The Role of National Culture on Citizen Adoption of eGovernment Services: An Empirical Study

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Abstract: Increasingly governments around the world have realized the imperative of providing the public with not only improved government information and services but also improved public governance, transparency and accountability through eGovernment services. However, many governments still face the problem of low level adoption of eGovernment websites. It is because the issue of eGovernment adoption is complex and multi-dimensional in nature. In consequence, it must be carefully addressed not only from technological perspectives but also from social, cultural, and organizational perspectives. The business case for developing sustainable successful eGovernment initiatives critically depends on our knowledge and understanding of how to increase citizen adoption of eGovernment websites. A review of the literature, however, shows that much of extant eGovernment research has focused on eGovernment adoption in developed countries. In consequence, little is known about national cultural factors that may influence eGovernment adoption in developing countries. This knowledge gap is particularly apparent in Jordan. Therefore, the objective of this paper is to examine national cultural factors that may influence citizen adoption of eGovernment websites in this culturally different part of the world. We developed an integrated model by extending the technology acceptance model (TAM) with Hofstede's national culture dimensions, which is used to evaluate the impact of national culture on eGovernment adoption in this paper. Based on survey data collected from a total of 197 Jordanian citizens, evidence shows that while two cultural dimensions: power distance and uncertainty avoidance had significant impacts on citizens' intention to adopt eGovernment, the other three cultural dimensions: individualism, masculinity, and long-term orientation had no discernible impacts. The results also indicate that perceived usefulness, perceived ease of use, attitude are significant indicators of citizens' intention to use state government services online.

Keywords: eGovernment adoption, technology acceptance model, culture, Jordan

1. Introduction

Information and communication technology (ICT) and resulting online capabilities such as the Internet provide the foundation for the transformation of the traditional government service. Over the past decade governments all over the world have realized the importance of providing government services and information via the Internet and world-wide-web to improve the efficiency, cost and quality of the government information and services provided to the public. However, although the adoption of eGovernment has the potential to provide better services to citizens at lower costs, it has acceptance problems. In fact, understanding why people accept or reject new information technology (IT) has proven to be one of the most challenging issues in IT/IS research (Al-Adawi et al., 2005). The acceptance and success of eGovernment is dependent upon citizen willingness to adopt this innovation (Carter and Bélanger, 2005). Yet, many governments worldwide still face the problem of low-level of citizen adoption of eGovernment websites (Belanger and Carter, 2008; Choudrie and Dwivedi, 2005; Gupta et al., 2008; Kumar et al., 2007; Fu et al., 2006; Wang, 2003). eGovernment adoption occurs in a turbulent social-political environment not only must be carefully addressed from a technological perspective, but also from social, political, and cultural perspectives. Without understanding what motivates the public to use eGovernment services, governments will not be able to take strategic actions to increase the eGovernment up-take (Gilbert et al., 2004). Hence, more empirical studies are required in the area of eGovernment adoption to help governments to improve their understanding of the issues that affect citizen adoption of eGovernment services and websites.

In addition, while the academic literature on eGovernment adoption has mainly focused upon the adoption of eGovernment websites in developed countries, relatively little attention has been given to the citizen adoption of eGovernment websites in developing countries (Alhujran and Chatfield, 2008). This study, therefore, aims to fill a gap in the literature by conducting empirical field research on eGovernment adoption in the Arab world, specifically in Jordan. Grounded on the Technology Acceptance Model (TAM) (Davis et al., 1989), this study develops a conceptual model by integrating the TAM with two of Hofstede's national culture dimensions - power distance, uncertainty avoidance.

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The extended TAM model is exploited to examine the impacts of these cultural dimensions upon citizen adoption of eGovernment websites in developing countries with different national cultures and values.

Moreover, although culture is being considered as a contributing factor in the IT/IS adoption, very limited research has attempted to explore the impact of the culture on IT/IS adoption in the Arab region. Most of the previous research has only focused on economical, political, and technological factors that impact technology transfer to the Arab world (e.g. Al-Gahtani, 2004; Straub et al., 2001). Furthermore, to date, almost no prior research has considered the influence of national culture on eGovernment adoption in the Arab world, in general, and Jordan, in particular.

In terms of achievements, efforts of Jordan to provide eGovernment services to the public have been internationally recognized. Recently, the ministry of Information and Communication Technologies (MoICT) has introduced more than three main eGovernment services to the public. Examples of these services are: police clearance, higher education admissions, and public jobs applications and tracking. However, despite some success, the eGovernment services and websites in Jordan are facing the challenge of increasing the usage level of these services and websites (Al-Hujran and Shahateet, 2010). Therefore, a better understanding of the factors that influence citizen adoption of eGovernment is a critically important policy issue in this country. This study provides the eGovernment officials with a useful guideline for achieving better eGovernment websites and increasing the citizen's adoption of these websites.

The remainder of this paper is organized as follows. Section 2 presents a background about eGovernment adoption in Jordan. Section 3 presents the theoretical background and the research model. Section 4 describes the research methodology of this study. Section 5 presents the analysis and results. Finally, we present our discussions, practical implications, limitations and conclusion.

2. Background: eGovernment adoption in Jordan

There is no clear definition of eGovernment adoption (Kumar et al., 2007). Researchers refer to it as the 'intention' (Carter and Bélanger, 2005; Warkentin et al., 2002) or 'willingness' (Gilbert et al., 2004) to use eGovernment information and services. Warkentin et al. (2002, p.159) define eGovernment adoption as "the intention to 'engage in eGovernment', which encompasses the intentions to receive information, to provide information, and to request eGovernment services". Similarly, Kumar et al. (2007, p. 69) define it as "a simple decision of using, or not using, online [eGovernment] services". For the purposes of this study, eGovernment adoption refers to the intention of citizens to use eGovernment websites and online services and.

Jordan is developing a strong ICT with the aim of becoming a knowledge-based country and a regional IT center. In terms of achievements, Jordan's efforts to provide eGovernment services to the public have been recognized worldwide. Recently, the Jordanian Ministry of Information and Communication Technologies (MoICT) has introduced several eGovernment services to the public. Examples include: police clearance, higher education admissions, and public jobs applications and tracking. However, despite some success the government is facing the challenge of increasing the low usage levels of these services and websites (Al-Hujran and Al-dalahmeh, 2011; Al-Hujran and Shahateet, 2010; Al-Jaghoub et al, 2010; Mofleh and Wanous, 2008). Specifically, Al-Jaghoub et al (2010) found that despite the government's growing investment in electronic services in Jordan, 85% of the citizens never logged in to an eGovernment website.

