

2008

The Use of Wireless Internet Parks to Facilitate Adoption and Diffusion of E-Government Services: An Empirical Study in Qatar

Shafi Al-Shafi

Brunel University, shafi.alshafi@brunel.ac.uk

Vishanth Weerakkody

Brunel University, vishanth.weerakkody@brunel.ac.uk

Follow this and additional works at: <http://aisel.aisnet.org/amcis2008>

Recommended Citation

Al-Shafi, Shafi and Weerakkody, Vishanth, "The Use of Wireless Internet Parks to Facilitate Adoption and Diffusion of E-Government Services: An Empirical Study in Qatar" (2008). *AMCIS 2008 Proceedings*. 322.

<http://aisel.aisnet.org/amcis2008/322>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISEL). It has been accepted for inclusion in AMCIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISEL). For more information, please contact elibrary@aisnet.org.

The Use Of Wireless Internet Parks To Facilitate Adoption And Diffusion Of E-Government Services: An Empirical Study In Qatar

Shafi Al-Shafi,
Brunel University, UK
School of Information Systems,
Computing & Mathematics
Shafi.AlShafi@Brunel.ac.uk

Vishanth Weerakkody,
Brunel University, UK
School of Information Systems,
Computing & Mathematics
Vishanth.Weerakkody@Brunel.ac.uk

ABSTRACT

The Qatari government has launched Wireless Internet Parks (iPark) concept under their national electronic government (e-government) initiative with a view of providing free internet access for all citizens while enjoying the outdoors. By offering free wireless Internet access, the Qatari government hopes to increase accessibility of e-government services and encourage their citizens to actively participate in the global information society with a view of bridging the digital divide. The adoption and diffusion of iPark services will depend on user acceptance and availability of wireless technology. This paper examines an extended technology acceptance model (TAM) that proposes individual differences, technology complexity, and trust environment constructs to determine perceived usefulness and perceived ease of the iPark initiative by using a survey based study. Results of the survey showed that among other constructs Wireless Internet trust and technology complexity has a significant affect on perceived usefulness of iPark services.

KEYWORDS: E-government, Wireless Internet, iPark, Technology acceptance model, Qatar.

INTRODUCTION

The government of Qatar has launched the wireless-free-internet-park (iPark) concept under the banner of e-government to make public services more accessible to citizens. The iPark initiative is implemented in a number of public parks and provides free connection to the citizens' Internet ready devices such as, laptop and PDA's any time of day. The first such initiative was launched in the city of Doha in Qatar in 2007 and it is the first of its kind in the Western Asia region. 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 (ibid). This paper explores citizens' acceptance of the iPark concept as part of the e-government initiative in Qatar.

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, 2007). Moreover, the Qatari government hopes that free internet access offered through the iPark concept will encourage more citizens to use e-government services and help bridge the digital divide.

The Internet while being the primary mode of access to e-government services has not been adapted globally at the same time or rate; some countries are considered as leaders (such as the US, UK and Singapore) and others simply follow (i.e. the Arabian Gulf region) (Gupta and Gupta, 2005). More recently, wireless technologies have become a useful means of internet connectivity and access to electronic services (e-services). Wi-Fi for 'Wireless Fidelity' is a set of standards for wireless local area networks (WLAN) and provides wireless access to the Internet (Lehr and McKnight, 2003). Hotspots providing such access include Wi-Fi-cafes where services may be free to customers. In fact, a hotspot need not be limited to a confined location; as illustrated in this paper, public parks can be used to offer free wireless internet access to citizens.

In particular, Wi-Fi has opened up new opportunities for electronic commerce (e-commerce) and e-government by allowing citizens to build connectivity 24/7. Moreover, it helps to increase accessibility of services and to expand social, government and business networks. The European Commission estimated Wi-Fi users to be around 125 million worldwide in the year 2006, and that there will be more than 500 million Wi-Fi users worldwide by 2009 (JiWire, 2006). However, wireless security remains mostly important factor that challenges wireless internet hot spots. As Wi-Fi grows the security threat also increases rapidly and therefore the need to protect information becomes imperative (Peikari and Fogie, 2003). The security risk remains largely from hackers, who are individuals, that access into the system without any authorization and for personal gain.

