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ADOPTION OF E-GOVERNMENT IN DEVELOPING COUNTRIES: THE CASE OF THE STATE OF KUWAIT

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Abstract: Although there is a great body of literature that discuss e-Government in developed countries, e-government literature in developing countries, in general, and Arab countries, in particular, is scarce. Using an extended version of Technology Acceptance Model (TAM), this study examined the factors that influence the adoption of e-government services in developing countries by using the State of Kuwait as an exemplar. A survey collected data from 534 students at a private American University in relation to Kuwait's e-government services. Using partial least squares (PLS) of structural equation modeling (SEM) analysis technique, the results demonstrated that e-Government services adoption can be explained in terms of perceived usefulness, perceived ease of use, computer self-efficacy, subjective norm, perceived credibility, attitude and behavioural intension. Additionally, the results of this study show that the perceived usefulness and perceived ease of use of e-government services are impacted by computer self-efficacy, perceived credibility and subjective norm. However, perceived usefulness was the major factor in determining Kuwaiti citizens' attitude towards the adoption of e-Government services. The research limitations, implications for research and practice are discussed.

Keywords- Developing Countries, e-Government, Kuwait, TAM, Technology Acceptance, Technology Adoption.

INTRODUCTION

Electronic Government (e-Government) is argued to be vital in developing the public sectors around the globe, as it assures more accountability and transparency [1]. The shift towards e-Government was aimed at introducing radical changes to the traditional approach of public service delivery. In fact, several governments have become increasingly aware of the benefits of e-Government in improving the performance of government organisations and the interactions with their citizens [2].

Fang defines e-Government as: "the ability to obtain government services through non-traditional electronic means, enabling access to government information and to completion of government transaction on an anywhere, any time basis and in conformance with equal access requirement; offers potential to reshape the public sector and build relationships between citizens and the government [3]." Grant and Chau argued that, by leveraging the capabilities of information and communication technology (ICT), E-Government can be seen as an initiative to [4]: (1) develop and deliver high quality, seamless and integrated public services; (2) enable effective constituent relationship management; and (3) support the economic and social development goals of citizens, business, and civil society at local, state, national and international levels. According to the director of the United Nations e-government readiness report (UNPAN, 2010), countries that are "reducing cost and improving efficiency, transparency and accountability with services that are inclusive. Those that follow these principles do well in our rankings [5]".

Governments have been attempting to incorporate e-government into their existing information system applications and government processes [6]. However, this initiative has put a pressure on governments, as it raised the citizen's expectations of government's ability and responsibility to offer new, effective, efficient and contemporary services over the Internet. As such, a number of countries, in both developed and developing nations, have started e-Government initiatives which aim to provide citizens with better services and improved governmental procedures. For instance, countries, despite being developed or developing, are motivated by the transformation of their public services in the form of e-Government involving government improvements, building a stronger relationship with citizens, improving the efficiency and effectiveness of government agencies and reducing the cost of service delivery [7].

While some theoretical work that discusses e-Government adoption in developing countries has been reported [8-12], most attention related to this concept was discussed in developed nations [13-17]. This is particularly true in the Arab world, where although large sums of money have been invested and different ICT programs have been launched, most Arab countries have faced a number of challenges that have slowed the implementation and adoption of their e-government initiatives [18]. The State of Kuwait is one such example. Kuwait is a small oil rich country situated in the Middle East, specifically in the Arabian Gulf region. It is surrounded by large and powerful neighbors such as Saudi Arabia from the south, Iraq from the north and Iran from the east. Kuwait has started a number of ICT development initiatives in 2000. In 2014 the UN e-government readiness report, ranked Kuwait's e-government program in the 49th place globally.

To the best of our knowledge, only two papers have investigated the adoption of e-government in the State of Kuwait. Using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, AlAwadhi and Morris explored the factors that determine the adoption of e-government services in Kuwait [19]. In their study, 880 students were surveyed, using an amended version of the UTAUT model. The empirical data reveal that performance expectancy, effort expectancy and peer influence determine students' behavioural intention. Moreover, the authors claimed that facilitating conditions and behavioural intentions determine students' use of e-government services. Additionally, Khalil and Al-Nasrallah used an extended version of UTAUT to investigate a number of factors that affect the Kuwaiti citizens' adoption of the traffic violation e-payment system (TVEPS) [20]. Their study results showed that effort expectancy and social influence affect the use intention, and users' Internet experience moderated such a relationship. However, results revealed that performance expectancy did not influence the intention to use TVEPS. Also, facilitating condition, trust and use intention were found to influence the actual use of the system. The authors also stated that, while gender moderated the relationship between facilitating conditions and actual use of the system, awareness moderated the relationship of trust and use intention with the actual use of the system. The research work reported by AlAwadhi et al. and Morris (2009) and Khalil and Al-Nasrallah (2014) have used an extended version of UTAUT model [19] [20]. Recently, the application of UTAUT has raised a number of concerns in relation to its applicability and validity in non-Western countries [21].

Though less research are conducted in the context of e-government in developing countries, these initiatives in developing countries cannot be overlooked, as the expectations from implementing e-Government services in developing countries are high and regarded as a prerequisite for economic and social development in developing countries [22]. Hence, his study adopted an extended version of the technology acceptance model (TAM) to investigate factors that determine the adoption of e-government services in the State of Kuwait. The main research question of this paper is: What are the main factors that determine citizens' attitudes toward adopting e-Government services? It is believed that the findings of this study will help decision makers in Kuwait, and other developing countries, to gain a better understanding of the factors that determine citizens' adoption of e-government services.

The paper is structured as follows. Following the Introduction, Section 2 provides (a) a brief background of TAM and prior research on e-Government adoption, and (b) an overview the e-Government initiative in Kuwait and the United Nations (UN) assessment of Kuwait's e-Government development and readiness; Section 3 discusses the research model and hypotheses; Section 4 explains the research method; Section 5 presents the research results; and Section 6 summarizes the hypothesis testing; followed by the research conclusions, limitations and future research.

LITERATURE REVIEW

Technology Acceptance and Adoption in the Context of e-Government

Researchers in the field of Information Systems (IS) have for long been interested in investigating the theories and models that have the power in predicting and explaining behaviour [23]. Various models were developed, such as the Theory of Reasoned Action (TRA) [24], Innovation Diffusion Theory (IDT) [25][26], Theory of Planned Behaviour (TPB) [27], Diffusion of Innovation (DOI) [26] and Technology Acceptance Model (TAM) [28]. Each model has its own independent and dependent variables for user acceptance and there are some overlaps. However, most of the IT adoption works conducted earlier had adopted the technology acceptance model (TAM) to examine the user's intention for acceptance of technology. TAM has become one of the most widely-applied individual-level technology adoption models in the IS field over the last two decades [29][30].

