

M-government Implications For E-Government In Developing Countries: The Case Of Saudi Arabia

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Abstract: *This paper contributes to the issue of mGovernment implementations by exploring the government's policy on ICT and e-Government in Saudi Arabia, and sheds light on the role of mGovernment applications for enhancing information and service delivery to citizens. This also describes the results of a survey on the available mGovernment applications, and provides an overall evaluation of them in Saudi Arabia.*

Keywords: m-Government application, Mobile penetration, e-Government, Developing countries, Saudi Arabia

1. Introduction

e-Government is the daily government services made available to citizens through electronic means, such as the Internet, telephones and other devices. The Internet, these days, has become the cheapest and most effective channel for delivering government services to the citizens. Yet, to access the Internet in order to avail oneself of certain types of government service (e.g. exam notification) requires resources (e.g. computer, Internet connection) that may not be available to the citizen. Recently, the development in mobile technologies has created new channels to communicate with others in a convenient way. The growth of use in mobile technologies (e.g. laptop connected to wireless LAN) sheds light on the necessity to utilize such technologies in the context of e-Government implementations. Thus, for developing countries, where the mobile penetration growth is high, they could significantly increase the use of e-Government.

In Saudi Arabia, an e-Government initiative was launched as a part of the country's overall information technology plan, and The National Information Technology Plan focused on ICT as a tool to reform public organizations. In general, one of the main objectives is to improve ICT infrastructure; telecommunication infrastructure is rapidly growing in Saudi Arabia, and since 1998, the Saudi government has started to liberate the telecommunication sector through privatisation and competition. This step has increased both the Internet and mobile penetration. The Internet Service Unit (2003) published a study of the number of Internet users in the period of 2001-2003. The result showed that Internet penetration had increased from 690,000 users in 2001 to 1,462,000 users in 2003 (ISU, 2004). For mobile penetration, the statistical report published by the Saudi Telecom Company (STC) in 2003 showed that currently there are five millions mobile subscribers, which represents 25% of the Saudi population (STC, 2004).

This paper contributes to the issue of mGovernment implementations by exploring the government's policy on ICT and e-Government in Saudi Arabia. It sheds light on the role of mGovernment applications for enhancing information and service delivery to citizens, and describes the results of a survey on the available mGovernment applications. It also provides an

overall evaluation of mGovernment applications in Saudi Arabia, and finally considers the implications of e-Government in developing countries in general.

2. e-Government

Information and Communication Technology (ICT) has fast become one of the main tools for organisational success. This rapid movement of ICT raises concerns amongst government agencies as to how to deal with technology in order to enhance the agencies' service to the public and to improve the internal progress of the organisation (Atallah, 2001). e-Government is the application of ICT by government agencies, and the aim of using ICT is to enhance information delivery to citizens. Mobile technologies have become the most efficacious channel for delivering the information as many citizens are now using mobile phones.

2.1. e-Government policy

The Saudi government has realised the effects of e-technologies (i.e. e-Government) on all aspects of life (e.g. economy, civilisation). Therefore, the Saudi government launched a number of initiatives under the National Information Technology Plan (NITP) in 2001. This plan focuses on ICT as a tool to reform public organizations, and overall, the main objectives focus on improving IT infrastructures, supporting the country's economy, e-learning, e-government and e-health, improving productivity, setting up standards and guidelines for a national network, developing a security framework and preserving the society's characteristics in a digital age. In general, the focus is on making government information and service delivery to citizens both easier and faster (Saudi Computer Society, 2004).

2.2. e-readiness in Saudi Arabia

As one of the main objectives of the national information technology plan is focusing on improving information technology (IT) infrastructure, the government has started to liberate the telecommunication sector through privatization. This step has improved the telecommunication infrastructure in the country. The last survey, made in 2003, found that the population in Saudi Arabia had reached sixteen million (NationMaster, 2004). The following table shows some of the key indicators on Saudi Arabia e-readiness.