Given the above context, the rationale for this research is to gain a better understanding about the free wireless internet park "iPark" initiative in Qatar. Using a pilot survey questionnaire, this study aims to explore the intention of citizens to use iPark services in Qatar. This is achieved by examining their perceptions of 'ease of use' and 'usefulness' in relation to internet access in the iPark. To pursue this line of inquiry, this research uses the Technology Acceptance Model (TAM). TAM theorizes that an individual's behavioral intention to use a technology is determined by two factors: perceived usefulness and perceived ease of use (Gardner and Amoroso, 2004).

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 analysing the empirical results, discussing the research implications and identifying areas for future research.

E-GOVERNMENT ADOPTION AND DIFFUSION: 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. (Wassenaar, 2000; Wimmer and Traunmuller, 2000; Bonham *et al.*, 2001; Seifert and Petersen, 2002; Zhiyuan, 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 (InfoDev, 2002); rebuilding customer relationships by providing value-added and personalised services to citizens (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 (Reynolds and Regio, 2001; Bonham *et al.*, 2001; InfoDev, 2002; and 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 (Margetts and Dunleavy, 2002; Seifert and Petersen, 2002; Zakareya and Irani, 2005). Lack of access to e-services (Chircu and Lee, 2005), security concerns (Harris and Schwartz, 2000), trust (Al-Sebie and Irani, 2005), individual differences (Reffat, 2003) and digital divide (Carter and Bèlanger, 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 Wi-Fi Internet trust, technology complexity and attitudes have on the intention to use a new technology, in this instance iPark. Similarly it will also examine perceived usefulness, ease of use and attitude of iPark services and the influence that a citizen's individual differences have on the intention to use such services.

In terms of adoption and diffusion, several studies have explored e-government acceptance in the United States (Carter and Belanger, 2005) and the U.K (Choudrie and Dwivedi, 2005). 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) 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 Technology Acceptance Model.

TECHNOLOGY ADOPTION: THE 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). For example these theories and models include, Theory Of Reasoned Action (TRA), Theory Of Planned Behaviour (TPB), Innovation Diffusion Theory (IDT) (Rogers, 1995), Unified Theory Of Acceptance and Use of Technology (UTAUT), and Technology Acceptance Model (TAM) (Venkatesh *et al.*, 2003).

The Technology Accepted Model is adapted from the Theory of Reasoned Action (TRA) to the field of information systems. Davis developed TAM in 1989 (Davis, 1989) and uses TRA as a theoretical basis for specifying the linkages between two key beliefs: perceived usefulness and perceived ease of use and users' attitudes, intentions and actual usage behaviour. According to Davis *et al.*, (1989) the main goal of the model is to give an explanation of the determinants of computer acceptance which resulted to an explanation of user behaviour across a broad range of end-user computing technologies and user populations (Davis *et al.*, 1989). In addition, another key focus of TAM (figure 1) is to provide a base for determining or exposing the impact of external variables on internal beliefs, attitudes, and intentions.

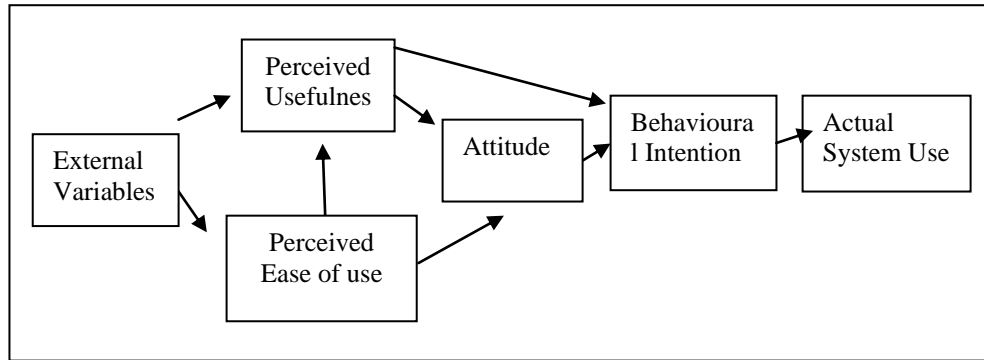


Figure-1: Technology Acceptance Model (source: Davis, 1989).