TAM was developed by Davis to theorize the usage behavior of computer technology [28]. The TAM was adopted from another popular theory called theory of reasoned action (TRA) from field of social psychology which explains a person's behavior through their intentions. Intention in turn is determined by two constructs: individual attitudes toward the behavior and social norms or the belief that specific individuals or a specific group would approve or disprove of the behavior. While TRA was theorized to explain general human behavior, TAM specifically explained the determinants of computer acceptance that are general and capable of explaining user behavior across a broad range of end-user computing technologies and the user population [31]. TAM breaks down the TRA's attitude construct into two constructs: perceived usefulness (PU) and perceived ease of use (EU) to explain computer usage behavior. In fact, TAM proposes specifically to explain the determinants of information technology enduser's behavior towards information technology [32]. In TAM, Davis proposes that the influence of external variables on intention is mediated by perceived ease of use (PEU) and perceived usefulness (PU). TAM also suggests that intention is directly related to actual usage behavior [28].

TAM aimed at providing "an explanation of the determinants of computer acceptance that is in general, capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" [33]. That is, TAM is used mainly to explain the impact of system characteristics and end-user behaviour on actual system use [34]. Burton-Jones and Hubona argued that TAM explains IT usage as the function of a four-stage process [35]: (1) external variables influences user beliefs about using the system; (2) user beliefs influence their attitudes about using a system; (3) user attitudes influence their intentions to use a system; and (4) user intentions determine the level of usage on the system.

Researchers have adopted various forms of TAM in order to investigate e-government adoption in different perspectives. Schaupp and Carter, for example, examined the adoption of an e-voting system in the USA, and found only trust (in the internet and in the government) having a direct effect on the intention to use the system [36]. Also, Sahu and Gupta investigated the adoption of an e-government application in the Indian Central Excise [37]. With the exception of self-efficacy, top management support and voluntariness of use, the model factors were found to be significant predictors of the intention to use the investigated system.

A number of studies have investigated the adoption of e-government services in developed countries, whereas relatively little has been undertaken in developing countries (Al-Shihi, 2005) [38][39]. For example, Dimitrova and Chen studied the effects of socio-psychological factors on the adoption of e-government in the USA using both, TAM and DOI [40]. The researchers identified perceived usefulness, perceived uncertainty and civic-mindedness as adoption factors. An online questionnaire was posted to a census-balanced sample of Internet users in the United States. The study results showed that perceived usefulness, perceived uncertainty and prior interest in government were associated with the adoption of e-government in the US.

In another study, Titah and Barki investigated the adoption of e-Government in public citizens in Australia using TAM [38]. The research findings reported that perceived usefulness (PU), which has been validated to be the most reliable predictor of influencing IT adoption behaviors in private commercial organizations in the research literature, was found not significant in influencing e-Government adoption in public citizens. The authors questioned the validity of directly extending the TAM theory into studying e-Government adoption issues in public sectors.

A number of e-Government studies have been conducted in developed countries, for example, Australia, UK, Russia, USA, China, European Union, Hong Kong, New Zealand and Singapore [41-49]. Also, Akman et al. (2005) studied the impact of gender and education in the use of e-government services in Turkey [50]. The researchers argue that there are differences in gender, education and occupation between people using ICT. Different groups of people were surveyed in the public and private sectors. The study results showed that differences in gender and education had a significant impact on the adoption of e-government services. The researchers found that males used e-government information and services more than females. It was also reported that the level of education of survey participants increased, the interaction with e-government also increased.

Colesca and Dobrica extended TAM to understand the potential user's adoption behavior of e-government in Romania [51]. The analysis of the study data revealed that the citizen's higher perception of usefulness, ease of use, quality and trust of e-government services directly enhanced their satisfaction and implicitly the level of adoption of e-government. Suki and Ramayah investigated the influence of a number of factors on the acceptance of e-government services in Malaysia [52]. They found that perceived usefulness, ease of use, compatibility, interpersonal influence, external influence, self-efficacy, facilitating conditions, attitude, subjective norms, perceived behavioral control and use intention to be significant determinants of the acceptance of e-government services. In another study, Rokhman studied the acceptance of Indonesian Internet users to e-government services, in terms of relative advantage, image, compatibility, and ease to use variables [53]. The research finding showed that there are more than 93 percent of the respondents have intention to adopt e-government. Also, relative advantage and compatibility variables were proven as useful factors to predict intention to use e-government, while the variables of image and ease to use is not proven.

In the Arab countries, Charbaji and Mikdashi (2003) explored the attitudes towards e-government of a sample of 220 graduate students at different universities in Lebanon, using a questionnaire with cognitive, affective and conative dimensions [54]. The cognitive dimension refers to knowledge and awareness; the affective dimension to people's feelings towards e-government; and the conative dimension to the intention of using e-government. The findings showed a direct relationship between the cognitive and conative dimensions, while the dimension of affective feelings was found to be less influential. In another study, Al-Shihi (2005) who investigated the development and adoption of e-government services in Oman [39]. He interviewed employees in both the private and the public sector and surveyed different segments of Omani society. The author found a number of barriers to the uptake of e-government in the country which were related to users' lack of IT knowledge, awareness and motivation; the under-marketing of e-government plans and initiatives; a lack of proper legislation and laws; and a lack of trust and confidence by users. However, the findings showed that culture had little effect on the adoption of e-government.

