authors (Agarwal & Prasad, 1999; Anandarajan *et al.,* 2002; Venkatesh & Davis, 1996).

The study revealed a significant relationship between perceived usefulness and self-efficacy (regression weight=0.110, C.R.=0.014) which shows that the participants in this study have a sufficient computer self-efficacy to collect the e-government services quickly and efficiently. These findings are in line with the previous studies (Ahmad *et al.,* 2010; Chen, 2010; Compeau & Higgins, 1995; Hayes, 2007; Venkatesh, 2000; Wong *et al.,* 2010; Wozney, Venkatesh & Abrami, 2006) that identified the relationship between self-efficacy and perceived usefulness. Earlier used Internet practice seems to bring about a deciding impact on recognized simplicity of usage and utility. More knowledgeable users have a tendency to look for added worth from Internet facilities. This is conceivable as the knowledge assists in decreasing the expenditure of looking for information. Users with previous Internet knowledge, particularly if content, will be further liable to utilize e-government facilities.

5.5.6. *Web skills significantly affect ease of use and perceived usefulness*
In this study, website skills focused on the features presented in the website. In general, online sites are determined by the attractive features available (Hong, 2002; Moore, Stammerjohan & Coulter, 2005; Chen & Lee, 2005; Mandel & Johnson, 2002). For instance Yeung & Lu (2004) conducted a study on the ways frequent visitors of online shopping sites can be enhanced through various mechanisms such as Frequently Asked Questions (FAQ), feedback forms and SEO friendly website content. In addition, the speed of the transaction process, uploading, and downloading speed, quality of the website and more importantly efficiency also influence the interests of the customers in adopting online shopping and also in

visiting the online sites frequently (Tan & Teo, 2000; Turban *et al.,* 2004; Ndubisi & Sinti, 2006).

Previous studies have indicated that (Igbaria, *et al.* 1995) a strong relationships between perceived usefulness, usage and perceived complexity. In particular, the studies have proven that ease of use significantly affected the website features (regression weight=0.121, C.R. =0.003). These findings corroborate the present study findings implying that GDRFAwebsites have a high level of ease of use in terms of less complexity of understanding web related information. The relationship between website quality and ease of use was the greatest and most powerful link with the standardized regression weights estimates. This result affirmed that the website quality factor directly impacts usage behaviour (USE) of e-government services in the UAE; moreover, this impact is greater than any other construct in the proposed TAM model. In contrast, the study failed to show a significant relationship with web skills and perceived usefulness (regression weight=0.056, C.R.=0.230). Although GDRFAwebsites are easy to use but are limited in terms of their service features (perceived usefulness).

The Government website is the chief means that is employed by the states counting the UAE government to initiate government facilities and data. The government departments in the UAE must make sure that their internet sites are easily identifiable and reached by the various users. Taking into consideration that the internet site layout is an important feature in this investigation, this may be referred to as the major test of the present execution of e-government in the UAE, is developing the website focussing on users centricity.

This investigation would assist the UAE administration to implement the needed strategies, so as to ensure residents centricity in the websites introduction, its facilities and the provision of information, subsequently additional users' contentment and purpose use the technology. Bertot & Jaeger (2006), state that easy access is vital for developing functional user-centric e-government facilities. This feature would further assist the administrative bodies to draw a uniform plan for their internet sites as residents change from one site to another to carry out various operations.

Therefore, this significant result demonstrates the success of adding web skills as an independent variable to the TAM model.

5.5.7. *Language significantly affects ease of use and perceived usefulness*

Language is the major determinant of compatibility and usage of websites (Carter, 1997, Kolodinsky & Hogarth, 2001 and Thirakanont, 2000. In this study, the researcher inserted an additional construct to identify whether the role of language plays an important role in the acceptance of new technology. The findings revealed that language significantly predicted the ease of use(regression weight=0.088, C.R.=0.016). This finding is in line with the previous studies (Agarwal & Prasad, 1997; Carter, 1997; Kolodinsky & Hogarth, 2001; Tan & Teo, 2000; Thirakanont, 2000). It has been identified by Al-Salih (2004) and Tan & Teo (2000)) that showed a significant relationship between ease of use and language computability. However, this study showed an insignificant relationship between language and perceived usefulness (regression weight=0.060, C.R.=0.150). This finding is perhaps due to the e-services being in English and the site providers are not aware of the way the applications that have been developed are being used. These insignificant findings have been substantiated with previous studies especially that have been conducted in the Arab Countries (Al-Far, 2005; Almobarraz, 2007).

5.5.8. *Perceived usefulness significantly affects intention to use*

Perceived usefulness is the customers' perceptions of e-government services usefulness. Several previous studies conducted (Davis *et al.,* 1989; Mathieson, 1991; Igbaria, 1993; Taylor & Todd, 1995; Bhattacherjee & Premkumar, 2004; Kuo & Lee, 2009) confirmed the direct relationship between perceived usefulness and intention to use. In line with these studies, the present study also contributes to the theoretical literature on this relationship which shows that perceived usefulness significantly affects intention to use(regression weight=0.22, C.R.=0.001). Greater levels of convenience are linked with improved objectives to take on e-government by the citizens. This result reveals that residents would be further agreeable to take on e-government if the facilities that are initiated on the internet sites are extra proficient to augment the efficiency and competence of carrying out their various dealings with the government website. Internet savvy individuals are further competent to measure the level to which web-based facilities assist them to perform in their dealings resourcefully. For instance, carrying out dealings with the help of

internet sites helps individuals to do their functions in time without delay that may happen due to waiting in a line while going to government departments, in person. Nevertheless, Carter & Belanger (2004) noted that this feature is not in a noteworthy correlation with the purpose to utilize it in the research analysis. That may infer to the example in their investigation by reviewing individuals from various degrees of computer and internet knowledge, yet this investigation is carried out chiefly on respondents who are accustomed to and knowledgeable in utilizing the internet. To enlarge the residents' purpose to utilize their government facilities online, departments must offer facts and facilities in a way which is helpful to the residents. For instance, the facilities have to be offered with high speed processing to make sure that residents do not face any delay or interruptions.