During previous years, TAM has received extensive support through validation, applications, and replications for its power to predict use of information systems (Cheng *et al.*, 2006). Also, Davis *et al.*, (1989), Venkatesh and Davis (2000) and Chau (1996) claimed that TAM is the most influential model in explaining IS/IT adoption behaviour. In this study, TAM will be used as the theoretical basis for examining user intention to use the iPark concept in Qatar. We have extended the TAM model to include three other relevant constructs, Wireless Internet trust (that include wireless internet safety and privacy), technology complexity in terms of Wireless Internet response time, and individual differences that includes age, gender, and qualifications.

Conceptual model and hypothesis

Attitude toward iPark

Attitude has been defined as a cause of intention (June *et al.*, 2003). According to Fishbein and Ajzen's (1975) attitude is classified into two constructs: attitude toward the object and attitude toward the behaviour. Investigation of the attitude construct toward using iPark services and examining its relationship with intention to use is appropriate for predicting usage behaviour. Therefore, the authors proposed the following hypothesis.

H1. Attitude toward iPark may have a significant positive affect on intentions to use iPark.

Perceived usefulness

According to Davis (1989) the perceived usefulness in TAM relates to productivity, performance, and effectiveness. This is an important construct as it provides a clear indication of how user attitude toward using and intention to use are influenced by perceived usefulness; perceived usefulness also has an indirect affect on intention to use via attitude (Davis *et al.*, 1989; June *et al.*, 2003). To explain perceived usefulness toward using iPark services, the authors propose the following two hypotheses:

H2. Perceived usefulness of iPark may have a significant positive affect on attitude toward using iPark.

H3. Perceived usefulness of iPark may have a significant positive affect on intention to use iPark.

Perceived ease of use

Perceived ease of use is another important determinant of attitude in TAM (June *et al.*, 2003). According to Davis's (1989) perceived ease of use is the individual's assessment of the level of effort involved in using the given system. Few authors confirmed the affect of ease of use on attitude toward use (Al-Gahtani and King, 1999; Venkatesh and Davis, 1996). To explain perceived ease of use toward using iPark services, the authors propose the following two hypotheses:

H4. Perceived ease of use of iPark may have a significant positive affect on attitude toward using iPark.

H5. Perceived ease of using iPark may have a significant positive affect on Perceived usefulness of iPark.

Individual differences

TAM primarily focuses on the development and identification of two key constructs, 'perceived usefulness' and 'perceived ease of use'. However, the original TAM does not include any moderating affects, and research suggests incorporating these moderators to include gender and age into the original TAM in order to make better predictions and explanations associated with user behaviour for a particular technology (Venkatesh and Davis, 2000; Morris and Venkatesh, 2000). Furthermore, research has found that gender (Venkatesh *et al.*, 2003; June *et al.*, 2003) and educational background (Agarwal and Prasad, 1999) significantly moderates the influence of the determinants on behaviour intention. Therefore, the authors propose the following two hypotheses:

H6. Individual differences may have a significant positive affect on perceived usefulness of iPark in terms of gender, age and qualification.

H7. Individual differences may have a significant positive affect on perceived ease of using iPark in terms of gender, age and qualification.

Wireless trust environment

June *et al.*, (2003) defined trust as a complex social phenomenon that reflects technological, behavioural, social, psychological, and organisational aspects. In this context, security and privacy are two key factors that influence Wireless Internet trust. Wireless internet security will be of greater threat compared to wired internet (*ibid*). Therefore, a high level of confidence and trust among all users will be the basis of a successful iPark initiation; in this context, ensuring the privacy of individuals will be a salient issue (June *et al.*, 2003). Thus, we propose the following proposition:

H8. Wireless trust environment may have a significant positive affect on perceived usefulness of iPark.

Technology complexities

The adoption and diffusion of Wireless hotspots will depend very much on the speed of Internet connection. Moreover, according to Pew Internet and American Life Project (2006), Wifi has the potential to reshape customers' needs and conversely customers can reshape the technology. Thus, the authors propose the following proposition:

H9. Technology complexity may have a positive significant affect on perceived usefulness of iPark in terms of Wireless Internet Speed.

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-2 and the appropriateness of the model in predicting users' intention to use iPark in the State of Qatar.