Al-Shafi and Weerakkody (2009) examined the factors affecting e-government adoption in the state of Qatar [9]. They found effort expectancy and social influence to influence the intention to use e-government services, and use intention to influence actual use of the services. Mouakket (2010) extended TAM model to study the factors that encourage citizens to adopt e-government in the United Arab Emirates (UAE) [55]. The results supported their model in predicating citizens' attitudes towards e-government program. In Jordan, Al-Shibly and Tadros (2010) investigated factors which have an impact on e-Government acceptance by Jordanian employees [56]. The results of their research indicated that system quality, information quality and perceived ease of use, are significant factors that contributes to e-Government acceptance in Jordan. However, Al-Soud et al. criticized their work by arguing that when assessing the maturity level of the Jordanian e-Government services, it is important to determine whether these factors are valid when it comes to Jordanian citizens and other e-Government users; and whether there are other factors that have a direct effect on e-Government acceptance in Jordan [57]. Also, AL-Soud and Nakata (2010) examined different Jordanian governmental Websites and concluded that the Jordanian e-Government Websites lack consistency in terms of standards and features due to the absence of different features that could improve interaction with the users [58]. The authors argued that this is most likely due to a lack of consideration for the citizens' expectations and needs. Just recently, Al-Soud et al. (2014) investigated Jordan's e-Government maturity level and addressed a number of key factors that hinder Jordan's e-Government development [57]. The authors claimed that the citizen's interest in e-Government services is declining, as the citizens' level of awareness of e-Government and its services is still modest after more than ten years of the start of the e-Government initiative in Jordan. The authors also argued that citizens' attitude toward using e-Government services is changing and determined by various factors and issues, such as: citizen's preferences when dealing with e-government, citizen's

attitude toward using various e-services, citizen's concerns and the required services.

While TAM has received extensive support through validations, applications and replications for its power to predict use of IS and is considered to be the most robust and influential model explaining IS adoption behavior [31][33][59], it has been found that TAM excludes some important sources of variance and does not consider challenges such as time or money constraints as factors that would prevent an individual from using an information system [9]. In addition, TAM has failed to provide meaningful information about the user acceptance of a particular technology due to its generality compared the TAM with TRA in their study [33][60]. The confluence of TAM and TRA led to a structure based on only three theoretical constructs: behaviour intention (BI), perceived usefulness (PU) and perceived ease of use (PEU). Social norms (SN) were found to be weak as an important determinant of behavioural intention. While TRA and TPB theorized social norms as an important determinant of behavioural intention, TAM does not include the social norms as such, influence of social and control factors on behaviour. This is significant, as the model will miss a core and critical component of technology acceptance, as these factors are found to have a significant influence on IT usage behaviour [27][60] [61] and indeed are important determinants of behaviour in the TPB [9].

The Case of the State of Kuwait - Overview

The State of Kuwait presents an interesting case of e-Government implementation. Kuwait plays a vital role in the economic, political, and wealth of the Middle East. Kuwait is a small oil rich country situated in the Middle East specifically in the Arabian Gulf region. Kuwait's official language is Arabic, while English is widely spoken. Kuwait is one of the Gulf Cooperation Council (GCC) countries that consist of Oman, Bahrain, Kuwait, Qatar, Saudi Arabia and the UAE. The Kuwaiti population is around three and a half million people, and the literacy percentage is almost 99% [62]. The official website of Kuwait's Government Online Services Portal (KGOSP) (http://www.e.gov.kw/) was launched in 2005, delivering its services to all Kuwait citizens, residents and visitors. By 2006, more than 50 government services were available through the e-Government official website.

With its small size and large Gross National Income (GNI), Kuwait can be categorized as a high income country with its GNI reaching $47,639 in 2015 [63]. In recent years, the state of Kuwait has taken further steps of improving its healthcare, education, and manpower including strengthening the private sector. Kuwait has maintained a budget surplus throughout the past 15 years with an average of 21% of GDP [64]. Recently, Kuwait has reached high numbers of internet users which led to expansion of its technology services. In 2014, internet users in Kuwait reached 3,022,010 [65].

With the National Assembly approval in 2006, Sheikh Sabah Ahmad AL Sabah became the Amir of Kuwait. His highness the Amir of Kuwait had a great vision and futuristic outlook of Kuwait's development. He strongly braced the application of technology in Kuwait, especially through the launching of the Kuwait Central Agency for Information Technology (CAIT) in 2006. The main objective of CAIT is to administer information technology strategies in Kuwait, and coordinate with governmental sectors all the necessary factors for the development of information technology. Additionally, one of CAIT main tasks is increasing the society awareness of information technology [66]. Furthermore, the Amir strongly urged the officials to increase the services to the society and increase the ICT awareness to bring Kuwait into the technology world. To assure the continuity of ICT, the Amir launches the E-Award, a prize that supports the participation in the information technology field [67].

The United Nations Public Administration Network UNPAN was established in 1999 after being entrusted by the General Assembly through The Division for Public Administration and Development Management of the Department of Economic and Social Affairs of the United Nations. Its main objective is to help developing countries in establishing an internet-based network that connects regional and national institutions dedicated to public assistance [68]. For instance, the exchange of information, training, and sharing different experiences are just few advantages of UNPAN. UNPAN created a chance for the developing countries to increase their knowledge and experience in different technological areas. The future aim of the program is to construct and distribute well-organized information and communication technologies to the public [69].

The United Nations (UN) e-Government surveys have published different reports which have analyzed how governments of the world are employing their e-Government initiatives to support effectiveness, efficiency, and inclusiveness as the parameters of sustainable development efforts worldwide [5][70]. These reports have been used in this paper to evaluate the State of Kuwait's performance in developing its e-Government program. When using the United Nations e-Government Readiness reports, it should always be kept in mind that the e-Government Readiness Index is a composite of three components, namely: Web measure (i.e. online services), telecommunication and the human capital [57].

According to UNPAN (2012) the telecommunication infrastructure and human capital components (which have two-thirds of the total weight of the e-Government development index) have contributed in achieving higher rankings in the survey for developed countries, as these components require long-term investment [70]. Hence, it is not surprising that the majority, if not all, of the top 25 positions in the rankings belong to high income countries due to their ability to invest in developing their e-Government Programs. However, this is not the case for the developing countries, although some of them have the financial ability to develop advanced e-Government initiatives due to lack of human capital and/or telecommunication infrastructure [57].

In 2012, Kuwait e-Government development index reached .5960 falling 13 places, compared to the 2010 UN survey which ranked Kuwait 63th in the world e-government development ranking [70]. Despite its financial strength, Kuwait was placed behind its GCC neighboring countries United Arab Emirates, Bahrain, Saudi Arabia, and Qatar. The United Arab Emirates scored the highest among the GCC countries with 0.7344 ranked

28 in 2012 jumping 21 places in two years which demonstrates its great advancement in the ICT field. Furthermore, compared to its 2010 record of being placed 58 among the world's e-government, Saudi Arabia scored 0.6658 in 2012 e-government development index improving its placement by being ranked 41 in the world e-government development ranking [70]. The improvement of the GCC countries demonstrated their expansion in the ICT sector, increasing their productivity, efficiency and e-government services. However, Kuwait was placed behind its neighboring countries which demonstrate the need for services improvement and efficiency in Kuwait's e-government.

