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SAUDI CITIZENS' PERCEPTIONS ON MOBILE GOVERNMENT (mGOV) ADOPTION FACTORS

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Abstract

The Saudi government has recently paid serious attention towards utilising mobile technology in order to deliver government services electronically to its citizens. This study attempts to explore citizens' (potential users) perceptions on a number of factors that may be important for encouraging the widespread adoption of mobile government (mGov) services in the context of Saudi Arabia. The factors descriptively explored in this research include: perceived risk, innovativeness; performance expectancy, effort expectancy, social influence, facilitating conditions, perceived value, hedonic motivation and behavioural intension. The survey data utilised in this research was collected through a self-administered questionnaire to 600 participants (with a response rate of 66%) within a convenience sample. The results obtained through a descriptive analysis demonstrated that the aforementioned factors are perceived as important by Saudi citizens and they have strong behavioural intention to adopt mGov services.

Keywords: Saudi Arabia, mobile government, mGov, UTAUT2, perceived risk, innovativeness

1.0   Introduction

After the widespread adoption of the Internet and mobile devices, mobile government (mGov) is now being widely implemented for delivering government services electronically to the citizens and other relevant stakeholders. This mGov channel is designed to deliver a number of services such as: the results of exams in the education sector; weather forecasting; health issues and appointments in the health sector as well. mGov will offer several advantages to citizens including: convenience; always on; access anywhere; as well as time and cost-saving. In addition, mGov will promote transparency between government and its citizens by weakening bureaucratic structure and processes (Alsenaidy and Ahmad, 2012). The Saudi Arabian government has sought to accelerate the implementation and adoption of

mGov. This is due to the following two reasons. Firstly, Saudi Arabia has experienced a growing rate of Internet adopters in the past few years. More specifically, the number of mobile Internet subscribers has surpassed the number of fixed mobile line subscribers since 2005 and this cannot be done without having an excellent infrastructure compared with other developing states. As Saudi citizens constitute the largest group of mobile users all over the world according to the United Nations Conference on Trade and Development UNCTAD's report in 2012 with 1,800 mobiles for every 1,000 persons in Saudi Arabia (Alsenaidy and Ahmad, 2012). However, despite a widespread adoption of internet and mobile devices, citizens still prefer the traditional channels for communicating and transacting with government. Indeed, existing studies state that citizen's adoption of mGov service is still not equivalent to the ambition of the Saudi Arabian government (Abanumy and Mayhew, 2005; Alhussain et al., 2010; Al-Khalifa, 2011; Almutairi, 2011; Alsenaidy and Ahmad, 2012).

Despite the concerns regarding slow adoption and thin usage (Dwivedi and Irani, 2009), it is worth noting the scarcity of research in the Saudi Arabian context for understanding adoption factors. In the existing conceptual and qualitative studies (such as Abanumy and Mayhew, 2005; Ahmad, et al., 2014; Alhussain and Drew, 2010, 2012; Alhussain et al., 2010; Al-Khalifa, 2011; Almutairi, 2011; Alsenaidy and Ahmad, 2012; Al-Solbi and Mayhew, 2005), it has been argued and found that using mGov in Saudi Arabia is not common because Saudi citizens have not used it frequently. Furthermore, in their explanations, they mentioned a number of reasons such as risks associated with using this technology and lack of Saudi infrastructure. However, due to the nature of existing work, generalisation and validity of findings are limited. Considering the initial stages of implementation (Dwivedi et al., 2013), the low rate of adoption of mGov services and the lack of rigorous studies on this emerging area, this study attempts to explore citizens' (potential users') perceptions on a number of factors that may be important for encouraging the widespread adoption of mGov services in the context of Saudi Arabia.

This submission is structured as follows. The next section provides an overview of mGov literature followed by an overview of the theoretical basis in the third section. After that, this study presents its methodology, results and discussion outlined in the fourth, fifth and sixth sections, respectively. And finally, this study comes to its conclusion in section 7.

