Awareness and Acceptability Evaluation of Using e-Government Services in Developing Countries: the Case of Jordan

Saheer Al-Jaghoub, Mouath Al-Hourani and Hussein Al-Yaseen
Al-Ahliyya Amman University, Amman, Jordan
saljaghoub@ammanu.edu.jo
mouath.hourani@ammanu.edu.jo
hyaseen@ammanu.edu.jo

Abstract: Similar to other developing countries, Jordan started a national e-Government initiative aiming to streamline government procedures and make information and government services available to business and citizens online. This paper presents the results of a pilot study that aims to assess factors which could influence the awareness and use of e-Government services in Jordan. It investigates issues such as: accessibility of e-government, citizen's attitude toward various privacy and security, the required services and costs. The data was collected using quantitative and qualitative methods including a survey and interviews with e-Government officials. The results of this preliminary study suggest that awareness of e-government did not reach the required level. These findings are hoped to be useful for researchers, practitioners and policy makers.

Keywords: ICT, Evaluation, e-government, developing countries, Jordan

1. Introduction

Many governments in developed and developing countries are now developing, implementing and improving their strategies to transform government services using information and communication technologies (ICTs) (Borras, 2004). This transformation of services is referred to as eGovernment, e-Gov., digital government, online government, or transformational government (Gupta et al., 2008).

E-Government, which is the term used in this paper, can be described as the use of any type of information and communication technologies to improve services and operations provided to different parties such as: citizens, businesses, and other government agencies (Grant and Chau, 2005; Gronlund and Horan, 2005; Adeshara et al., 2004; Arif, 2008).

E-Government has been classified in terms of activities and delivering models into four categories: the Government to Citizens or Government to Customer (G2C); Government-to-Business (G2B); Government-to-Employees (G2E); Government-to-Government (G2G); and Citizen-to-Citizen (C2C) (Lee et al., 2005; Carter and Belanger, 2003). A number of studies have focused on many issues related to e-Government such as: e-Government strategies (Beynon-Davies, 2004; Williams and Beynon-Davies, 2004); e-Government program challenges (Barc and Cordella, 2004); e-Government technical issues (Cottam et al., 2004); e-Government usability websites (Mosse and Whitley, 2004); e-Government adoption (Ciborra and Navarra, 2005; Elsheikh et al., 2008; Dwivedi and Williams., 2008; Mofleh et al., 2008b).

The government of Jordan has started implementing an e-Government program in 2002 which seeks to improve service delivery and increase the involvement of citizens through the use of ICT. This paper presents the results of a research done as a *pilot study* in one of the Jordanian universities as a *preliminary* evaluation of Jordanian citizens awareness and acceptability of the e-Government program. The data was collected using both a survey and quantitative methods (focus groups and interviews). The "Levels of e-Government application model" (NAO, 2002) is used as a theoretical framework to aid in the analysis.

The paper is structured as follows: the introduction is followed by presenting the research approach, then the theoretical framework is discussed, after which the e-Government initiative in Jordan is briefly presented. Section 5 presents the results, followed by the discussion and conclusion.

2. Research approach

To collect the data for this paper, a combination of quantitative and qualitative methods was used including a survey, focus group discussions and interviews. Using a survey research method is considered to be an appropriate research approach to address the citizens' awareness and usage of e-Government services (Choudrie and Dwivedi, 2005). However, combining quantitative and qualitative (Mixed Research method) sources of information and analytical methods can build on the strength of each type of data collection and minimize the weaknesses of any single approach (Tashakkori and Teddlie, 2003). A multi-method approach can increase both the reliability and validity of evaluated data. A mixed research approach is the most appropriate technique when investigating a

complex and emerging phenomena such as e-Government (Creswell, 2003; Green and Preston, 2005; Sammons et al., 2005; Mofleh et al., 2008a; Shareef et al., 2009).

The following questions need to be answered by participants and were included in the questionnaire:

- What percentage of the Jordanian population uses computers and the Internet? How do people use these tools (applications and Internet)?

- Where do people feel comfortable using computers and the Internet? For what purposes do they use the Internet? Why do they NOT use the Internet?

- What are peoples' attitudes toward the Internet and the costs of its use?

- Would people use government services if they were available on the Internet? How much would they pay for these services?

- What are the privacy and security concerns with respect to e-Government applications?

- What are the main barriers of using government services over the Internet?

