

The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait

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Abstract

E-government initiatives are in their infancy in many developing countries. The success of these initiatives is dependent on government support as well as citizens' adoption of e-government services. This study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model to explore factors that determine the adoption of e-government services in a developing country, namely Kuwait. 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, facilitating conditions and behavioural intentions determine students' use of e-government services. Implications for decision makers and suggestions for further research are also considered in this study.

1. Introduction

E-government initiatives have been undertaken worldwide. E-government has been defined as “the application of information and communications technology (ICT) to transform the efficiency, effectiveness, transparency and accountability of informational and transactional exchanges within government, between governments and government agencies at federal, municipal and local levels, citizens and businesses; and to empower citizens through access and use of information” [33]. The success of such initiatives is dependent not only government support, but also on citizens' willingness to accept and adopt those e-government services [10]. Government decision makers, therefore, need an understanding of the factors that would encourage use of electronic service delivery channels rather than more traditional service delivery methods. To date, there has been little

research exploring factors that determine the adoption of e-government services by citizens in developing countries, especially in the Arab world [5] and the research described here aimed to address this gap. The study adapted the Unified Theory of Acceptance and Use of Technology (UTAUT) model to explore factors that determine the adoption of e-government services in Kuwait as an example of a developing country where e-government services are still being developed. The results of this study will help decision makers to gain a better understanding of the factors that determine citizens' adoption of e-government services.

2. E-government in Kuwait

The ever-increasing use and adoption of information and communication technologies by Kuwaiti government departments have helped in building an IT infrastructure capable of adopting e-government services. The driving force behind the project to provide e-government services is seen to be the move towards e-business generally, and the economic and social changes caused by it, as well as the international trend towards a digital economy and an information-based society. Other reasons for its implementation include the easy access provided by digitisation to vast amounts of information, and the increasing role of electronic processes in daily life. By implementing this project, the government's performance will be improved, Kuwait will move abreast of developments taking place in the world and governmental procedures for individuals and institutions will be facilitated [3].

The former Prime Minister, the present Emir of Kuwait, Sheikh Sabah Al-Ahmad Al-Sabah, had ordered the establishment of a steering committee at governmental level to assess the e-readiness and management of ICT, and of control systems. He then

adopted the e-government project in Kuwait as one of the government's top priorities, with the aim of executing a great transformation of government work [18]. In 2000, the Council of Ministers issued Decree No. 759 concerning the implementation of e-government in Kuwait. The decree states that a National Higher Committee be established and led by the Prime Minister, with the participation of the Minister of Planning, members from ministerial committees and a number of specialists. This committee is responsible for supervising the implementation of the e-government project in Kuwait. Under the direction of this Committee, a Central Technical Body (CTB) needed to be established as stated in the decree. The CTB is responsible for coordinating the work of the National Higher Committee and government organisations. It is also responsible for seeking appropriate IT specialists in addition to exploring relevant experience in the implementation of e-government in other countries [25]. A Memorandum of Understanding (MoU) was signed in 2004 with the Government of Singapore to cooperate in the implementation of the e-government project and benefit from the successful experience of the Singaporean government [3].

Launching the official site (portal) for Kuwait's e-government on the Internet was the first step in the implementation phase of the project. This site enables visitors to "obtain instant services, and become familiar with the State of Kuwait and its different governmental and non-governmental sectors" [6, p.9]. In an annual survey of *Global e-government*, where various features of national government websites by 198 countries around the world were analysed, Kuwait scored 28.9 on a scale of 100, whereas Taiwan scored 60.3, the highest score achieved by any country [40]. These findings indicate that Kuwait is still in an early stage of developing e-government and needs to improve its web instruments to encourage potential users to use the available online services.

3. Literature review

User acceptance of IT is deemed a necessary condition for the effective implementation of any IT project [30]. User acceptance is defined as an "initial decision made by the individual to interact with the technology" [38, p.446]. Adoption comes after "direct experience with the technology and after an individual has decided to accept the technology" [38, p.446]. A number of studies have investigated the adoption of e-government services in developed countries [36], whereas relatively little has been undertaken in

developing countries [5]. Many prior studies are based mainly on technology acceptance theories and models such as the Theory of Reasoned Action (TRA) [19], the Theory of Planned Behaviour (TPB) [1], the Technology Acceptance Model (TAM) [15], the Diffusion of Innovation (DOI) [31] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [39], which provide useful insights and implications for understanding an individual's intention of using e-government services [14], [21].

