The Requirements Towards the Development of the E-government Service Model in Improving E-services for Ministry of Higher Education and Scientific Research in Yemen

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Abstract — Electronic government, or e-Government, enables the organizations to provide better daily services to the clients. Nowadays, governments are measured by their citizens’ satisfaction and understanding of the citizens’ need is very important to improve that satisfaction which results to repetitive visit. Nowadays, Yemeni government is facing a lot of challenges as to electronically providing a civil service on a daily basis which is of a major challenge. There is a various e-government service models have been reviewed by researcher, but the most appropriate e-government service models are selected based on the requirements. A field study at Ministry of Higher Education and Scientific Research (MoHESR) was used to collect the requirements. The results are used for mapping the proposed requirements of e-government services implementation of MoHESR and existing e-government service model of SAFAD. Based on the results gathered from the field study, the study recommends that the new proposed e-government service model for MoHESR should address the dimensions of new interesting multi-language website, simple services to interact with website, several specific online services and integrate the services with other agencies under MoHESR.

Keywords – E-government; E-services; E-government Service Model; MoHESR, Yemen

1. INTRODUCTION

Information and Communication Technology (ICT) is considered as one of the most important aspects of today’s world. The evolution of new technologies has dramatically changed the way that people interact with their governments in a very easy and transparent way. Nowadays, e-government has become very popular to all countries since it fosters the bonds between knowledge and productivity from one aspect, and between competitiveness and economic growth from another [2]. One of those developing countries is Yemen which consider as a third world country that is trying to not only implement e-government in its private organizations but also in its governmental agencies. The Yemeni government is trying to find the appropriate e-government framework to enhance the economic growth and provide the people with the best and fastest services offered by this new technology [3]. The Republic of Yemen already initiated an e-government plan that cost around 60million USD and implemented some phases [3]. Although, the Yemen government has initiated and proposed an e-government project to overcome the current manual systems problems but they still not implemented the real e-government in terms of government services. In addition, the government faces increased pressures from the citizen to manage their daily procedures and work electronically. Government agencies are developing websites for the purpose of web presence while unintentionally creating scattered clusters of static information on the Internet. Besides that, all of the e-government agencies websites have no multi-languages which are important to foreigner visitors. In addition, citizens are not engaging with government and the result, the government finds difficulties in building citizen satisfaction. Therefore, when the government wants to reach its vision and mission, they must provide the services to engage the citizen to support the government. One of the Yemeni government agencies is the Ministry of Higher Education and Scientific Research (MoHESR) which has some limitations and weaknesses such as the website is poor of information needed to citizen, services provided is limited and no online interaction services are provided (still using manual forms) (http://www.yemen.gov.ye/portal/mohe). Therefore, the aim of this study is to identify the e-services requirements of MoHESR and to propose an e-government service model in improving e-services for MoHESR in the republic of Yemen.

2. CURRENT SITUATION OF E-GOVERNMENT SERVICES IMPLEMENTATION IN YEMEN

E-government has been given many definitions in many existing literature. Also many terms such as "digital government", "inter-networked government" [4] as well as "government online" has been used. E-Government in simplest terms can be described as the use of ICT within government to make operations more efficient, improve quality of service and offer an
easy access for citizens to government information and services [5]. In Yemen e-government there are a few studies that discussed e-government and e-government online services in Yemen. Al-Hagery highlighted twelve challenges facing the task of the transition to e-Government in the current stage in Yemen. Then, suggested that it is possible to implement e-government in Yemen in case of achieving several criteria [6]. In addition, according to Al-wazer [7] that Yemen has got low points on online service index and the problem is that Yemen e-government portal has many problems such as it contains many links to different organization in the government, the links are not operational, the contents are not up-to-date and for each Ministry there is a private website which is not linked to the portal. The Table 1 below shows the Yemeni E-government ranks compared with other countries from the same region. It shows that there is a big gap between the Yemen country and the other countries compared with and the question is that how to overcome this problem and try to narrow the gap by improving the EGDI in the coming years.

**Table 1**: E-government Ranks of Yemen compared with other countries in the region [7].

<table>
<thead>
<tr>
<th>Index</th>
<th>Yemen</th>
<th>Oman</th>
<th>Maldives</th>
<th>Bahrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDGI (Rank)</td>
<td>0.2154 (164)</td>
<td>0.4576 (82)</td>
<td>0.4392 (92)</td>
<td>0.7363 (13)</td>
</tr>
<tr>
<td>Online service index (Rank)</td>
<td>0.0476 (167)</td>
<td>0.3683 (55)</td>
<td>0.1619 (127)</td>
<td>0.7302 (8)</td>
</tr>
<tr>
<td>TCII (Rank)</td>
<td>0.0298 (165)</td>
<td>0.2092 (83)</td>
<td>0.2886 (60)</td>
<td>0.5855 (19)</td>
</tr>
<tr>
<td>HCI (Rank)</td>
<td>0.5739 (153)</td>
<td>0.7980 (116)</td>
<td>0.8754 (90)</td>
<td>0.8933 (65)</td>
</tr>
<tr>
<td>E-participation index (Rank)</td>
<td>0.0429 (135)</td>
<td>0.1571 (76)</td>
<td>0.0714 (117)</td>
<td>0.6714 (11)</td>
</tr>
</tbody>
</table>