Although the literature reported that there are several studies exploring factors that influence eGovernment adoption in the developed countries (e.g. Carter and Belanger 2004**;** Carter and Bélanger, 2005; Gilbert et al., 2004; Fu et al. 2006**;** Kumar et al. 2007**;** Phang et al. 2005**;** Warkentin et al. 2002**;** Wang 2003), there appears to be a lack of understanding of the factors that influence the citizen intention to use eGovernment services and websites in Jordan (Al-Hujran and Al-dalahmeh, 2011; Al-Hujran and Shahateet, 2010; Alomari et al, 2010). Hence, a better understanding of the factors that influence citizen adoption of eGovernment is a critically important policy issue in Jordan. In this context, this study is aiming to provide the eGovernment officials in Jordan with a useful guideline for achieving better eGovernment websites and channeling their strategies toward increasing the citizen adoption of these websites. The results would help authorities understand the key factors that influence citizen's adoption of eGovernment services and websites. Particularly, the results of this study are expected to help government agencies cultivate the positively correlating

factors to enhance citizen adoption of eGovernment while trying to reduce the effects of the negative factors. As mentioned earlier, the success of any eGovernment is highly dependent upon the citizen willingness to use these electronic services.

3. Theoretical background and research model

The research model used to guide the study is shown in Figure 1. In the following sections, the meaning and the theories supporting the relationships are presented.

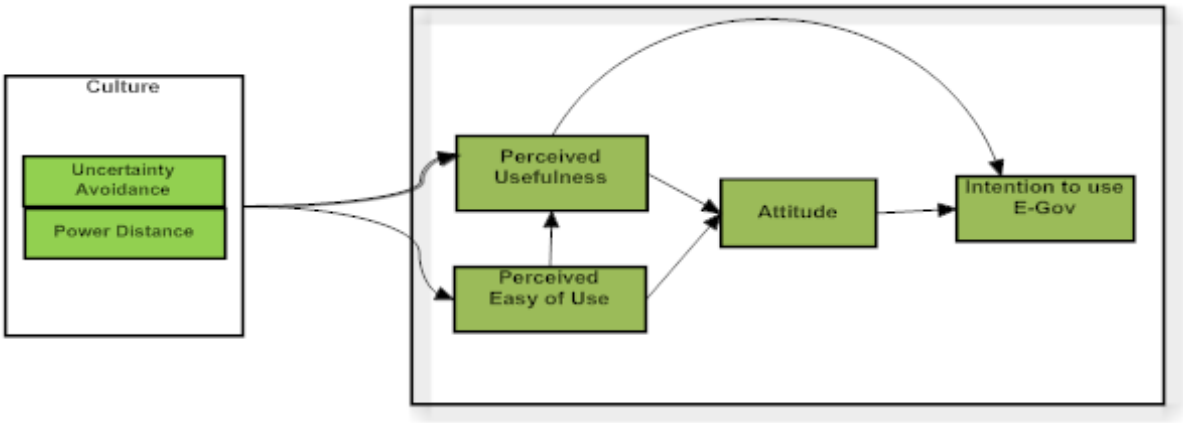

Figure 1: Research model of citizen's intention to use eGovernment services and websites

3.1 Technology Acceptance Model (TAM)

The technology acceptance model (TAM) (Davis, 1989; Davis et al., 1989), is one of several models that IT/IS researchers have used to predict and explain the underlying factors that motivate users to accept and adopt new information technology systems. This model (Figure 2) is derived from the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980).

According to TRA, the individual attitude and subjective norms influence the user's behavioral intention, which, in turn, influences his or her actual behavior. Building upon this, TAM was proposed to explain and predict users' acceptance of IT and IS systems by assuming that the constructs - perceived ease of use (PEOU) and perceived usefulness (PU) - are the key determinants of IT and IS acceptance behavior. Davis (1989, p.320) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance", and defined perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort". Fishbein and Ajzen (1975, p.216) defined behavioral intention as "the strength of one's intention to perform a specified behavior". In TAM, the perceived usefulness of the system is predicted to be positively influenced by its perceived ease of use. TAM also theorizes that all other external variables are fully mediated by PU and PEOU (Heijden, 2003). Figure 2 illustrates TAM constructs and their relations. According to TAM, greater PU and PEOU of an IT/IS system would positively influence an attitude toward this system. The attitude, in turn, leads to a greater intention to use the system, which positively affects one's actual use of the system (Davis, 1989).

Several meta-analysis studies have provided sufficient data about TAM to be highly credible (King and He, 2006; Shumaila et al., 2007). It also received substantial empirical support by means of validations and replications from numerous researchers (Adams et al., 1992; Davis, 1993; Venkatesh and Davis, 2000). In addition, several studies have applied TAM to evaluate users' adoption in different settings such as e-mail, voice-mail, graphics, spreadsheet, and word processing, electronic commerce electronic learning, internet banking, and eGovernment. Furthermore, TAM has reliable instruments, and is empirically sound (Pavlou, 2003). TAM has routinely explained up to 40 per cent of the behavioral intentions to use (Venkatesh and Davis, 2000). This is despite the fact that TAM is usually criticized for ignoring the social influence on technology adoption (Mathieson, 1991), but social and human factors could actually be integrated with TAM to improve its predictive powers (Venkatesh and Davis, 2000).

However, most of prior TAM research relatively focused on IT/IS adoption by employees in organizations context (Phang et al. 2005), where the use in most cases is mandatory. Therefore,

researchers need to be cautious when applying the results of these studies to a different context such as eGovernment, where the use of technology is voluntary. Accordingly, it is essential to study the adoption of new IT/IS with different population such as citizens.

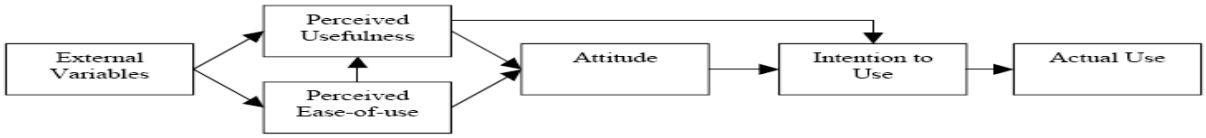

Figure 2: TAM source: Davis (1989)

Based on the above-mentioned assumptions of the original TAM, the following hypotheses are proposed in this study:

H1: *There is a direct and positive relationship between perceived usefulness and attitude toward using eGovernment websites.*

H2: *There is a direct and positive relationship between perceived ease of use and attitude toward using eGovernment websites.*

H3: *There is a direct and positive relationship between attitude and behavioural intentions to use eGovernment websites.*

H4: *There is a direct and positive relationship between perceived ease of use and the perceived usefulness of eGovernment websites.*

H5: *There is a direct and positive relationship between perceived usefulness and the behavioural intentions to use eGovernment websites.*

3.1 eGovernment adoption and TAM

Although TAM has been applied to a wide range of IS/IT settings, only a few empirical and conceptual studies have explored citizen adoption of eGovernment using TAM as a theoretical framework. Table 1 summarizes the findings of these studies. Conceptual but not empirical studies are marked with a single asterisk (*).