2.0   Literature Review

mGov stands for the group of services regarding the strategic employment of the services and utilisations that are solely accessible by means of mobile phones (Al-Busaidi 2012; Hung et al., 2013; Yfantis et al., 2013). The service of mGov can be regarded as being a strategy. Its application contains *inter alia*: the complete employment of all sorts of wireless and the technology of mobile phones; the implementations and the tools to improve the advantages pertaining to the parties participating in mGov involving the national people of the country; businesses and the units of the government; reduction of cost; effectiveness; transformation of the organisations of the public sector; adding convenience and flexibility; improving services for the citizens; and the capability of accessing more people via mobile phones compared to the wired Internet (Abdelghaffar and Magdy, 2012; Aloudat et al., 2014; Althunibat et al., 2011). The aforementioned advantages could be classified within three sets of advantages: advantages to the government, the national people and the industry (Alsenaidy and Ahmad, 2012; Madden et al., 2013).

Employing mGov within the context of developing countries has experienced various degrees of success according to the governments in each state and the level of infrastructure as well (Al-Busaidi, 2012; Alsenaidy and Ahmad, 2012). Within the context of Saudi Arabia, it is important to notify the huge development in the infrastructure in the overall IT sector. For example, in Saudi Arabia, the spending in the field of IT has surged up to $11.50 billion in 2014. Furthermore, the growth of smartphones is expected to increase from '25.01% to 48.63% at the end of 2011 till end 2016' (Ahmad et al., 2014). Likewise, the number of Internet subscribers soared up to 4.8 million compared with 3.4 million for fixed phone line subscribers. In addition, mobile subscribers and services hit unprecedented levels with 51 million in 2013 within an overall increasing rate of 18.3% (Ahmad et al., 2014). However, the overall rate of using mGov was modest as has been investigated by a number of researchers. For example, the utilisations of mGov were investigated by Abanumy and Mayhew (2005) who made their study by means of analysing the ways the public authorities made use of mGov. Through that research, they were referred to the modest development in applying mGov. They attributed the weakness of using mGov to the overall weakness in all eGov services. They suggested that the government did not do too much in this field in order to increase the tendency of potential users to adopt mGov. Likewise, Al-Khalifa (2011)

attested the fact that it was quite important to meet the public inclinations with regard to the types of mobile phones; i.e. what is current and new. To achieve that, they proposed a design approach that targets mGov websites in Saudi Arabia. In a similar fashion, the electronic readiness in the public and private organisations of the KSA was investigated by Al-Solbi and Mayhew (2005). They concluded by recommending the government to go on a plan to raise the electronic readiness inside the organisations of the government in addition to increasing public awareness about such services in their everyday lives. Likewise, the preferable security methods of mGov from the viewpoint of the consumers were specified by Alhussain and Drew's (2010) field study in the KSA. The main impetus of the study was that when the intentions of consumers are identified, accepting mGov would be higher. Furthermore, there are advantages of applying mGov such as increasing the effectiveness of governmental services; public information and services delivery; and a significant cost reduction in addition to the feasibility of using this service - these were pointed out by Alsenaidy and Ahmad (2012). However, they indicated that the obvious shortage of the awareness of people and the lack of trust were two of the basic obstacles when it came to the actual using of the service on a larger scale. Obviously, in two studies - one by Alhussain and Drew (2010) and another by Alsenaidy and Ahmad (2012) - the issue of actual usage was a major problem when it came to distributing mGov services. Consequently, this study focuses on the adoption of mGov by potential users and will be explained in this paper. Moreover, adding to the obstacle of awareness in Saudi Arabia, Almutairi (2011) pinpointed that making use of mGov is additionally confronted by 'mobile authentication, mobile payment, location-aware applications, and the content display management.'

It is clear that because of the newly born Internet services in the KSA, the matter of mGov has not, so far, been researched in a good way. It is evident that this issue needs additional research to investigate the lack of actual adoption of the mGov. As such, Alhussain et al. (2010) and Alhussain and Drew (2012) indicated the importance of using biometric technology in mGov in Saudi Arabia. Their study asserted that raising the actual use of mGov requires providing biometric technology. This technology would affect the willingness of accepting the actual use of mGov among potential users as it gives benefits, such as trust and privacy, among potential users. When Alhussain and Drew (2012) used the grounded theory, they discovered that PIN does not give that high security because PIN numbers can be guessed. They suggested in an attempt to give high security services to people, the use of the biometric authentication method.

As discussed before, there was general acceptance among various writers that although the up-surging numbers of Saudi citizens who use mobile, Internet subscribing and who constitute potential users of mGov, the actual adopting of mGov is still below the expectations. The findings of this current study will be as follow: this research will adopt UTAUT2 variables in addition to perceived risk (PR) and innovativeness (INN) in order to appoint exactly the factors that change the behavioural intention of Saudi potential users in order to adopt mGov. Furthermore, this study will consider the fact that there are no actual users of mGov and consequently it will not consider the actual usage variable and it will not consider the habit variable as there is no habit if there is no actual use.

