

# Evaluating the Awareness of E-government in the Republic of Yemen

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## ABSTRACT

This paper presents the results of a pilot study that was carried out with the aim of examining the awareness of e-government in Yemen. It also investigates the impact of the demographic variables such as age, gender, education, occupation, income and living place on the Yemeni citizens' awareness and perceptions about e-government. Close-ended questions were asked to provide information about the adopters and non-adopters of e-government program. The results reveal a low awareness of the use of e-government in Yemen. Also, the Yemeni culture affects the participation of females in using e-government.

## Keywords

E-government, Awareness, Yemen, demographic variables.

## 1. INTRODUCTION

In recent years, information communication technology (ICT) has played a pivotal role in the digital world. It has become one of the core elements of managerial reform around the world [1]. Governments around the world have started e-government strategies to renew the public sector in order to promote the rapid steps of technological change [2]. E-Government is a relatively new area of study in the information field that is concerned with the use of ICT by government agencies to deliver its services electronically [3]. According to Rubin and Wang, one of e-government's characteristics is that it is an opportunity to improve the performance of the government so that it can deliver public service effectively and efficiently [4]. According to Ndou, e-government initiative is to reduce bureaucracy and offer access to online services all the time, which enhances the quality of services through offering citizens the opportunities to participate directly in decision making, and making them submit their suggestions and ideas online in forums and online communities [5]. Moreover, by using e-government websites citizens can access the information and services anytime, and anywhere. In order to ensure the effective implementation of e-governance and enable the citizens to obtain its benefits an evaluation of the awareness of using e-government services is required. It is considered as an important indicator of e-government success.

E-government is a growing phenomenon within public sector institutions around the world [6]. It is emerging as a significant discipline within the field of public administration and management in general, but understanding and managing e-government as a concept and in practice is a challenging unwieldy task [7]. Online services are beneficial to both citizens and government. Government agencies realize its benefits in the form of cost reduction and improved efficiency. Citizens receive faster and more convenient services from a

more responsive and informed government. While there seems to be substantial growth in the development of e-government initiatives, it is not clear whether citizens will embrace the use of its services [8]. The primary objective of most e-government initiatives is to serve citizens better. However very little has been written about the citizens' likelihood of utilizing e-government[9].

The success of such initiatives is dependent not only on government support but also on citizens' willingness to accept and adopt those e-government services[10]. Yemeni government is trying its best to extend e-facilities to its citizens but it is still facing problems in this regard. The problems are mostly related to lack of contribution from the citizens. As a result, little attention has been given to the citizen's perspective, which has prompted this research work. It is not known whether the citizens of Yemen are aware of e-government and its services, and whether the citizens are actually going to accept and adopt the newly proposed services. Therefore, the initial aim of this paper is to examine the citizens' awareness of e-government initiatives, and to investigate the impact of the citizens' demographic characteristics on their awareness and adoption of e-government measures in Yemen. To fulfil the above objectives, this study undertook an empirical evaluation of the e-government awareness among the Yemeni citizens.

## 1.1 Background of Yemen

Like other less developed countries, Yemen too is seeking to develop ICT sector in order to sustain its development process. Yemen achieved tangible results in this field and especially in developing policies and plans, adopting infrastructure components and electronic applications, and human capacity building [11]. The Internet was introduced in Yemen in 1996 [12] through the internet service providers (ISPs) TeleYemen and the Public Telecommunications Corporation [13] [14]. According to World Bank, there is a rapid development in ICT sectors in Yemen that occurred between 2006 and 2011[15], as we see in

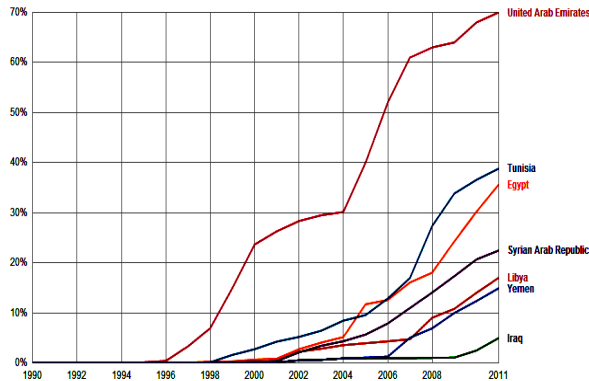
**Figure 1** below.