In 2012 Kuwait was ranked 63th for the world overall e-Government readiness index, with an overall index of 0.5960 out of 1.0, of which, 0.5817 for online service component, 0.4179 for telecommunication infrastructure component and 0.7885 for human capital component [70]. These results demonstrate the urge of ICT improvements through the services provided and its effectiveness. However, despite its low ranking in 2012, Kuwait was listed among the countries that utilize all channels. This means that it uses all available methods to provide its e-government services. Kuwait uses Digital channels such as internet websites, public access points, and mobile services to reach to its public to provide various services. In fact, Kuwait uses all necessary channels available to ensure high e-government penetration, service delivery, and effectiveness [70].

The development of Kuwait's overall e-Government readiness index was shown in 2014 where Kuwait was ranked in the 49th place globally, jumping 14 places compared to 2012 report, and being placed among high EDGI countries including its neighboring GCC countries Saudi Arabia, United Arab Emirates, and Qatar which also showed some improvement in the past years. However, Kuwait improvements were much higher compared to its neighbors since the 2010 report [71].

Kuwait's overall e-Government readiness index of 0.6286 out of 1.0 in 2014 was divided into the three categories of which, 0.5748 for online service component, 0.5862 for telecommunication infrastructure component and 0.7194 for human capital component [71]. While it is a noticeable improvement since 2012, Kuwait ranking in 2014 is approximately the same as 2010's ranking where it was ranked 50 among the global ranking of E-government development index [5]. In 2014 report, Kuwait score in the online service index was 0.5748 out of 1.0, of which, 84% 52% 37% 41% for Stage1, 2, 3, and 4 respectively. In the telecommunication Infrastructure Index and its components, Kuwait received 0.5862 in 2014, whereas in 2012 index score was 0.4179. One of the interesting findings of the 2014 report, is the massive increase of Wireless broadband subscribers per 100 inhabitants reaching which was 71.73 passing the 2012 score tremendously. While the percentage of individuals using the internet in 2012 reached 38.25%, the percentage of internet users in 2014 was increased greatly reaching 79.18% [71].

Despite these improvements, high literacy rate, small population and high EDGI in 2014, Kuwait still scored the lowest among its Gulf Cooperation Council countries. There are many reasons that may have led to these low rankings. The unsatisfactory use of governmental services and lack of public awareness are some of the reasons behind Kuwait's low index score. Additionally, people in Kuwait are still afraid of e-payments transactions due to the lack of high level of online security. Also, the e-government online services need to be enhanced and provide greater services to the public. According to a survey undertaken by one of the leading newspapers in Kuwait, 56% of people in Kuwait use the Internet for entertainment and recreation purposes. In addition, 38% were unsatisfied with the Internet services in general [72].

THE RESEARCH MODEL AND HYPOTHESES

As discussed previously, while TAM has been extensively used in different contexts in IS research, TAM has been criticized for (1) not providing meaningful information about the user acceptance of a particular technology due to its generality [73], and (2) not including the social norms such as influence of social and control factors on behaviour. This is significant, as the model will miss a core and critical component of technology acceptance, as these factors are found to have a significant influence on IT usage behaviour. For instance, other researchers have found that original TAM constructs may not adequately capture key beliefs that influence consumer attitudes toward the adoption of different ICTs.

Based on various recent TAM studies, this research in adopting an extended TAM with the inclusion of three additional constructs (i.e external variables), namely: 'perceived credibility', 'computer self-efficacy' and 'subjective norm'. Individual differences factors such as self-efficacy incorporated into the TAM was found to have significant effects on intention through PEU and PU and perceived credibility in internet banking usage [74]. Trust and perceived risks have also been examined in TAM previous research but have shown mixed findings [75][76]. Perceived credibility is the first dimension of trust as defined by Lindskold in 1978 [77]. Behavioral intentions may be defined as a measure of the strength of one's intention to perform a specific behavior such as the use/adoption of an IS [24]. Subjective norm (SN), one of the social influence variables, refers to the perceived social pressure to perform or not to perform certain behavior [27]. SN is defined as the person's perception that most people who are important to him or her think he or she should or should not perform the behaviour in question [33]. SN was adopted and included in the TAM model, in order to overcome the limitation of TAM in measuring the influence of social environments [78]. Whether this is positive or negative; it is a very important factor in many aspects of the lives of citizens and is likely to be influential [23]. It is believed that, in some cases, people might use a system to comply with the mandates of others rather than their own feelings and beliefs [33]. Figure 1 depicts the research model of this study.

Perceived Credibility (PC)

For the purpose of this study, perceived credibility (PC) indicates the perception of protection of user's transaction details and personal data against illegal entrance. According to Hanudin (2007), perceived credibility is a key indicator of behavioral intention to use an IS. Perceived credibility refers to two important dimensions which are security and privacy [79]. Security is defined as the protection of information or systems

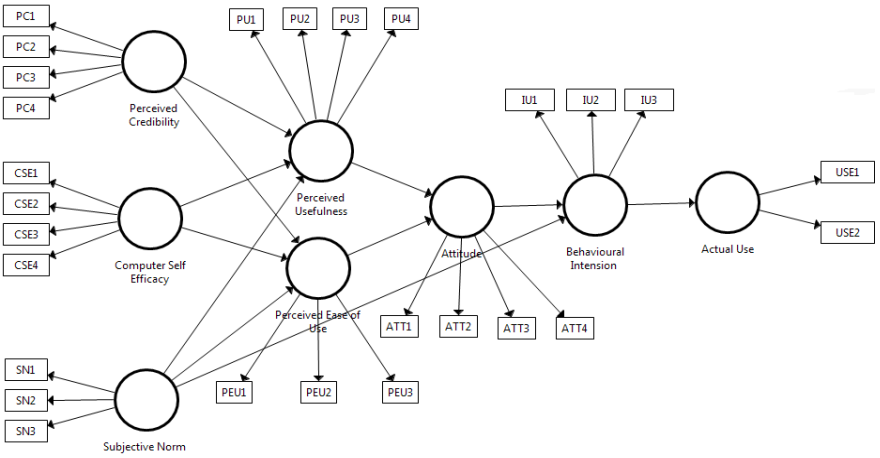

Figure 1: The Research Model.

from unsanctioned intrusions or outflows, while privacy is the protection of various types of data that are collected (with or without the knowledge of the users) during users' interactions with the internet [80]. Oni and Ayo (2010) tested empirically and proved that Perceived Credibility (PC) have positive impact on Perceived Ease of Use (PEOU), Perceived Usefulness (PU) and attitude (ATT) [81]. Nysveen et al, (2005) also found perceived credibility had a significant effect on intention [82]. The usage intention (i.e. attitude of e-government services) could be affected by users' perceptions of credibility regarding security and privacy issues. Thus, to study the effect of perceived credibility on user's acceptance of e-government services, the study makes the following hypotheses:

H1: Perceived credibility has a significant effect on perceived ease of use.