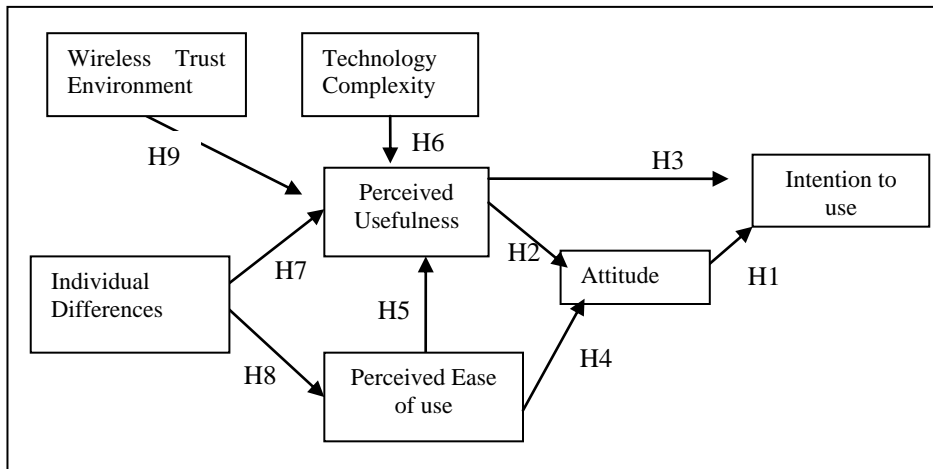


Figure-2: Factors Influencing iPark Adoption

RESEARCH METHODOLOGY

To explore the argument set out above and understand the context of the iPark initiative in Qatar, brief informal open-ended interviews (Yin, 1994) were conducted with three citizens and one Academic in the last quarter of 2007. 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 iPark in Qatar.

After the questionnaire was designed, a limited testing was done using one researcher and four 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 one question and modification to another.

The protocol followed for data collection was as follows. First, one of the researchers approached the iPark users, identified himself and provided a brief description of the research and the main purpose of the questionnaire. Then, the process of completing the questionnaire began by distributing the questionnaire to users and briefly explaining the contents of the questionnaire. Thereafter the questionnaires were collected after a period of around 20 to 30 minutes.

The survey questionnaire was distributed to a total of 55 iPark users between the period of November and December 2007; 54 usable responses were obtained. Overall, a survey questionnaire approach was selected 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). The questionnaire used had 26 closed-ended questions and used likert scale type (5-point scale) questions (Saunders *et al.*, 2002).

Data analysis

The proposed research model consists of seven dependant and independent variables: i) individual differences in terms of age, gender and qualifications; ii) perceived usefulness; iii) perceived ease of use; iv) attitude; v) intention to use; vi) wireless trust in terms of security and privacy; and vii) technology complexity in terms of wireless internet speed.

The authors generated the descriptive statistics (percentage and tables), used reliability of measurements and construct correlations 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).

RESEARCH FINDINGS

The State of Qatar where this research was conducted 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); 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, 2007).

Of these 54 usable respondents (15%) were females while 85% were males. Also, of the 54 respondents, (74%) had an internet connections in their home/work or both.

When examining the ‘ease of use’ of iPark services, 85% of the respondents mentioned that they found the service was easy for them, while 15% thought otherwise.

In terms of age, the results revealed that the majority of respondents (38%) were found in the age group of 31-45, followed by the age group of 19-30 constituting around (32%) of the total respondents. In contrast, the younger groups (less than 18) and older age groups (46-60) consisted together of (30%) of the total respondents (see figure 3).

As far as education is concerned, the majority of respondents (38%) hold postgraduate degrees (Masters and PhD), and (36%) hold undergraduate level qualifications and 26% hold secondary school certificates (see figure 3).

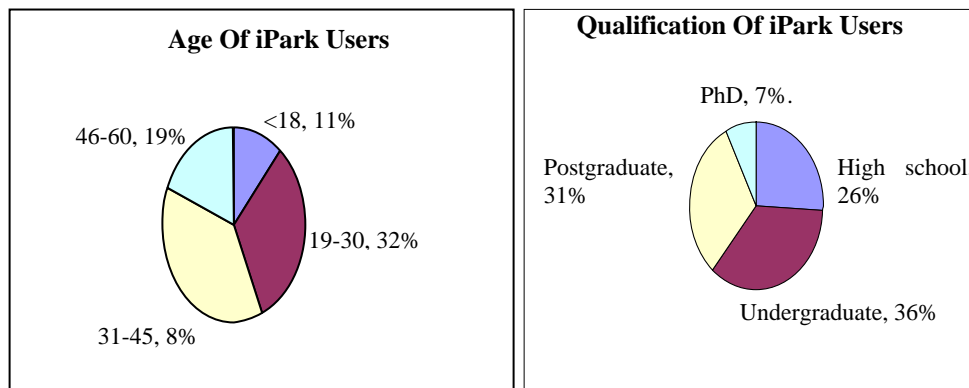


Figure-3 Age and Qualification of the Respondents

Finally, Figure 4 shows that the majority of respondents used iPark for: emails (76%); chat (35%); e-government services (22%); Fun (43%); Research (22%); News (56%); Enquiry (26%); Downloading Information (54%); and other (6%).