As mentioned earlier, this is a pilot study for a more comprehensive research that aims to evaluate the Jordanian citizens' awareness and acceptability of e-Government services. The data for the survey and the focus groups was collected at *Al-Ahliyya Amman University*. Four sources of data and information were identified:

- General information on e-Government services (Government online, 2009)

- Data from a survey: we administered a survey instrument to a sample of undergraduate students at *Al-Ahliyya Amman University*. Many studies in ICT adoption have used students as a sample (Moon and Kim, 2001) as they have experience using the Internet; differ from the demographics of the population of citizens. Majority of undergraduate students use and have easy access to Internet services. The questionnaire contains four stages: designing and testing the questionnaire based on two focus groups and some interviews; followed by data collection and then data analysis; and finally the preliminary findings of the questionnaire.

- Focus group discussions: focus groups were organized both before and after the survey. The first focus group meetings were designed to take place prior to the survey, and had as main goal to discuss with participants their attitudes, usage and awareness with the internet and e-Government services in Jordan to find out the reasons for no or low levels of usage. The participants of the first round of focus groups were also administered the questionnaire for the survey. The second round of focus group meetings were conceptualized as a forum for discussing the survey results and, on this basis, developing recommendations.

- In addition to the above, interviews with the decision makers in the field of e-Government at the Ministry of Information and Communication Technology (MoICT) in Jordan including: Director of projects, e-Government initiative manager.

The results and the conclusions from the interviews were integrated and synthesized with the result of the survey.

3. Theoretical framework of e-government project

Similar to any project, an e-Government project is a unique, complex, and one time effort, with specified limitations (time, budget, resources and performance) designed to meet governmental and agencies goals or stakeholders (Citizens, Businesses, Employees, and Agencies) needs (Al-Yaseen et al., 2008).

The model used in this paper is based on the "Levels of e-Government application model" (NAO, 2002). This model proposes that each e-Government project goes through different phases from the easy phase (Basic site) which mainly involves developing websites, piloting a few applications, and putting these services online. The most advanced phases can be seen in some developed countries in which e-government reaches a high level of maturity and becomes fully integrated into the governance framework and activities of each sector (Joined-up e-Government) (Yang and Paul, 2005; Santos and Heeks, 2003). Figure 1 shows the main levels of the e-Government project, which are be discussed briefly below (NAO, 2002).
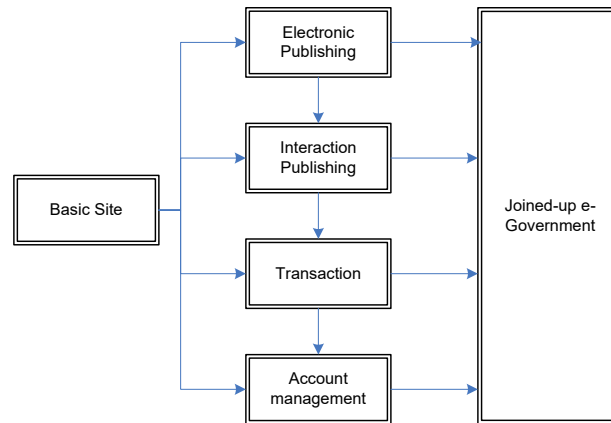
Figure 1: Levels of e-government application model (NAO, 2002)

- Stage 1: Basic site – provision of basic information, usually electronic versions of print documents; no email contact is given.

- Stage 2: Electronic Publishing – provision of extensive downloadable, static information via ICTs; basic email contact is given but there is no online interaction.

- Stage 3: Interactive Publishing – provision of dynamic, customizable information via ICTs; with a capacity to interact (e.g. via email and online submissions).

- Stage 4: Transaction – ability to authenticate users and register their identities reliably in order to undertake complete transactions online (e.g. submitting a tax return); users may be able to manage their own 'accounts' (i.e. a set of personal interactions/transactions).

- Stage 5: Joined-up e-Government – interlinking of different government structures/processes to produce electronic one-stop shops; users can access their own files/accounts and manage their relationships with government wholly via the Internet.

4. e-Government initiative in Jordan

Jordan is a developing country in the Middle East with a population of about 5,000,000 and limited natural resources. The e-Government initiative in Jordan has been one of a number of ICT related initiatives launched with the succession of King Abdullah II to the throne in 1999, the aim of which is to transform the country into a knowledge-based economy (Al-Jaghoub and Westrup, 2003). As the projects manager in MoICT stated: "*In 2000, the Government of Jordan launched a national e-Government initiative; in 2003 the initiative has been chartered by His Majesty King Abdullah II as an e-Government program, aiming to make information and services available to citizens on the Internet*". Jordan's national e-Government program aims to provide government and agencies services throughout various electronic channels such as internet, SMS gate, mail and others where work is in progress to develop a number of electronic services. The e-Government program aims to deliver high-quality services to consumers, businesses and organizations; improve government performance and efficiency; enhance Jordan's competitiveness; ensure public sector transparency and accountability; reduce costs and increase ease of interaction with government; promote development of Jordan's ICT sector; develop skills within the public sector; boost e-commerce activities; and improve information security.