H2: Perceived credibility has a significant effect on perceived usefulness.

Computer Self Efficacy (CSE)

Self-efficacy is one's belief in his or her ability to execute a particular task or behavior [83]. For instance, computer self-efficacy (CSE) measures one's confidence in mastering a new technology [84]. If a person has high CSE, then he/she will be successful in using the technology, and if a person shows low CSE, then he/she may believe will have difficulty using the technology purposefully [85]. Venkatesh and Davis (1996) found that CSE acts as a determinant of perceived ease of use both before and after hands-on use with a system [86]. CSE is considered as one of the external variable in TAM model and it plays a vital role in shaping an individual's feeling and behaviour [84]. Eastin (2002) revealed that computer self-efficacy have a significant impact on customer attitude and played important role in the e-commerce adoption processes [87]. Also, Hanudin (2007) found that there is a causal link between computer self-efficacy and perceived ease of use [79]. In fact, CSE would lead to more favourable behavioural intention through its influence on PU and PE [75][88]. Other TAM researchers have found an influence of CSE on the TAM [89][90][91][92]. As a result, to investigate the effect of computer self-efficacy on user's acceptance of e-government services in Kuwait, this study hypothesizes the following:

H3: Self-efficacy has a significant effect on perceived ease of use.

H4: Self-efficacy has a significant effect on perceived usefulness.

Subjective Norm (SN)

From the theory of planned behavior and unified theory of acceptance and use of technology (UTAUT) subjective norm (or social influence) was hypothesised to have a direct effect on Perceived ease of use, perceived usefulness and behavioural intension [21][28]. Venkatesh and Davis (2000) argued that when a co-worker thought that the system was useful, a person was likely to have the same idea [79]. It is argued that people can choose to perform a specific behaviour even if they are not positive towards the behaviour or its consequences, depending on how important they think that the important referents believe that they should act in a certain way [24][79]. This was supported by Schepers and Wetzels (2007), who meta-analysed 88 studies on the relationship between subjective norm and the TAM variables [93]. They found overwhelming evidence that showed a significant relationship between subjective norm and perceived usefulness as well as perceived ease of use and behavioural intension. Hence, this study hypothesizes the following:

H5: Subjective norm has a significant effect on perceived ease of use.

H6: Subjective norm has a significant effect on perceived usefulness.

H7: Subjective norm has a significant effect on behavioural intension.

Perceived Usefulness (PU)

Perceived usefulness is defined as the extent to which a person believes that using a particular system will enhance his or her job performance Davis (1989) [33]. Subramanian (1994) found that perceived usefulness had significant correlation with attitude toward usage behavior [94]. This finding was later confirmed by Fu, Farn, and Chao (2006) and Norazah et al. (2008) who found that behavioral intention was largely driven by perceived usefulness [95][96]. There has been extensive body of literature in the IS community that provides evidence of the significant effect of perceived usefulness on usage intention [61][79]. Park

(2009) found that perceived usefulness and perceived ease of use were found significant in affecting user attitude [97]. Other studies have also provided evidence to show that perceived usefulness has influences on attitudes and intention to use technology [98][99][100]. Perceived usefulness was found to be significant constructs in the e-Government adoption literature [101]. As a result, the following hypothesis was made:

H8: Perceived usefulness use has a positive effect on users' attitude towards e-government services.

Perceived Ease of Use (PEU)

Perceived ease of use is another major determinant of attitude toward use in the TAM model. Davis defined Perceived Ease of Use (PEU) as "the degree to which a person believes that engaging in online transactions would be free of effort" [33]. PEU is the fundamental determinant for the acceptance and use of IT in general [102]. This finding was later confirmed by other researchers (e.g. Fagan, Wooldridge, & Neill, 2008; Jahangir & Begum, 2008; Hsu, Wang, & Chiu, 2009; Ramayah, Chin, Norazah, & Amlus, 2005) who found PEU to have positively influenced the behavioural intention to use different IS applications [103][104][105][106]. More specifically, perceived ease of use was found to be significant constructs in the e-Government adoption literature [101]. These results suggest the following hypothesis:

H9: Perceived ease of use has a positive effect on users' attitude towards e-government services.

Attitude (ATT)

Karjaluoto et al. (2002) defined attitude as the users' desirability to use the system [107]. Fishbein and Ajzen (1975) classified Attitude into two constructs: attitude toward the object and attitude toward the behavior [24]. The latter refers to a person's evaluation of a specified behavior. In TAM context, attitude is defined as the mediating affective response between usefulness and ease of use beliefs and intentions to use a target system [108]. Davis (1989) stated that a prospective user's overall attitude toward using a given system is an antecedent to intentions to adopt [33]. Suki and Ramayah (2010) stated that "As an innovative system, e-Government is still in its infancy. Large numbers of users simply do not exist in many countries and regions. An investigation of attitudes toward using e-Government and identification of its relationship with intention to use is more appropriate and practically valuable for predicting usage behavior [108]." Thus, to investigate the effect of users' attitude on users' acceptance and adoption of e-government services, this study hypothesizes:

H10: Users' attitude has a positive impact on intention to adopt e-government services.

Behavioural Intension (BI)

Davis (1989) pointed out that behavioural intention is highly correlated with the actual use of a system [33]. Additionally, in reference to intention-based theories, user adoption and usage behaviour are determined by the intention to use IS "it is a kind of ′self-prediction′ or ′behavioural expectation′, indicated as one of the most accurate predictors available for an individual's future behaviour [108]." As a result, the main success dimension to intention to use a system represents the degree and behaviour in which an IS is utilised by its users [109]. As TAM postulates that actual use is dependent on the behavioural intention, which is a result of the attitude toward using, this study hypothesizes the following:

H11: Behavioural intention has a significant effect on the actual use od e-government services.

