

THE ACCEPTANCE OF USING M-GOVERNMENT SERVICES IN JORDAN

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ABSTRACT

Mobile services have enormous potential to be one of the government's most effective tools, to govern, control, and administer community requirements and justice. In order for the governments to offer acceptable and attainable mobile services, these services have to be used by citizens. The preliminary question that lead to this study was: What are the factors that affect user acceptance of m-Government services in Jordan?, or how can we motivate the citizens to utilize services? As m-Government services are a new field, there is a minimal amount of research and literature that could assist in discerning the factors that affect acceptance of such services. This study applies the Technology Acceptance Model (TAM) to examine the user acceptance of using m-Government services. The results show that Perceived usefulness (PU) and Perceived ease of use (PEOU) affect citizen's acceptance of m-Government services. Failures to demonstrate the advantages of m-Government services to potential citizens will likely result in a low rate of acceptance.

Keywords: *Acceptance, E-Government, M-Government .TAM model.*

1. INTRODUCTION

Mobile communication technologies are a key catalyst for transformational change of functionalities of governments [1]. In 2010 the total mobile subscriptions crossed 5.282 billion [2]. Mobile phones have emerged from being a luxury product to a mass necessity. The journey of the last 10 years of mobile technology has been ascensional, where a lot has been accomplished in a short period of time. In 1998, the global mobile penetration was around 5%, it crossed 50% in 2008 and it is expected to have almost the same number of mobile subscriptions as the number of global citizens by 2018 [5]. Between 2000 and 2009 the worldwide Internet Usage has grown 362.3% [1]. Internet is used by almost all the cultures of the world and it is embedded in everything in the world. The same trend is already being recognized with mobile devices and applications.

The integration of internet and mobile devices have opened the doors of real mobility and 24X7 services. The special features of mobile phones have attracted many people to use it. By today's standards it can be said that mobile phones are no more luxury, instead they have become necessity. This has made a lot of organizations to offer their

services through mobile phones. It is interesting to note that private sectors have started offering mobile services, much earlier than the public sector. The services offered through mobile devices are getting more and more periodically. It is very significant to realize that the mobile devices, especially the mobile phones have become a solid answer to a lot of real world problems, such as reaching the citizens anytime and anywhere. Though we claim that the mobile phones have brought a lot of changes to the societies and organizations, it is difficult to measure the amount of changes that they have made in the social and economic spheres.

Governments are able to exploit the ubiquitous nature of mobile technologies in order to maintain their control, and contact with their constituents. Mobile technologies enable the citizens, businesses and government officials to effectively and efficiently access, manipulate and accomplish their needs by rendering mobile services from anywhere, at any time. M-Government is then the fruit of the government's efforts to utilise mobile technologies to communicate with, and offer services to end users via the mobile services.

The term, m-Government refers the use of mobile wireless communication technology within the government administration and in its delivery of services and information to citizens and business' [3]. By connecting a wireless part to a wired end part, the m-Government creates and guarantees mobility for the public, business, and the government services. Furthermore, convenience in accessing information, real time access to information, and personalization of information access are guaranteed to maximize benefits of using information and in turn create further advanced e-Government services [4].

Mobile services have enormous potential to be one of the government's most effective tools, to govern, control, and administer community requirements and justice. In order for the governments to offer acceptable and attainable mobile services, these services have to be used by citizens. The preliminary question that lead to this study was: What are the factors that affect user acceptance of m-Government services in Jordan?, or how can we motivate the citizens to utilize services? As m-Government services are a new field, there is a minimal amount of research and literature that could assist in discerning the factors that affect acceptance of such services. M-Government implementation is still in its very early stages – whereby a comprehensive m-Government has not yet been created [6]. The transformation from e-Government to m-Government calls for researching the integration process between e-Government and m-Government. It additionally entails investigation of all the pressures that may affect the transition process. Such pressures differ between nations and include the nation's technological and information infrastructure, mobile device penetration, user acceptance, public and social pressures, and security and privacy [7].

2. M-GOVERNMENT DEFINITION AND ITS INTEGRATION WITH E-GOVERNMENT

M-Government is considered as a subset of e-Government, which uses mobile and wireless technology within the government administration and in its delivery of services and information to citizens and firms [8]. The concept of m-Government is related various features such as: WAP, MMS, SMS, Web, Satellite etc [9]. According to El Kiki & Lawrence [10] the m-Government should not be viewed as a new type of government, instead it must be considered as a rather a new 'tool' for Government. The m-

Government is a mix of complex strategies, which improves the efficiency of the traditional government tasks, by changing the working style of the government and enabling a favourable relationship between the government and the public. From the employee's perspective, m-Government provides a seamless environment for them to communicate, from clients' office or on the road without the need to plug into a network interface, in addition to accessing their emails, calendars, maps and tasks. For example field workers, customs inspectors, immigration agents, medical, law enforcement and military personnel can all benefit by access to current data to make better and faster decisions [11]. From the citizen's and business's perspective, the m-Government facilitates accessibility to government services and public information at anytime, anywhere, thus saving time, effort and money. Generally, citizens do not carry computers, but information and public services can, as m-Government provides for instant availability of services and information, helping frequent travellers and people on the move to access government services [12].

