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Modelling use continuance in virtual worlds: The case of second life

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UNDERSTANDING CITIZENS' BEHAVIOURAL INTENTION IN THE ADOPTION OF E-GOVERNMENT SERVICES IN THE STATE OF QATAR

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ABSTRACT:

Electronic government (e-government) has shown encouraging results in developed countries in the context of delivering electronic information and services to citizens. However, despite the many lessons that can be learned from the experiences of those e-government initiatives, developing countries are still faced with various issues pertaining to their implementation of e-government services. Like many other developing countries, the e-government initiative in the state of Qatar has faced a number of challenges since its inception in 2000. Using a survey based study this paper describes citizens' behavioural intention in terms of applying the Unified Theory of Acceptance and Use of technology (UTAUT) model to explore the adoption and diffusion of e-government services in the state of Qatar. Analysis of the results indicates that there is significant positive relationship between performance expectancy, effort expectancy, social influence and behavioural intention to use e-government services for the citizens of Qatar. Implications for practice and research are discussed.

KEY WORDS: Adoption, Diffusion, E-government, UTAUT, Qatar

1. INTRODUCTION

The Qatari e-government initiative was launched in 2000. In global terms the UN e-government readiness report (2008) ranked Qatar's e-government project as number 53 worldwide. As in many countries, the national e-government focus in Qatar is to achieve the highest performance in executing governmental transactions electronically, through streamlined business processes and integrated information technology solutions (IctQATAR, 2008). In 2004, ictQATAR was established to manage and develop the overall Information and Communication Technology (ICT) strategy in Qatar relating to infrastructure, service delivery and legislation of public services. A year later ictQATAR took overall control of the national electronic government initiative with an aggressing plan for e-government program parallel with e-health and e-education programs using a phased implementation plan. As part of this ongoing strategy to encourage accessibility of e-government services, free wireless internet access was introduced in 2007 in public parks. The Qatari government hopes that this concept will encourage more citizens to use e-government services and help bridge any digital divide that may exist in the state of Qatar by augmenting citizens' participation and engagement in public services.

Given the above context, the rationale for this research is to gain a better understanding about the adoption and diffusion of 'e-government services' from Qatari citizen's perspective. The relative newness of the e-government concept in Qatar and the lack of prior published research that explore the citizen's perception of electronic government information and services offered the motivation and rationale for undertaking this research. Furthermore, initial research conducted by the authors indicates that the adoption and diffusion of e-government services has been slower than the Qatari government's expectations (Al-Shafi and Weerakkody 2008;). Given this context, this research aims to examine the factors influencing citizens' intention to adopt e-government services in Qatar. In order to achieve this aim a survey based quantitative research strategy is adapted. Since the primary aim of the research is to explore the intention of citizens to use e-government services in Qatar, this is achieved by examining their perceptions of 'Ease of Use' and 'Usefulness' in relation to the e-government services offered. To pursue this line of inquiry, this research uses Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT theorizes that an individual's behavioural intention to use a technology is determined by performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh *et al.*, 2003; 2008).

In an e-government context, Moon (2002) proposed that IT and web-based public services can help governments to restore public trust by coping with corruption, inefficiency, ineffectiveness and policy alienation. Conversely, lack of access to e-services (Chircu and Lee, 2005) and digital divide (Carter and Bélanger, 2005; Carter and Weerakkody, 2008; Chen *et al.*, 2006;) are challenges that can impact on trust and thereby impede the further take-up of e-government services. To bridge the digital divide, Reffat (2003) suggests that governments could help by providing computer education especially to elderly and younger people. It has also been found that younger people are accessing the internet more compared to the elderly (Kurunananda and Weerakkody, 2006). One of the main reasons is that younger people enjoy the use of the internet whereas the elderly find it difficult to learn and use. Also, the elderly do not want to be bothered with anything relating to technical matters (such as learning to use the mouse, modems, network connections and other peripheral devices) and software aspects (such as Internet Explorer).

The paper is structured as followed. In the next section a literature perspective of e-government is offered followed by an outline of the theoretical model used for the research. Then the empirical background to the research is presented. This is followed by the methodology used for the research and a presentation of the empirical results. Finally the paper concludes by analyzing the empirical results, discussing the research implications and identifying areas for future research.