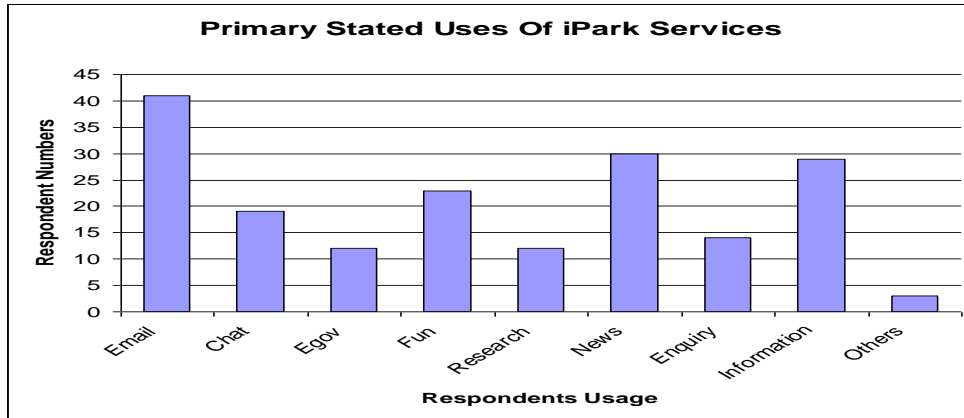


Figure-4: Primary uses of iPark user respondents, November & December, 2007

As outlined in table-1, the average scores for respondents’ perceived ease of use ranged from 4.07 to 4.37. Descriptive statistics show that these scores are quite high. For perceived usefulness, the score ranged from 3.85 and 4.54, which is quite high. Concerning technology complexity and wireless Internet trust, the score ranged from 2.87 to 3.70, indicating that the scale is average. In addition, for attitude towards iPark, the score ranged from 4.35 to 4.59, indicating that the scale is uniform. Also, the score ranged from 1.15 to 2.64 for individual differences toward iPark. The last score ranged from 3.30 to 3.72 for intention to use.

	Mean	Std. Deviation
Use iPark frequently	3.43	1.238
Encounter problem frequently in using the iPark	2.70	1.218
Individual Differences		
Gender	1.15	.359
Qualification	2.20	.919
Age	2.64	.922
Perceived Ease Of Use		
Using the iPark service is easy for me	4.07	.949
Interaction with the iPark services is clear and understandable	4.08	.917
Becoming skilful in the use of the iPark services is easy	4.37	.853
Overall, I find the use of the iPark services easy	4.17	1.060
Perceived Usefulness		
Using the iPark would enable me to accomplish my tasks more quickly	3.89	1.144
Using the iPark would make it easier for me to carry out my tasks	3.85	1.139
iPark is useful for me	4.54	.803
Overall, using the iPark is advantageous for me	4.50	.897

Technology Complexity		
Speed of Internet in the iPark is good	3.70	.964
Wireless Trust		
I would feel secure sending sensitive information across the iPark	2.91	1.336
Overall, the iPark is a safe place to transmit sensitive information	2.87	1.275
Attitude		
Using the iPark is a good idea	4.59	.567
Using the iPark is pleasant	4.43	.742
In my opinion, it would be desirable to use the iPark	4.35	.828
In my view, Using free Wireless Internet from public parks is a wise idea	4.42	.936
Intention To Use		
I would Use the iPark channels for my needs.	3.72	1.140
I would use iPark for my e-government services	3.30	1.207

Table-1: Descriptive Statistics of iPark Usage

Reliability Test

Cronbach’s coefficient alpha values were chosen to examine the internal consistency of the measure (Hinton et al., 2004) (table 2). Cronbach’s results varied between 0.826 for the intention to use and 0.860 for the individual constructs.