Table 1: eGovernment adoption studies using TAM

TAM core variables	Authors	Findings
Perceived usefulness(PU)	Carter and Belanger 2004; Fu et al. 2006; Kumar et al. 2007*; Phang et al. 2005; Warkentin et al. 2002*; Wang 2003	Citizens' PU is a significant predictor of their intention to use eGovernment.
Perceived ease of use(PEOU)	Carter and Belanger 2004	PEOU did not have a direct effect on citizens' BI to adopt eGovernment.
	Carter and Belanger 2005; Fu et al. 2006; Kumar et al. 2007*; Phang et al. 2005; Warkentin et al. 2002*; Wang 2003	Citizens' PEOU is a significant predictor of their intention to use eGovernment.
	Fu et al. 2006; Phang et al. 2005; Wang 2002	PEOU was a significant determinant of PU.
Culture	Warkentin et al. 2002*	They hypothesized that the cultural dimensions (power distance and uncertainty avoidance) were most likely associated with eGovernment adoption.

3.2 National culture

The culture is not an easy concept to define (Davison and Martinsons, 2003). In addition, there is no generally accepted definition for national culture. Hofstede (1997 p.21) defines national culture as "the

collective programming of the mind which distinguishes the members in one human group from another".
Although Hofstede's national culture framework has been criticized due to some methodological weaknesses (Baskerville, 2003), Leidner and Kayworth, (2006) found after an extensive literature review of national culture studies that over 60 per cent of these studies used one or more of Hofstede's cultural dimensions. In fact, Hofstede's work still has a great impact even today. According to McCoy et al (2007), most research on national culture uses Hofstede's measures and concepts, including those who disagreed with his dimensions. Therefore, as Hofstede's definition of culture and his theoretical framework are widely recognized and accepted, they have also been chosen in this research as a theoretical background to assess the impact of the national culture on eGovernment adoption in Jordan.

Hofstede (1997) identified five dimensions of cultural variation. These dimensions have been conceptually defined as follows:

- Power Distance (PD): the extent to which the less powerful members of group or society accept and expect that power is unequally distributed;
- Uncertainty Avoidance (UA): the extent to which the members of group or society feel threatened by unknown situations;
- Individualism vs. Collectivism (IDV): the extent to which individuals are integrated into groups;
- Masculinity vs. Femininity (MAS): the extent to which gender roles are assigned in a culture;
- Long-Term vs. Short-Term Orientation (LTO): a society's preference to be more forward looking or future oriented.

As motioned earlier, the Arab world is considered as one of the most complex cultural and social systems in the world. Different than western countries, religion plays a significant role in determining the different aspects of social and traditional life. Religion is also considered as one of the main determinant of internet usage in these countries (Hofheinz, 2005). People in the Arab world find the internet as an approach to break up the limitations of the traditional and social life (Alomari et al, 2010). Therefore, this complex cultural system offers a different yet a rich context to study the influence of the national culture on citizen adoption of eGovernment services and websites.

Figure 3 shows a comparison between the Arab world and the United States in terms of the index values of Hofstede's cultural dimensions. The Figure demonstrates the cultural differences between the Arab world and the Western countries. While the Arab culture is high in power distance (80 vs. 40) and uncertainty avoidance (68 vs. 46), the American culture is high in individualism (91 vs. 38) and masculinity (62 vs. 53). Scores for Hofstede's fifth dimension (LTO) were not found for the Arab countries; therefore, LTO was omitted from the comparisons.

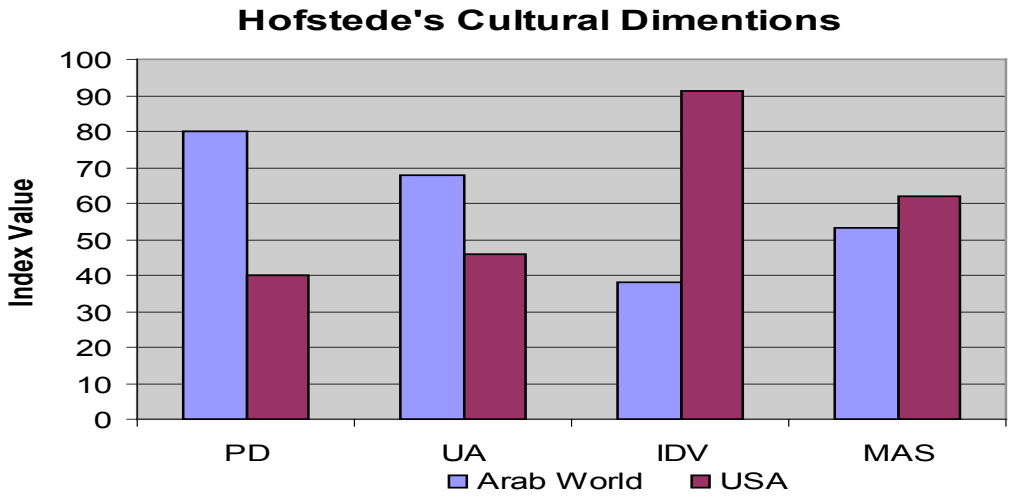

Figure 3: A comparison of Hofstede's cultural dimensions (Arab world vs. USA)

The importance of both national and organizational culture to the success of IS/IT adoption has been also widely recognized (e.g. Bagchi et al., 2003; Erumban and Jong, 2006; Leidner & Kayworth, 2006; Straub, 1994; Twati, 2006). These studies underscored the importance of the culture, and how it is linked to the success of IS/IT adoption and use. For example, Erumban and Jong (2006) found a significant relationship between cultural factors and the adoption decisions of new technologies across countries. Results of this study indicated that the power distance and uncertainty avoidance dimensions are the most significant cultural factors by which some of the differences in ICT adoption rates among countries can be explained. Countries with high scores in UA and PD, such as the Arab countries, have a lower rate of ICT adoption than countries with low UA and PD scores (Erumban and Jong, 2006). Similarly, Leidner & Kayworth (2006) stated that UA plays a significant role in determining how groups will potentially adopt and diffuse ICT. Countries high in UA are less likely to adopt frame relay technology (Leidner & Kayworth, 2006). Since ICT is inherently risky, those less comfortable with uncertainty will be less likely to adopt new technologies.