2. E-GOVERNMENT IN THE STATE OF QATAR

The State of Qatar is a peninsula with a strategic position at the centre of the west coast of the Arabian Gulf. The total land area is approximately 11,437 sq km. The population estimated to be around 1,500,000 (The Peninsula, 2008; Al-Shafi and Weerakkody, 2008); however, only a minority of the population is citizens by birth, while the rest are residents who live or work in Qatar and are not Qatari's by birth (Al-Shafi and Weerakkody, 2008).

E-government was launched in Qatar in July 2000 and the initial period of strategy formulation and implementation was laggard compared to e-government efforts during the same period in developed countries. However, with the establishment of ictQATAR in 2004 and their consequent takeover of the national e-government initiative a year later resulted in accelerated progress in the last three years. Parallel programmes were introduced in key areas such as health, interior affairs and education. The vision of ictQATAR states "Serve as independent and fair regulator, protecting consumers and businesses from unfair practices as Qatar transitions to a competitive telecoms market. And Lead the government's ICT strategy, nurture innovative technologies to benefit those who live and work in Qatar, and help make people from all walks of life become comfortable with technology" (ictQATAR, 2008).

The Qatari e-government site offers many services, ranging from student registration and paying traffic violations to applying online for visas and permits (Al-Shafi and Weerakkody, 2008). In global terms the UN Global e-government readiness report (2008) ranked Qatar's e-government project as number 53 worldwide, where as in 2005 it was ranked as number 62 worldwide (Al-Shafi and Weerakkody, 2008). In addition to this, the UN (2005) report considered the Qatari e-government project to be regional (West Asia) best practice. This implies that major improvements and developments have been made during recent times. As part of Qatar government's ongoing efforts to increase accessibility to e-government services and bridge the digital divide, free wireless internet access in public parks – (iPark) initiative was launched in March 2007; this concept provides "Broadband for all" and aims to foster a knowledge based society. The primary goal of the initiative is to increase internet usage by establishing "hot spots" in public parks (IctQATAR, 2007). There are currently three designated wireless internet hotspots throughout selected public parks in the city; these parks are targeting visitors who have internet access available on their laptops, PDAs, and other internet-ready devices (The Peninsula, 2007).

3. E-GOVERNMENT ADOPTION: A LITERATURE PERSPECTIVE

With the popularity of e-government growing, various researchers have offered different definitions to explain the concept (Seifert and Petersen, 2002). However, these definitions differ according to the varying e-government focus and are usually centered on technology, business, citizen, government, process, or a functional perspective (Seifert and Petersen, 2002; and Irani *et al.*, 2006). The definition considered to be most suitable for the purpose of this paper is one that defines e-government as making full use of the potential of technology to help put its citizens at the centre of the e-services provided and which makes its citizens its intention (Waller *et al.*, 2001).

Like e-business, e-government promises to deliver a number of benefits to citizens, businesses and governments. The most significant benefits of e-government, according to the literature, are delivering electronic and integrated public services through a single point of access to public services 24 hours a day, seven days a week (Reffat, 2003); bridging the digital divide so that every citizen in society will be offered the same type of information and services from government (Huang, 2007); rebuilding customer relationships by providing value-added and personalized services to citizens (Weerakkody and Dhillon, 2008; Davison *et al.*, 2005); fostering economic development and helping local businesses to expand globally; and creating a more participative form of government by encouraging online debating, voting and exchange of information (Davison, *et al.*, 2005).

Like any other new technology or organisational concept, the introduction of e-government to a country will also result in a number of challenges for the citizens and the government alike (Seifert and Petersen, 2002; Zakareya and Irani, 2005). Lack of access to e-services (Chircu and Lee, 2005; Huang, 2007;

Carter and Weerakkody, 2008), security concerns (Harris and Schwartz, 2000), trust (Carter and Weerakkody, 2008; Welch *et al.*, 2005; Al-Sebie and Irani, 2005), individual differences (Reffat, 2003) and digital divide (Carter and Bélanger, 2005; Chen *et al.*, 2006) are challenges that can impact on participation and thereby obstruct the further take-up of e-government services.