Carter and Belanger [11], for example, surveyed 140 students in the US to investigate factors that influence citizens' adoption of e-government services. They adopted the DOI and examined what they thought were the most relevant constructs, namely, relative advantage, compatibility, ease of use and image, which affect the intention of citizens to use e-government services. The findings showed that higher levels of relative advantage, compatibility and image are significantly associated with an increased intention to adopt e-government services. In another study, Carter and Belanger [10] studied citizens' adoption of e-government services based on an integrated model that incorporated constructs from the TAM and DOI theories, and from the Web trust model. In a pilot study, a questionnaire was administered to 140 undergraduate students in the US. The findings revealed that perceived usefulness, relative advantage, and compatibility were significant in increasing citizens' intention to use e-government services. However, in the main study, in which another group of adults aged 14 to 83 years was surveyed, Carter and Belanger [9] found that perceived ease of use, compatibility and trustworthiness were significant indicators of citizens' intentions to use e-government services. A comparison of the findings of the pilot study with those of the main study showed that there were differences in the determinants of intention to use e-government services. Citizens' demographic attributes had a strong impact on the factors indicating intention. For example, the findings of the pilot study were influenced by students' Internet and computer experience, whereas, in the actual study, the familiarity of respondents with the e-services on which the questionnaire questions were based had an influence on the findings.

Another study, based on technology adoption theories, was undertaken by Hung, Chang and Yu [22] who investigated the public's acceptance of the online tax filing and payment system (OTFPS), an e-government service in Taiwan. Based on TPB, the researchers proposed a comprehensive model to elicit users' salient attitudes towards e-government services using an e-mail questionnaire survey. The study found

that perceived usefulness, ease of use, perceived risk, trust, compatibility, external influence, interpersonal influence, self-efficacy and facilitating conditions were critical factors in the adoption of OTFPS.

Dimitrova and Chen [17] examined the effects of socio-psychological factors on the adoption of e-government in the US by combining two theoretical perspectives, TAM and DOI. 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 findings showed that perceived usefulness, perceived uncertainty and prior interest in government were associated with the adoption of e-government in the US.

Phang et al. [29] studied the adoption of e-government by Chinese senior citizens. They surveyed a small sample of randomly selected senior citizens. Based on TAM, the researchers modelled compatibility, image and Internet safety perception as determinants of perceived usefulness and ease of use. The study revealed that perceived ease of use and Internet safety influenced the senior citizens' perception of the usefulness of e-government; however, cultural considerations, image and compatibility had less influence on the usefulness of IT as perceived by users.

Fewer e-government technology studies have been undertaken in developing countries. Akman et al. [2], for example, investigated the impact of gender and education in the use of e-government services in Turkey. 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 findings 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, and as the level of education of survey participants increased, the interaction with e-government also increased.

In another study, Charbaji and Mikdashi [12] investigated 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. 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.

Some of the above findings are similar to those reported in a study undertaken by AlShihi [5] who investigated the development and adoption of e-government services in Oman, one of the Gulf Cooperation Council (GCC) countries. He interviewed employees in both the private and the public sector and surveyed different segments of Omani society. He found a number of barriers to the uptake of e-government in Oman 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.

To sum up, while the literature review has identified a number of factors that determine the adoption of e-government services in developed countries, such as usefulness, ease of use, perceived risk, trustworthiness, compatibility, external influence, Internet safety, interpersonal influence, relative advantage, image and facilitating conditions, relatively little is known about whether these factors apply to developing countries. To address this gap, this study aimed to explore the factors that determine the adoption of e-government services in Kuwait, a developing country, through empirical data collection and analysis using university student as subjects.

4. Research model and hypotheses

The research model employed in the research was based on the Unified Theory of Acceptance and Use of Technology (UTAUT). Venkatesh et al. [39] created this synthesized model to present a more complete picture of the acceptance process than any previous individual models had been able to do. Eight models previously used in the IS literature were merged in an integrated model, all of which had their origins in psychology, sociology and communications. These eight models are the TRA, TAM, TPB, the Motivational Model (MM) [16], the combined TAM and TPB (C-TAM-TPB) [34], the Model of PC Utilization (MPCU) [35], DOI and Social Cognitive Theory (SCT) [13]. Each model attempts to predict and explain user behaviour using a variety of independent variables. A unified model was created based on the conceptual and empirical similarities across these eight models. By consolidating and improving upon existing IT acceptance models, it is argued that the UTAUT model should now serve as a benchmark for the

acceptance literature [32]. Although the UTAUT model is relatively new, its suitability, validity and reliability in technology adoption studies in different contexts has been proven, for example, [7], [26], [32] and [39].