5.5.9. *Ease of use significantly affects intention to use*

Customers' perceptions of e-government ease of use are assumed to affect intention to use. Previous studies have confirmed a significant relationship with ease of use and intention to use (Davis *et al.,* 1989; Karahanna & Straub, 1999). This result also confirmed in the current study (regression weight=0.147, C.R. =0.011) Interest of the customers in using a particular product can be directly influenced by their ease of use (Lee *et al.* (2005), Ramayah (2006) and Kuo & Lee (2009) through the interactions with the technology. The largely acknowledged result states that the receiving of the system will improve with enhancements in recognized simplicity of usage or PEOU (Davis, 1989; Venkatesh & Davis, 1996; Karahanna, Gefen & Straub, 2003; and Kaasinen, 2005). Acceptance of e-government facilities by residents in the UAE will improve if the e-Government facilities are initiated with simplicity of comprehension and usage by UAE residents. Complexity is considerable as the investigation was directed to individuals who are internet educated. Since the example has a great degree of internet knowledge, they are better able to understand the significance of being provided with comprehensible and trouble-free online facilities via e-government internet sites. Complexity has frequently been taken into consideration, in an important correlation with the application purposes in different perspectives, such as e-commerce (Van Slyke *et al.,* 2004). Nevertheless, this investigation revealed that complexity is an important feature with the potential to impact its purpose for the residents to utilise the e-government facilities, basically by GDRFA users. Thus, the administration in the

UAE must initiate its facilities in an uncomplicated and comprehensible manner by guaranteeing the ease of finishing the various dealings through a lesser number of clicks and furthermore provide understandable directives to perform the various dealings like driving licence renewal.

Hence, in line with the previous study findings, the present study also added to the literature on the relationship between ease of use and intention to use.

5.5.10. Ease of use significantly affects perceived usefulness

It has been proven that for the acceptance of mass market technology, the important requirement is perceived usefulness (Burke, 1996) and this is determined by the customer perceptions on the role of technology in improving the quality of service (Peterson *et al.,* 1997). Further, websites play an important determinant to predict perceived usefulness than hedonic features and customers though not satisfied with the previous experience will continue the use of e-commerce services. The present study showed a significant relationship between ease of use and perceived usefulness (regression weight=0.264, C.R.=0.001). This study results corroborates with the other studies conducted by Peterson *et al.,* (1997) Adams *et al.,* 1992; Agarwal & Prasad, 1999; Gefen & Keil, 1998; Gefen & Straub, 1997; Hendrickson *et al.,* 1993; Igbaria *et al.,* 1995; Subramanian, 1994). They also discuss that the ease of using a system is more important to users which highlights the findings of this study whereby, theintention to use e-government systems is influenced by two constructs: ease of use and perceived usefulness and this study revalidates the TAM model that shows direct effects of ease of use on actual use (Schepers & Wetzels, 2007).

There were two areas in which the attitudes of the consumers were recorded by Karahanna & Straub (1999). One was identified as the user friendly feature which was associated with the pre-adoption attitudes and the other was the assumption of the usefulness that was significant to the post-adoption attitude of the users. The initiation to avail the product of a system depends on the ease of use; however, continuation with the same will depend mostly on the belief that it is useful for the user. The ease of use and the perceived usefulness, both seem to have a positive and significant relationship with the purpose to utilize e-government for informative reasons and have found to be consistent (Hung *et al.* 2006; Wangpipatwong *et al.*2008; Tung & Rieck, 2005; Carter & Belanger). The customers therefore look for precision, accuracy, the latest information which is error free and reliable that

isprovided by the e-government, which when established with the customers and the e-government system will create a trust between them as pointed out by Kumar *et al.* (2007).