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 in table 3 show that all of the constructs got high reliability. 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)
Individual Differences	3	0.86
Perceived Ease Of Use	4	0.83
Perceived Usefulness	4	0.83
Wireless Trust	2	0.84
Technology Complexity	1	0.84
Attitude	4	0.84
Intention To Use	2	0.83

Table-2: Reliability of Measurements

Table-3 also shows that the correlation is significant for one key factoring as per the hypothesis (H3), *perceived usefulness* (0.417), which implies that it is correlated with intention to use, whereas attitude (0.143) was found to be insignificantly associated with intention to use as per hypothesis (H1).

Constructs		Intention to use
I would find the iPark useful	Pearson Correlation	.417(**)
	Sig.(1-tailed)	.001
In my view, Using free wireless Internet from public parks is a wise idea	Pearson Correlation	.143
	Sig.(1-tailed)	.155

Table-3. Correlations of intention to use construct

Table-4 also shows that the correlation is significant for one key factor as per hypothesis (H2), *perceived usefulness* (0.286), which implied that it has an impact on attitude. Whereas, *perceived use of ease* (0.025) was found to have an insignificant correlation and negative affect on attitude toward using iPark as per hypothesis (H4).

Constructs		ATTITUDE
Overall, I find the use of the iPark services easy	Pearson Correlation	-.025
	Sig.(1-tailed)	.430
I would find the iPark useful	Pearson Correlation	.286(*)
	Sig.(1-tailed)	.021

Table-4: Correlations of Attitude

Table-5 also shows that the correlation is significant for the following four key factors: *perceived ease of use* (0.489) as per the hypothesis (H5); *technology complexity in terms of wireless internet speed* (0.358) as per hypothesis (H6); *individual differences in terms of age* (0.478) and *Qualification* (0.251) as per hypothesis (H7); and finally *wireless trust in terms of wireless internet security* (0.399) and *privacy* (0.297) as per hypothesis (H9). These results imply that these constructs have a significant impact on perceived usefulness. In contrast, *individual difference in terms of gender* (0.113) was found to have an insignificant correlation. In addition, *individual differences in terms of age and qualification* had a negative affect on perceived usefulness toward using iPark as per hypothesis (H7).

Constructs		Perceived Usefulness
Overall, I find the use of the iPark services easy	Pearson Correlation	.489(**)
	Sig.(1-tailed)	.000
I would rate the speed of Internet/Response time in the iPark is good	Pearson Correlation	.358(**)
	Sig.(1-tailed)	.005
Age	Pearson Correlation	-.478(**)
	Sig.(1-tailed)	.000
Gender	Pearson Correlation	.113
	Sig.(1-tailed)	.212
Level of Education	Pearson Correlation	-.251(*)
	Sig.(1-tailed)	.036
I would feel secure sending sensitive information across the iPark	Pearson Correlation	.399(**)
	Sig.(1-tailed)	.002
Overall, the iPark is a safe place to transmit sensitive information	Pearson Correlation	.297(*)
	Sig.(1-tailed)	.016

Table-5: Perceived usefulness Correlations

Table-6 shows that the correlation is insignificant for one key factor, *individual differences in terms of age* (0.140), gender (0.066) and qualification (0.491) as per hypothesis (H8). This result implies that they have an insignificant impact on the perceived ease of use construct. In addition, individual differences in terms of age and gender constructs had a negative affect on perceived ease of using iPark as per hypothesis (H8), whereas the individual’s educational background though showed a positive impact on perceived ease of using iPark.

Constructs		Perceived ease of use
Age	Pearson Correlation	-.140
	Sig.(1-tailed)	.159
Gender	Pearson Correlation	-.066
	Sig.(1-tailed)	.317
Level of Education	Pearson Correlation	.003
	Sig.(1-tailed)	.491

Table-6. Perceived usefulness Correlations

DISCUSSION AND CONCLUSION

This paper discussed the results of a survey targeted towards iPark users in Qatar and it provides a representative account of the citizens' perceptions of the iPark project. While the availability and use of Wi-Fi networks continue to increase, for users, Wi-Fi facilitates greater mobility, information access, and flexibility in connectivity, improved efficiency, low cost, ease of use, and new applications, which could change the way they access electronic services.