From the aforementioned, this research will focus particularly on the influence that technology complexity and e-government services have on the intention to use a new technology. Similarly it will also examine the influence performance expectancy and effort expectancy has on the intention to use such services.

In terms of adoption, several studies have explored e-government acceptance in the United States (Carter and Belanger, 2005; Carter *et al.*, 2008) and the U.K (Choudrie and Dwivedi, 2005; Carter and Weerakkody, 2008). However, no studies exist that examine factors that influence Qatari citizens' adoption of e-government services. In this respect Lee *et al.*, (2005) state that cross-national research on e-government is sparse in the literature and Dwivedi *et al.*, (2006) and Carter and Weerakkody (2008) highlights the need for studies that investigate the adoption rate and behaviour of e-services. Given this context, this study attempts to address this gap in a Qatari perspective by integrating the aforementioned constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT).

4. TECHNOLOGY ADOPTION: A THEORETICAL BACKGROUND

Researchers in the field of Information Systems and Technology have for long been interested in investigating the theories and models that have the power in predicting and explaining behaviour (Venkatesh *et al.*, 2003). Various models were developed, such as the Theory Of Reasoned Action (TRA) (Fishbein and Azjen, 1975) and Technology Acceptance Model (TAM) (Davis, 1982). Each model has its own independent and dependent factors for user acceptance and there are some overlaps (Dillion and Morris, 1996).

TAM has received extensive support through validations, applications and replications for its power to predict use of Information Systems (IS) and is considered to be the most robust and influential model explaining IS adoption behaviour (Davis, 1982; Davis *et al.*, 1989; Davis and Venkatesh, 1996; Lu *et al.*, 2003). On the other hand, 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. Also, TAM has failed to provide meaningful information about the user acceptance of a particular technology due to its generality (Mathieson *et al.*, 2001). Consequently, a number of modified TAM models were proposed which are applicable to contemporary technologies (Horton *et al.*, 2001; Chau and Hu, 2001). However, researchers are confronted with a choice among a multitude of models. Hence, a new model was developed to address these limitations, which is named as the Unified Theory of Acceptance and Use of Technology (UTAUT) model and the aim of the model was to understand intention/usage as the dependent variable (Venkatesh *et al.*, 2003).

The UTAUT model consists of eight theoretical models: the theory of reasoned action (Davis *et al.* 1989), the technology acceptance model (Davis, 1989), the motivational model (Davis *et al.*, 1992), the theory of planned behaviour (Ajzen, 1991), a model combining the technology acceptance model and the theory of planned behaviour (Taylor and Todd 1995), the model of PC utilization (Thompson *et al.*, 1991), the innovation diffusion theory (Rogers, 1995), and social cognitive theory (Compeau and Higgins, 1995). The UTAUT model combines the previous eight theoretical models and is made up of four key factors that act as determinants of behavioural intentions and usage behaviour. Also, UTAUT posits the role of four key moderator variables (Age, Gender, Experience, and Voluntariness of use). Moreover, UTAUT model has been found to be preferred to the abovementioned theoretical models as it is able to account for a high percentage of the variance (R^2) in usage intention (Venkatesh *et al.*, 2003).

Venkatesh *et al.*, (2003) have tested the unified theoretical model in four different organizational settings for a period of six months and the study showed significant predicts intention (performance expectancy,

effort expectancy, social influence, and facilitating conditions), whereas attitude toward using technology, self-efficacy, and anxiety were theorized not to be direct determinants of intention.

5. CONCEPTUAL MODEL AND HYPOTHESIS

From the aforementioned factors that make up UTAUT, this research utilized three independent variables (performance expectancy, effort expectancy, and Social influence) and one dependant factor (intention to use) to formulate the research model used for the study.