Figure 5.1: Previous Vs Present study findings: A comparative
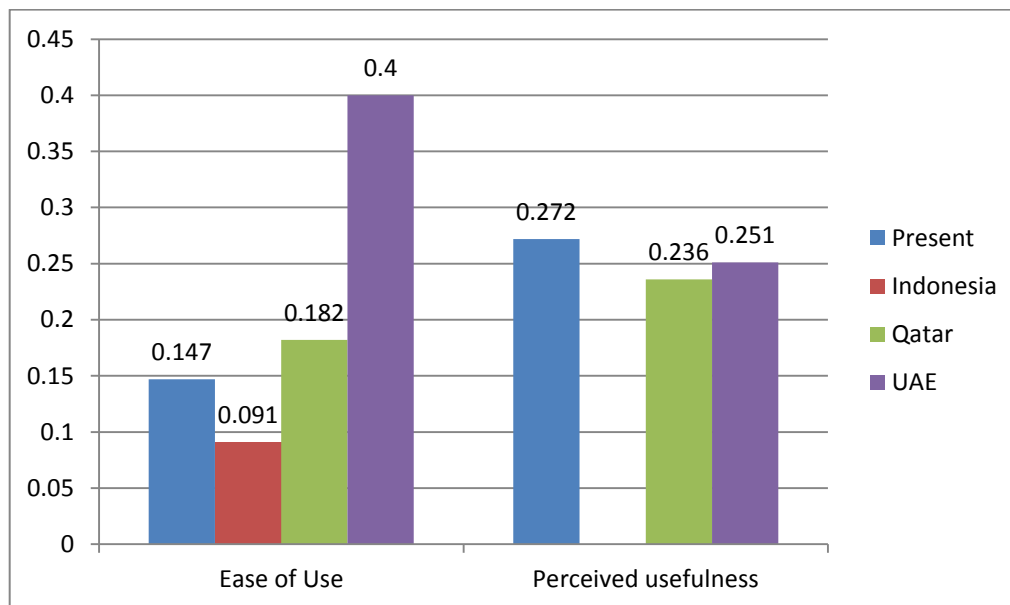
The above Figure compares the variable EOU and PU with the present study and in comparison with other countries. The present study was in par with the other countries which shows that the findings are valid. The obtained result from the hypothesis clearly states that it is important to the customers that there is a significant ease of use of the e-government system. They also found that as it was easy to use, the services were realized to be beneficial, as it did not require much of an effort to utilize it. It is proven that the result obtained is favourable and is concurrent but not contrary with earlier findings. It was argued that preciseness, timeliness and completeness through usefulness was of primary concern for the customers (users) and that, the navigational features of the site were of lesser significance as it would be cultivated on user exposure to the Internet.

Therefore, this result obtained provides the validity and empirical proof Kumar *et al.,* (2007) who has claimed the same. The other aspects or factors also can be looked into to the improvement of the use of the e-government for security, regulations, privacy, individual differences and financial position of customers' transactions. The accuracy, validity, adequacy, error free and reliable information are

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the elements which the decision and policy makers should be able to project in the e-government website.

Based on the results, the gender and education levels of users have a significant role in carrying out transactions and for gathering information using e-government. The result is also concurrent with the findings of Van Dijk *et al.* (2008), on the claim that the social demographic and psychological factors do not have an influencing effect on the usage and acceptance factors of e-government. Also, previous exposure with the computers or the Internet does not have an influence on the usage and transactions of the e-government. It is very surprising that this kind of result is obtained while taking into account that most of the respondents have a good profile with respect to Internet and computer usage. The future research prospects can include other parameters such as income level, place of residence, marital status, profession, etc. The future focus of the decision and policy makers would be to increase the awareness of e-government services with different groups of the community.

Conclusion, Limitations and Recommendations

6.1. Introduction

This study provides more insights into different factors and accomplishes several theoretical objectives. The factors derived from the Technology Acceptance Model (TAM) have been used in order to successfully obtain acceptance of e-services of General Directorate of Residency and Foreigners Affairs in the UAE. Firstly, the study validated the TAM constructs in a developing country context and is the first of its study in the UAE. Secondly, the TAM constructs have identified different factors that influence e-government usage and this study contributed to the existing literature by adding and testing extra untested constructs such as web-skills, computer self-efficacy and particularly e-marketing on the usage perspective which is considered as an important factor to reach customers. This construct includes factors which deal with how users perceive the use of online services according to cultural norms and values. Thirdly, the study was conducted with larger sample size (n=466) and as has been ascertained this is the first study to be conducted with such a large sample size which concentrates on the seven Emirates of the UAE. Finally, the findings revealed that security, the marketing mix, language, web skills, computer self-efficacy and support significantly affected ease of use and perceived usefulness. However, the trust and computer self-efficacy doesn't affect the ease of use. Further, ease of use significantly affects intention to use and perceived usefulness while in turn intention to use was influenced by perceived usefulness.

The state of e-government adoption in the Gulf Corporation countries is still at an immature state despite various efforts taken by the government to propagate the importance of e-services. At present, the studies have not paid enough attention to examining the factors that may impact the adoption of e-services. The study investigates the factors associated with adopting e-government services in one of the Middle-Eastern countries, the result of which can be extrapolated to the other Middle

East countries.. A number of studies are available on e-government adoption in many countries, however, there are no specific studies investigating the use of e-government services in the UAE, specifically in GDRFA. In this respect, this research analysis has expanded the knowledge of adoption behaviour and pattern of e-government while also providing valuable contributions to adoption and implementation strategies.

Chapters 1 and 2 of this thesis discussed the conceptual model of e-government and review of normative available literature. Chapter 3 provides all the details of research methodology. The thesis has been useful in conferring a better understanding of e-government promotion efforts in the UAE based on the empirical study reflected in Chapters 4. Finally, Chapter 5 briefs the overall objective of the study through a strong a convincing comparison of the findings of the present study and literature. The following section provides a summary of the important innovative contributions from the present study.