Researchers also explored the impact of the national culture on TAM variables (e.g. Twati, 2006; Veiga et al., 2001). Their studies concluded that the cultural dimensions influence the model variables. However, in a study by Warkentin et al. (2002), they proposed that of the five cultural dimensions, PD and UA are the most likely to differentiate eGovernment adoption and use. Erumban and Jong (2006) also found that the PD and UA dimensions are the most significant cultural factors by which some of the differences in ICT adoption rates among countries can be explained. Therefore, the following hypotheses are proposed:

H6a: *There is a direct and positive relationship between uncertainty avoidance and the perceived usefulness of eGovernment websites.*

H6b: *There is a direct and positive relationship between power distance and the perceived usefulness of eGovernment websites.*

H7a: *There is a direct and positive relationship between uncertainty avoidance and the perceived ease of use of eGovernment websites.*

H7b: *There is a direct and positive relationship between power distance and the perceived ease of use of eGovernment websites.*

4. Methodology

4.1 Instrument development

The survey items were adopted from prior research. The TAM scales of PU and PEOU were measured using items adopted from Davis (1989) and Davis et al. (1989). TAM scales of ATU were adopted from Taylor and Todd (1995). BI items were adopted from Malhotra & Galletta (1999) and Pavlou (2003). Culture items were adopted from Al-Sukkar (2005). All items were measured using a five-point Likert-type scale, ranging from "strongly agree" to "strongly disagree".

Sekaran (2003) stresses the importance of choosing the questionnaire language that approximates the level of understanding of the respondents. Given that the majority of the Jordanians are communicating in Arabic language, questionnaire items of this study have been translated into Arabic language. The English version of the questionnaire has been translated into Arabic by two independent translators. The Arabic version which has been translated by the first translator has then been translated back to English by the second translator. The same was repeated to the second translator's version. The two versions in both languages have been then compared to resolve any differences. The final version has been used for the study.

4.2 Evaluating the validity and the reliability of the instrument

Content validity is concerned with the degree to which the scale items represent the domain of the concept under study. According to Sekaran (2003), face validity is a basic index of content validity. Experts in the field can be solicited to advice on whether scale items have face validity (Straub et al., 2005). Therefore, instrument was pre-tested with three academics and one student in the field of Information Systems. An academically excellent student has been asked to fill the survey. When he finished it, he was asked to find out if there were any problems to understand the survey questions.

Based on this feedback, the wording of some questions was modified to improve clarity. After this step, three academics were asked to answer the survey questions and to provide their feedback on whether the questions would accurately measure each construct, whether the questions were vague, ambiguous, difficult to understand, or contained contradictions. The instrument was then modified to reflect the feedback received from the three academics. Final survey items are found in Appendix 1.

To insure that the instrument items are measuring the same construct, Cronbach's alpha was used to evaluate the reliability of the instrument items (Cronbach, 1970). Although researchers suggest 0.7 as the accepted reliability cut-off of Cronbach's alpha test, a value more than 0.6 is regarded as a satisfactory level (Hair et al., 2006). The reliability function in the SPSS 17 was used to test the internal consistency of the items for each scale. The results are presented in Table 2. The outcomes of the statistical analysis demonstrate satisfactory reliabilities, ranging from 0.745 to 0.867 for all scales.

Table 2: Reliability statistics

Scale	No. of Items	Mean	Cronbach Alpha (α)
Perceived Usefulness (PU)	5	3.995	.798
Perceived ease of use (PEOU)	5	3.698	.831
Attitude Toward Using (ATU)	3	4.198	.745
Behavioral Intention to Use (BI)	2	4.028	.756
Culture: Uncertainty Avoidance	4	4.199	.781
Power Distance	5	2.459	.867
Total	24		

4.3 Data collection and participants

Prior research showed that the educated Jordanian citizens are the early adopters of the Internet (Al-Jaghoub and Westrup, 2003) and are likely users of eGovernment services and websites in Jordan. Therefore, for this study we identify the university students and internet cafes users who are Jordanian citizens as the targeted population of this study. A face-to-face personally administered survey was the research method adopted in this study. The final survey (see Appendix 1) was distributed to a sample of 265 students drawn from different Universities and internet cafes in Jordan. A total of 208 surveys were returned, achieving a 78.4% survey response rate. Eleven incomplete surveys were exempted from the analysis. Thus, 197 of the returned surveys were usable responses.

Demographic characteristics of the overall participants are presented in Table 3. Of the surveys analyzed, 69 respondents (52.3%) were female and 128 (65.0%) were male. Most of them are between 20-30 years of age (67.0%), have a bachelor's degree (79.8%). In addition, most of the respondents have considerable experience in using a computer. 81.8% of the respondents had more than 3 years of computer use and around 60% of them are using the Internet in daily or weekly bases. These results indicated that university students in Jordan have considerable experience in using computers and the Internet. Demographic characteristics of the overall participants are presented in Table 3.

4.4 Data analyses

A set of multiple linear regressions and analyses of variance (ANOVA) were used to analyze the sample data, and to test the hypothesis associated with the research model. Multiple regression analysis is a statistical technique used to explore the relationship between a single dependent variable and several predictors (independent variables) (Hair et al, 2006). In addition, the tests of the regression assumptions were conducted. The results of testing the regression assumptions and the outcomes of the regression analyses are provided in the following sections.

4.5 Tests of multiple regression assumptions

It is important that researchers assess whether their analyses meet the underlying assumptions of multiple regression when testing the relationship between dependent and independent variables, based on a regression analysis conducted on sample data (Hair et al, 2006). These assumptions are: 'linearity', 'normality of residuals', 'multicollinearity' and 'residual independence'. In this study, there was no indication of any violation of the regression assumptions. For example, before testing hypotheses H7a and H7b, the tests of the regression assumptions were performed (same tests were

repeated for the whole set of multiple linear regressions). The following subsections will provide a brief discussion on each of these assumptions.

Table 3: Demographic characteristics of participants

Characteristics		Frequency	Percent
Gender	Male	128	65.0
	Female	69	35.0
Age	Less than 20	29	14.7
	20-30	132	67.0
	31-40	25	12.7
	41-50	10	5.1
	More than 50	1	.5
Education	High school	9	4.6
	Community College	11	5.6
	Bachelor	156	79.2
	Postgraduate	21	10.7
Income	Less than 200	99	50.3
	201-500	65	33.0
	501-800	14	7.1
	More than 800	19	9.6
Occupation	Private sector employee	23	11.7
	Public sector employee	43	21.8
	Student	131	66.5
Computer experience	Less than 3 years	36	18.3
	3-5	47	23.9
	More than 5 years	114	57.9
Internet usage frequencies	Once a month	39	19.8
	Several times monthly	42	21.3
	Several times weekly	55	27.9
	Once a day	20	10.2
	Several times daily	41	20.8

4.5.1 Linearity

Linearity was examined through the analysis of residuals and partial regression scatter plots. For example, by looking at the scatter plots in Figure 4, the residuals scatter plot does not exhibit any nonlinear pattern, and shows that the points are randomly and evenly dispersed throughout the scatter plot. This is an indication that the assumption of linearity and homoscedasticity for all variables has been met (Hair et al, 2006).

4.5.2 Normality of residuals

In this study**,** it is reasonable to assume normality in the variables since the sample size of the study is large enough (i.e. greater than 100) (StatSoft Inc, 2003).