The UTAUT model contains five direct determinants of behavioural intention and use behaviour: (1) performance expectancy, which is “the degree to which an individual believes that using the system will help him or her to attain gains in job performance” [39,p.447]; (2) effort expectancy, which is “the degree of ease associated with the use of the system” [39,p.450]; (3) social influence, which is “the degree to which an individual perceives that important others believe he or she should use the new system” [39,p.451]; (4) facilitating conditions, which is “the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system” [39,p.453]; and (5) behavioural intention, which is “the person’s subjective probability that he or she will perform the behaviour in question” [19,p.288]. The UTAUT model also considers moderators influencing the four direct determinants: gender, age, experience and voluntariness of use.

The comprehensiveness, validity and reliability of the UTAUT model have encouraged the current authors of this study to adopt and validate it in the context of e-government adoption in a developing country. The model was amended to suit the context of the study. Performance expectancy was measured by the perceptions of using e-government services in terms of benefits, such as saving time, money and effort, facilitating communication with government, improving the quality of government services and by providing citizens with an equal basis on which to carry out their business with government. Effort expectancy was measured by the perceptions of ease of use of e-government services as well as ease of learning how to use these services. Social influence was replaced by peer influence as students in their teens need to belong to or feel connected with people of their own age and be with them to share attitudes, interests and circumstances that resemble their own [20]. In fact, adolescents spend twice as much time with peers as with parents. Their relationships with peers are more salient during this time, which also makes them more vulnerable to peer pressure than small children or adults. Peer influence is “the degree to which peers influence use of the system”, whether positive or negative, it is a very important factor in many aspects of the lives of teenagers and is likely to be influential [26]. Since this study examined the adoption of e-government services by young adult

students at Kuwait University, the influence of peers on intention and use of technology was expected to be greater than the influence of other groups. This construct was measured by the perception of how peers affect students’ use of e-government services. Facilitating conditions was measured by the perception of being able to access required resources, as well as to obtain knowledge and the necessary support needed to use e-government services. It is also influenced by the perception of the technology fitting into the lifestyle of the user. The measurement of behavioural intention included the intention, prediction and planned use of e-government services.

The amended model also considered the influence of the moderators that were thought would influence the four direct determinants: gender, Internet experience and type of academic course. Research on gender differences indicates that men tend to be more highly task-oriented than women. Performance expectancy which focuses on task accomplishment is likely to be more significant to men, whereas effort expectancy is more significant to women [39]. Venkatesh, Morris and Ackerman [37] mentioned that women tend to be more sensitive to others’ opinions and, therefore, found that peer influence was more significant to women in the intention to use technology. Experience, in Venkatesh et al.’s, model, was changed to Internet experience. Several studies have shown that Internet experience influences perceived usefulness [23] and perceived ease of use [8] which, in consequence, affects people’s actual use or intention to use specific systems. Online services for the public are therefore more likely to be used by experienced Internet users. Thus, Internet experience needed to be considered in order to explain users’ effort and performance expectancy [27]. Further, use of the system could be expected to increase as users of technology find help and support in using the system effective. Internet experience was measured by the time spent on, and the frequency of, using the Internet. Type of academic course was added to the model because different teaching methods are used for scientific and humanities courses which have an impact on users’ beliefs [4]. The effect of type of academic course was perceived to be a possible influence on perceived use of the e-services because the current study included participants taking scientific and humanities courses. Age was deleted from the model as the participants were of a similar age. Voluntariness of use was also deleted because e-government services are highly voluntary. Figure 1 illustrates the model used in the research.