6.2. The proposed Model for Understanding E-Government Implementation and Adoption

The researcher contends that this thesis entails positive contributions in the following ways:

Contribution 1: As discussed in Chapter 2, TAM is an appropriate model to be adopted in e-government acceptance services. It is clear from the Literature survey that studies on e-Government services acceptance in the UAE is inadequate, specifically embedding elements that would be helpful for governments to enhance quality and effectiveness of services provided to end-users as well as improving business operations, being time saving and smart functioning service for the residents. This study is unique in that it is the first to include a new factor i.e. e-marketing using the TAM model. Currently, however, there is lack of clarity if the same factors are applicable to the UAE scenario. The present study predominantly focuses on addressing this gap specifically in the seven Emirates of the UAE which is expected to assist in identifying and developing a clear view of the factors affecting acceptance of e-service. In an attempt to fill this gap, a conceptual model proposal has been given by the researcher to understand the challenges better and the

probable relationship existing between factors that affect adoption and application. The model is explained and analysed in Chapters 2 and 4.

Contribution 2: With respect to adoption, the present study's contribution was identification of factors that influence adoption of e-government inGDRFA in the UAE. These are: security, E-marketing mix, language, web skills, computer self-efficacy, and support. The study observed that performance expectancy and facilitating conditions was not very significant while considering behavioural intentions and discussing e-government services for adoption respectively.

Contribution 3: The conceptual model that is modified shows the role of factors like gender, age, and educational level while explaining the adoption and application of e-government.

Contribution 4: The researcher supports the modified conceptual model provided in Chapter 6 on a more practical level which can be useful in guiding the e-government adopters, users and decision-makers. In addition, the revised conceptual model can be useful for other researchers to comprehend the challenges associated with e-government implementation. Further, the model can be useful in anticipating expectation of the public with regards to e-government adoption/ implementation.

Contribtion 5: The results of this study confirmed the validity and reliability of TAM to assess the acceptance of e-services. This study has extended TAM by adding the construct E-marketing elements as a foundation to determine the acceptance of e-services.

Contribution 6: E-marketing elements are rarely used to measure the acceptance of e-services. One of the most important contributions of this study was exploring and identifying the essential impact of this factor in the acceptance of e-services.

These contributions presented a strong discussion as to why the study is a pioneering work in e-government with a specific reference to the Gulf Co-operation countries, particularly the UAE. The study also provides data on the e-government usage behaviour after implementation in the UAE. Further, this study is one among very few researches on the challenges faced while implementing e-government and its usage of the system by the individuals. Also, the employment of quantitative study methodology has provided better opportunities to understand the factors that influence adoption and implementation of e-government in the Gulf countries. Based

on the extensive literature survey carried out by the author, it is quite certain that this is the first study that analyses the perception of the customers and their adoption of the e-government services at a national level in the UAE. Appropriate to the study, a highly accepted theoretical model i.e. the TAM model has been utilized which is a well-defined theoretical framework to understand e-government adoption. The large sample size used in the study also adds to the credibility of the study design.

As discussed in detail in Chapter 1, this thesis primarily aims to examine the different perceptions of e-government service users and identify the factors relating to the influence of e-government acceptance. E-government for individuals basically comprises of a user interface, which the customers can access to acquire information on any government services without having to approach the office personally. The main motivation for this study was drawn from a lack of substantial evidence on the claims of e-services acceptance behaviour using the TAM model in the UAE, which makes this a study of particular significance. Consequently, the researcher set out to analyse the factors affecting e-government service adoption using a survey method in UAE to confer a holistic approach to the study.

6.3. Practical Implications

The literature on e-government holds that e-services will be highly beneficial for customers who actively use the service which will be encouraging for customers to adopt the services electronically on a regular basis. This research provides empirical evidence to show that wider adoption of the e-services and obtaining its benefits such as convenience of use and prompt services in comparison with conventional means of service would probably spread the usage throughout the UAE. Further, the practical learning as outcomes of the research analysis are as follows:

The complete potential of e-government services cannot be tapped if a large population of customers do not participate in the adoption and utilization of the service. This fact is evident from the UAE government's plans and efforts to further e-government development and disseminate the same among the customers throughout the seven Emirates of the UAE to ensure ease of acquiring and providing services. Nevertheless, the challenges delineated in the research show that these

objectives are practically more complicated than conceived. Therefore, measures should be taken to mitigate the challenges rather than fully resolving them.

Similarly, from the view point of the user, a number of previous studies display various factors that are considered to be significantly influential in comprehending customers' decision making in adopting e-services from a national perspective. In this regard, it takes a highly co-ordinated plan to be adopted by implementers and policy makers to guarantee easily accessible, user friendly, transparent and value added services are provided online to the users. The initial steps taken by the UAE government to propagate e-government services to the wider public have been successful and this is a motivating outcome for all stakeholders (government, enterprises, and customers) further developments.

The government can introduce stronger measures to further promote the UAE e-government website while also taking appropriate steps to assist the less computer savvy customers by setting up customer service centres. These observations in the practical sense are encouraging for the major part however, in a theoretical sense these findings acknowledge that acceptance of technology is important for its success and the acceptance depends on key aspects like (trust, language, support, web skills, e-marketing mix, security), intent to use, ease of use and usefulness of the technology application and services obtained. However, the practical view point still remains that although results obtained from the present analysis are positive, the concept of e-government has yet to mature to a state of attaining success. It is clear from various empirical studies that this state is not yet reached primarily due to customers' concerns about security and lack of uniformity of access to internet access. It can therefore be concluded that to implement e-government in UAE successfully it requires for the government to fully understand the needs of the customers and apprehensions in terms of security and take measures to amend factors of concern associated with e-government adoption.