3.0   Theoretical Basis

Various IS theories/models have been used in the context of mGov. These theories are: Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Decomposed Theory of Planned Behaviour (DTPB), Technology Acceptance Model (TAM), Diffusion of Innovations (IDT), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Dwivedi et al., 2011; Rana et al., 2013). They have been globally tested, modified and developed over the years in order to understand and predict individuals' behaviour towards the adoption of mGov. There are a plenty of studies that have used these theories as a theoretical basis for their research model (e.g. Abdelghaffar and Magdy (2012) used TAM, IDT and UTAUT; Al-Busaidi (2012) adopted TAM and IDT; Aloudat et al. (2013) used TAM; Althunibat et al. (2011) adopted TRA, TAM and UTAUT; Hung et al. (2013) embraced TPB; Yfantis et al. (2013) embraced UTAUT).

Venkatesh et al. (2012) suggested UTAUT2 in order to investigate customer usage of technology. They extended UTAUT to UTAUT2 to fill the gap that existed in the user adoption context and this has been done through developing new variables to the original UTAUT2. These variables are hedonic motivation (HM); price value (PV); and habit (HT) in addition to the original UTAUT factors including PE, EE, SI, FC, BI and USE. This integration of new constructs will provide a stronger prediction of consumers' behaviour intention compared with previous UTAUT models. Furthermore, in UTAUT2, a link between facilitating conditions and BI has been added. This addition paves the way to measuring the importance of FC in influencing the behavioural intention of potential adopters in this study

rather than measuring the effect of FC variables over actual usage as mentioned in the UTAUT model. Consequently, this study will consider UTAUT2 variables for understanding the adoption of mGov by potential users in Saudi Arabia.

UTAUT2 is a comprehensive model which has gathered variables of previous models within it. As such, perceived usefulness and perceived ease of use in TAM can be noticed from the implications of UTAUT2. As such, perceived expectancy and effort expectancy, respectively, in UTAUT2 have taken the place of what has just been mentioned about the implications of UTAUT2. In a similar fashion, according to Chen and Li (2010), contrary to perceived behavioural control in TPB, facilitating conditions in UTAUT2 have been embraced. Likewise, in UTAUT2, hedonic motivation has replaced Davis et al.'s (1992) perceived enjoyment. According to what has been referred by Venkatesh et al. (2012), social impact as an original construct in UTAUT2 is like other concepts like subjective norm and family influence. Relying on what Mallat et al. (2006) said: 'The value of price stands for price in addition to cost.'

Venkatesh et al. (2012) recommended testing the suitability of the UTAUT2 in a different context as well as testing it on other technologies rather than the mobile Internet. This research follows a quantitative study that has derived its variables from the UTAUT2 model in addition to other variables; i.e. perceived risk and innovativeness in order to investigate their effect on the behavioural intention of the potential adopters. These factors were carefully selected according to the mobile technology literature that proved the significant role that these factors play in influencing the adoption of mobile technology by the users. When doing that, the applicability of the basic UTAUT2 is going to be checked on mGov. Moreover, this makes the determination of the most important factors that may influence the adoption of mGov potential users; it will also help in providing a conceptual model that may suit the Saudi Arabian context.

Furthermore, this research benefits from previous qualitative studies in that they did not mention the lack of frequency and dependency in using mGov; hence, discard the independent variable habit and the dependent variable actual usage which are considered as a part from UTAUT2 model's constructs. Discarding both variables is a logical step as they cannot understand the existence of habit without the existence of actual behaviour as habit focuses on the 'intentionality as the overarching mechanism and key driver of behavior'

(Venkatesh et al., 2012). As a result, they recognised the importance of habit for actual behaviour by adopting a direct effect from habit to actual behaviour. Thus, discarding the behaviour variable will abolish the need for the habit variable. The suggested constructs are demonstrated below in Table1:

Factor Examined	Definition	Example citations that have tested this construct for examining adoption of mobile applications
Performance Expectancy (PE)	"The degree to which using a technology will provide benefits to consumers in performing certain activities" (Venkatesh et al., 2012, p. 159)	Karaiskos et al. (2009); Susanto and Goodwin (2010); Tai and Ku (2013); Venkatesh et al. (2012); Yfantis et al. (2013)
Effort Expectancy (EE)	"The degree of ease associated with consumers' use of technology" (Venkatesh et al., 2012, p. 159)	Alsheikh and Bojei (2014); Gao and Deng (2012); Thong et al. (2011); Venkatesh et al. (2012); Yfantis et al. (2013)
Facilitating Conditions (FC)	"Refer to consumers' perceptions of the resources and support available to perform a behaviour" (Venkatesh et al., 2012, p. 159)	Alalwan et al. (2014); Hung et al. (2013); Pedersen (2005); Venkatesh et al. (2012); Wiratmadja et al. (2012); Yfantis et al. (2013)
Social Influence (SI)	"The extent to which consumers perceive that important others (e.g. family and friends) believe they should use a particular technology" (Venkatesh et al., 2012, p. 159)	Abdelghaffar and Magdy (2012); Althunibat et al. (2011); Babaee (2010); Dwivedi and Irani (2009); Huiying et al. (2010); Venkatesh et al. (2012)
Hedonic Motivation (HM)	"The fun or pleasure derived from using technology and it has been shown to play an important role in determining technology acceptance and use" (Brown and Venkatesh, 2005, p. 402)	Alalwan et al. (2014); Al-Busaidi (2012); Chang et al. (2013); Kim et al. (2007); Petrova and Qu (2007); Venkatesh et al. (2012)
Price Value (PV)	"Consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost for using them" (Venkatesh et al., 2012, p. 161)	Alborz (2010); Karaiskos et al. (2009); Kim (2012); Ko et al. (2009); Venkatesh et al. (2012)
Innovativeness	"The willingness of an individual to try out any new information technology" (Zarmpou et al., 2012, p. 229)	Dai and Palvi (2009); Das (2011); Karaiskos et al. (2009); Yang et al. (2012); Zarmpou et al. (2012)
Perceived Risk (PR)	"The expectation of losses associated with purchase and acts as an inhibitor to purchase behaviour" (Featherman and Pavlou, 2003, p. 454)	Alalwan et al. (2014); Alsheikh and Bojei (2014); Althunibat et al. (2011); Babaee (2010); Tai and Ku (2013); Yang et al. (2012)

Behaviour Intention (BI)	"The intention of the user to use the technology" (Yfantis et al., 2013, p. 160)	Pedersen (2002); Van Biljon and Kotzé (2008); Venkatesh et al. (2012); Wu and Wang (2005); Yfantis et al. (2013)

Table 1: Description of factors

4.0   Methodology

This study utilised a total of thirty-five scale items that were derived from the literature of information system in order to measure the selected variables; i.e. innovativeness and perceived risk in addition to other variables in the UTAUT2 model. To do that, it is essential to make items that will help in assessing the traits of the related variants. Venkatesh et al. (2012) used various items in order to measure the variables of the UTAUT2 as seen in Table 2 below. In addition, these items were used and reused by a number of writers. Therefore, perceived risk was selected from Featherman and Pavlou (2003); Wu and Wang (2005); Zhou (2012). Furthermore, this paper selects the innovativeness items from Agarwal and Prasad (1998); Aldás-Manzano et al. (2009) and Karaiskos et al. (2009).   The degree of the responses was estimated using the seven-point Likert scale ranging from strongly agree to strongly disagree. When it comes to the demographic variables, this study adopts the following demographic information: gender, age, education, occupation and monthly income (see Table 4). Regarding the language of the data collection tool, the questionnaire was translated into Arabic so that the cultural and linguistic differences become ineffective (Brislin, 1976).

The tool was assessed and checked for validity by experts who backed up the validity of the scale but making a few recommendations with regard to rewriting some words or sentences more clearly (Dwivedi et al., 2006). After that, a pilot study was conducted using 30 questionnaires which were given to Saudi potential adopters who were directed to give their ideas in case they met any difficulties in answering the questionnaire (Dwivedi et al., 2006). The experts made certain about the suitability of the questionnaire's items in terms of language simplicity, clarity and length. Furthermore, the reliability of the scale was affirmed using Cronbach's alpha which yielded an alpha value of .70 of all of the undertaken constructs (Nunnally, 1978) which means that the measures used in this study had a good internal and consistent degree and appropriately met the reliability principle.