THE RESEARCH METHOD

Measures

Previous studies, measuring "the actual use" of IS, have used both objective perspective and subjective perspective [109]. The objective measures capture the connect time, the functions utilised, or the frequency of use of the system, while the subjective measures are captured by questioning users about their perceived use of a system [109][110]. In this study, the actual use construct was measured by the frequency and the duration of usage of e-government services [31][111]. Table 1 shows the operationalized definitions of different variables as well as the questionnaire items used in the research model and their sources. A seven point Likert scale with anchors of strongly disagree to strongly agree was used to measure each item of the other constructs in this study.

Study Sample

A total of 534 usable survey responses were collected and examined from students at an American private university in the State of Kuwait. Only 46 percent of respondents are males while majority of 54 percent are females. 27 percent of the respondent is aged less than 18 years; 42 percent were aged between 18-25, 15 percent were age between 26-30 years; 11 percent were aged between 31-40 and only 5 percent were above 40 years of age. Most of the respondents have been using e-government services between 1–3 years with 50 percent, while only 2 percent have been using e-government services for more than 10 years. Table 2 shows a snapshot of the respondents' demographic data.

RESEARCH RESULTS

Partial Least Square (PLS) of structure equation modelling was used to analyze the data of this study. PLS method is used for small sample since it used boot-strapping methods [112]. The research model presented in Figure 1 was analyzed using SmartPLS 3.1 [113]. Validation of PLS models involve a two-step process: 1) assessing the outer (measurement) model and (2) assessing the inner (path) model. The reliability and validity of the outer-model need to be established before the inner-model is examined [114].

The Measurement Model

Tests for internal consistency, items' loadings, convergent validity and discriminant validity were conducted. Internal consistency reliability and indicators reliability were also evaluated. Specifically, Cronbach's Alpha [115], Composite Reliability [116] and examination of item loadings [117], cross-loadings [118] and average variances extracted (AVE) were used [119]. The results are shown in Table 3.

Table 4 provides evidence of the discriminant validity of the item scales used in this study. The bolded items in the matrix

Table 1: Definitions and measurement items of the constructs used in this study

Perceived Credibility	Perceived credibility indicates the perception of protection of user's transaction details and personal data against illegal entrance		Oni and Ayo (2010)
	Items		
	PC1	Using e-government services would not divulge my privacy.	Yang (2007)
	PC2	Information and News on e-government sites are more credible	
	PC3	I would find e-government services reliable in conducting my transactions.	
	PC4	I would find e-government services kept my information confidential.	
Computer Self Efficacy	Individuals' judgment of their capabilities to use computers in diverse situations.		Thatcher & Perrewe (2002)
	Items		
	CSE1	I am confident of using e-government services if I have only the online instructions for reference.	Lee et al. (2003)
	CSE2	I am confident of using e-government services even if there is no one around to show me how to do it.	
	CSE3	I am confident of using e-government services even if I have never used such a system before.	
	CSE4	I believe I have the ability to install and configure the software to access e-government services	
Subjective Norm	Individuals' perception that most people who are important to him/her think he/she should/should not perform the behaviour in question		Davis (1989)
	Items		
	SN1	What e-government stands for is important for me as a citizen in this country	Park (2009)
	SN2	I like using e-government services on the similarity of my values and society values underlying its use	
	SN3	People who are important to me believe that I should be using e-government services	
Perceived Usefulness	The degree to which a person believes that using a particular technology will enhance his performance.		Davis (1989)
	Items		
	PU1	Using e-government services would enable me to accomplish my tasks more quickly	
	PU2	Using e-government services would make it easier for me to carry out my tasks	
	PU3	I would find e-government services useful	
	PU4	Overall, I would find using e-government services to be advantageous	
Perceived Ease of Use	The degree to which person believes that using a particular system would be free of effort.		Davis (1989)
	Items		
	PEU1	Using the e-government services is easy for me	
	PEU2	It is easy for me to become skillful at the use of the e-government services	
	PEU3	Overall, I find the use of e-government services easy	
Attitude	Attitude towards behavior is made up of beliefs about engaging in the behavior and the associated evaluation of the belief.		Fishbein and Ajzen (1975)
	Items		
	ATT1	Using e-government services is a good idea	Lee et al. (2003)
	ATT2	I would feel that using e-government services is pleasant	
	ATT3	In my opinion, it would be desirable to use e-government services	
	ATT4	In my view, using e-government services is a wise idea	
Intention to Use	Intention to use refers to the extent to which individuals would like to use e-government services		Gupta et al. (2008)
	Items		
	IU1	I would use e-government services for my different governmental transactions	Cheng et al. (2006), Jahangir and Begum (2008)
	IU2	Using e-government services for handling my governmental related transactions is something I would do	
	IU3	I would see myself using e-government services for handling my governmental related transactions	

Table 2: Demographic data of the respondents.

Data	Frequency	Percentage
Gender		
Male	244	46%
Female	290	54%
Total	534	100%
Age		
Less than 18 years	144	27%
18 – 25 years	223	42%
26 – 30 years	80	15%
31 - 40 years	61	11%
More than 40 years	26	5%
Total	534	100%

e-Government services usage		
Less than a year	37	7%
1–3 years	268	50%
4–7 years	176	33%
8–10 years	42	8%
more than 10 years	11	2%
Total	534	100%

Table 3: Items loading, Cronbach's alpha, Composite reliability and AVE.

Items	**Loading**	**Cronbach's Alpha**	**Composite Reliability**	**AVE**
PC1	0.872			
PC2	0.904			
PC3	0.924			
PC4	0.924			
Perceived Credibility		**0.927**	**0.948**	**0.821**
SN1	0.931			
SN2	0.940			
SN3	0.946			
Subjective Norm		**0.933**	**0.957**	**0.882**
PU1	0.954			
PU2	0.953			
PU3	0.952			
PU4	0.950			
Perceived Usefulness		**0.966**	**0.975**	**0.907**
PEU1	0.962			
PEU2	0.952			
PEU3	0.956			
Perceived Ease of Use		**0.954**	**0.970**	**0.915**
CSE1	0.896			
CSE2	0.931			
CSE3	0.909			
CSE4	0.882			
Computer Self Efficacy		**0.926**	**0.948**	**0.819**
ATT1	0.933			
ATT2	0.941			
ATT3	0.919			
ATT4	0.935			
Attitude		**0.950**	**0.964**	**0.869**
IU1	0.957			
IU2	0.964			
IU3	0.965			
Intention to Use		**0.959**	**0.974**	**0.925**
USE1	0.946			
USE2	0.941			
Actual Use		**0.877**	**0.942**	**0.891**

Table 4: Discriminant validity (inter-correlations) of the item scales.