6.4. Research Limitation

Similar to every research, this study encounters the following limitations:

- Time is the main limiting factor of this study. The time allocated for a PhD research is generally in the range of 3 – 4 years. If there is plenty of time, then this empirical research would have incorporated triangulation approach to improve the quality of the study thereby yielding better results. Moreover, this would have increased the confidence of the study.

- Even though the data was collected from Seven Emirates, the present study was conducted only in the UAE. Further research should be conducted to evaluate whether the proposed model is applicable for the administration of other countries.

- The other limitation of this study is that the empirical survey was not able to cover the personal information of the population because of legal restrictions. The convenient sampling approach was adopted in the survey.

6.5. Recommendations

- More attention should be paid to the elements of marketing mix such as products, promotion, price, and distribution of electronic services. For, example more packages of services should be offered to the customers especially the software that enhances the security of website. In addition, different multimedia should be used to introduce the services offered by GDRFA. The channels that are used to connect the customers should be extended and the focus should be on the provision of low cost channels asthe users of e-services may be outside the UAE. These recommendations could be achieved through establishing a new division in the structure of GDRFA called "Marketing Management". In spite of the importance of marketing l there is no division or department responsible for the marketing activities.

- The website of GDRFA should offered in different languages such as Indian and Chinese language. The main reason behind this suggestion is that most of users of e-service are from Asia.

- The support should be not limited to technical support but also include the language support by providing the customers with services of translation due to the variety in the nationalities of GDRFA customers.

- The instructions to achieve any transaction should be clear. GDRFA should provide the user with guide for all the requirements and stages to achieve a specific transaction.

- The instructions to the electronic payment system should be clear. The users may not trust the electronic payment because there is no specific instructions are provided to them about the payment.

- Support the current systems with new complementary software to enhance the trust and security of the electronic system of GDRFA.

6.6. Areas for Future Research

All research is subjected to further improvements and the present research is no longer an exception. The following section deals with the recommendations and areas for further improvement.

Recommendations 1: Several challenges encountered during e-government adoptions were identified by reviewing the literature on TAM. Further research on this topic may lead to identification of more challenges encountered by e-government adoption.

Recommendation 2: The present project focussed on adoption perspectives without studying the implementation process. Thus, further research should concentrate on both adoption and implementation leading to more holistic approach to the adaptation of E-services.

Recommendation 3: In the literature review, past literature sources were studied along with the theory of Technological Acceptance Model to list various challenges faced during e-government adoption. There are several studies on e-government literatures under the themes of cultural, economic, political challenges; however, the current study focussed on interdisciplinary areas of Marketing, Technical, Experience, Education and E-marketing. Hence, future researches should focus on studying the challenges in e-government adoption under the themes of economic and cultural impact.

Recommendation 4: Another recommended area of research is to study the influence of adoption and implementation of e-government over the political framework and general administration of the country.

Recommendation 5: The suggested model for e-government adoption in the literature review is the TAM model. Two more theoretical constructs are present in the TAM model. They are social influence and cognitive instrumental processes. The direct determinants affecting the e-government adoption are age, gender and education. Further research should focus on more adoption factors such as culture which influence the individual's adaption to e-government in the UAE and other parts of gulf countries.

Recommendation 6: The adoption of individual technology was assessed by evaluating the TAM model in developing country like the UAE as a part of this project. More research can be done by testing TAM model in GCC and other parts of the world and thereby comparatively analyse the e-government adoption.

In spite of the above-mentioned limitations, this is the first study in UAE, specifically in the GDRFA, to analyse the empirical relationship among ease of use, perceived usefulness and intention to use of government based electronic services. Therefore, all of the above-mentioned limitations can be treated as prospects for future research. The present study recommends more empirical researches studying the relationship among cultural, demographical, political and economic factors and the perception of various groups regarding the usage of e-government services.

In addition, it will be beneficial to study the impact of intervening and moderating variables (values, norms, attitude, residence location etc.) over the relationship among ease of use, perceived usefulness, intention to use and perceived information quality. Finally, this study helped to improve both practical and academic knowledge. In the academic context, the present study provides a clear understanding on the individuals' perception to utilise e-government system (Kumar *et al.* 2007; Wangpipatwong *et al.,* (2008).

This study offered suggestions for managers, thereby improving the practical knowledge. Intention to use can be divided into conducting transactions and data collection and this offers more suggestions for policy makers and decision makers on

the adoption of e-government services. This helps policymakers to have an improved understanding on the demands of their customers.

6.7. Summary

This is the first national level research to study the challenges faced by the customer's "adoption to e-government services" in the UAE. Moreover, this study pioneered in surveying a large group of people (466+) within a country covering a wide range of GCC region. Thus, it can be concluded that this study offered a better understanding of people's adoption of e-government services with the help of established theories such as TAM and various factors that influence the e-government adoption with reference to UAE.

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APPENDIES

Appendix A: Study Questionnaire

To: General Directorate of Residency and Foreigner Affairs Customers

Subject: Factors That Impact the acceptance of e-services - UAESurvey

Dear Sir/Madam,

My name is Sara Al Mutawa and I am a doing my PhD research at the University of Southern Queensland in Australia. I am examining "Factors that Impact the acceptance of e-services in the public sector in the United Arab Emirates."