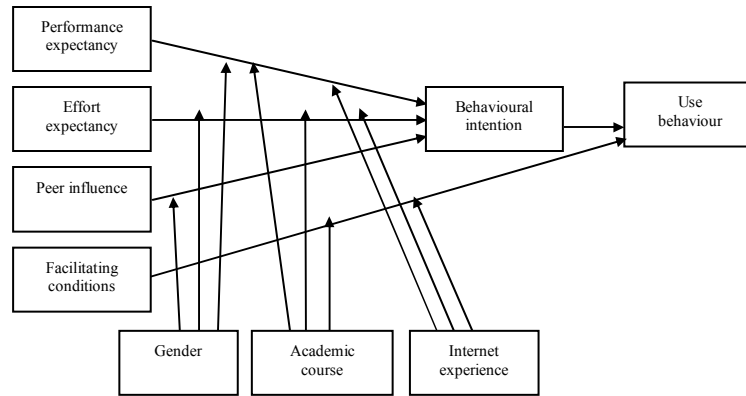


Figure 1. Research model

The following hypothesised relationships were generated:

- H1.** There would be a significant positive relationship between performance expectancy and behavioural intentions to use e-government services, and this relationship would be moderated by gender, type of academic course and Internet experience.
- H2.** There would be a significant positive relationship between effort expectancy and behavioural intentions to use e-government services, and this relationship would be moderated by gender, type of academic course and Internet experience.
- H3.** There would be a significant positive relationship between peer influence and behavioural intentions to use e-government services, and this relationship would be moderated by gender.
- H4.** There would be a significant positive relationship between behavioural intention and use behaviour of e-government services.
- H5.** There would be a significant positive relationship between facilitating conditions and use behaviour of e-government services, and this relationship would be moderated by type of academic course and Internet experience.

5. Methodology

Quantitative research in the form of a questionnaire survey was undertaken to meet the aim of the research. The study was limited to undergraduate and postgraduate students at Kuwait University. The sample was chosen not only for practical reasons and for convenience but because university students are amongst the adult population for whom the Internet has become part of their daily routine [24]. Further, when the e-government project is fully implemented in

Kuwait, this group will be its main users, therefore, knowing their attitudes and perceptions will help to improve services.

The questionnaire was administered to 1013 students taking scientific and humanities courses. It was designed to be short, unambiguous and easy for respondents to complete. Because the e-government project was not widely known in Kuwait, it also provided a definition of e-government. Respondents were instructed to indicate their perceptions of the amended UTAUT model, which included performance expectancy, effort expectancy, peer influence, facilitating conditions and behavioural intention to use e-government services, all elicited by using a seven-point Likert scale ranging from 1 “strongly disagree” through to 7 “strongly agree”. Consistent with other research, similar items were grouped together for higher reliability and validity of the model.

Constructs and statements relevant to the research were adopted from Venkatesh et al. [39] and modified to suit the research context. In addition, new statements related to the constructs were added by the researchers to provide greater clarity; see Appendix A for statements in full.

As the questionnaire was in English and the study was to be carried out in Kuwait, it was necessary to translate it into Arabic, the language spoken in Kuwait. Between April and June 2006, the researchers distributed the questionnaire to the sample within the university. A total of 880 complete questionnaires were obtained, yielding a response rate of 86.8%.

6. Data analysis

6.1. Overview of respondent

About two thirds (69.8%) of respondents were female and one third (30.2%) male, with an average age of 20 years. Slightly over half of the respondents were undertaking scientific courses and the other half humanities courses. The majority of respondents (94.8%) were studying at undergraduate level, with only 5.2% at postgraduate level. The majority (73.6%) had been using the Internet for more than three years, whilst less than 10% had been using it for less than a year and about 15% for more than one but less than three years. About half (43.2%) of all respondents used the Internet on a daily basis, whilst about one third (31.6%) used it two to three times a week. Over two thirds (70.4%) of respondents rated their Internet proficiency to be either good, very good or excellent, whilst less than 30% rated it to be only fair or poor. The majority (90%) of respondents used the Internet for searching for information, while about two thirds (69%) used it also for e-mail and entertainment and more than a quarter (27.2%) used it for online shopping. As expected, more than three quarters (76.4%) of respondents indicated that they did not use e-government services, whilst a quarter (23.6%) did use them, thus confirming that e-government services are not widely used and probably not well known to people in Kuwait.

6.2. Reliability of the amended UTAUT

Cronbach alpha was used to test the reliability of the scale constructs. The five constructs of the amended UTAUT model reported reliability of 0.809 of the Cronbach alpha coefficient (above 0.70 being acceptable [28]). The reliability for each construct is illustrated in Table 1.