The e-Government initiative has been launched in terms of activities and delivering models into four categories: the Government to Citizens or Government to Customer (G2C) section aims to provide comprehensive information about all the services provided by the Jordanian Ministries and other Jordanian government agencies. Citizens can benefit from services related to life including birth, school, work, retirement, health services and so on. Government to Business (G2B) aims to provide investors in Jordan with information about all the services provided by the Ministries and other government agencies, including how to start a new business, running a business, investment incentives, privatization program, and investment benefits at free zones and so on. Government to Employees (G2E) aims to provide governmental employees in different government agencies in Jordan with information about all the services provided by the Ministries and government agencies (Director of e-Government program in Jordan).

5. Preliminary results of awareness and usage of e-government services

The survey was distributed to a sample of 1200 students from different departments at AAU. Of the 1200 questionnaires, 1200 completed responses were collected; giving a response rate of 100%. The response level is due to the fact that the questionnaires were answered and collected with the presence of the researcher(s) during the lectures. This rate was considered to be above expectation given that the generally accepted average responses to non-incentive based questionnaires are around 20%. We analyzed the data from the responses of the questionnaire using a combination of the parametric statistical methods, Descriptive Analysis and Factor Analysis (Pett, et al., 2003). Students were asked to select from the list the closest choice of many variables. Each of these variables were measured using a five point Likert scales (1 = not important and 5 = very important).

For technically interested readers we report that a factor analysis technique was employed in order to identify possible categories. Factor analysis was performed in three steps (following Berthold and Hand, 2003):

- A matrix of correlation coefficients for all possible pairings of the variables was generated.

- Factors were then extracted from the correlation matrix using principal factors analysis.

- The factors were rotated to maximize the relationships between the variables and some of the factors and minimize association with others using Varimax Kaiser Normalization, which maintained independence among the mathematical factors. The Eigenvalues determined which factors remained in the analysis. Following Kaiser's criterion, factors with an Eigenvalue of less than 1 were excluded. A Screen plot provides a graphic image of the Eigenvalue for each component extracted

5.1 Computer and internet use

A large majority -100%- of the sample currently uses computers and most of the computer users also use the Internet. This rate is reasonable given the characteristics of the sample which consists of university students who have access to computers and the internet, and tend to rely on it for educational and other purposes. This level of access may not be applicable to the the majority of Jordanians.

5.2 Importance of place and purpose of using internet

Most of the people in this sample report using computers at home, at work or at the university. Of the people who use computers: 100% use it at home; 60.2% use it at University; 14.7% use it at work –as most of the students are unemployed-; while 31.8% use it at a public place. As noted, most computer users are also Internet users. Home is main place 84.1% for connecting to the Internet, 13.5% of Internet users at work; 40.8% of Internet users at University; and 30.2% connect to the Internet at a public place.

5.3 Attitudes toward the Internet, cost and other factors

The reasons for not using the Internet are varied. The main reason is associated with 'Not enough time'; and the least important reason is 'Don't use computers', as shown in Table 1 below:

Table 1: Reasons for not using the Internet

Reasons for not using the Internet	%
Not enough time	17.9
Phone bill too high	15.1
Internet charge too high	12.3
For security reasons	7.4
Concerned about kids	2.6
Don't use computers	0.0

The most frequent Internet use was browsing the Internet (100%), entertainment (86.2%); sending and receiving emails (56.2%); getting information (36.4%); shopping over the Internet (16.7%) and for paying bills online (1.9%).

5.4 Using government services over the Internet

When we asked the participants if they know what e-Government is in Jordan, (74.1%) answered 'Yes'; while when we asked the same question in a different way within the survey, we found that more than (75%) of the participants do not actually know about e-Government services or its Website. Moreover, the study found that more than (85%) of the participants never logged in to e-Government Website or never got any information.

In order to investigate how people might feel about using government services on the Internet, we asked a series of questions about peoples' most current use of different services by going to government departments, and then we asked if they would use these services if they become available on the Internet. The respondents were also asked how much they are willing to pay for the convenience of using such services online.

The most frequently used service included checking traffic tickets, while the least service was renewing the family document. As Table 2 indicates, many of the actual users of the services are very interested in having an Internet-based delivery system:

Table 2: e-Government services

e-Government Services	%
Information about checking traffic tickets	81.3
Information about the whether	51.1
Renew passport	39.4
Renew ID card	28.4
renew a driver's license	18.9
Paying bills	17.2
Information about car tax	16.8
Apply for job	10.1
Renew health card	8.1
Pay taxes	7.9
Tax refund	7.3
Income tax settlement	7.1
Tax situation	6.5
Renew family document	1.6

The results are presented in Table 3. Using a factor analysis cut-off level of 0.5, four factors were considered the main reasons of using e-Government services, which we described as: 'personal information', 'security and health information', 'tax information', and 'other information'.