Performance expectancy is defined as the degree to which individuals believe that using a system will help them improve their job performance and contains five variables: Performance Expectancy, extrinsic motivation, job-fit, relative advantage, and outcome expectations (Venkatesh *et al.*, 2003). Effort expectancy is the degree of ease associated with the use of the system (Venkatesh *et al.*, 2003). Venkatesh *et al.*, (2003) identify three constructs from the eight models that make up the concept of effort expectancy: perceived ease of use, complexity, and ease of use. Additionally, Marchewka *et al.*, (2007) claimed that this construct can be significant in determining user acceptance of information technology.

Social influence is “the degree to which peers influence use of the system”, whether positive or negative, it is a very main factor in many aspects of the lives of young people and is likely to be powerful (Venkatesh *et al.*, 2003).

Facilitating conditions are the degree to which an individual believes that an organisational and technical infrastructure exist to support the system (Venkatesh *et al.*, 2003). Facilitating conditions are comprised of three root constructs: perceived behavioural control, facilitating conditions, and compatibility (*ibid*).

Due to the constraint on the length of paper, facilitating conditions and use behaviour that are originally in the UTAUT model are excluded from the proposed model in this research. Additionally, facilitating conditions is predicted to have a direct effect on actual usage instead of behavioural intention to use (Venkatesh *et al.*, 2003).

Based on the aforementioned and the theoretical context offered, this paper will test the strength of the hypothesized relationships mentioned in the theoretical model outlined in figure-1 and the appropriateness of the model in predicting users’ behavioural intention to use e-government services in the State of Qatar.

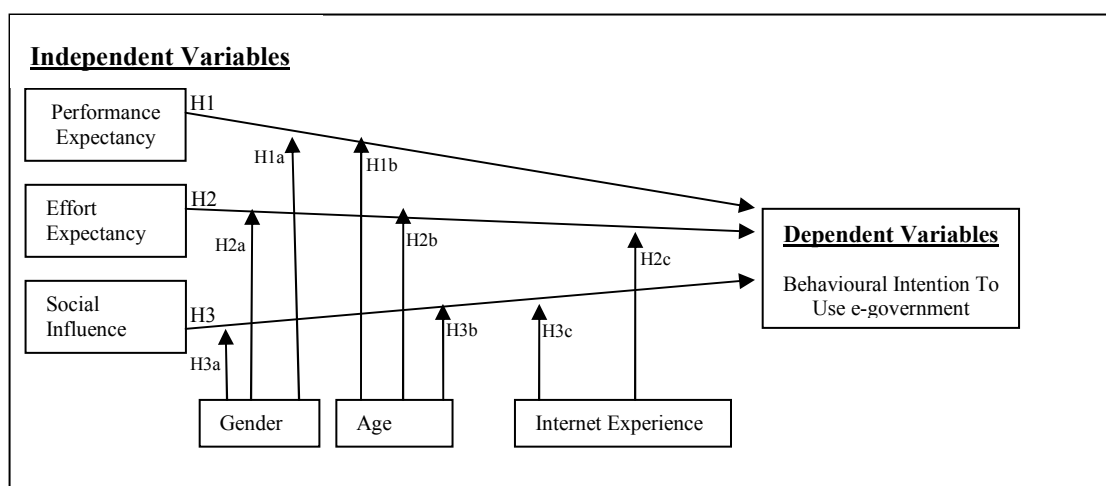


Figure 1. Research Model

NO.	Hypothesis
H1:	There would be a significant positive relationship between performance expectancy and behavioural intentions to use e-government services.
H1a:	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.
H1b:	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 age.
H2:	There would be a significant positive relationship between effort expectancy and behavioural intentions to use e-government services.
H2a:	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.
H2b:	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 age.
H2c:	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 internet experience.
H3:	There would be a significant positive relationship between Social influence and behavioural intentions to use e-government services.
H3a:	There would be a significant positive relationship between Social influence and behavioural intentions to use e-government services, and this relationship would be moderated by gender.
H3b:	There would be a significant positive relationship between Social influence and behavioural intentions to use e-government services, and this relationship would be moderated by age.
H3c:	There would be a significant positive relationship between Social influence and behavioural intentions to use e-government services, and this relationship would be moderated by internet experience.