Table 1. Reliability of the model constructs

Amended UTAUT subscales	Cronbach alpha coefficient
Performance expectancy	0.78
Effort expectancy	0.74
Peer influence	0.13
Facilitating conditions	0.80
Behavioural intention	0.68

Only two constructs, peer influence and behavioural intention, had values of Cronbach alpha coefficient less than 0.70; however, they were considered acceptable for use in this study. This is

because the behavioural intention value of 0.68 was very close to 0.70, whereas the low value of peer influence was due to the short scale where it is common to have quite low values [28].

6.3. Results

A regression analysis process was undertaken based on the research model (the amended UTAUT), which included predictors (independent variables), outcomes (dependent variables) and moderators. The study attempted to explore any changes in respondents' intentions through the "intention" question, which asked respondents whether they intended to use e-government services in the future: in "four weeks", in "three months" or in the "future". Thus, this made the behavioural intention construct a binary outcome variable.

As there were two binary outcome variables (behavioural intention and use) the analysis was run separately for each. Logistic regression, using SPSS software, was utilised to facilitate the analysis, which investigated the relationship of predictor variables to outcome variables.

At the first stage of the analysis, the main predictors performance expectancy (PE), effort expectancy (EE), peer influence (PI) and their interactions with the moderators (gender, academic course and Internet experience) were used to predict the behavioural intentions (BI) with regard to their use of e-government services in the three phases. The first phase concerned the respondents' intention to use e-government services within four weeks following the survey; the second phase concerned their intention to use e-government services within three months of the survey, and the third phase concerned their intention to use the services at sometime in the future beyond this. In the second stage of the analysis, the predictor variables BI and facilitating conditions (FC) and their interactions with the moderators (academic course and Internet experience) were used to predict the use behaviour (UB) for e-government services, but only in one phase.

In the first phase of predicting respondents' behavioural intention regarding their use of e-government services within the four weeks (following the survey), a logistic regression model was conducted on BI within the next four weeks using PE, EE and PI and their interactions with the moderators (gender, academic course and Internet experience). The regression model was obtained by the forward stepwise method, adding predictor variables iteratively. The

logistic regression model correctly classified 60.2% of cases. Table 2 indicates only the significant values of Wald statistics, where EE (B=0.064; S.E=0.031; df=1; p<0.001), PI (B=0.078; S.E= 0.015; df=1; p<0.011), PE x Internet experience (B=0.044; S.E= 0.017; df=1; p<0.010) and EE x Internet experience (B=-0.044;

S.E=0.020; df=1; p<0.031) were significant, thus partially supporting hypotheses H1, H2 and H3. This suggests that these variables significantly predicted respondents' behavioural intentions with regard to their use of e-government services within four weeks following the survey.

Table 2. Results of forward logistic regression for behavioural intention (4 weeks)

Step 4		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
	EE	.064	.015	19.053	1	.000	1.066	1.036	1.098
	PI	.078	.031	6.449	1	.011	1.081	1.018	1.148
	IEXP by PE	.044	.017	6.600	1	.010	1.045	1.011	1.081
	IEXP by EE	-.044	.020	4.673	1	.031	0.957	0.920	0.996
	Constant	-3.754	.575	42.650	1	.000	0.023		

In the second phase of predicting respondents' behavioural intentions with regard to their use of e-government services within three months following the survey, similar predictors and their interaction were tested. The model correctly predicted 59.7% of the cases. In this phase something interesting happened: EE was still found to be a significant predictor of BI within three months following the survey (B=0.028; S.E=0.014; df=1; p<0.36), but PE was also found to be

a statistically significant predictor of BI (B=0.052; S.E= 0.016; df=1; p<0.001); whereas, PI was no longer a significant predictor of BI for this phase. In addition, the interactions of PE x Internet experience and EE x Internet experience appeared not to make any significant contribution to the prediction of BI. These results partially supported hypotheses H1 and H2; see Table 3.

Table 3. Results of forward logistic regression for behavioural intention (3 months)

Step 2		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
	PE	.028	.014	4.385	1	.036	1.029	1.002	1.056
	EE	.052	.016	10.593	1	.001	1.053	1.021	1.087
	Constant	-2.981	.486	37.636	1	.000	0.051		

In the final phase of predicting respondents' behavioural intentions with regard to their use of e-government services in the future, the model correctly predicted 65.2% of cases. Interestingly, in this phase, EE and PE were still significant predictors of BI in the future (B=0.046; S.E=0.019; df=1;

p<0.017), (B=0.096; S.E= 0.023; df=1; p<0.001) respectively, and EE x Science (type of academic course) became a statistically significant predictor of BI (B=-0.016; S.E= 0.006; df=1; p<0.008), thus partially supporting hypotheses H1 and H2; see Table 4.