The results of this research showed that individual differences have a negative affect on perceived ease of use (H8) and perceived ease of use has a negative relationship with attitude (H4). The remaining hypotheses showed that they were consistent. This implies that contrary to expectations the citizens' intention to use new technological concepts such as iPark has no link with the individual differences in terms of age and educational background of the citizen in the Qatari context. Given these findings, it can be concluded that the iPark initiative in Qatar has been successful initially in promoting wider access to the Internet. This is encouraging from an e- government perspective. The authors suggest that public parks (iParks) can be used to advertise and market the Qatari e-government national website and raise e-government awareness among Qatari citizens. 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 perceived usefulness, attitude, wireless Internet trust, and technology complexity aspects of the services used.

This research describes an early attempt to study the adoption of the iPark initiative by Qatari citizens and thus represents only the views of a limited sample of users (54). To ensure more thorough testing of the hypothesis proposed in this research, the authors have planned future research in the fourth quarter of 2008 to survey a larger number of iPark users.

REFERENCES

- Agarwal, R. and Prasad, J. (1999), Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30(2);pp.361-91.
- AL-Gahtani, S. and King, M.(1999) Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behavior And Information Technology*. 18(4),pp:277-297.
- Al-Shafi, S. and Weerakkody, V. (2007). Implementing and managing e-government in the State of Qatar: a citizens' perspective. *Electronic Government, an International Journal*. 4(4), 436 - 450
- Al-Sebie, M. and Irani, Z. (2005) 'Technical and organisational challenges facing transactional e-government systems: an empirical study', *Electronic Government, An International Journal*, Vol. 2, No. 3, pp.247–276.
- Bonham, G., Seifert, J. and Thorson, S. (2001). *The Transformational Potential of e-Government: The Role Of Political Leadership*. Paper presented at the The 4th Pan European International Relations Conference of the European Consortium for Political Research, University of Kent, Canterbury, U.K.
- Carter, L. and Bélanger, F. . (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15, 5-26.
- Chau, P.Y.K. (1996). An Empirical Assessment Of A Modified Technology Acceptance Model. *Journal of Management Information Systems*, 13(2); pp. 185-204.
- Chen, C., Tseng, S. and Huang, H. (2006). A comprehensive study of the digital divide phenomenon in Taiwanese government agencies. *International Journal Of Internet And Enterprise Management*, 4(3), 244-256.
- Cheng, T., Lam, D. and Yeung, A. (2006). Adoption of internet banking: An empirical study in Hong Kong. *Decision Support Systems* 42, 1558-1572.
- Chircu, A. M. and Lee, D.H-D. . (2005). E-government: Key Success Factors For Value Discovery And Realisation. *E-Government, an International Journal*., 2(1), 11-25.
- Choudrie, J. and Y. Dwivedi (2005). A Survey of Citizens Adoption and Awareness of E-Government Initiatives, The Government Gateway: A United Kingdom Perspective. E-Government Workshop. Brunel University, West London.
- Cornford, T. and Smithson, S. . (1997). *Project Research in Information Systems: A Student's Guide*. London: Macmillan Press.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(319-340).
- Davis, F. D., Bagozzi, R. P. and Warshaw, P.R. . (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8),pp:982-1003.
- Davison, R. M., Wagner, C. and Ma, L.C. . (2005). From government to e-government: a transition model. *Information Technology & People*, 18(3),pp:280-299.
- Dwivedi, Y. and Weerakkody, V. (2007). Examining the factors affecting the adoption of broadband in the Kingdom of Saudi Arabia. *Electronic Government, an International Journal*, 4(1),pp:43-58.
- Dwivedi, Y., Papazafeiropoulou, A. and Gharavi, H. (2006), *Socio-Economic Determinants of Adoption of the Government Gateway Initiative in the UK*, Electronic Government, 3(4),pp:404-419.
- Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*, Addison-Wesley, Reading, MA.
- Gardner, C. and Amoroso, D. (2004). *Development of an Instrument to Measure the Acceptance of Internet Technology by Consumers*. Paper presented at the Proceedings of the 37th Hawaii International Conference on System Sciences, Hawaii,USA.
- Gupta, V. and Gupta, S. (2005) Experiments in Wireless Internet Security. *Statistical Methods In Computer Security*
- Harris, J.F. and Schwartz, J. (2000) 'Anti drug website tracks visitors', *Washington Post*, 22 June, p.23.
- Hinton, P.R., Brownlow, C., McMurvay, I. and Cozens, B. (2004) *SPSS explained*. East Sussex, England: Routledge Inc.
- IctQatar. (2007). Free wireless internet in Qatar's public parks. from <http://www.ict.gov.qa/output/page422.asp>
- InfoDev. (2002). The e-Government Handbook for Developing Countries. from <http://www.cdt.org/egov/handbook>.
- Irani, Z., Al-Sebie, M. and Elliman, T. (2006). Transaction Stage of e-Government Systems: Identification of its Location & Importance. Paper presented at the Proceedings of the 39th Hawaii International Conference on System Science, Hawaii.