The internet usage percentage gradually increased between the years 2000 and 2010. There was a rapid change in the number of internet users that jumped from 420,000 users in 2010 to 3,691,000 users in 2012 representing 14.9% of the total population [16].

**Figure 1** Internet users in some Arab countries as a

### percentage of population [16]

In addition, there were 640,140 Facebook subscribers (2.5% of the population) by October 2012, and most of them were youth according to Facebook statistics [17]. This obviously means that it has been a positive effect brought about by the Arab spring, which started in Jan 2011 in Yemen.



**Table 1 Internet Usage and Population Statistics in Yemen[16]**

Year	Users	Population	Internet users (%)
2000	15,000	17,900,000	0.1 %
2001	100,000	19,600,009	0.5 %
2005	220,000	20,764,630	1.1 %
2009	370,000	22,858,238	1.6 %
2010	420,000	23,495,361	1.8 %
2012	3,691,000	24,771,809	14.9 %

According to the rural poverty portal report about Yemen, the Literacy rate of adult (age 15 and above) is high (62.4%) [18]. Table 2 shows the population distribution according to age group in Yemen. As 63.6% of the population is aged below 24 years, which forms the future of Yemen, which is an encouraging factor for implementing e-government in Yemen, it is imperative to have an in-depth understanding of the awareness of e-government among these potential users of e-government services.

**Table 2 Population distribution according to age group in Yemen [18]**

Age Group (Year)	Male (M)	Female (F)	Total	Represent in population(M & F)
0-14	53,63,542	51,69,554	1,05,33,096	42.50%
15-24	26,53,988	25,78,724	52,32,712	21.10%
25-54	38,17,569	36,47,352	74,64,921	30.10%
55-64	4,28,920	4,64,740	8,93,660	3.60%
> 65	3,06,186	3,41,234	6,47,420	2.60%
Total	12,570,205	12,201,604	24,771,809	100%
Median age:	Total: 18.3 years, male: 18.3 years, female: 18.4 years (2012 est.)			

This work is divided into four main sections: it starts with an introduction to e-government and background about ICT and e-government in Yemen, Section 2 illustrates the research methodology adopted in this paper, Section 3 presents the

results and discussion of this paper, and finally Section 4 offers the conclusion.

## 2. RESEARCH METHODOLOGY

This paper presents the results of a research done towards preliminary evaluation of Yemeni citizens' awareness of e-government program. Random sampling method was adopted to collect the samples where seven hundred fifty respondents were used for the purpose of the data analysis.

The validation of the questionnaire was through an extensive review of the literature and from the professionals to determine if the intended citizens had any difficulty in understanding or if any ambiguous questions were there in the questionnaire. Based on their feedback, some modifications were made. In order to obtain a high response rate we used close-ended multiple-choice questions in the questionnaire. To increase response, a mixed-mode survey was employed. Apart from the manual survey, a web-based survey was employed to reach citizens in different geographic areas across the country. After uploading the survey on the server, invitations were emailed to the citizens randomly. We also used Facebook to invite responses. We restricted the respondents to the Yemeni citizens only. The responses to the survey were collected for the period from September 2012 to February 2013. The number of valid responses was 750, out of which 509 responses were collected online and 241 were collected by traditional methods out of the 300 questionnaires distributed manually. The responses from the traditional method were collected from the malls, hospitals, ministries, Sana'a University, and different places in Sanaa. Descriptive statistics were used to interpret the results. Cross-tab, One-way ANOVA test, Post Hoc Tests and t-test were used to analyze the data and to find the significant difference for the mean of the factors investigated in this study. The collected data were analysed by using SPSS version 19.0.