I am inviting you to participate in this research study by completing the attached survey. It will take approximately 15 minutesto complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, do not include your name. Participation is strictly voluntary and you may withdraw from participation at any time. There are no consequences for not participating or for withdrawing from participation.

Thank you for taking the time to assist me in my educational endeavours. The data collected will provide useful information regarding factor affecting the usage of e-services within UAE.

If you have any queries regarding the ethical conduct of this research you can contact the Research Ethics Office at USQ by email: ethics@usq.edu.au

If you require additional information or have questions, please do not hesitate to contact me.

Thank you for your cooperation in taking the time to respond.

Sincerely,

Sara Saeed Bilal Al Mutawa
University of Southern Queensland
Toowoomba / Queensland / Australia.
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AU Mobile phone: +614 51676639
Email: SaraSaeedBilal.AlMutawa@usq.edu.au

Section A: Please tick ◯ the items applicable to you.

General Information:

1. **Gender:** ○ Male   ○ Female

2. **Nationality:**
   - ○ UAE
   - ○ Arab Countries
   - ○ European
   - ○ Asian
   - ○ African
   - ○ Others

3. **Employment:**
   - ○ Not employed
   - ○ Self employed
   - ○ Government employment
   - ○ Private employment

4. **Age Bracket:**
   - ○ 18-25
   - ○ 26-35
   - ○ 36-45
   - ○ 46-60
   - ○ Above 60

5. **Education:**
   - ○ Illiterate (not able to read and write)
   - ○ Literate (able to read and write)

- ◯ Secondary School Certificate

- ◯ Undergraduate (unable to finish college)

- ◯ Graduate (able to finish college)

- ◯ Post Graduate (masters/ doctorate)

Section B:

This section deals with factors that impact the acceptance of e-services in the General Directorate of residency and foreigner affairs (GDRFA) – UAE. The customer's field are designed to suit your aggregate perception. If you strongly agree with the statement, tick '7. If you strongly disagree, tick '1'. If your opinion is less strong, tick one of the numbers in the middle.

No	Items	Strongly disagree			Neutral			Strongly agree	Don't know
	Usefulness	1	2	3	4	5	6	7	
1	Using online services gives me greater control over my transaction with GDRFA.								
2	The online services address my transactions needs.								
3	Using GDRFA online services saves me time.								
4	I find GDRFA's online services add value.								
5	GDRFA online services support critical aspects of my transactions.								
6	Overall, I find the GDRFA e-services useful to accomplish my transactions.								
	Ease of Use	Strongly disagree			Neutral			Strongly agree	Don't know
		1	2	3	4	5	6	7	
7	I make less error when I use the GDRFA online service.								
8	I do not need to consult the user manual when using the GDRFA online services.								
9	Interacting with the GDRFA online services requires less mental effort.								
10	I find it easy to recover from errors encountered while using GDRFA online services.								
11	I find it easy to use the GDRFA online services to do what transactions I need.								
12	It is easy to navigate around the GDRFA' site.								
13	The GDRFA online services provide helpful guidance in performing tasks.								
14	Overall, I find the GDRFA e-services easy to use.								
	Intention to Use	Strongly disagree			Neutral			Strongly agree	Don't know
		1	2	3	4	5	6	7	
15	I become clearer about services available when I use the GDRFA on-line service.								
16	If a similar transactions need arises in the future, I would feel comfortable using the GDRFA online services again.								

		Strongly disagree			Neutral			Strongly agree	Don't know
17	I would recommend use of GDRFA online services to other colleagues who may need to use similar transactions.								
	E-Marketing Mix								
		1	2	3	4	5	6	7	
18	All information related to GDRFA online services are available at their website.								
19	I can receive all the services I need from GDRFA via electronic channels.								
20	I find that the e-mail facility in the GDRFA online services is useful.								
21	Secured online payment is available in the GDRFA web site.								
22	I can track my transaction via GDRFA website.								
23	GDRFA website provides customers with online communication channels.								
24	Information about services fees is available in the GDRFA website.								
25	GDRFA advertises its online services well.								
26	Online promotion of GDRFA provides me sufficient information about their online services.								
	Education and Experience	Strongly disagree			Neutral			Strongly agree	Don't know
	Computer Self-efficacy								
		1	2	3	4	5	6	7	
27	I could complete the transaction using the GDRFA online services, if I had seen someone else using it before trying it myself.								
28	I could complete the transaction using the GDRFA online services, if I could call someone for help if I got stuck.								
29	I could complete the transaction using the GDRFA online services, if someone showed me how to do it first.								
30	I could complete the transaction using the GDRFA online services, if someone else had helped me to get started.								

	Language	1	2	3	4	5	6	7	
31	I can complete the GDRFA online services without online translation.								
32	I can complete the GDRFA online services without the help of Arabic speaking translator.								
33	Language is not a key barrier for me to use GDRFA online services.								
34	GDRFA provides sufficient language facilities its clients.								

	Web Skills	1	2	3	4	5	6	7	
35	I am very skilled at using the GDRFA website.								
36	I know how to find what I want on the GDRFA website.								
37	I know more about using the GDRFA website than most my colleagues.								
38	I have experience to deal with complicated websites.								

	Technical Infrastructure	Strongly disagree			Neutral			Strongly agree	Don't know
	Security								
39	I feel secure in providing personal information for GDRFA online services.								
40	I feel the risk associated with GDRFA transactions is low.								
41	GDRFA website does not share my personal information with other sites								
42	GDRFA website protects information about my credit card.								