Table 4. Results of forward logistic regression for behavioural intention (in the future)

Step 3		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
	PE	.046	.019	5.671	1	.017	1.047	1.008	1.087
	EE	.096	.023	16.841	1	.000	1.101	1.051	1.152
	SIENCE by EE	-.016	.006	6.942	1	.008	0.984	0.973	0.996

In the second stage of analysis, respondents' use behaviour (UB) with regards to e-government services was investigated. A forward stepwise logistic regression model was also conducted on UB using BI, FC and the interactions of the moderators (academic course and Internet experience) with FC. The model

correctly predicted 62.5% of the cases. The Wald statistics showed that BI and FC were significant predictors of UB (B=0.116; S.E=0.027; df=1; p<0.001), (B=0.054; S.E=0.011; df=1; p<0.001) respectively and no significant interactions were

obtained. These results supported H4 and partially supported hypotheses H5; see Table 5.

Table 5: Results of forward logistic regression for use behaviour

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 2	TBI	.116	.027	17.839	1	.000	1.123	1.064	1.185
	TFC	.054	.013	17.832	1	.000	1.056	1.030	1.083
	Constant	-5.347	.587	82.967	1	.000	0.005		

7. Discussion

Although the majority of respondents, with different Internet experiences, did not use e-government services, they showed positive attitudes towards such services. The logistic regression analysis was the most appropriate analytical technique due to its ability to predict the behavioural intentions and use behaviour of respondents, most of whom did not use e-government services. Logistic regression indicated that the model performed well; typically 60% of cases were predicted correctly. Further, logistic regression was able to evaluate the validity of the model through the goodness of fit test ($X^2=2.75$, $df=8$, $p<0.949$), which in this study indicated that the model was significant and reasonable for the data provided.

The empirical test of the amended UTAUT model was able to identify constructs determining the intention and use of e-government services as well as the effect of moderators on the relationship between the predictors and the outcomes.

The influence of performance expectancy on respondents' behavioural intentions was significant only for the time spans "next three months" and "future". For the time span "next four weeks", the direct relationship between performance expectancy and behavioural intention was not significant. However, it became significant when the relationship was moderated by respondents' Internet experience where the effect of performance expectancy on behavioural intention increased with greater Internet experience. This indicates that respondents with greater Internet experience have realised the benefits they get from using the Internet and can relate such benefits to the use of e-government services. The significant and strong influence of performance expectancy on students' intention, in the three time spans, suggests that university students tend to focus on the usefulness of e-government services and specifically on what they will gain from using such services. Therefore, for e-government services to be accepted by the public, it would be necessary to demonstrate the advantages and benefits they are likely to provide for users.

The direct relationship between effort expectancy and behavioural intentions of respondents was significant in all three time spans. The relationship was also moderated by their Internet experience for the time span "next four weeks", such that once Internet experience increased, effort expectancy became less important. This is because many students are sufficiently confident in their Internet abilities which would enable them to use the services. For "future" intentions of respondents, the relationship was also moderated by the type of academic course the respondents were taking, such that when they were studying scientific courses, effort expectancy became even less important for their intention. This is due to the significant differences that exist between skills and intellectual demands of different academic subjects, where science courses place a greater emphasis on practice rather than the cognitive theories as emphasised in humanities courses. The statistically significant influence of effort expectancy suggests that respondents are apt to use e-government services when they are easy to use enabling them to have more time for other activities. Although effort expectancy became less important for those with greater levels of Internet experience and who were studying scientific courses, the results highlight the need to provide easy e-government services especially since the target population will have different levels of Internet experience and different educational backgrounds.

The results showed that peer influence was significant to respondents' intention only in the time span of "four weeks". This suggests that peer influence becomes more significant and important when individuals have limited experience of online services. Therefore, it is essential that government bodies ensure that users have a positive experience while using the e-services as their experience might influence their peers and other people important to them.