As an example, in Jordan the citizens can use short message service (SMS) to check their car traffic violation information, from wherever they are; this is in addition to receiving real-time information on their mobile devices. Another example is the state government in California, as they established a webpage for citizens in order to let them register, if they desire receiving 'cell notification services' for traffic updates, energy alerts, lottery results and even papers from the Governor's press room. Citizens are also involved in the fight against crime and illegal drugs by using SMS [10]. In light of e-Government definition mentioned at the end of Section II, it can then be stated that both e-Government and m-Government integrate and complement each other, prompting new pulse of effective and efficient services to citizens, businesses and government officials.

Since the e-Government initiatives have failed to live up to expectations of citizens, m-Government initiatives can rebuild trust, through faster interaction with the citizens and more effective and efficient service delivery [13][14]. The stable interaction and managed fluid organization, with great potential for enhanced hierarchy and vertical integration, can provide a suitable underpinning for m-Government initiatives [14]. M-Government offers a new level of immediacy, effectiveness, and convenience in the type of service delivery. Mobile communications is fast becoming an accepted part

of mainstream society. It provides a dynamic means for citizens, particularly younger ones to interact with local authorities and other government agencies providing location based services. In places with lower levels of Internet or PC access, mobile access is a cost effective way to deliver government information and service. In Japan where space for home computers can be limited, most citizens under 30 consider their mobile phone to be their primary Internet-access device [15].

3. M-GOVERNMENT IN JORDAN

The SMS is hugely popular with the younger generation. It is proving to be an effective way of reaching out to the rural areas. The penetration rate of mobile devices in Jordan has reached 118.2 per cent in December 2011 [2]. This presents an opportunity that Jordan must take to embrace an era of m-Government. In 2008 Jordanian Government has started providing some of its services via mobile phones by initiated SMS gateway project, its aimed to increase the effectiveness of communication channels between government and citizens using SMS services. Many pull message services that are provided in Jordan through the government's website such as: Vehicle traffic complaints, Custom services, Tax Services, Weather services and other utility services.

4. USER ACCEPTANCE

User acceptance can be described as a product of user behaviour in relation to the available technology and a given environment. Davis [16] has described, perceived usefulness and perceived ease of use as the main influences on user acceptance of information technology. As a consequence thereof, to achieve user acceptance the development of these perceptions need to be dealt with. Methods in this field range from standard quantitative approaches such as simply asking about how services would be or are perceived to explorative approaches of shadowing users. The latter are able to find out more about actual usage patterns and social shaping factors (see [17] [18]). Previous research indicate that for mobile communication, the usage patterns are influenced by the "representation" of a service [19], meaning that the image is being drawn by suggesting value (based on supposed usage). This image is usually framed by the reaction of the individual environment of a prospective user, considering norms and general values.

Due to the complex nature of technology acceptance process, there is a need to observe more determinants of IT usage grounded on the principle

of social influence, Trust, Services quality, Risk and other determinants are important to describe the acceptance of m-Government services. The choice to use a mobile service, as is the case for any ICT, is thus guided more by the perception of use and the actual use and user needs, so the evaluation of a service to meet these needs is crucial for its success. Yet, research has also shown [18] that a typical user will not only make smart choices about the technology to use, but he/she will often consider the appropriateness of a means from a functional (reflecting the actual service) and a social (reflecting the outside perception) point of view. Furthermore, often parallel structures are maintained, for backup purposes or to meet requirements of unexpected situations. From the initial description of influences on user acceptance, the second relevant issue for government is user requirements. It is a fact that m-Government is still in its infancy and relatively alien. Hence, there is a possibility that m-Government remains unknown to and underutilized by the citizens. Therefore there is a need, to understand the extent of acceptance of m-Government by citizens and to examine the factors affecting intentions to use it for services transactions.

The detection of the factors that affect the user acceptance of m-Government services as perceived by end users is important for the development of m-Government strategies [20]. Globally a lot of money is invested in the e-Government projects which yield diverse results [21][22]. Deploying a full-fledged e-Government services will solve a lot of problems, including the shortages of resources, unfortunately the acceptance of the e-Government and m-Government services have recorded equal amount of success and failures [23][14]. Even well designed and sufficiently funded m-Government projects can fail if the number of citizens willing to use or accept them do not reach a critical mass, which increases the risk of financial, human, and technical resources invested in those projects to be underutilized [24].