## 3. RESULTS AND DISCUSSIONS

In this section, the results of this study are presented. It starts with the frequency of the respondents, then, the level of their awareness that will be analyzed in depth to show the impact of the demographic factors like gender, age group, education level, occupation, living and income on the awareness level. In some cases percentages do not sum up to 100%, this is due to computer rounding, or missing answers.

### 3.1 Frequency of respondents

The frequency distribution of respondents is shown in

Table 3. The females are a mere 18.2%, which indicates the gender domination of males and the cultural restrictions prevalent in Yemen. The age distribution of respondents shows that the age groups 21-30 and 31-40 represent 46% and 39% of the total respondents respectively. This shows that the young generation is dominant. Most of the respondents have bachelor's degrees and are government employees.

**Table 3 The frequency distribution of respondents according to the demographic Variables**

Variables	Value	Number of Respondents	%
Gender	Female	136	18.2
	Male	603	80.8
Age	Less than 20	41	5.5
	21-30	343	46.0

	31-40	292	39.2
	41-50	56	7.5
	Greater than 50	13	1.7
Education Level	Educated without degree	13	1.7
	Secondary School or Equivalent	143	19.2
	Bachelor	330	44.4
	Master	164	22.1
	PhD	89	12.0
Occupation	Student	155	20.8
	Government Employee	366	49.2
	Non-Government Employee	183	24.6
	Job-less/ House wife/ Retiree	34	4.6
Income (Yemeni Riyal)	< 30,000	118	15.9
	31,000-60,000	190	25.6
	61,000-90,000	170	22.9
	> 90,000	226	30.4
	No answer	46	5
Place of Living	Inside Yemen	469	62.5
	Outside Yemen	280	37.5

Table 4 shows that most of the respondents had a computer or laptop at home or at their work place; they represent 90.7% of the respondents out of those who had computer only, 75.2% had internet access.

**Table 4 Frequency of technical variables**

Technical Variables	Value	Number of Respondents	Percent %
Possess Computer	No	65	8.8
	Yes	673	90.7
Possess Internet	No	181	24.8
	Yes	549	75.2

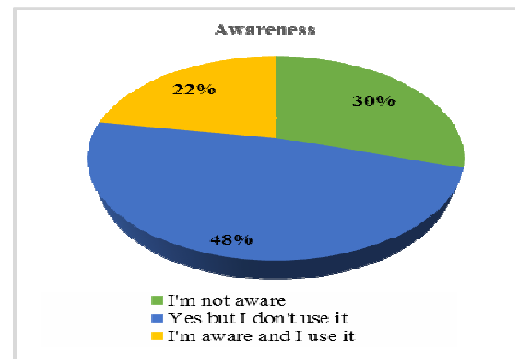
### 3.2 Awareness

In Table 5 and Figure 2, the results show that 22.3% of the respondents were aware and used one or more of e-government services that were introduced online.

**Table 5 The awareness of e-government**

Variable	Value	Number of Respondents	Percent %
Awareness	I'm not aware	217	29.4
	Yes, but I don't use it	352	47.6
	I'm aware and I use it	165	22.3

On the other hand, around 29% of the respondents were not aware at all. Around 47.6 % of the respondents were aware and had heard about e-government but did not use it. To go in depth and illustrate the demographic characteristics of those who were aware or not aware we will present the result of awareness variable by demographics factors using the cross tab analysis.