Table 1: e-readiness in Saudi Arabia

Indicator	
Number of landline telephone lines per 100 inhabitants in 2003	15.5
Number of mobile telephone lines per 100 inhabitant in 2003	31.2
Home internet penetration per population	4.38
Internet technology	Dial-up and broadband
Mobile operator and technology	<ul style="list-style-type: none"> • Saudi Telecom Company (STC) • Etisalat

Source: Saudi Telephone Company (STC), 2003

2.3. e-Government implementation in Saudi Arabia

The government of Saudi Arabia has realised the importance of e-Government applications for enhancing the delivery of information and services to its citizens, residents and businesses. Yet, the rate of progress of e-Government applications in public organizations does little to reflect this, and this apparent when users navigate ministry websites. A study conducted in 2003

evaluated Saudi ministry website by adapting a UN e-Government stages model. The UN e-Government stages model is divided into five stages: emerging presence, enhance presence, interactive presence, transactional presence, and seamless presence (DPEPA, 2002). Each stage consists of a number of assessment elements. The results can be seen in Table 2.

Table 2: Online presence for Saudi ministries websites

Stage reached	Assessment elements	Saudi's ministries	
		Number	%
No presence	No official website available	8	38%
Emerging presence	e.g. agency name, agency phone number, address, operating hours, general frequently asked question	-	-
Enhanced presence	e.g. organisational news, publication, online policy (security, privacy)	3	14%
Interactive presence	e.g. officials' e-mail, post comment online, simple two-way communication, download organization's form	10	48%
Transactional presence	e.g. e-form, e-payment	-	-
Seamless	Full integration across organisation	-	-

Adapted: (Abanumy & Mayhew & Al-Badi, 2003)

The Abanumy et al (2003) study emphasised that, even if the website was evaluated in, for example, interactive presence, it was not necessarily covering all the elements required for that stage (Abanumy & Mayhew & Al-Badi, 2003). Nevertheless, the results in Table 2 suggest lack of emphasis on e-Government websites as a tool for delivering information and services to citizens (Relyea, 2002). On the other hand, developing e-Government websites is not a low cost process, it require resources (i.e. human resources, hardware, software) to achieve the goal for implementing such services (Christensen & Hughes, 2000).

Abanumy et al (2004) conducted a study to explore the extent to which the ministry websites are accessible to disabled peoples. Different tools were used to examine the Saudi ministry websites, such as Multiweb, LYNEX and Validator Service (Delorie, 2004; Multiweb, 2004; W3C, 2002). The result of this study showed that not one of ministry's website was accessible. This result encouraged the authors to unearth the reasons behind this lack of accessibility to ministry websites and found that the most important factors affecting it were a lack of awareness of the importance of accessibility, and having no accessibility policy in the country (Abanumy & Mayhew & Al-Badi, 2004).

3. mGovernment

mGovernment is an ICT application to provide citizens with government information and services through mobile technologies (Kushchu & Kuscu, 2003). The mobile phone technology provides user benefits, in some cases difficult to be found by other means (e.g. landline phone). One of these benefits is privacy, where personal information is saved in mobile phones and kept under the owners' supervision. In addition, the size of mobile phone devices gives users the advantage to use it in all places (Yu & Kushchu, 2004).

A previous study conducted by Yu and Kushchu, in mGovLab, explained the importance of mobility for e-Government implementations by developing a 3P model. This 3P model consists of three components, and the table below shows those 3P components, their descriptions, and examples for clarification.

Table 3: 3P model components

3P model component	Description	example
Prime value	Provide real need of information for the users. It provides users with what they want in order to solve a problem may face.	<ul style="list-style-type: none"> • <i>SMS for people with hearing disabilities</i> • <i>Mobile warring against mobile phone theft</i> • <i>Quick information collection</i>
Pleasure value	Represents provision of better services to make citizen-government interaction more enjoyable.	<ul style="list-style-type: none"> • <i>Mobile transaction</i> • <i>Faster information exchange</i> • <i>Fight against crime</i>
Post value	Comparative relationship between benefits and costs	<ul style="list-style-type: none"> • <i>Location identification</i> • <i>m-Voting</i>

Adapted: (Yu & Kushchu, 2004).