Table-1: Research Hypothesis

6. RESEARCH METHODOLOGY

To explore the argument set out above and understand the context of the e-government services initiative in Qatar, brief informal open-ended interviews (Yin, 1994) were conducted with four citizens and three researchers who are engaged in e-government research in Qatar during August 2008. The interviews lasted around 30 minutes and provided the context to formulate a detailed survey questionnaire that was to be used to investigate the citizens' perceptions of e-government services in Qatar. Questionnaires were selected as the primary data collection methods as it is inexpensive, less time consuming and has the ability to provide both quantitative scale and qualitative data from a large research sample (Cornford and Smithson, 1997; Miles and Huberman, 1994). Questions were compiled from IT adoption literature to represent the constructs in the proposed research model (figure 1) and wording of the questionnaire was modified to fit the research context and background information collected from the initial informal interviews mentioned above. 36 closed format questions were used limiting individual responses to multiple choice answers, for example, ranking using likert scale (5-point scale) and 'yes' or 'no' answers (Hall and Hall, 1996; Saunders *et al.*, 2002). This enabled the information to be grouped and analysed statistically (Leung, 2001; Hall and Hall, 1996) using SPSS V15. Since the answers can be influenced by the order the questions are presented, this was carefully planned with an introduction which explained who the researchers represent, purpose of the research and how and why the respondents were selected for the research, and the importance of their answers to the research. The main body contained topical questions ordered logically and in a manner non-threatening to respondents (Liinamaa *et al.*, 2004). After the questionnaire was designed, a limited testing was done using six researchers and ten practitioners. This was important to improve the questions and to test respondents' comprehension and

clarity before the actual survey was administered (Saunders *et al.*, 2002). The pilot testing led to the removal of two questions and modification to another one.

The survey questionnaire was distributed to a total of 250 citizens between the period of September and October 2008; 216 usable responses were obtained. The response rate was good with 86.4% responding. The protocol followed for data collection was as follows. First, one of the researchers approached students and members of academic and non academic staff in the national university of Qatar and general citizens who use the services of two government agencies that have implemented e-government services. The researcher identified himself and provided a brief description of the research and the main purpose of the questionnaire. Then, the process of distributing and completing of the questionnaire began within the premises of the university and the two government agencies. Whilst distributing the questionnaire to users, a brief explanation of the purpose and contents of the questionnaire were offered to the respondents and participation was on a purely voluntary basis. The questionnaires were completed in an environment free from external pressures and at the respondents own pace. The questionnaires distributed in the two government agency premises were collected after a period of between 10 to 30 minutes, and the questionnaires distributed in the university were collected the following day.

6.1 Data analysis

The proposed research model (figure 1) consists of three independent variables, Performance Expectancy; Effort Expectancy, and social influence and one dependent variable, behavioural intention to use. To check the responses of the questions, the first stage of the data analysis consisted of checking the responses and tagging them with a unique number. The authors generated the descriptive statistics (percentage and tables) and used Linear Regression analysis by utilising SPSS (Version 15.0). Descriptive data analysis provides the reader with an appreciation of the actual numbers and values, and hence the scale that researchers are dealing with (Dwivedi and Weerakkody, 2007).

7. ANALYSIS OF THE RESEARCH FINDINGS

Of these 216 usable respondents, 41.7% were females while 58.3% were males. In terms of education, the majority of respondents (54%) hold undergraduate level qualifications degrees, 10% hold postgraduate degrees (Masters and PhD) and 36% hold equal or below secondary school certificates. As far as age, the results revealed that the majority of respondents (34%) were found in the age group of 18-24, followed by the age group of 30-44 constituting around 23.6%, then age group of 25-29 (22%), and finally age group of 45-54 composing around 13% of the total respondents. In contrast, the younger groups (less than 18) and older age groups (greater than 54) consisted together of 7.4% of the total respondents. Additionally, the study shows that the majority of respondents used e-government services for: emails (79.6%); Fun (58%); Research (62.5%); Purchasing (32%); and others (23%).

As found in the study (table 2), the average scores for respondents' Effort Expectancy ranged from 3.70 to 4.20. Descriptive statistics show that these scores are quite high. For Performance Expectancy, the score ranged from 3.63 and 4.25, which is quite high. Concerning social influence, the score ranged from 2.98 to 3.94, indicating that the scale is average. The last score reached is 4.22 for behavioural intention to use, indicating that the scale is quite high.