	Trust	1	2	3	4	5	6	7	
43	Based on my experience with GDRFA online services, I know it is honest.								
44	Based on my experience with GDRFA online services, I know it cares about customers.								
45	Based on my experience with GDRFA online services, I know it provides good service.								
46	Based on my experience with GDRFA online services, I know it is trustworthy.								

47	Based on my experience with GDRFA online services, I know it is not opportunistic.								

<table>
<tr><td colspan="10" align="center">Support</td></tr>
<tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td></td></tr>
<tr><td>48</td><td>GDRFA website tells me if my transaction is not processed (completed).</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>49</td><td>Help Desk take care of technical problem promptly.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>50</td><td>GDRFA website offers ability to speak to a live person if there is a problem.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>51</td><td>The online response time from GDRFA support staff to remedy problems is fast.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>52</td><td>The responses to your enquiries through GDRFA online channels are given in acceptable time.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Appendix B: Normality of study

Table B. 1: Normality of study items

	Mean	SD	Skewness		Kurtosis	
			Statistic	Std. Error	Statistic	Std. Error
Q1	5.28	1.742	-.810	.113	-.379	.226
Q2	5.20	1.712	-.590	.113	-.658	.226
Q3	5.08	1.679	-.567	.113	-.655	.226
Q4	5.05	1.734	-.561	.113	-.647	.226
Q5	4.85	1.744	-.289	.113	-.966	.226
Q6	5.22	1.774	-.684	.113	-.646	.226
Q7	5.55	1.523	-1.055	.113	.556	.226
Q8	5.24	1.513	-.667	.113	-.250	.226
Q9	5.56	1.562	-.918	.113	.055	.226
Q10	5.31	1.542	-.849	.113	.228	.226
Q11	5.15	1.523	-.677	.113	.007	.226
Q12	5.49	1.544	-1.062	.113	.455	.226
Q13	5.23	1.587	-.685	.113	-.197	.226
Q14	5.33	1.444	-.587	.113	-.303	.226
Q15	5.02	1.678	-.717	.113	-.218	.226
Q16	5.03	1.487	-.525	.113	-.350	.226
Q17	4.99	1.564	-.592	.113	-.392	.226
Q18	4.57	1.961	-.245	.113	-1.204	.226
Q19	4.73	1.978	-.362	.113	-1.242	.226
Q20	4.58	1.844	-.259	.113	-1.046	.226
Q21	4.67	1.902	-.376	.113	-1.069	.226
Q22	4.72	1.968	-.340	.113	-1.195	.226
Q23	4.75	1.901	-.371	.113	-1.078	.226
Q24	4.60	1.932	-.300	.113	-1.145	.226
Q25	4.70	1.982	-.330	.113	-1.152	.226

Q26	4.82	1.870	-.471	.113	-.883	.226
Q27	5.48	1.694	-1.084	.113	.294	.226
Q28	5.43	1.632	-.955	.113	.088	.226
Q29	5.32	1.644	-.934	.113	.079	.226
Q30	5.43	1.720	-.982	.113	.009	.226
Q31	4.47	1.849	-.272	.113	-.962	.226
Q32	4.63	1.716	-.292	.113	-.814	.226
Q33	4.64	1.826	-.249	.113	-.986	.226
Q34	4.42	1.863	-.203	.113	-1.060	.226
Q35	5.66	1.734	-1.169	.113	.279	.226
Q36	5.49	1.577	-1.011	.113	.305	.226
Q37	5.44	1.572	-1.015	.113	.258	.226
Q38	5.50	1.639	-1.053	.113	.213	.226
Q39	5.27	1.645	-.786	.113	-.221	.226
Q40	5.26	1.669	-.730	.113	-.380	.226
Q41	5.19	1.562	-.708	.113	-.270	.226
Q42	5.22	1.595	-.819	.113	-.052	.226
Q43	4.26	1.865	-.234	.113	-.984	.226
Q44	4.41	1.778	-.244	.113	-.918	.226
Q45	4.38	1.817	-.171	.113	-1.049	.226
Q46	4.27	1.805	-.170	.113	-.957	.226
Q47	4.38	1.740	-.160	.113	-.942	.226
Q48	4.89	1.828	-.531	.113	-.694	.226
Q49	4.39	1.737	-.120	.113	-.800	.226
Q50	4.75	1.744	-.372	.113	-.656	.226
Q51	4.47	1.710	-.177	.113	-.847	.226
Q52	4.62	1.735	-.311	.113	-.818	.226

Appendix C: Correlation of Items measuring study constructs

Table C. 1: Correlation of items measuring Usefulness

	Q1	Q2	Q3	Q4	Q5	Q6
Q1	1					
Q2	.848	1				
Q3	.782	.760	1			
Q4	.806	.753	.766	1		
Q5	.735	.704	.709	.692	1	
Q6	.849	.750	.720	.764	.647	1

Table C. 2: Correlation of items measuring ease of use

	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Q7	1							
Q8	.763	1						
Q9	.721	.622	1					
Q10	.746	.633	.609	1				
Q11	.745	.667	.585	.686	1			
Q12	.790	.649	.687	.665	.672	1		
Q13	.704	.606	.600	.591	.602	.639	1	
Q14	.698	.638	.617	.582	.573	.648	.664	1