Finally, an issue not to be underestimated, is the overall perception of m-Government. We have to bear in mind that mobile communications are currently most often used for purposes of social connectedness, whereas we also see mobile services are most successful when offering entertainment and tools to customize the personal item "mobile phone". Against this background, it has to be proven that m-Government is more than supposedly helpful SMS or more intrusive government officials with remotely trustworthy devices that seem to

reveal and collect by far too much sensitive data. E-Government has reached a point where the extreme perceptions reaching from subversive Internet-based liberation to data-gathering “big brother”-like organizations have diffused into something convincingly useful, that can be utilized as needed. The biggest changes have occurred within the backend infrastructures. Since m-Government is, due to its mobility, doomed to take place far more in public spaces, the positive images have yet to emerge, the general perceptions yet need to be formed.

5. TECHNOLOGY ACCEPTANCE MODEL (TAM)

TAM was proposed by Davis [16] that constitutes two important concepts such as: perceived usefulness (PU) and perceived ease of use (PEOU) (see Figure 3.1). The PU refers the degree to which an individual believes that, using a particular system would enhance his/her job performance. The PEOU refers the degree to which an individual believes TAM was proposed by Davis [16] that constitutes two important concepts such as: perceived usefulness (PU) and perceived ease of use (PEOU) (see Figure 3.1). The PU refers the degree to which an individual believes that, using a particular system would enhance his/her job performance. The PEOU refers the degree to which an individual believes that, using a particular system would be free of physical and mental efforts. In TAM, an individual’s belief determines the attitude towards using the system and, in turn, the attitude helps to develop the intention to use. TAM is an adaptation of the Theory of Reasoned Action (TRA) which was developed by Ajzen and Fishbein [25]. Comparatively, TRA is more generic whereas TAM is more specific.

This study has chosen TAM due to two main reasons. First, TAM is based on its predictive power which makes it easy to apply in different information system devices [26][27][28][29][30]; Second, TAM helps to better understand the relationship between four important constructs of the study; perceived usefulness, perceived ease of use, attitude and behavioural intention.

As an extension of the technology acceptance model (TAM). TAM2 was developed by Venkatesh and Davis [31]. TAM2 was expanded with external factors to include deterministic factors such as social influence and cognitive instrumental processes to explain perceived usefulness and usage intentions. The extended model was based on four longitudinal studies of different systems, through

different stages of implementation including pre-implementation, accounted for 40%–60% of the variance in usefulness perceptions and 34%–52% of the variance in usage intentions. Social influence processes such as subjective norm and image and cognitive instrumental processes such as job relevance, output quality, and perceived ease of use significantly influenced user acceptance.

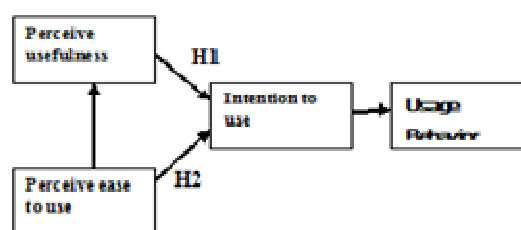


Figure 3: TAM model (Davis (1989))

Many researchers have investigated and agreed that ‘perceived usefulness’ and ‘perceived ease of use’ are valid constructs in understanding an individual’s intention to accept Information System (IS) [32] [27] [30]. However, depending on the context of specific technology, additional constructs are required to better reflect the application of emerging technologies [33].

6. RESEARCH DESIGN

A total of 300 citizens responded to the questionnaire survey and 25 were invalid due to incomplete data. The data analyzed, using SPSS 16 software.

The size sample of TAM studies depend on the type of research, in our case this study is an exploration study Davis [16] identified TAM studies from 25 up to 2,500 respondents. In this study the sample size it sufficient to explore the citizen perspective

The demographic distribution shows that 45.4% of the respondents were male and the remaining 54.6% were female. With respect to age, most of the respondents (70.0%) were between 19 to 30 years. This age group has potential to become users of m-Government because of its familiarity with the latest mobile technologies [34]. With regards to educational attainment, 4.3 percent had primary and secondary education, 24.1% were diploma holders, 50.6% had Undergraduate degrees and 21.0 % had postgraduate degrees.