	Mean	Std. Deviation
<u>Demographic Categories</u>		
Gender	1.42	.494
Age	3.25	1.258
Occupation	1.29	.456
Qualification	1.75	.632
Nationality	1.46	.500
Internet Experience	4.12	1.177

<u>Performance Expectancy</u>		
PE1. Using e-government system will enable me to accomplish tasks more quickly	4.25	.773
PE2. E-government services will develop existing bureaucratic services	4.25	.721
PE3. E-government system will be useful by one click	4.11	.766
PE4. E-government system will enable me accessing it 24/7	4.25	.877
PE5. Equal chances to all citizens when using e-government	4.13	.821
PE6. Government agencies can be trusted	3.63	.995
PE7. Leadership are committed to e-government project	3.88	.863
PE8. E-government team collaborates with other government agencies	3.72	.900
PE9. E-government system integrates with other government agencies systems	3.70	.965
<u>Effort Expectancy</u>		
EE1. Learning e-government system would be easy	4.03	.885
EE2. Interaction with the e-government system would be clear and understandable	4.00	.825
EE3. It will not be hard to be skilled to use e-government system	4.03	.806
EE4. If I got the resources, e-government system would be easy to use	4.20	.780
EE5. Overall, e-government system is easy to use	4.06	.815
<u>Social Influence</u>		
SI1. Important people to me think I should use the online government system	3.57	.893
SI2. I would use online government services if I needed to	3.94	.807
SI3. I would use online government services if my friends and colleagues used them	2.98	1.109
SI4. People around me who use the e-government system have more prestige	3.26	1.025
<u>Behavioral Intention</u>		
BI. I predict that I will use e-government system in the future	4.22	1.001
*Scores range from 1 to 5, where 1 = Strongly Disagree and 5 = Strongly Agree.		

Table 2: Descriptive Statistics

7.1 Reliability Test

Cronbach's coefficient alpha values were chosen to examine the internal consistency of the measure (Hinton *et al.*, 2004) (table 3). Cronbach's results varied between 0.56 for social influence and 0.83 for the effort expectancy. Hinton *et al.*, (2004) have suggested four different points of reliability, excellent ranges (0.90 and above), high (0.70- 0.90), high moderate (0.50-0.70) and low (0.50 and below). The previous mentioned values show that all of the constructs got high reliability except social influence which resulted to high moderate within table 3. The high Cronbach's values of the constructs means that constructs were internally consistent and the reliability is measuring the same construct.

Constructs	Number of items	Cronbach's Alpha (a)
Performance Expectancy	9	0.77
Effort Expectancy	5	0.83
Social Influence	4	0.56

Table-3: Reliability of Measurements

Table-4 also shows that the correlation is significant to these key factors, Performance expectancy (0.405), Effort expectancy (0.268), and Social influence (0.247). Whereas, other moderators such as age, gender, and internet experience were found to be insignificant.

Key Factors		Behavioural Intention to use
Performance Expectancy	Pearson Correlation	.405(**)
	Sig. (2-tailed)	.000
Effort Expectancy	Pearson Correlation	.268(**)
	Sig. (2-tailed)	.000
Social Influence	Pearson Correlation	.247(**)
	Sig. (2-tailed)	.000

Gender	Pearson Correlation	-.030
	Sig. (2-tailed)	.660
Age	Pearson Correlation	.065
	Sig. (2-tailed)	.347
Internet Experience	Pearson Correlation	.117
	Sig. (2-tailed)	.090
** Correlation is significant at the 0.01 level (2-tailed).		