4.5.3 Multicollinearity

Hair et al (2006) recommended examining the variable inflation factor (VIF) and tolerance level (TOL) to diagnose multicollinearity within multiple regression procedure. TOL is acceptable over 0.1 and VIF below 10 (Hair et al, 2006, Field, 2005).Table 3 shows the values of both TOL and VIF. Both of them were in the acceptable range. All the values of VIF are less than 10 and all the tolerance values are greater than 0.1. Hence, these tests confirmed that multicollinearity among the variables was not a problem.

4.5.4 Independence of residuals

The Durbin-Watson statistic was used to test whether the assumption of residual independence is acceptable or not. The Durbin-Watson statistic tests whether or not adjacent residuals are correlated

(Field, 2005), and is better if the values are closer to 2 (Field, 2005). Table 3 shows that the Durbin-Watson value is 1.895. Thus, the independence of residuals assumption does not violate, because the value is very close to 2.

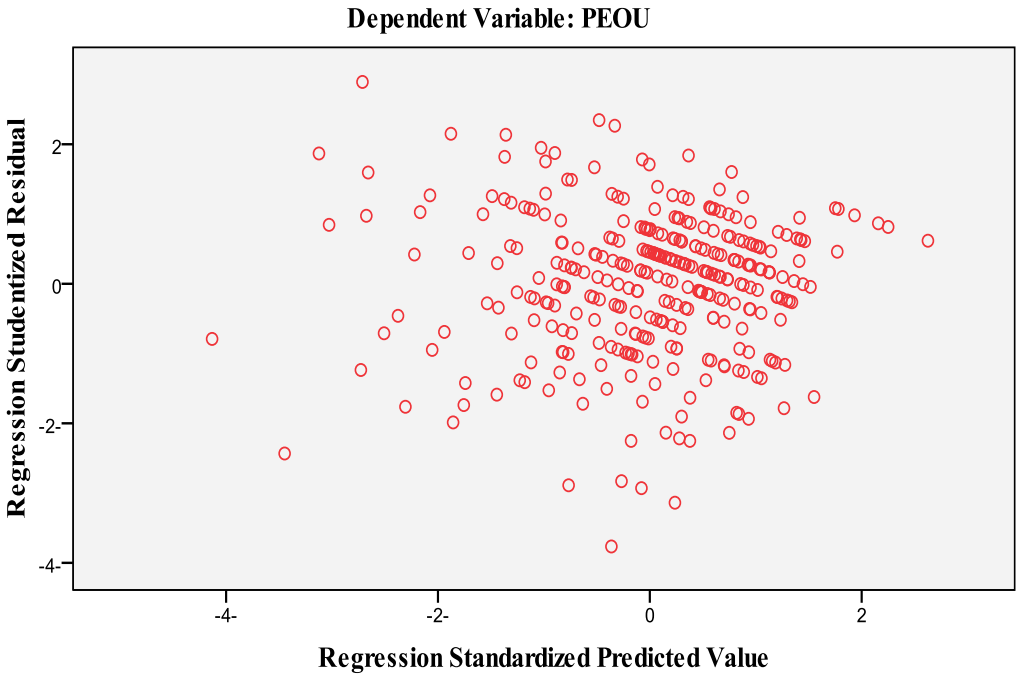

Figure 4: Scatter plot: Cultural dimensions (PD and AU) vs. PEOU

Table 3: Collinearity statistics: cultural dimensions vs. PEOU

Predictor Variable	Collinearity Statistics		Durbin-Watson
	Tolerance	VIF	
Uncertainty Avoidance (UA)	.816	1.531	1.895
Power distance (PD)	.717	1.487	

5. Analysis and results

Table 4 shows the results of the regression analysis based on the relationships proposed in the research model. Figure 5 is a graphical representation of the analysis results (only significant relations appear in this Figure). To investigate the research hypotheses, several multiple regression analyses were performed using SPSS 17.0 package for Windows. For example, to investigate hypotheses H6a and H6b, UA and PD were simultaneously regressed on perceived usefulness. A summary of the research hypotheses and test results are provided in Table 4 and Figure 5. The nine research hypotheses H1, H2, H3, H4, H5, H6a, H6b, H7a, and H7b have been supported from the empirical test. In addition, the results indicated that the research model explained around 43% of the variance in citizens' intention to adopt and use eGovernment websites (R^2 = 0.433).

Table 4: Path coefficients and hypothesis testing

Analyses Type	Hypothesis		Independent Variable	Dependent Variable	Beta	Supported
Multiple Linear Regression			Cultural dimensions	PU		
		H6a	UA		0.137*	Yes
		H6b	PD		0.187*	Yes
			Cultural dimensions	PEOU		
		H7a	UA		0.223**	Yes
		H7b	PD		0.202**	Yes
	H1	-	PU	Attitude	0.236**	Yes
	H2	-	PEOU	Attitude	0.182**	Yes