Table C. 3: Correlation of items measuring intention to use

	Q15	Q16	Q17
Q15	1		
Q16	.814	1	
Q17	.839	.770	1

Table C. 4: Correlation of items measuring E-Marketing mix

	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26
Q18	1								
Q19	.859	1							
Q20	.876	.829	1						
Q21	.841	.832	.826	1					
Q22	.837	.799	.825	.830	1				
Q23	.853	.802	.825	.814	.853	1			
Q24	.839	.795	.797	.816	.835	.839	1		
Q25	.825	.788	.814	.796	.815	.800	.806	1	
Q26	.835	.824	.829	.811	.816	.824	.797	.824	1

Table C. 5: Correlation of items measuring E-Marketing mix

	Q27	Q28	Q29	Q30
Q27	1			
Q28	.875	1		
Q29	.865	.822	1	
Q30	.857	.834	.811	1

Table C. 6: Correlation of items measuring E-Marketing mix

	Q31	Q32	Q33	Q34
Q31	1			
Q32	.902	1		
Q33	.913	.859	1	
Q34	.881	.821	.823	1

Table C. 7: Correlation of items measuring web skill

	Q35	Q36	Q37	Q38
Q35	1			
Q36	.889	1		

Q37	.883	.832	1	
Q38	.892	.845	.831	1

Table C. 8: Correlation of items measuring security

	Q39	Q40	Q41	Q42
Q39	1			
Q40	.914	1		
Q41	.872	.844	1	
Q42	.894	.869	.844	1

Table C. 9: Correlation of items measuring trust

	Q43	Q44	Q45	Q46	Q47
Q43	1				
Q44	.915	1			
Q45	.917	.901	1		
Q46	.905	.867	.858	1	
Q47	.902	.870	.882	.866	1

Table C. 10: Correlation of items measuring trust

	Q48	Q49	Q50	Q51	Q52
Q48	1				
Q49	.760	1			
Q50	.821	.719	1		
Q51	.733	.756	.673	1	
Q52	.771	.745	.680	.795	1

Appendix D: Covariance between the constructs of study model

Table D. 1: Covariance between the constructs of study model

			Estim ate	S.E.	C.R.	P
EaseofUSe	<-->	Intentiotouse	.526	.112	4.685	***
EaseofUSe	<-->	Emarketing	.729	.130	5.613	***
EaseofUSe	<-->	ComputerSelfEfficacy	.385	.108	3.563	***
EaseofUSe	<-->	Language	.585	.117	4.987	***
EaseofUSe	<-->	WebSkill	.509	.106	4.801	***
EaseofUSe	<-->	Support	.624	.110	5.691	***
EaseofUSe	<-->	Security	.615	.106	5.828	***
EaseofUSe	<-->	Trust	.561	.113	4.948	***
EaseofUSe	<-->	Usefulness	.897	.122	7.375	***
Intentiotouse	<-->	Emarketing	.640	.143	4.462	***
Intentiotouse	<-->	ComputerSelfEfficacy	.647	.124	5.222	***
Intentiotouse	<-->	Language	.614	.131	4.682	***
Intentiotouse	<-->	WebSkill	.411	.117	3.508	***
Intentiotouse	<-->	Support	.671	.123	5.477	***
Intentiotouse	<-->	Security	.522	.116	4.502	***
Intentiotouse	<-->	Trust	.545	.126	4.316	***
Intentiotouse	<-->	Usefulness	.857	.134	6.403	***
Emarketing	<-->	ComputerSelfEfficacy	.581	.139	4.167	***
Emarketing	<-->	Language	.780	.151	5.173	***
Emarketing	<-->	WebSkill	.415	.133	3.111	.002
Emarketing	<-->	Support	.778	.140	5.550	***

Emarketing	<-->	Security	.571	.132	4.318	***
Emarketing	<-->	Trust	.512	.143	3.586	***
Emarketing	<-->	Usefulness	.876	.151	5.793	***
ComputerSelfEfficacy	<-->	Language	.694	.129	5.357	***
ComputerSelfEfficacy	<-->	WebSkill	.460	.115	4.002	***
ComputerSelfEfficacy	<-->	Support	.556	.118	4.703	***
ComputerSelfEfficacy	<-->	Security	.268	.111	2.421	.015
ComputerSelfEfficacy	<-->	Trust	.265	.121	2.195	.028
ComputerSelfEfficacy	<-->	Usefulness	.598	.127	4.695	***
Language	<-->	WebSkill	.339	.121	2.801	.005
Language	<-->	Support	.692	.128	5.422	***
Language	<-->	Security	.534	.121	4.425	***
Language	<-->	Trust	.635	.132	4.800	***
Language	<-->	Usefulness	.682	.136	5.003	***
WebSkill	<-->	Support	.439	.113	3.883	***
WebSkill	<-->	Security	.401	.108	3.696	***
WebSkill	<-->	Trust	.622	.120	5.164	***
WebSkill	<-->	Usefulness	.524	.122	4.278	***
Support	<-->	Security	.733	.115	6.351	***
Support	<-->	Trust	.869	.127	6.836	***
Support	<-->	Usefulness	.756	.128	5.913	***
Security	<-->	Trust	.850	.122	6.971	***
Security	<-->	Usefulness	.721	.123	5.878	***
Trust	<-->	Usefulness	.762	.133	5.722	***