- Jiwire (2006). JiWire Launches Worldwide Point-of-Connection Wi-Fi Hotspot Advertising Network, from <http://www.jiwire.com/about/announcements/press-advertising-network.htm>
- June, L., Chun-Sheng, Y., Chang, L. and James E. (2003). Technology Acceptance Model For Wireless Internet, *Internet Research: Electronic Networking Application And Policy*, 13(3), pp:206-222.
- Lee, S. M., Tan, X. and Trimi, S. (2005), *Current practices of leading e-government countries*, *Communications of the ACM*, 48(10), pp:99-104.
- Lehr, W. and McKnight, L. W. (2003) Wireless Internet access: 3G vs. WiFi? *Telecommunications Policy*, 27 : pp. 351-370.
- Margetts, H. and Dunleavy, P. (2002). *Cultural Barriers to E-Government* (Working Paper): University Collage of London and London School of Economics for National Audit Office.
- Morris, M.G. and Venkatesh, V. (2000) Age differences in technology adoption decisions: implications for a changing work force', *Personnel Psychology*, 53(2):pp.375-403 .
- Peikari, C. and Fogie, S. (2003). *Maximum Wireless Security*. from <http://www.berr.gov.uk/files/file9972.pdf>.
- Pew Internet & American Life Project (2006) Home Broadband Adoption. from http://www.pewinternet.org/pdfs/PIP_Broadband_trends2006.pdf
- Reffat, R. (2003). *Developing A Successful E-Government* (Working Paper): University Of Sydney, Australia.
- Reynolds, M. M., and Regio-Micro, M. (2001). The Purpose Of Transforming Government-E-Government as a Catalyst In The Information Age. *Microsoft E-Government Initiatives*, from <http://www.netcaucus.org/books/egov2001/pdf/EGovIntr.pdf>
- Rogers, E. M. (1995). *Diffusion of innovations*. New York.
- Saunders, M., Lewis, P. and Thornhill, A. (2002). *Research methods for business students* (Third edition). Harlow:Prentice Hall.
- Seifert, J. and Petersen, E. (2002). The Promise Of All Things E? Expectations and Challenges of Emergent E- Government. *Perspectives on Global Development and Technology*, 1(2), pp:193-213.
- The Peninsula Newspaper. (2008). Bursting at the seams, from http://www.thepeninsulaqatar.com/Display_news.asp?section=Local_News&month=January2008&file=Local_News200801296298.xml.
- UN. (2008). *World public sector report: UN E-Government survey, From E-Government To Connected Governance*. New York.
- Venkatesh, V. and Davis, F. D. (1996), A model of the antecedents of perceived ease of use: Development and test. *Decision Sci.* 27 451-481.
- Venkatesh, V. and Davis, F. D. (2000), *Atheoretical extension of the technology acceptance model: Four longitudinal field studies*, *Management Science*, 46(2), pp:186-205.
- Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), pp:425-478.
- Waller, P., Livesey, P. and Edin, K. (2001), e-Government in the Service of Democracy. *ICA Information*, 74.
- Wassenaar, A. (2000). E-Governmental Value Chain Models. *DEXA, IEEE Press*, pp:289-293.
- Wimmer, M. and Traunmuller, R. (2000), *Trends in e- government: managing distributed knowledge*. Paper presented at the Proceedings from 11th International Workshop on Database and Expert Systems Applications, New York.
- Yin, R. K. (1994). *Case Study Research - Design And Methods* (Second Edition). London:Sage Publications
- Zakareya, E., and Irani, Z. (2005), E-government adoption: Architecture and barriers. *Business Process Management Journal*, 11(5), pp:589-611.
- Zhiyuan, F. (2002), E-Government in Digital Era: Concepts, Practice and Development. *International Journal Of The Computer, The Internet and Management*, 10(2), pp:1-22.