	H4	-	PEOU	PU	0.505***	Yes
	H5	-	PU	BI	0.236**	Yes
	H3	-	Attitude	BI	0.534***	Yes

*** Correlation is Significant at <0.001

** Correlation is Significant at <0.01

* Correlation is Significant at <0.05

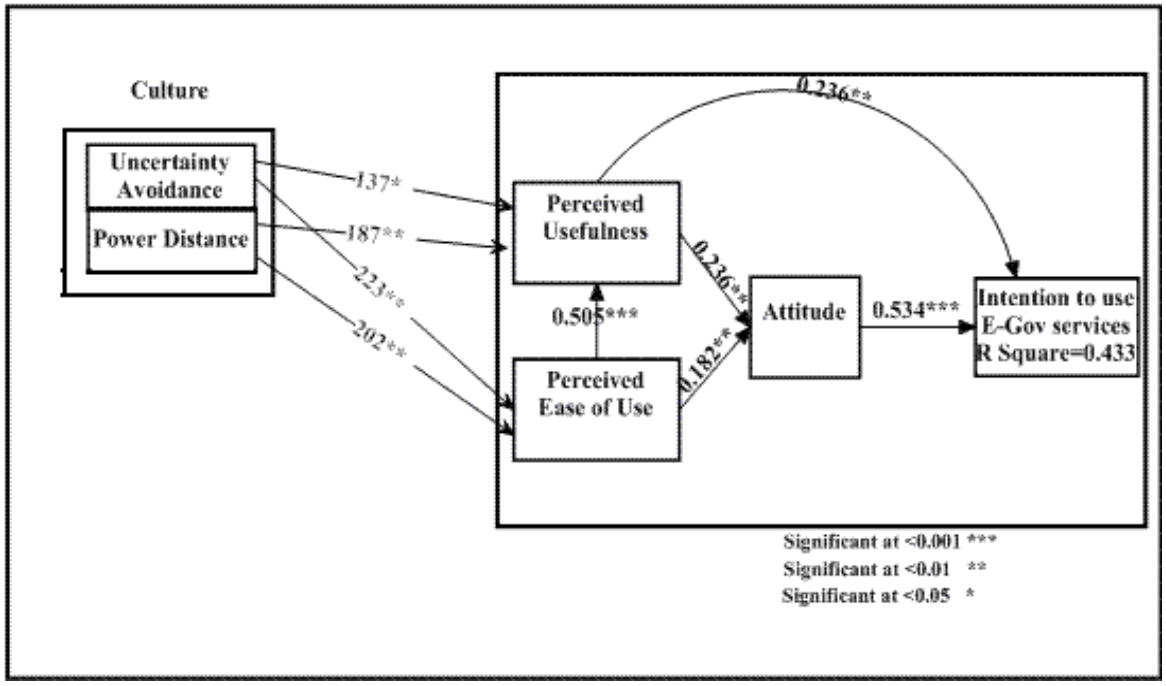

Figure 5: Significant relationships in the research model

6. Discussions

As hypothesized and consistent with TAM research, the results showed that perceived usefulness and attitude toward using eGovernment websites enhanced the level of citizen intention to use eGovernment websites, and together, accounted for 43.3% of the variance in the intention to use eGovernment services (R^2 = 0.433). The results also indicated that perceived usefulness and perceived ease of use were significant predictors of the citizen attitude toward using eGovernment services and websites, suggesting that the government should make eGovernment websites more useful and usable. For example, they could achieve this by increasing the general public awareness about the usefulness of using eGovernment; providing eGovernment and ICT training workshops; and refining IS/IT systems selections to meet different citizens' needs. However, perceived usefulness was the strongest predictor of the citizen attitude toward using eGovernment websites. This finding is in accordance with earlier TAM research that consistently found perceived usefulness a more powerful predictor than the perceived ease of use (e.g. Davis, 1989; Fu et al., 2006). This outcome yields the implication that usefulness is more interesting to some citizens than others. The possible justification may be that the effect of perceived ease of use on IS/IT usage often decreases with the familiarity of the user with the IS/IT (Venkatesh et al., 2003; Chang et al, 2005). In this study, only respondents who were familiar with eGovernment services and websites were selected for the model testing. Therefore, the effect of perceived ease of use on eGovernment services adoption was not as important as the perceived usefulness. Still, perceived ease of use of eGovernment websites indirectly enhanced citizen attitude toward using eGovernment websites through perceived usefulness. The influence of perceived ease of use on perceived usefulness was strong. This supports TAM which asserts the easier a system is to use, the more useful it can be. Hence, developing eGovernment websites that are easy to use will enhance the usefulness of the services and websites and indirectly influence citizen attitude positively toward using eGovernment services and websites.

This study also hypothesized there would be a positive relationship between national culture dimensions and TAM core constructs (i.e. perceived usefulness and perceived ease of use). The findings showed that only two cultural dimensions: power distance and uncertainty avoidance had a significant positive impact on perceived ease of use and perceived usefulness. In their study, Warkentin et al. (2002) proposed that of the five cultural dimensions, power distance and uncertainty avoidance are the two dimensions that most likely differentiate eGovernment adoption and use. Countries that are high in UA are less likely to adopt frame relay technology (Leidner & Kayworth, 2006). Since ICT is inherently risky, those less comfortable with uncertainty will be less likely to adopt new technologies. Similarly, cultures with high power distance are expected to have lower openness for new ideas such as eGovernment as it involves decision-making on issues where there is very little information about them (Lee and Peterson, 2000).

7. Practical implications and Limitations

7.1 Practical implications

The primary objective of this study was to identify the impact of the national culture on citizen adoption of eGovernment services and websites in developing countries, in particular Jordan. The study has fulfilled this objective. This research provides eGovernment officials and policy makers in Jordan with a practical and communicable checklist of the cultural and technological factors, which are seamlessly integrated; and that cover the perspectives of the citizens. This checklist should be considered as the cornerstone for any current and future eGovernment project. A survey on Jordanian citizens showed that the cultural dimensions - power distance and uncertainty avoidance; perceived usefulness; perceived ease of use; and the attitude - contribute significantly to the citizen adoption of eGovernment services and websites in Jordan. Since Jordan and other Arab countries are facing the problem of low-level citizen adoption of eGovernment services, the research outcomes are believed to assist eGovernment officials and policy makers from Jordan and also from the other Arab countries, that share many similar cultural characteristics to Jordan, to better position their strategies to encourage faster and more efficient adoption of these services.

Particularly, the outcomes of this study suggested that eGovernment officials need to pay attention to the dominant culture. For example, by providing the necessary training to alleviate anxiety could lead to better acceptance of IS/IT applications (Al-Gahtani, 2004), such as the eGovernment. Also, government agencies should provide services that are easy to use. Carter and Belenger (2005) suggested different ways to increase the perceived ease of use. One is to provide online tutorials through the eGovernment websites to illustrate how citizens can use and transact with eGovernment services and websites. Government agencies should also improve help and search facilities in their websites to enable citizens to effectively find relevant information. In addition, feedback from citizens about eGovernment services and websites should be encouraged, elicited and analyzed. This will enable government agencies to redesign their websites to present eGovernment services and information in a way that is easier for citizens to use. In addition, given the dominant effect of perceived usefulness, it is important for the government agencies to incorporate useful information and services into their websites. Also, these agencies should employ training and promotion approaches to develop citizens' beliefs of the usefulness and the public value of the eGovernment services.

7.2 Limitations

As with all studies, this study has its limitations also. This study adopted cross-sectional design. The cross sectional study represents a slice of time and does not show how the citizen attitude and behavior may change over time. Further study employing a longitudinal design would ascertain whether or not the citizen attitude toward using eGovernment services change over time. In addition, this study applied Hofstede's national culture framework. Although it has been widely applied and cited, several researchers have criticized, as mentioned earlier, the framework due to some methodological weaknesses (Baskerville, 2003; Fang, 2003).

8. Conclusion

This study integrates the technology acceptance model (TAM) and Hofstede's national culture dimensions to evaluate citizen adoption of eGovernment. The results of a multiple regression analysis indicate that perceived usefulness, perceived ease of use, and attitude are significant indicators of citizen intention to use state government services online. In addition, the results show that the two

cultural dimensions: power distance and uncertainty avoidance have significant impacts on citizens' intention to adopt eGovernment. As government agencies continue to invest in eGovernment services, it is very important for agencies to enhance their understanding of the factors that influence citizen adoption of eGovernment websites and services.

9. Appendix 1: Survey items

Behavioral Intention to Use (BI)

BI1	I intend to use the eGovernment portal and/or Ministry's website(s) to access government services frequently.
BI2	I predict that I should use the eGovernment portal and/or Ministry's website(s) to access government services in the future.

Attitude toward Using (ATU)

ATU1	Using the eGovernment portal and/or Ministry's website(s) to access government services is a good idea.
ATU2	I like the use of eGovernment portal and/or Ministry's website(s) to access government services.
ATU3	Using the eGovernment portal and/or Ministry's website(s) to access government services would be pleasant.