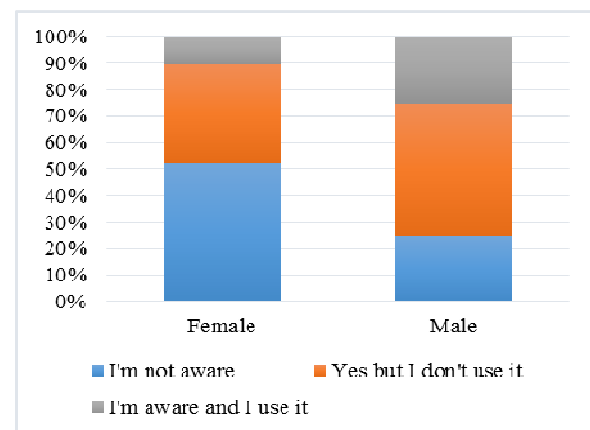
**Figure 2 The awareness of e-government**

### 3.3 Awareness by gender

The results in Table 6 and Figure 3 show that 10.4% of females and 25.3% of males were aware and used e-government compared to 52.2% of females and 24.7% of males who were not aware at all. By using independent sample t-Test in gender,  $t = -2.288$  & Sig. (2-tailed) = 0.022, it showed that there is a significant difference between the means for male and female. The male were more aware of e-government than female.

**Table 6 Cross tab of Awareness and Gender**

Gender	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Female	70	52.2%	50	37.3%	14	10.4%	134	100%
Male	146	24.7%	296	50.0%	150	25.3%	592	100%



**Figure 3 Awareness by Gender**

### 3.4 Awareness by age groups

Table 7 shows that the awareness and the use of e-government among the age group of 31-40 years is the highest followed by age groups 41-50 and 21-30 years. The result of ANOVA test ( $F=6.956$  & sig = .000) shows that, there is a significant difference between the means for the different age groups in awareness. The results of Post Hoc test show that the respondents below 20 years are not aware compared to the awareness of other age groups. In addition, the age group 21-30 years has less awareness of e-government compare to 31-40 age group.

**Table 7 Cross tab of Awareness and Age**

Age	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
< 20	24	60.0%	13	32.5%	3	7.5%	40	100%
21-30	113	33.4%	153	43.5%	72	21.3%	338	100%
31-40	61	21.3%	151	52.6%	75	26.1%	287	100%
41-50	17	30.9%	26	47.3%	12	21.8%	55	100%
> 50	1	7.7%	9	69.2%	3	23.1%	13	100%

### 3.5 Awareness by education level

The awareness and the use of e-government among the respondents who has PhD is the highest (43.2%) compared to the other education level. Table 8 illustrates these results. The ANOVA and Post Hoc tests show that there is a significant difference between the means for the different education levels in awareness ( $f=17.165$  &  $Sig = .000$ ). The awareness decreased with decrease in education level.

**Table 8 Cross tab of Awareness and Education Level**

Education Level	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Educated without degree	6	46.2%	7	53.8%	0	0.0%	13	100%
Secondary School or Equivalent	70	49.6%	54	38.3%	17	12.1%	141	100%
Bachelor	95	29.5%	161	50.0%	66	20.5%	322	100%
Master	35	21.3%	86	52.4%	43	26.2%	164	100%
PhD	8	9.1%	42	47.7%	38	43.2%	88	100%

### 3.6 Awareness by Occupation level

The results of ANOVA and Post Hoc tests show that there is a significant difference between the means for the different Occupation levels in awareness ( $f=4.704$  &  $Sig = .003$ ). Most of the Jobless Housewives and Retirees (46.9%) were less aware followed by students (39.4%). Table 9 shows that the non-Government Employees used e-government more than the other groups (27.5%).

**Table 9 Cross tab of Awareness and Occupation**

Occupation	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Student	61	39.4%	57	36.8%	37	23.9%	155	100%
Government Employee	89	24.6%	195	53.9%	78	21.5%	362	100%
Non-Government Employee	47	26.4%	82	46.1%	49	27.5%	178	100%
Jobless / Housewife/ Retiree	15	46.9%	16	50.0%	1	3.1%	32	100%

### 3.7 Awareness by Income

The results of ANOVA and Post Hoc tests show that there is a significant difference between the means for respondents with the different income levels in awareness ( $f=12.255$  &  $Sig = .000$ ). The more the income the more the awareness and readiness to use e-government online services. Table 10 illustrates the result of relation between awareness and

income.