Table 3: Factor analysis of e-government services

e-Government services	Factors			
	personal information'	security and health information'	tax information'	other information'
Information about checking traffic tickets	0.973			
Information about the whether	0.869			
Renew passport	0.894			
Renew ID card	0.865			
renew a driver's license	0.776			
Paying bills	0.973			
Information about car tax	0.973			
Apply for job		0.784		
Renew health card		0.974		
Pay taxes			0.928	
Tax refund			0.874	
Income tax settlement			0.842	
Tax situation			0.841	
Renew family document				0.933
Note: Only loadings greater than 0.50 are shown				

As mentioned earlier in Table 1, -for the privacy and security issues- nearly 7.4% of the study sample agreed that they were worried about privacy on the Internet.

6. Discussion and conclusion

A striking result of the above survey is the low level of awareness of the e-Government program within the sample. The fact that our sample consisted of students who are young, most of them have high income, have access to the Internet and use it for various reasons, implies that they should at least know what e-Government is. Given that many other Jordanians will not have the same level of income, Internet access, and easiness of usage means that they will most likely have even lower awareness and usage levels of e-Government services. According to the e-Government officials, this is expected and there are awareness plans in place to address this issue which includes conducting workshops, making visits to different agencies such as schools, universities, companies and media promotions. However, such plans face the challenge of the limited resources available which include budget, qualified personnel, and the culture (Director of projects).

The demanded services as shown in table 3 based on factor analysis indicates that such services are related to the needs of the people. For example, in our sample the least demanded service was the family document renewal which is reasonable taken into consideration that students in most cases do not have such a document which is required once a person starts his own family. For other Jordanians, the importance of services may be ranked differently.

Results indicated that people are willing to pay a fee to use some of the Internet-based services. With respect to how much people might pay for the convenience of such services (if it is available online), responses varied depending on the nature of the services provided by government. On average, people are willing to pay more to the first factor which we described as 'personal information', than they are for the other factors, which we described as 'security and health information', "tax information', and 'other information', respectively. Payment for services may be linked to the person's income especially that even within the focus group discussion a number of participants expressed concerns about cost of using services and using the internet in general. Therefore, for other Jordanians with lower income levels this concern about cost is most likely applicable.

A very important issue that was pointed out during focus group discussions is the concern about security of giving information over the internet. Generally speaking, there is a lack of trust of using online transactions especially when it comes to important documents or payments. This may also be related to the culture in general within Jordan where the internet still seems to be used mainly for entertainment. For example, only 16% of the sample did shopping online. Using e-Government services within such a culture is still problematic and needs serious attention.

NAO (2002) proposed a model to present different levels of e-Government services development. This model has five components: 1) Basic site; 2) Electronic Publishing; 3) Interactive Publishing; 4) Transaction; and 5) Joined-up e-Government. This research applied the model of the Jordanian e-Government program in order to examine the current situation of the e-Government project. E-Government project in Jordan launched nine years ago, and based on the different sources of data and information; there is a demand for e-Government services amongst Jordanian citizens. However, the percentage of citizens using these services is still modest. Based on the discussion during the interviews pointed out that e-Government program still in the beginning of the second phase (Electronic Publishing) based on NAO model (see Figure 1).

ICTs are useful instruments, capable of increasing government agencies' effectiveness, efficiency and transforming their services. In order to improve the effectiveness of the Jordanian e-Government practice, government agencies need to move towards a higher level (Figure 1) of e-Government development, which will require more technical, personal and financial commitments. Jordanian government also needs to establish systematic and comprehensive e-Government plans of citizens' encouragement and awareness of the e-Government services web sites. Issues like privacy and security, costs, acceptance appear to be the major obstacles of adopting e-Government services and need attention in the deployment of e-Government. However, the challenge of using the country's limited resources needs to be kept in mind. This research has been a preliminary attempt that aims to investigate the current level of awareness of e-Government and to understand some of the reasons behind the results that were apparent from the sample used for this paper. Future research should be targeted towards a more comprehensive sample which includes people that represent different demographics to further analyze the current situation and enable the decision makers in the Jordanian government to plan and implement the e-Government more successfully in the future.

Finally, developing countries are not a homogenous group and therefore the results of this paper may not be generalizable. However, our findings may be useful as they provide rich insights (Walsham, 1995) to other developing countries in planning and implementing their e-Government initiatives.

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