Perceived Usefulness (PU)

PU1	Using eGovernment portal and/or Ministry's website(s) enable me to access government services (e.g. getting national exam result online, getting national number) more quickly.
PU2	Using eGovernment portal and/or Ministry's website(s) enhances my effectiveness in accessing government services (e.g. find the most relevant information about a service).
PU3	Using eGovernment portal and/or Ministry's website(s) allows me to access more government services than would otherwise possible.
PU4	Using eGovernment portal and/or Ministry's website(s) to access government services increases my productivity (e.g. find information about services within shortest time frame).
PU5	Overall, I find eGovernment portal and/or Ministry's website(s) useful for me to access government services.

Perceived Ease of Use (PEOU)

PEOU1	Learning how to use eGovernment portal and/or Ministry's website(s) to access government services is easy for me.
PEOU2	I find it easy to use eGovernment portal and/or Ministry's website(s) to find what I want.
PEOU3	My interaction with eGovernment portal and/or Ministry's website(s) to access government services is clear and understandable.
PEOU4	EGovernment portal and/or Ministry's website(s) is flexible to interact with.
PEOU5	Overall, I find using eGovernment portal and/or Ministry's website(s) to access government services easy to use.

Uncertainty Avoidance (UA)

UA1	It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do
UA2	Rules and regulation are important because they inform workers what the organization expects of them
UA3	Order and structure are very important in a work environment
UA4	Working in a structured environment is better than working (rules and regulations) in an unstructured work environment

Power Distance (PD)

PD1	Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent
PD2	Manager should make most decisions without consulting subordinates
PD3	Employees should not question their manager's decisions

PD4	Manager should not ask subordinates for advice, because they might appear less powerful
PD5	Decision making power should stay with top management in the organization and not be delegated to lower level employees

References

Abu-Samaha, A. & Abdel Samad, Y. (2007) "Challenges to the Jordanian Electronic Government Initiative", *Journal of Business Systems*, *Governance and Ethics,* vol. 2, no. 3, pp 101-109.

Ajzen, I. & Fishbein, M. (1980) *Understanding Attitudes and Predicting Social Behaviour,* Prentice-Hall, Englewood Cliffs, NJ.

Al-Adawi, Z, Yousafza, S & Pallister, J (2005) "Conceptual Model of Citizen Adoption of EGovernment", in *Proceedings of the Second International Conference on Innovations in Information Technology (IIT'05)*, Dubai, United Arab, 26-28 September 2005, p 1-10.

Al-Gahtani, S. (2004) "Computer Technology Acceptance Success Factors In Saudi Arabia: An Exploratory Study", *Journal of Global Information Technology Management,* **v**ol. 7, pp 5-29.

Al-Hujran, O. & Al-dalahmeh, M. (2011) "The Role of National Culture on Citizen Adoption of eGovernment web sites ", in *Proceedings of the 11th European Conference on eGovernment*, University of Ljubljana, Ljubljana, Slovenia 16-17 June 2011.

Alhujran, O. & Chatfield, A. (2008) "Toward a Model for EGovernment Services Adoption: The Case of Jordan", in *Proceedings of the 8th European Conference on eGovernment*, Ecole Polytechnique, Lausanne, Switzerland, 10-11 July 2008, pp 13-22.

Alhujran, O & Shahateet, M. (2010) "Citizen adoption of eGovernment initiatives in developing countries: A case study of Jordan", in Proceedings *of the 10th European Conference on EGovernment***,** Limerick, Ireland**.**

Al-Jaghoub, S. & Westrup, C. (2003) "Jordan and ICT-led development: towards a competition state?", *Information Technology & People,* vol. 16, pp 93-110.

Al-Jaghoub, S., Al-Yaseen, H. & Al-Hourani, M. (2010) "Evaluation of Awareness and Acceptability of Using eGovernment Services in Developing Countries: the Case of Jordan", *The Electronic Journal of Information Systems Evaluation*, vol. 13, no. 1, pp 1 – 8.

Alomari, M, Sandhu, K., & Woods, P. (2010) "Measuring Social Factors in EGovernment Adoption in the Hashemite Kingdom of Jordan", *International Journal of Digital Society (IJDS)*, vol. 1, no. 2, pp 78-96.

Al-Sukkar, A. (2005) "The application of Information Systems in the Jordanian Banking Sector: A study of the Acceptance of the Internet", PhD thesis, University of Wollongong, Australia.

Bagchi, K, Cerveny, R, Hart, P & Peterson, M (2003) "The Influence of National Culture in Information Technology Product Adoption", in *Proceedings of the Ninth Americas Conference on Information Systems,* Tampa, Florida, USA, 4-6 August 2003, pp 957-965.

Baker, E., Al-Gahtani, S. & Hubona, G. (2010) "Cultural Impacts on Acceptance and Adoption of Information Technology in a Developing Country", *Journal of Global Information Management*, vol. 18, no. 3, pp 35-58.

Baskerville, R (2003) "Hofstede Never Studied Culture", *Accounting, Organizations and Society*, vol. 28, no. 1, pp 1-14.

Carter, L. & Belanger, F. (2004) "Citizen Adoption of Electronic Government Initiatives", in *the 37th Hawaii International Conference on System Sciences*, Hawaii, USA.

Carter, L. & Bélanger, F. (2005) "The utilization of eGovernment services: citizen trust, innovation and acceptance factors", *Information Systems Journal,* vol. 15, no. 1, pp 5-25.

Chatfield, A. & Alhujran, O**.** (2009) "A Cross-Country Comparative Analysis of eGovernment Service Delivery among Arab Countries", *Information Technology for Development,* vol. 15, no. 3, pp 151-170.

Choudrie, J. & Dwivedi, Y. (2005) "A Survey of Citizens' Awareness and Adoption of EGovernment Initiatives, The 'Government Gateway': A United Kingdom Perspective", in *eGovernment Workshop '05 (eGOV05)*, Brunel University, London, UK.

Cronbach, L. (1970) *Essentials of Psychology Testing,* Harper & Row, New York.

Davis, F. (1989) "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology", *MIS Quarterly,* vol. 13, no. 3, pp 319-340.

Davis, F, Bagozzi, R & Warshaw, P (1989) "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Management Science*, vol. 35, no. 8, pp 982-1005.

Davison, R & Martinsons, M (2003) "Guest Editorial; Cultural Issues and IT Management: Past and Present", *IEEE Transactions on Engineering Management*, vol. 50, no. 1, pp 3-7.

Erumban, A. & Jong, S. (2006) "Cross-country differences in ICT adoption: A consequence of Culture?", *Journal of World Business*, vol. 41, no. 4, pp 302–314.

Fang, T. (2003) "Critique of Hofstede's Fifth National Culture Dimension", *International Journal of Cross Cultural Management*, vol. 3, no. 3, pp 347-368.