6.1 Research Instrument

The questionnaire was adapted from earlier studies [16][27][28][29][30]. One of the advantages in using the TAM was that it had a well-validated measurement inventory [30][32]. While the measures of perceived usefulness and perceived ease of use were adapted from the study of Davis[16], those of perceived ease of use were adapted from the two studies of [29] and [16].

Hypothesis

H1: Perceived usefulness will not have a positive effect on the behavioral Intention to use m-Government.

H2: Perceived ease of use will not have a positive effect on the behavioral Intention to use m-Government.

7. FINDINGS AND RESULT

A. Reliability Testing and Validity of the Measurement Model

Cronbach's alpha (Alpha = .7139) exceeding the recommended value of 0.50 [35]. These values show good internal consistency among scales used for the study.

B. Results

Perceived usefulness (PU) and Perceived ease of use (PEOU) were the original constructs in TAM, and they have been found to influence user acceptance of technology-enabled products and services by many prior studies. Therefore, it is not surprising to find that, they also affect citizen's acceptance of m-Government services. Failures to demonstrate the advantages of m-Government services to potential citizens will likely result in a low rate of acceptance.

Perceived usefulness was found to have a significant effect on behavioral intention to use m-Government services and perceived ease of use also was found to have a significant effect on behavioral intention (see table 1). These outcomes are consistent with previous studies of [29][30][31]. Hence, when m- Government is shown to be useful, Jordanian citizens intention to adopt it will be greater than otherwise.

Table 1. Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.390	.149		9.913	.000
	PU	.209	.040	.192	5.246	.000
	PEOU	.451	.052	.496	13.507	.000

Dependent Variable: BI: (F=146.018, P<.001, R=.590, R-Square=.348, The best Predictor: PEOU (Beta =.496, P<.001).

between perceived ease of use, perceived usefulness and usage (table 2). These outcomes are consistent with previous studies [27][28][29][30]. Thus, the greater perceived ease of use, and usefulness the more likely that m-Government will be adopted by Jordanians citizens. Overall, the results indicated the appropriateness of fundamental elements of TAM in the Jordanian m-Government context. Consequently, null hypotheses for H1 and H2 are rejected, and it is confirmed that perceived usefulness and perceived ease of use have a strong influence over the behavioural intention to use m-Government.

Table 2. Correlations

		PU	PEOU	USAGE
PU	Pearson Correlation	1.000	.417*	.513**
	Sig. (2-tailed)		.024	.004
	N			
PEOU	Pearson Correlation	.417*	1.000	.436*
	Sig. (2-tailed)	.024		.018
	N			
USAGE	Pearson Correlation	.513**	.436*	1.000
	Sig. (2-tailed)	.004	.018	
	N			

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

C. Other Finding

We found that 55.2% of sample didn't have any experience in using m-Government services, 32.5 % - didn't know about m-Government,85.1% of citizens think that they can utilize the use of m-Government services , and 65.4% think that m-Government services have the better impact on the quality of delivery than the traditional e-Government , also 70.5 of sample If they were given a choice to choose between the e government and m-Government to get services from the government services, the prefer m-Government.

8. DISCUSSIONS

Several barriers hinder the implementation of m-Government, such as: trust, privacy and security and law and public policy, transparency and accountability, technical challenges, lack of infrastructure and lack of security. These are some of the barriers that governments face during the implementation of m-Government. A successful m-Government implementation also needs citizens who have the skills to use mobile device in order to access the new services that m-Government offers and who are willing to use those m-Government services. Even if governments overcome the barriers to the implementation of m-Government, significant problems with the citizens' acceptance in the use of m-Government services are likely to appear. To go beyond the traditional goals of improving efficiency and efficacy of internal operations with the use of information technology, governments must take advantage of the new mobile technologies to improve their existing services to citizens and to create new services channel that were not previously possible. Governments must find a way to engage citizens in the use of m-Government services. The benefits of m-Government are linked to the number of end users that will use the services [1].

In order to increase the usage of new m-Government services, it should be marketed by demonstrating the benefits to users, by using the traditional service channel or relevant private sector channels as cost-effective marketing channels. Building citizen-centric "one-stop shop" portals that can deliver truly integrated-seamless government services to citizens and businesses is another factor for creating Value to Users.

9. LIMITATION AND FUTUER WORK

Obviously, one research study such as this one cannot cover all topics in m-Government user acceptance. Hence, there is a room to pursue further research. Firstly, m-Government services operate in four major categories: G2B, G2G, and G2E domains. However, this study has only addressed the issues relating to user acceptance in the G2C domain. Similar user acceptance research efforts can be applied to the G2B, G2G, and G2E domains. Secondly, this study focused on the TAM constructs which were found to be significant. However, in future studies, researchers may workaround this scope. Further studies should be conducted with more dimensions, depending on the research goals.

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