In Saudi Arabia, e-Government applications have faced difficulties (e.g. readiness) that require efforts and resources to overcome them (Abanumy & Mayhew & Al-Badi, 2003; Saudi Computer Society, 2004; STC, 2004). However, the situation in mGovernment applications is different where there are high levels of citizen readiness and availability of technical infrastructure (STC, 2004). Thus, it is necessary for public managers to consider the implications of such technology on e-government implementations. Chyasi and Kushchu (2004) suggest a framework for developing countries to start developing mGovernment applications. The framework is divided into three different stages: simple applications stage, interactive applications stage, and high interactive applications stage (Ghyasi & Kushchu, 2004).

4. mGovernment applications in Saudi Arabia

Mobile technology usage is rapidly increasing amongst the people in Saudi Arabia. As a result of the fast growing use of mobile phones, it is necessary to give mGovernment applications attention to alert people about the benefit of e-Government implementations.

The purposes of conducting this study are to evaluate the mGovernment applications in respect to their availability to citizens, the aim of deploying mGovernment application, and the benefits received for public organisation and citizens. The author's procedure for data collection was through interviews with IT employees working in computer centres in public organisations (i.e. ministries) to investigate mGovernment application availability in the organisation.

In Saudi Arabia, mGovernment application developments are at an early stage. The public sector is using only SMS technologies because of the low cost of this technology. The author has conducted a study to uncover the extent to which mGovernment applications are implemented in Saudi ministries as a part of the e-Government implementations. The results

found that very few applications were being implemented, as can be seen in the following sections:

4.1. High school exam results notifications

The Ministry of Education has been sending final exams results to high school students through mobile phones since 2003. The main objective of this service is to provide the exam result to students faster than before. The way this service works is as follows; Saudi Telephone Company (STC) receive softcopy of students final exam results from Ministry of Education. The student sends an SMS message containing a student number, and then the student receives a text message containing the result. The disadvantage of this service is the lack of privacy where anyone who knows a student's number can obtain that student's results regardless of having permission.

4.2. Physician appointment reminder

Some hospitals have recently started an appointment reminder application. The aim of this service is to remind the patient of his/her appointment with the physician. The application sends an SMS message to the patient's mobile phone that contains the date, time and clinic location. The hospital management evaluates this application as a successful service as this service reduces "no show" patients.

4.3. Occasional congratulation

A number of public sector organisations have started an occasional congratulation application as a part of e-Government applications. The way this service works is as follows; the application sends an SMS message to all phone numbers stored in the database. The text message usually contains congratulations for either a private event or public occasion.

4.4. Current weather notification

The weather forecasting authority and STC started this service in 2002, and works as follows; the mobile user sends an SMS message to STC that contains the weather condition code, then STC sends back an SMS message containing weather conditions. The disadvantage of this service is summed up by one of the interviewee, "*The weather here is stable most of the time. In addition, there is no need to pay for this service. I can find the weather conditions from other resources such as newspaper or TV*" (Ahmed, postgraduate student at King Saud University in Riyadh, Saudi Arabia, 2004).

5. Overall evaluation for mGovernment applications

The high levels of citizen readiness, the easy use of mobile phones, and the availability of the technical infrastructure in respect to mobile technology give the governments a good opportunity to attract the citizens and residents to e-Government implementations, especially in countries where mobile penetration is higher than Internet penetration. Also, citizens may start to recognise the advantages of e-Government implementations through provide them information and services in a convenient way.

In Saudi Arabia, the STC statistics show a huge demand for mobile usage in Saudi Arabia, and show that the mobile phone penetration increased within three years from 6.26 to 31.2 per 100 inhabitants in 2000 and 2003 respectively. On the other hand, few mGovernment applications are available. Therefore, it is necessary to start focusing on the interactive applications through

mobile technology (e.g. mobile phone) to enhance the information and service delivery to users. This step may increase the awareness of the significance of e-Government applications among users (e.g. citizens) and management as well. In addition, it may attract users towards the opportunities and benefits of e-Government.

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