When it came to the sampling procedure, this study implemented a convenience sampling because the researcher assumed having no list of the Saudi mGov potential adopters, and because of having Saudi mGov potential adopters being dispersed over a fast geographic area; in other words, convenience sampling is appropriate from the viewpoint of cost (Dwivedi et al., 2006; Franzosi, 2004). Moreover, a sample of convenience made it possible to have a result that can be generalised more appropriately because it allowed for the inclusion of a variety of profiles and traits of potential adopters (Franzosi, 2004). The population that was going to be sampled were within particular cities in Saudi Arabia which have been chosen after dividing Saudi Arabia into three geographical areas (i.e. west, middle and east), and the cities that are populated the most (i.e. Jeddah, Riyadh and Dammam in the west, middle and east regions respectively) were chosen. It is worth noting in context that the aforementioned selection criterion was in accordance with the order of population of Saudi cities as stated by the Central Department of Statistics and Information (2014) i.e. Riyadh and Jeddah were in the first position while Dammam in the second. Therefore, this study relied on the regional importance of the cities when choosing its 600 participants. Table 2 contains the scale items of the selected factors; i.e. PE, EE, HM, SI, FC, PV, PR, INN, and BI.

Construct	Item	Source
Performance Expectancy (PE)	PE1. mGov will be useful in my daily life.	Venkatesh et al., (2012)
	PE2. Using mGov will help me accomplish things more quickly.	
	PE3. Using mGov will increase my productivity.	
	PE4. Using mGov will increase my chances of achieving things that are important to me.	
Effort Expectancy (EE)	EE1. Learning how to use mGov will be easy for me.	
	EE2. My interaction with mGov will be clear and understandable.	
	EE3. mGov will be easy to use.	
	EE4. It will be easy for me to become skilful at using mGov.	
Social Influence (SI)	SI1. People who are important to me think that I should use mGov.	
	SI2. People who influence my behaviour think that I should use mGov.	
	SI3. People, whose opinions that I value, prefer that I use mGov.	
Facilitating Conditions (FC)	FC1. I have the resources necessary to use mGov.	

	FC2. I have the knowledge necessary to use mGov.	
	FC3. mGov is compatible with other technologies I use.	
	FC4. I can get help from others when I have difficulties using mGov.	
Hedonic Motivation (HM)	HM1. Using mGov will be fun.	
	HM2. Using mGov will be enjoyable.	
	HM3. Using mGov will be very entertaining.	
Price Value (PV)	PV1. mGov is reasonably priced.	
	PV2. mGov is good value for the money.	
	PV3. At the current price, mGov provides good value.	
Perceived risk (PR)	PR1. Providing mGov service with my personal information would involve many unexpected problems.	Zhou (2012)
	PR2. It would be risky to disclose my personal information through this service provider.	
	PR3. There would be high potential for loss in disclosing my personal information to this service provider.	
	PR4. Using mGov services subjects your checking account to financial risk.	Featherman and Pavlou (2003)
	PR5. I think using mGov puts my privacy at risk.	Wu and Wang (2005)
Innovativeness (INN)	INN1. If I heard about mGov technology, I would look for ways to experiment with it.	Karaiskos et al. (2009)
	INN2. Among my peers, I am usually the first to explore new technologies.	
	INN3. I like to experiment with new technology, i.e. mGov.	
	INN4. In general, I am not hesitant to try out new information technologies.	Agarwal and Prasad (1998)
	INN5. Compared to my friends, I seek out a lot of information about mGov services.	Aldás-Manzano et al. (2009)
	INN6. I would try new mGov service even if in my circle of friends nobody has trialled it before.	
Behavioural Intention (BI)	BI1. I will use mGov in the future.	Venkatesh et al. (2012)
	BI2. I will always try to use mGov in my daily life.	
	BI3. I will plan to use mGov frequently.	