	PC	**SN**	**CSE**	**PU**	**PEU**	**ATT**	**IU**	**USE**
PC	**0.906**							
SN	0.610	**0.939**						
CSE	0.521	0.593	**0.905**					
PU	0.439	0.328	0.548	**0.952**				
PEU	0.554	0.529	0.601	0.625	**0.957**			
ATT	0.327	0.575	0.623	0.514	0.556	**0.932**		
IU	0.409	0.447	0.518	0.590	0.741	0.659	**0.962**	
USE	0.548	0.319	0.445	0.383	0.571	0.683	0.631	**0.944**

Table 5: Factor loadings (bolded) and cross loadings.

Items	**PC**	**SN**	**CSE**	**PU**	**PEU**	**ATT**	**IU**	**USE**
PC1	**0.872**	0.125	0.530	0.248	0.218	0.247	0.544	0.329
PC2	**0.904**	0.114	0.513	0.264	0.244	0.255	0.501	0.357
PC3	**0.924**	0.135	0.548	0.245	0.234	0.259	0.522	0.315
PC4	**0.924**	0.174	0.554	0.267	0.248	0.234	0.514	0.360

SN1	0.257	**0.931**	0.259	0.248	0.553	0.579	0.441	0.590
SN2	0.264	**0.940**	0.262	0.252	0.550	0.532	0.448	0.546
SN3	0.239	**0.946**	0.234	0.259	0.552	0.549	0.513	0.553
CSE1	0.118	0.230	**0.896**	0.368	0.350	0.445	0.305	0.111
CSE2	0.154	0.244	**0.931**	0.366	0.364	0.430	0.344	0.167
CSE3	0.168	0.262	**0.909**	0.324	0.315	0.440	0.315	0.175
CSE4	0.161	0.248	**0.882**	0.309	0.322	0.410	0.357	0.124
PU1	0.544	0.544	0.421	**0.954**	0.254	0.264	0.548	0.270
PU2	0.523	0.547	0.433	**0.953**	0.222	0.241	0.541	0.284
PU3	0.534	0.551	0.411	**0.952**	0.219	0.225	0.524	0.267
PU4	0.590	0.549	.0487	**0.950**	0.264	0.268	0.549	0.248
PEU1	0.441	0.354	0.333	0.607	**0.962**	0.336	0.257	0.114
PEU2	0.419	0.367	0.321	0.655	**0.952**	0.320	0.294	0.129
PEU3	0.406	0.328	0.301	0.684	**0.956**	0308	0.297	0.143
ATT1	0.118	0.532	0.278	0.328	0.498	**0.933**	0.328	0.281
ATT2	0.145	0.561	0.268	0.369	0.442	**0.941**	0.364	0.264
ATT3	0.162	0.529	0.259	0.348	0.451	**0.919**	0.348	0.247
ATT4	0.147	0.523	0.248	0.361	0.448	**0.935**	0.350	0.239
IU1	0.654	0.315	0.298	0.348	0.223	0.528	**0.957**	0.457
IU2	0.628	0.357	0.288	0.315	0.267	0.547	**0.964**	0.441
IU3	0.601	0.358	0.257	0.354	0.248	0.562	**0.965**	0.403
USE1	0.580	0.388	0.451	0.333	0.358	0.554	0.517	**0.946**
USE2	0.646	0.398	0.442	0.368	0.347	0.529	0.509	**0.941**

diagonals, representing the square roots of the AVEs, are greater in all cases than the off-diagonal elements in their corresponding row and column, supporting the discriminant validity of the item scales.

The convergent validity of the item scales were assessed by extracting the factor loadings (and cross loadings) of all items to their respective construct. These results, shown in Table 5, indicate that all items loaded: (1) on their respective construct from a lower bound of 0.872 to an upper bound of 0.965 and (2) more highly on their respective construct than on any other construct (the non-bolded factor loadings). A common rule of thumb to indicate convergent validity is that all items should load greater than 0.7 on their own construct, and should load more highly on their respective construct than on the other constructs [120].

The Structural Model

Based on the suggestions of Chin (1998), the assessment of the structural model entails [120]: Estimates for path coefficients (β), Determination of coefficient (R^2), and Estimates for total effects. The first step in assessing the structural model, using PLS, should be based on the path coefficient's (β) direction algebraic sign, magnitude and significance [111] [116][120] [121][122].

In PLS, the individual path coefficients of the structural model can be interpreted as standardized beta coefficients of ordinary least squares regressions [116]. Path coefficients should exceed .100 to account for a certain impact within the structural model [111]. Furthermore, path coefficients should be significant at least at the .050 level [111][116]. Figure 2 shows the structural model results. All beta path coefficients (β) are positive (i.e. in the expected direction) and statistically significant (at $p < 0.05$).

Since the main purpose of the structural model is to assess the relationships between hypothetical constructs, the most essential criterion for the assessment of the structural model is the coefficient of determination (R^2) of each of the constructs in the model [122]. R^2 values should be sufficiently high for the model to have a minimum level of explanatory power [111] [116][120] [121][122]. In PLS, R^2 values represent "the amount of variance in the construct in question that is explained by the model" [121]. Chin (1998) considers R^2 values of approximately 0.67, 0.33, and 0.19 as substantial, moderate and weak respectively [120]. The R^2 values of this study are shown in Figure 2, with $R^2 = 0.650$ for perceived usefulness, $R^2 = 0.670$ for perceived ease of use, $R^2 = 0.786$ for Attitude, $R^2 = 0.695$ for behavioural intention and $R^2 = 0.614$ for actual use.

Interestingly, some researchers claim that the significance of high direct inner path model relationships (i.e. Estimates for path coefficients (β)) is no longer of interest to researchers and practitioners [116][123]. Rather, they suggest, the sum of all direct and indirect effects of a particular construct on another construct should be the subject of evaluating the structural model. Table 6 displays the total effects on the five predicted constructs.

The strongest effect on the intention to use the e-Government services is attitude (0.795). It also has a strong effect on the actual use (0.623). The strongest effect on attitude is perceived usefulness (0.641) followed by computer self-efficacy (0.369). Additionally, perceived usefulness also has a strong effect on intension to use and actual use (0.510 and 0.399) respectively.

HYPOTHESIS TESTING

The empirical tests of the extended TAM model were able to identify constructs determining the intention to adopt of e-government services. All the study hypotheses were established and confirmed with the results. Table 7 presents the hypotheses and outcomes.

CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

ith most developing countries deploying different e-Government

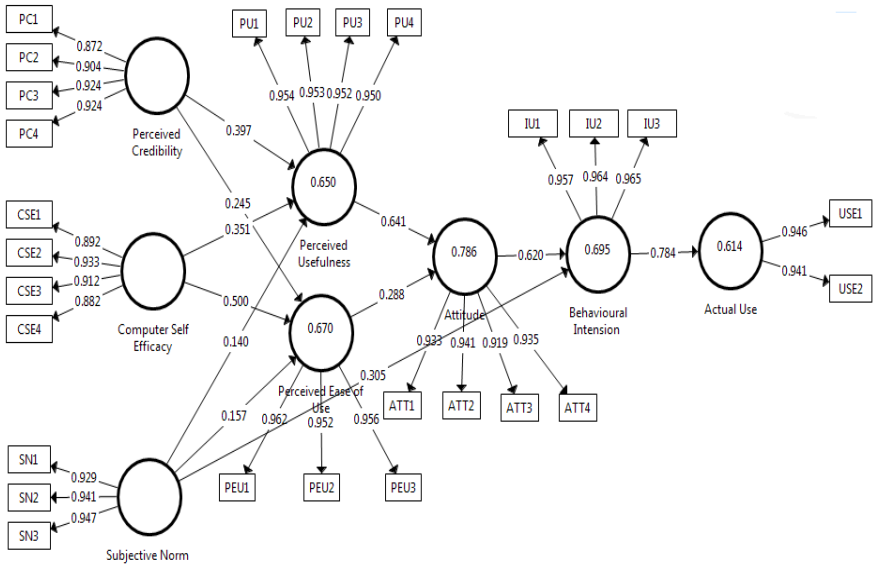

Figure 2: The Structural Model.

Table 6: Total effect of the Structural Model.

	PEU	PU	Attitude	Intention to Use	Actual Use
Perceived Credibility	0.245	0.397	0.325	0.258	0.203
Subjective Norm	0.157	0.140	0.135	0.388	0.304
Computer Self Efficacy	0.500	0.351	0.369	0.293	0.230
Perceived Usefulness			0.641	0.510	0.399
Perceived Ease of Use			0.288	0.229	0.179
Attitude				0.795	0.623
Intention to Use					0.784

Table 7: Summary of hypotheses testing.

Hypotheses	T-Statistics	P-Value	Findings
H1: Perceived Credibility -> Perceived Ease of Use	3.052	0.002	Supported
H2: Perceived Credibility -> Perceived Usefulness	5.259	0.000	Supported
H3: Computer Self Efficacy -> Perceived Ease of Use	6.966	0.000	Supported
H4: Computer Self Efficacy -> Perceived Usefulness	4.648	0.000	Supported
H5: Subjective Norm -> Perceived Ease of Use	2.530	0.012	Supported
H6: Subjective Norm -> Perceived Usefulness	2.441	0.015	Supported
H7: Subjective Norm -> Behavioural Intension	5.835	0.000	Supported
H8: Perceived Ease of Use -> Attitude	4.757	0.000	Supported
H9: Perceived Usefulness -> Attitude	9.682	0.000	Supported
H10: Attitude -> Behavioural Intension	26.567	0.000	Supported
H11: Behavioural Intension -> Actual Use	23.360	0.000	Supported

initiatives with the hope to achieve advanced levels of e-Government services and improve public administration by increasing convenience, performance and accessibility of different government services to citizens, Carter and Belanger (2005) argued that the success of e-Government initiatives is dependent not only government support, but also on citizens' willingness to accept and adopt those e-government services [103]. This is called the "demand side" of e-Government, which examines the factors that promote and inhibit the adoption of e-government by citizens [124]. Warkentin et al. describe adoption as the intention to use e-Government services: "To adopt e-Government processes, citizens must have the intention to 'engage in e-Government', which encompasses the intentions to receive information, to provide information and to request e-Government services [125]." That is, without citizens' acceptability and adoption of e-Government services, such an initiative may not achieve its intended goals. According to Straub, there is no one model for understanding the processes in which an individual engages before adopting a new innovation [126]". As such, the full potential of the Kuwaiti e-Government services initiatives won't be realized without citizens' adoption of such services.

Using an extended version of Technology Acceptance Model (TAM), this study examined the factors that influence the adoption of e-government services in developing countries by using the State of Kuwait as an exemplar. The results demonstrated that e-Government services adoption can be explained in terms of perceived usefulness, perceived ease of use, computer self-efficacy, subjective norm, perceived credibility, attitude and behavioural intension. Additionally, the results of this study show that the perceived usefulness and perceived ease of use of e-government services are impacted by computer self-efficacy, perceived credibility and subjective norm. However, perceived usefulness was the major factor in determining Kuwaiti citizens' attitude towards the adoption of e-Government services.

This research, like any other, has its own set of limitations. First, the scope of the study (i.e. the number of respondent) may not reflect the perceptions of all Kuwaiti citizens' in relation to the adoption of e-government services. Second, although the use of students in survey research is often criticized, they are both acceptable and appropriate when studying certain patterns of relationships [127]. In fact, the use of students maybe even more appropriate, since their demographics fit the citizen profile of many e-government services [128]. Third, this study did not take a cross-cultural approach. These limitations may hinder the generalizability of

the study findings. Fourth, this study did not investigate citizens' satisfaction with each of the e-Government services. Fifth, the study did not examine the quality of the e-Government services that citizens utilize. Satisfaction with as well as the quality of e-Government services may promote adoption. Future research in other developing countries is needed to further investigate the determinants of adopting of e-government services. Future research should look into various moderators such as age, culture and gender that may affect the factors of e-government adoption. Also, additional research could possibly conduct a survey examining citizens' satisfaction with- and the quality of- e-Government services in developing countries.

Despite the abovementioned limitations, it is believed that this study makes a valuable addition to the e-Government body of knowledge in the developing countries, and provides useful implications for both theory and practice. The findings of this study can also provide useful insights to decision makers. In order to retain and enhance e-Government services adoption, decision makers should: (1) conduct attractive awareness campaigns to target potential users properly; (2) emphasize the usefulness and benefits of e-Government services; (3) increase the availability of necessary hardware and software for e-Government services use; (4) enhance the functionalities and features of e-government services and (5) increase the availability of resources, such as Internet access, support and user guidance especially in places where less advantaged citizens are found.

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