Table-4: Correlations

7.2 Regression Analysis: Factors Influencing the Intention to use e-government services.

A regression analysis was conducted with the use of e-government service channels as dependant variable and Effort Expectancy, Performance Expectancy, and social influence as predictor variables. From a total of 216 cases that were analyzed a significant model emerged {F (3, 216) =12.325, p < .001} (Table-5). The second significant statistic that was obtained from the analysis is the R², which ranges from 0 to 1, with 1 being a perfect fit model. It was found that R²= 0.185 for this analysis. This factor explains 18.5% of the changes in the behavioural intention to use e-government services. Other unidentified factors account for the remaining 81.5%. Also, table-5 shows that of all the factors, the following have no significant impact on behavioural intention to use e-government services: Performance Expectancy ($\beta = 0.202$, p= 0.029); Effort Expectancy ($\beta = 0.173$, p= 0.065); and Social influence ($\beta = 0.166$, p= 0.032).

ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1	20.084	3	6.695	12.325	.000(a)
Regression			Model		
Model	R	R Square	Adjusted R Square		
1	.43(a)	.185	.170	1	

Factors	Effecting	Intention To Use	E-gov.	Services
Intention To Use e-government Services Factors	Beta	Standardised Beta	T Statistics	Significance
(Constant)	1.071		1.996	.048
Performance Expectancy	.038	.202	2.198	.029
Effort Expectancy	.051	.173	1.857	.065
Social Influence	.056	.166	2.164	.032
Predictors: (Constant), Effort Expectancy, Performance Expectancy, and social influence Dependent Variable: behavioural Intention To Use.				

Table 5: Regression analysis results

8. DISCUSSION AND CONCLUSION

This paper discussed the results of a survey targeted towards e-government service users in Qatar and it provides a representative account of the citizens' perceptions of the e-government services in the state. The significant and non-significant factors found in the study and their influences on practice are outlined below.

8.1 Significant Factors

Of the adoptions factors, performance expectancy, effort expectancy, and social influence all had a significant impact on intention to use the Qatari e-government services.

8.2 Non-Significant Factors

Gender, age, and internet experience were found to be insignificant in terms of predicting the behavioural intention to use e-government services.

8.3 Implications for Practice

Citizens using e-government may benefit from the services and consequently encouraged to adopt e-government. If the government provides more benefits to its citizens in terms of convenient access and prompt services, when compared to the old and traditional means, then possibly this practice might spread the use of e-government services throughout the Qatari society.

Furthermore, the conclusions that have emerged from the analysis presented in this study are as follow:

- Although research exists that explores citizen adoption of e-government services in many countries, the authors argue that currently there is no independent studies that examine e-government adoption in the State of Qatar.
- Three constructs (namely, performance expectancy, effort expectance, and social influence) significantly influenced the behavioural intention of citizens for adopting e-government services in Qatar.
- Empirical finding suggests that the influence of the remaining three constructs (namely, Gender, Age, and Internet experience) on citizens behavioural intention of the e-government services in Qatar were non-significant.
- Five constructs (namely, performance expectancy, effort expectance, social influence, age, and Internet experience) were found to have a positive affect on behavioural intention. Whereas, gender was found to have a negative affect on behavioural intention.

Given these findings, it can be concluded that the e-government services initiative in Qatar has been successful initially in promoting wider access to the Internet. This is encouraging from an e-government perspective. Yet, much more can be done to raise awareness of e-government in Qatar such as advertising and promoting the national e-government website and setting up citizen service centres to assist those who are less-computer-savvy to adapt e-government services. While the research findings are encouraging from a practical perspective for the Qatari government, from a theoretical perspective these results reconfirm that technology acceptance is influenced by key constructs such as Performance Expectancy, Effort Expectancy, and Social influence aspects of the e-government services used. From a practical perspective however, one has to recognise the fact that although the survey results are encouraging, e-government has yet to mature in the state of Qatar since its inception in 2000. This is sad considering the progress other countries in the region, such as Dubai and Bahrain have made during the same period. As our survey results reflect, some of the reasons for this can be attributed to the fact that citizens still do not fully trust e-government services, are concerned about security and some are hindered by the lack of internet access. Furthermore, it can be concluded that this study extends the theoretical knowledge in the area of citizens' adoption of technology (in this case, e-government applications and services) by testing the UTAUT model in a developing country (Qatari) context. Future research can focus on extending this study to other gulf countries and draw comparative analysis of e-government efforts in different countries in the region from a citizens' perspective.

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