Table 2: Scale Items of the selected factors

5.0   Results

5.1 Response Rate

In this study, and from a convenience sample of mGov Saudi Arabian potential users, 600 self-administered questionnaires were assigned to collect the required data from three main cities in Saudi Arabia (Jeddah, Riyadh and Dammam) as mentioned previously in the Methodology section. 191 questionnaires were distributed in Jeddah, 212 in Riyadh and finally 197 in Dammam. 418 out of 600 questionnaires were returned, and this represents 69.67 % as a response rate. In detail, 144 questionnaires were returned from Jeddah, 172 from Riyadh and finally 102 from Dammam. However, eighteen questionnaires returned incomplete; four from Jeddah, eleven from Riyadh and three from Dammam. In addition to this, four questionnaires returned from Riyadh were found with more than one answer on the same question. Accordingly, these problematic and incomplete (above 25% of scale items are empty) questionnaires are considered as invalid responses, and they should be removed in the data-editing process stage (Sekaran, 2003). In conclusion, Table 3 outlines the distributed sample for mGov technology, returned responses, incomplete and problematic responses, and finally valid responses.

	mGov	%
Sample	600	100
Returned responses	418	69.67
Incomplete and problematic responses	22	3.67
Valid responses	396	66

Table 3: Response Rate

5.2 Respondents' Profile and Characteristics

According to Table 4 below, 396 of the responses showed that more than half of them were males (57.6%), whereas 42.4% were females. With regard to the respondents' age, the descriptive statistics illustrate that the largest part was within 30-39 years old with 58.1% followed by the age group of 40-49 (16.2%). The rest of the percentages were divided among the age group of 21-29 (10.1%) and 9.3% for those who were above 50, whereas the smallest

percentage was 6.3% between 18-20 years old. Regarding the educational level, Table 4 shows that the biggest category of the educational level having a Bachelor's Degree (42.9%). The second largest group were diploma holders (20.7%) followed by 20.2% as postgraduates and 14.4% as high school holders. A very small percentage of respondents with (1.8%) held less than high school qualification. In terms of occupation, government employees represented the majority by 63.9%, and 15.9% of the responses were private sector employees followed by 11.4% as self-employed and 8.8% as students. Regarding the monthly income, Table 4 illustrates that the largest percentage of the sample (53.5%) earned between 8001-14000 SR followed by those who have a monthly income between 4001-8000 SR (16.2%). Next, there were two groups that had nearly the same percentages; 11.6% for those who have more than 20000 SR, and 11.1% between 14001-20000 SR per month. Finally, the smallest group was between 1000-4000 SR, and it represented 7.6% of the usable responses (see Table 4 below).

Demographic Profile	Number of Respondents (N= 307)	Percentage (%)
Gender		
Male	228	57.6
Female	168	42.4
Total	396	100
Age		
>=18-20	25	6.3
21-29	40	10.1
30-39	230	58.1
40-49	64	16.2
50 and above	37	9.3
Total	396	100
Education		
Less than High School	7	1.8
High School	57	14.4
Diploma	82	20.7
Bachelor	170	42.9
Postgraduate	80	20.2
Total	396	100
Occupation		
Student	35	8.8
Government employee	253	63.9
Private sector employee	63	15.9
Self employed	45	11.4
Total	396	100

Monthly income (Saudi Riyals)		
1000-4000	30	7.6
4001-8000	64	16.2
8001-14000	212	53.5
14001-20000	44	11.1
More than 20000	46	11.6
Total	396	100

Table 4: Respondents' Profile and Characteristics

5.3 Descriptive Analysis of Measurement Items

The descriptive statistics show that there are four items devoted to measuring citizens' perceptions on performance expectancy (PE) as shown below in Table 5. The average mean was recorded with a value of 6.59 (±.584) for all PE items. PE1 achieved the highest mean score of 6.64 (±.567). In comparison, the lowest mean was 6.56 (±.598) as a value recorded for PE3. According to Table 5 below, there are four items identified to measure citizens' perceptions on effort expectancy (EE). As seen, the largest mean scores were 6.48 (±.650) and 6.42 (±.653) for EE4 and EE1 respectively, and the average mean score for all EE items was 6.42 (±.661). Social influence (SI) was measured by three items. In detail, the highest mean scores were 6.47 (±.584) for SI1 and 6.45 (±.697) for SI3 followed by 6.41 (±.612) for SI3 as the lowest mean. In addition, the average mean score for all SI items was 6.44 (±.631). Moreover, four items were identified to measure citizens' perceptions on facilitating conditions (FC) as shown below. FC2 had the highest mean score of 6.45 (±.664) while FC4 had the lowest mean with a value of 6.26 (±.740), and the average mean value recorded for all FC items was 6.38 (±.680).