Table 2 below shows the Online services comparison between the Western Asia countries for the Years 2008, 2010 and 2012 according to the UN data center [8]. The comparison shows that Yemen country still at the bottom compare to other Western Asian countries while the UAE, Bahrain and Saudi Arabia are on the top.
TABLE 2: Online Services Comparison between Western Asia Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Online Service 2012</th>
<th>Online Service 2016</th>
<th>Online Service 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>0.3268</td>
<td>0.1746</td>
<td>0.2709</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>0.3660</td>
<td>0.3238</td>
<td>0.2946</td>
</tr>
<tr>
<td>Bahrain</td>
<td>0.8627</td>
<td>0.7302</td>
<td>0.5201</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0.5621</td>
<td>0.3714</td>
<td>0.4783</td>
</tr>
<tr>
<td>Georgia</td>
<td>0.6013</td>
<td>0.2476</td>
<td>0.3545</td>
</tr>
<tr>
<td>Iraq</td>
<td>0.2876</td>
<td>0.1524</td>
<td>0.1070</td>
</tr>
<tr>
<td>Israel</td>
<td>0.8497</td>
<td>0.5841</td>
<td>0.6656</td>
</tr>
<tr>
<td>Jordan</td>
<td>0.3922</td>
<td>0.5333</td>
<td>0.6054</td>
</tr>
<tr>
<td>Kuwait</td>
<td>0.5617</td>
<td>0.4603</td>
<td>0.4147</td>
</tr>
<tr>
<td>Lebanon</td>
<td>0.4771</td>
<td>0.2667</td>
<td>0.3913</td>
</tr>
<tr>
<td>Oman</td>
<td>0.6667</td>
<td>0.3683</td>
<td>0.4849</td>
</tr>
<tr>
<td>Qatar</td>
<td>0.7086</td>
<td>0.2794</td>
<td>0.3913</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>0.7974</td>
<td>0.3111</td>
<td>0.4649</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>0.3288</td>
<td>0.0413</td>
<td>0.3408</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.4641</td>
<td>0.3450</td>
<td>0.4214</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>0.8627</td>
<td>0.2508</td>
<td>0.7157</td>
</tr>
<tr>
<td>Yemen</td>
<td>0.1763</td>
<td>0.0475</td>
<td>0.0736</td>
</tr>
</tbody>
</table>

In addition, Figure 1 below shows a comparison between 4 countries which have been chosen to compare with Yemen e-government development and online services. It shows that Malaysia is on the top then UAE then Saudi Arabia, Qatar and then Yemen.

FIGURE 1: E-government Development between 5 countries with Yemen
3. CURRENT SITUATION OF E-GOVERNMENT SERVICES IMPLEMENTATION IN MoHESR

In the current situation for MoHESR and especially in terms of services provided to the citizen. MoHESR provides multiple channels delivering service and information. The current channels are Telephone, Letter, Oral speaking, E-mail homepage and application. But most of the services if not all are still don’t have a central technology used for user-adaptive systems to deliver dynamic content, also the process in the services is still held manually as well as the data transaction is also gathered manually. The data transaction is stored in papers and the database is still done using excel to keep the information. The only thing that already existed electronically is website portal that presents the information and latest news in the MoHESR. The website presents the information using one language only which is Arabic language. The information presented in the website is not enough and also the other links in the website are not functioning. The website delivers the latest news for the Ministry but no services or any interacting between the citizen and the website. In addition, the graphical design of MoHER is not attractive and not well-organized. Therefore, the user gets confused when he/she searches for specific things in the Website.

4. METHODOLOGY

This section includes, research approaches, research tool, data collection and results analysis. These parts will be explained separately.

A. Research Approaches

There are two types of data collection approaches to be used to gather the research information. The two types of data collection are quantitative and qualitative approaches. In this research, researcher conducted quantitative data collection approach through distributed questionnaire.

B. Research Tool

The questionnaire method was used as a tool for gathering the needed information of this study, after taking into account the necessary conditions of questionnaire questions design based on the methodology of scientific references and the evaluation of specialists in this area.