Both behavioural intention and facilitating conditions were found to be significant for students' use of e-government services. This suggests that the necessary resources and information and continuous support, would need to be provided to encourage citizens to use services that are congruent with their lifestyle.

Unexpectedly, the test of the amended UTAUT model did not reveal any significant gender influence on the relationship between performance expectancy, effort expectancy and peer influence and students' intention to use e-government services. These results contradict results reported in many other studies, which indicate gender differences in the adoption of technology as one aspect of socio-cultural differences between humans, for example, [2], [37] and [39]. The absence of gender differences in this study can be contributed to the sample of students, comprising males and females who are receiving similar educational and learning opportunities. Further, those students belong to modern Kuwaiti society which attempts to offer equal social, political and economic status to both genders within its cultural and religious traditions; for example, women have recently been granted the right to vote similarly to men.

8. Implications and Conclusions

This study identifies the determinants of potential users' adoption of e-government services in a developing country using an amended version of the UTAUT model. The findings revealed that performance expectancy, effort expectancy, peer influence and facilitating conditions were significant in the adoption of e-government services in Kuwait. These findings are consistent to some extent with those reported in studies conducted in developed countries i.e. [9], [10],[11], [22] and [17], thus proving that factors, which determine the adoption of e-government services, identified in developed countries could be applicable in the context of developing countries. Despite the fact that the use of student subjects might have limited the generalisability of the findings of this study, the research provides useful insights into the motivations underlying the intentions to use e-government services in developing countries. The likely adoption of e-government services by student subjects is well predicted on the basis of the key variables performance expectancy, effort expectancy and peer influence, and on the basis of facilitating conditions and the moderating effects of Internet experience and type of academic course. The model developed in this research has created a foundation for further research investigating the adoption of e-government services in developing countries. Future research could, for example, include a wider range of participants and cover other variables, such as culture and trust.

For decision makers in government to get people to use and adopt e-government services, these services must be genuinely useful to the intended users. They

must be efficient and should meet the specific needs of users. For an effective adoption of the services, widespread and attractive awareness campaigns should be conducted, targeting potential users properly to inform them about the real benefits they would gain from the use of these new types of services. These benefits include lower costs, savings in time and effort, reduction in bureaucratic procedures and the provision of enabling everybody with an opportunity to conduct business with the government on an equal basis. The use of e-government services should be designed to be as easy to use as possible to meet the needs of the cultural diversity of Kuwaiti society in terms of education and Internet experience. Moreover, knowledge, resources and support should be provided to various groups in society, such as providing computers and Internet access at the community level in public places, especially in areas where less advantaged people are found. This would ensure that the largest possible number of people could make use of these e-services.

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Appendix A

Performance expectancy statements
<p>Statements adopted from Venkatesh et al.: Using the system in my job would enable me to accomplish tasks more quickly. Using the system would enhance my effectiveness on the job. Using the system would make it easier to do my job. I would find the system useful in my job. If I use the system, I will spend less time on routine job tasks.</p> <p>Statements added by the researchers: The e-government website would enable me to access government information and services when I need them – 24 hours/day, 7 days/week. I think interacting with the government face to face would be preferable to interacting online. The e-government website would give all citizens an equal chance to carry out their business with government.</p>
Effort expectancy statements
<p>Statements adopted from Venkatesh et al.: Learning to operate the system would be easy for me. My interaction with the system would be clear and understandable. I would find the system flexible to interact with. It would be easy for me to become skilful at using the system. I would find the system easy to use. Using the system takes too much time from my normal duties. Overall, I believe that the system is easy to use.</p> <p>Statement added by the researchers I would find it easier to talk face to face with someone rather than use online services.</p>
Peer influence statements
<p>Statements adopted from Venkatesh et al.: People who are important to me think that I should use the system.</p> <p>Statements added by the researchers I would only use online services if I needed to. I would use the online services if my friends used them.</p>
Facilitating conditions statements
<p>Statements adopted from Venkatesh et al.: I have the resources necessary to use the system. I have the knowledge necessary to use the system. Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system. I think that using the system fits well with the way I like to work. Using the system fits into my work style.</p> <p>Statements added by the researchers: I have enough Internet experience to use online services. I would not like to carry out my business with government online. I would find it difficult to use online services due to lack of time.</p>
Behavioural intention statements
<p>I intend to use the system in the next <n> months. I predict I will use the system in the next <n> months. I plan to use the system in the next <n> months.</p>