Table 5 shows that there are three items allocated to measuring citizens' perceptions on hedonic motivation (HM). The mean values of all HM items ranged between 6.68 (±.476) as the lowest value and 6.77 (±.442) as the highest value recorded for HM1. The calculated average mean value of all HM items was 6.72 (±.464). Results on Table 5 show that price value (PV) was measured by three items as well with different mean values ranging between 5.89 (±.752) and 5.92 as the highest score recorded for PV1 and PV2 with different SD values. In addition, the average mean for all PV items was found with a value of 5.91 (±.753). Table 5 also shows that there are six items identified to measure citizens' perceptions on

innovativeness (INN). INN2 had the largest mean value of 6.49 (±.684) compared to INN3 that had the lowest mean score of 5.42 (±1.301). In addition, the average mean value for all INN items was 6.20 (±.856). As seen in Table 5, five items were identified to measure citizens' perceptions on perceived risk (PR). Their mean scores ranged between 1.87 (±.606) and 2.06 (±.617) recorded for PR5 as the highest value. The average score of all PR items was 1.97 (±.592). Finally, with regard to behavioural intention (BI), three items were adopted to measure the construct as seen in Table 5. The lowest mean was for BI3 with a value of 6.67 (±.531) while the highest mean score was 6.70 (±.519) for BI2. The average mean value recorded for all BI items was 6.68 (±.523).

Construct	Item	Mean	Standard Deviation
Performance Expectancy (PE)	PE1	6.64	.567
	PE2	6.60	.562
	PE3	6.56	.598
	PE4	6.57	.611
	Average	6.59	.584
Effort Expectancy (EE)	EE1	6.42	.653
	EE2	6.39	.664
	EE3	6.40	.680
	EE4	6.48	.650
	Average	6.42	.661
Social Influences (SI)	SI1	6.47	.584
	SI2	6.45	.697
	SI3	6.41	.612
	Average	6.44	.631
Facilitating Conditions (FC)	FC1	6.41	.636
	FC2	6.45	.664
	FC3	6.41	.683
	FC4	6.26	.740
	Average	6.38	.680
Hedonic Motivation (HM)	HM1	6.77	.442
	HM2	6.68	.476
	HM3	6.71	.474
	Average	6.72	.464
Price Value (PV)	PV1	5.92	.769
	PV2	5.92	.740
	PV3	5.89	.752
	Average	5.91	.753
Innovativeness (INN)	INN1	6.15	.959
	INN2	6.49	.684
	INN3	5.42	1.301
	INN4	6.39	.751
	INN5	6.43	.717

	INN6	6.35	.725
	Average	6.20	.856
Perceived Risk (PR)	PR1	1.98	.515
	PR2	2.02	.654
	PR3	1.87	.606
	PR4	1.92	.569
	PR5	2.06	.617
	Average	1.97	.592
Behavioural Intention (BI)	BI1	6.69	.519
	BI2	6.70	.519
	BI3	6.67	.531
	Average	6.68	.523

Table 5: Descriptive Analysis of Measurement Items

6.0   Discussion

The descriptive results presented in the previous section help to visualise what the data showed. In detail, after overviewing the literature review and the main theories in the IS field, this study adopted the UTAUT2 variables as the most fitting theory. As previously mentioned, perceived risk and innovativeness were added in order to investigate the most influential factors that affect behaviour intention in Saudi Arabia towards using mGov services. By collecting empirical data from 600 participants (with a valid response of 396 participants), the findings provided a summary regarding the response rate, respondents' profile and characteristics, and a descriptive analysis of measurement items.

In general, and regarding the descriptive analysis of the measurement items, the high mean, which is combined with the low standard deviation, indicated that the respondents' answers tended to be 'strongly agree' with a high certainty. Furthermore, the high mean, which is combined with the high standard deviation, indicated that the respondents' answers tended to be 'strongly agree' with a high uncertainty. In contrast, the low mean, which is combined with the low standard deviation, indicated that the respondents' answers tended to be 'strongly disagree' with a high certainty i.e. perceived risk (PR) as participants seems to be less concerned regarding risks related to mGov services. Moreover, the low mean, which is combined with the high standard deviation, indicated that the respondents' answers tended to be 'strongly disagree' with a high uncertainty (Dancey and Reidy, 2007). In other words, and regarding the standard deviation, the low value reflects that there is a high certainty that the

majority of participants have similar views towards the variable. However, the average mean and standard deviation of all variables in this study were in their recommended level as seen in Table 5 above. In detail, it seems that the items of PE, EE, SI, FC, HM, PV, INN and BI were able to capture a high average mean value with a low standard deviation. Accordingly, it is worth noting that the majority of the respondents positively perceive the aspects related to these factors. Thus, future research should take these factors into account so that the significance level of these factors over the adoption of mGov in Saudi Arabia can be examined; this will definitely guide the Saudi government to give more attention towards the most significant factors that can raise the rate of mGov adopters.