Field, A. 2005, *Discovering Statistics Using SPSS: (And Sex, Drugs and Rock 'N' Roll)*, 2 edn, Sage Publications, London.

Fishbein, M. & Ajzen, I. (1975) *Belief, Attitude, Intentions and Behavior: An Introduction to Theory and Research,* Addison-Wesley, Boston.

Fu, J.-R., Farn, C.-K. & Chao, W.-P. (2006) "Acceptance of Electronic Tax Filing: A study of taxpayer intentions ", *Information & Management,* vol. 43, no. 1, pp 109-126.

Gefen, D., Pavlou, P., Warkentin, M. & Gregory, M. (2002) "EGovernment Adoption", in *Proceedings of the AIS 2002 Americas Conference on Information Systems,* Dallas, Texas, USA, 9-11 August 2002, pp 569-576.
Gilbert, D., Balestrini, P. & Littleboy, D. (2004) "Barriers and Benefits in the Adoption of E- government", *International Journal of Public Sector Management*, vol. 17, no. 4, pp 286-301.
Gupta, B., Dasgupta, S. & Gupta, A. (2008) "Adoption of ICT in a Government Organization in a Developing Country: An Empirical Study", *Journal of Strategic Information Systems,* vol. 17, no. 2, pp 140-154.
Hair, J., Black, W., Babin, B., Anderson, R. & Tatham, R. 2006, *Multivariate Data Analysis*, 6 edn, Pearson Educational International -Prentice Hall, Upper Saddle River- New Jersey.
Heijden, H. (2003) "Factors influencing the usage of websites: the case of a generic portal in the Netherlands", *Information & Management,* vol. 40, no. 6, pp 541-549.
Hofheinz, A. (2005) "The internet in the Arab World: Playground for political Liberalization", *International Politics and Society*, vol. 3, pp 78-96.
Hofstede, G. (1997) *Cultures and Organizations: Software of the Mind,* McGraw-Hill, New York.
Hubona, G., Truex, D., Wang, J. & Straub, D. (2006) "Cultural and Globalization Issues Impacting the Organizational Use of Information Technology" . In Galletta, D. F., & Zhang, P. (Eds.), *Human-Computer Interaction and Management Information Systems - Applications*. Armonk, NY: M. E. Sharpe.
King, W & He, J (2006) "A Meta-Analysis of the Technology Acceptance Model", *Information & Management*, vol. 43, no. 6, pp 740-755.
Kumar, V., Mukerji, B., Butt, I. & Persaud, A. (2007) "Factors for Successful eGovernment Adoption: a Conceptual Framework", *Electronic Journal of eGovernment,* vol. 5, no. 1, pp 63-76.
Lee, S., & Peterson, S. (2000) "Culture, entrepreneurial orientation, and global competitiveness", *Journal of World Business,* vol. 35, pp 401-416.
Leidner, D. & Kayworth, T. (2006) "A Review of Culture in Information Systems Research: Toward A Theory of Information Technology Culture Conflict", *MIS Quarterly,* vol. 30, no. 2, pp 357-399.
Malhotra, Y. & Galletta, D. (1999) "Extending the technology acceptance model to account for social influence: Theoretical bases and empirical validation", in *Thirty-Second Annual Hawaii International Conference on System Sciences-Volume 1*, Hawaii, USA.
Mathieson, K (1991) "Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior", *Information Systems Research*, vol. 2, no. 3, pp 173-191.
McCoy, S., Galletta, F. & King, R. (2007) "Applying TAM Across Cultures: The Need for Caution", *European Journal of Information Systems*, vol. 16, no. 1, pp 81-90.
Mofleh, S. & Wanous, M. (2008) "Understanding Factors Influencing Citizens Adoption of eGovernment Services in the Developing World: Jordan as a Case Study", *Journal of Computer Science*, vol. 7, no.2, pp 1-11.
Pavlou, P. (2003) "Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model", *International Journal of Electronic Commerce,* vol. 7, no. 3, pp 69-103.
Phang, C., Sutanto, J., Li, Y. & Kankanhalli, A. (2005) "Senior Citizens' Adoption of EGovernment: In Quest of the Antecedents of Perceived Usefulness", in *the 38th Hawaii International Conference on System Sciences*, Hawaii, USA.
Sekaran, U. (2003) *Research Method for Business: A Skill Building Approach,* John Wiely and Sons, New York.
Shumaila, Y, Gordon, R & John, G (2007) "Technology Acceptance: A Meta-Analysis of the TAM: Part 2", *Journal of Modelling in Management*, vol. 2, no. 3, pp 251-280.
StatSoft 2003, *Electronic Statistics Text Book*, accessed 30/9/2011, <http://www.statsoft.com/textbook/stathome.html>.
Straub, D (1994) "The Effect of Culture on IT Diffusion: Email and Fax in Japan and the US", *Information Systems Research*, vol. 5, no. 1, pp 23-47.
Straub, D. W. (1989) "Validating Instruments in MIS Research", *MIS Quarterly,* Vol 13, No. 2, pp 146-169.
Straub, D., Loch, K. & Hill, C. (2001) "Transfer of information technology to the Arab world: a test of cultural influence modeling", *Journal of Global Information Management,* vol. 9, no. 4, pp.141-172.
Straub, D. W., Gefen, D. & Boudreau, M. C. (2005) *Quantitative Research ,In Research in Information Systems: A Handbook for Research Supervisors and Their Students,* D. Avison and J. Pries-Heje, Amsterdam.
Taylor, S. & Todd, P. (1995) "Understanding Information Technology Usage: A Test of Competing Models", *Information Systems Research,* vol. 6, no. 2, pp 144-176.
Twati, J. (2006) "Societal and Organisational Culture and the Adoption of Management Information Systems in Arab Countries", PhD thesis, Griffith University, Brisbane, Australia.
Veiga, J, Floyd, S & Dechant, K (2001) "Toward Modeling the Effects of National Culture on IT Implementation and Acceptance", *Journal of Information Technology*, vol. 16, no. 3, pp 145-158.
Venkatesh, V. & Davis, F. (2000) "A theoretical extension of the technology adoption model: Four longitudinal field studies", *Management Science,* vol. 46, pp 186-204.
Venkatesh, V, Morris, M, Davis, G & Davis, F. (2003) "User Acceptance of Information Technology: Toward a Unified View", *MIS Quarterly*, vol. 27, no. 3, pp 425-478.
Wang, Y. (2003) "The Adoption of Electronic Tax Filing Systems: An Empirical Study", *Government Information Quarterly,* vol. 20, no. 4, pp 333–352.
Warkentin, M., Gefen, D., Pavlou, P. & Rose, G. (2002) "Encouraging Citizen Adoption of eGovernment by Building Trust", *Electronic Markets,* vol. 12, pp 157-162.