**Table 10 Cross tab of Awareness and Income**

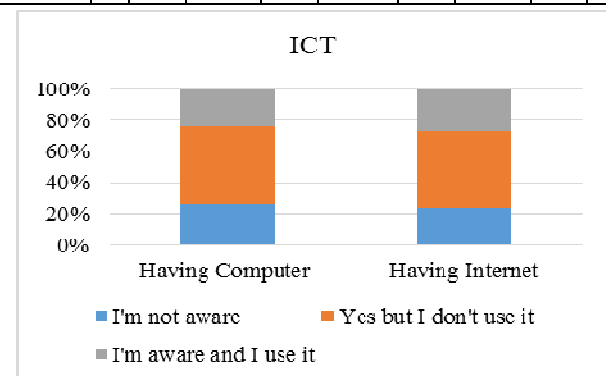
Income (Yemeni Riyal)	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
< 30,000	55	47.4%	49	42.2%	12	10.3%	116	100%
31,000-60,000	54	28.4%	86	25.2%	46	28.2%	186	100%
61,000-90,000	39	23.2%	90	53.6%	39	23.2%	168	100%
> 90,000	42	18.8%	116	51.8%	66	29.5%	224	100%

### 3.8 Awareness for people having computer and internet

The awareness is more among those who have computer at home or place of work. Table 11 and Figure 4 also show that the respondents who have internet access were more aware and 27.5% of them were already using the e-government services.

**Table 11 Cross tab of Awareness and having Computer and internet**

Variables		I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
		Freq	%	Freq	%	Freq	%	Freq	%
Having Computer	No	41	65.1%	17	27.0%	5	7.9%	63	100%
	Yes	172	25.9%	331	49.9%	160	24.1%	663	100%
Having Internet	No	85	48.3%	76	43.2%	15	8.5%	176	100%
	Yes	127	23.4%	266	49.1%	149	27.5%	542	100%



**Figure 4 Awareness and ICT**

### 3.9 Awareness and living place

**Table 12 Cross tab of Awareness and living place**

Variables	I'm not aware		Yes, but I don't use it		I'm aware and I use it		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Living inside Yemen	167	36.7%	228	50%	60	13.3%	455	100%
Living outside Yemen	50	18%	124	44.6%	104	37.4%	278	100%

The respondents who live temporarily outside Yemen for study or work or for other purpose were more aware than those who live in Yemen. The reasons for that are the

experience they had during their stay abroad. Table 12 shows those differences.

The government of Yemen should ensure the process of raising the level of awareness among the different categories of citizens using different channels like T.V, Radio, News, SMS and other media. It should spread the awareness of e-government applications, and help the citizens learn how to use and get the maximum benefits provided by these applications through providing a free training in technology used in e-government, like computer and internet, and improve the skills required to deal with e-government. In a small number of cases, citizens are already looking at the ways of actively promoting and increasing the usage of such services. The government should include a course about e-government in the syllabus in schools and colleges. The government agencies should provide support and guide people in finding information they need, encouraging them to do this on-line rather than having to access the services of various departments face-to-face or over the phone [19]. Government should provide free access centers in urban and rural areas for accessing the e-government online service along with technical support to give the citizens an opportunity to learn how to use these services. In addition, the government should improve the infrastructure and reduce the cost of internet facility to allow more access to e-government services.

#### 4. CONCLUSION

This study offers essential contribution to different stakeholders including decision makers and government agencies who would require adopting of e-Governance to improve the relationship with the citizens. In general, the level of awareness of e-government is very low and the participation of females in e-government is very low. Here, the government can play a major role to disseminate the information about e-government online services and how it can be used. The government can get the advantage of high Literacy rate in Yemen and a large young population to introduce good online services. In summary, the study findings suggest that government needs to think more strategically in relation to the use of ICT among the citizens. To eliminate the aspects of digital divide and to encourage the citizen to adopt and use the government services online, the government should increase the level of awareness and usage of ICT among citizens. The next phase of our study is in-depth investigation into the causes responsible for the respondents' inability to use e-government in spite of being aware of it.

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