6.1 Contribution

Noticeably, mGov technology has not been quantitatively researched. Furthermore, as mentioned previously in the literature review section, there is a scarcity of qualitative studies regarding mGov especially in Saudi Arabia, This study aimed at studying, statistically, the factors that affect the behavioural intention towards adopting mGov service among the Saudi Arabian potential users rather than studying the actual users. Indeed, tackling this matter will contribute in solving the contradiction between UNCTAD's report (2012) that Saudi citizens constituted the highest category of mobile users in the world and the Saudi existing writings that referred to the modest applications of mGov among them. Although there is an assertion on the predictable significance of UTAUT2 factors, this study suggested including PR and INN to fix a probable gap in UTAUT2 that discarded the empirical findings about the importance of these two variables. Consequently, the accuracy of prediction will increase when studying mGov adoption. In addition, as various statistics and Saudi studies indicated to the lack of actual use of mGov, this study discarded the usage as a dependent variable from UTAUT2 as well as removing the independent variable; i.e. habit as it is intrinsically correlated with the usage. Moreover, Venkatesh et al. (2012) recommended examining the applicability of UTAUT2 on new technology and in different countries. Adopting the UTAUT2 factors in addition to the new variables as an extension to suit the Saudi Arabian context will contribute to the research lane of acceptance and use of technology. Also, through having a descriptive analysis of the findings, this research asserted the role of each variable in affecting the decisions of the participants. To sum, this study helped to appoint the factors that if, applied, by the government, the adoption of mGov may surge. The increase in

the adoption of mGov will positively affect the developmental policies of the Saudi government as well as the financial performance for the government and citizens.

7.0 Conclusion

This study examined a considerable number of studies regarding the factors that affect the adoption of mGov among potential users. Within the context of Saudi Arabia, the previous existing research suggested that although there is a widespread usage of the Internet and mobile technology, as well as the efforts of the Saudi government, the using of mGov is still below their ambitions. As a result, this research is trying to appoint the different factors that might affect the behavioural intention of the potential users to use mGov and consequently, help the government to take the right choices in this issue. After studying a collection of IS theories, this study adopted nine variables: i.e. PE, EE, PV, SI, HM, FC, PR, INN and BI. Thus, in this modified UTAUT2 as a theoretical base, the researcher did a descriptive analysis for each one of these variables after distributing the questionnaire to 600 participants in Saudi Arabia. The findings referred that these factors play a role in changing the behavioural intention for the participants.

7.1 Limitations and Future Research Directions

This study aimed at investigating the adoption of mGov among potential users in the context of Saudi Arabia. Firstly, doing a descriptive analysis rather than an inferential analysis will not permit extending the findings to the whole population in Saudi Arabia. Accordingly, this study will open doors to assume the hypotheses regarding the relations between factors in addition to using structural equation modelling (SEM) to test the model fitness and structural model. Secondly, consider investigating the factors that affect the adoption of potential users of mGov rather than considering other applications of mGov; i.e. Gov-Gov (G2G) transactions and Gov-Businesses (G2B). These transactions will not offer a comprehensive understanding of the overall services, scopes, benefits and challenges of mGov in the domain of Saudi Arabia. Furthermore, consider studying the behaviour intention rather than the actual use of mGov for it will not give an overall view about using this service in Saudi Arabia. As a result, having a future research should take into consideration these issues along with having comparative research between them. This may assist the government to select the best

strategy for raising the levels of mGov services. Furthermore, following a longitudinal study will give a better comprehensive understanding towards this issue and the range of influences of the studied variables. These influences are stable and continuous over a period of time. As such, the classic error of contingency will be minimised in this study which considered a static number of variables with one 'snap-shot' in time. Moreover, as this study implemented in the context of Saudi Arabia which is a developing country, cultural context should be considered when comparing between developing and developed states.

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