C. Data Collection

Researcher distributed questionnaire to 37 citizens. However, researcher only focuses for citizens above 19 years old and the main customer for MoHESR as the respondent such as students. The aim for choosing the type of respondents and their age is because those respondents are considered main customer who have a deal with MoHESR government agency.

D. Result Analysis

As a questionnaire technique, the researcher uses the quantitative approach for the purpose of data collection. In this survey, the researcher intend to identify the customer satisfaction about the current services available in the Website of MoHESR and also to know the problem they are facing while they use the services provided. In addition, researcher wants to know the services that the customer need and should to be added to the current services available. The questionnaire has been distributed to 37 citizens from both genders. The main respondents have been selected carefully by the researcher in order to choose the productive people who have deal with the MoHESR government agency. The age of the respondents that has been selected by the researcher is with age 19 and above as well as the right customers such as the students and universities who directly interact with the MoHESR government agency.

Questions were separated into two categories: (1) Yes/No questions that asking the citizen awareness regarding MoHESR (2) and multiple choice questions about the citizen’s respond regarding the MoHESR current service problems and suggestions to solve those current problems. The Figure 3.1 below is a graph summary represent the seen from the gender perspective.
As shown in figure 3.2 above, the survey was deducted to 37 respondents. The graph above showed that the big number of respondents was for those with age 25 years old followed by those with age of 23, 22 and 27. The least responsive was for those with age of 19, 20, 21, 30 and 88 with 1 percent each. The researcher chose respondents with age of 19 and above due to those citizens is considered aware about MoHESR and also already familiar and has used the services provided by MoHESR.

Since this study is concern about the e-services provided in the MoHESR government agency portal, researcher also intended to identify the customer opinion that related to this website and knowing the problem they are facing and their suggestions and requirements that MoHESR should concern about. Therefore, the figures below shown the citizen satisfaction to the current services available, problems they face and also the services that they need from the MoHESR to add to the current services available.

The figure 4 below shows the summary of the citizen’s range of satisfactions towards the current portal available.
The above graph as in figure 4 showed that level of the citizen satisfaction regarding current services available in MoHESR represented by the current portal. The range was from 1-5 and the 1 represent the lowest satisfaction and 5 represent the highest satisfaction. Twelve citizens chose number 3 which means average, eleven citizens chose 1 which means lowest satisfaction followed by 10 citizens chose number 2 then four citizens chose number 4 and none of the respondents chose number 5 that represent the highest satisfactions. Besides that, researcher wants to identify the current problems as shown in the figure below.

The graph above as in figure 5 presents the most problem that the citizens face when they use the current services in MoHESR. A number of 19 respondents selected the problem of Information provided in the website is not enough, also a number of 19 respondents selected the problem which is “services that provided is limited”, then a number of 14 respondents chose a problem that “No online interaction services provided, Still using manual form. In addition, number of 11 respondents chose a problem that the Website does not contain multi-language to deliver the information. Due to these problems, researcher wants to know the suggestions by the citizens as part of the solutions to overcome those problems as shown in the figure below.
The figure 6 above shows that a number of 25 respondents suggest an online scholarship system, followed by a number of 24 respondents who suggest an online electronic forms and services, then 20 respondents suggest an Academic affairs system then 20 respondents suggest an online culture attaché systems followed by 16 respondents suggest online certificate equivalency system as well as private universities licensing system and a number of 18 respondents suggest an online recommended universities finder system and then a number of 12 respondents suggest Seminar and conference system. Besides that, the researcher desires to know the criteria of good e-government portal from citizen’s perception.

5. PROPOSED MODEL

The proposed e-government service model for MoHESR are based on the collected data from the literature review which contained the existing models for e-government service as well as the requirements gained from the field study. The Figure 7 below shows the model adopted from SAFAD model [1] of e-government stages. Furthermore, the four established stages of information, interaction, transaction, and integration from SAFAD used for mapping the proposed requirements of e-government services implementation of MoHESR. The new model now illustrates the new extent as: i) New interesting multi-language website; ii) Simple services to interact with the website; iii) Several specific online services; iv) Integrate the services with other agencies under MoHESR.

A. Proposed Model Stage 1: New Interesting Multi-language Website

The new proposed prototype website is considered as a solution for the current existing website for MoHESR. This new website has overcome the limitations that has once existed such as the website’s graphical design is not usable for citizen and it has no functions to interact with citizens as well as the website is in only one language that is, Arabic. Therefore, the proposed website in this study has come out with the design that is easy to use and more interesting than the other existed one. In addition, the new proposed website is a multi-language website and it has many other services to citizen.

B. Proposed Model Stage 2: Simple Services to Interact with Website

This stage describes the solution that overcomes the problem of the existing website that has no interact information. At this stage services as searching in agency databases, ordering printed, downloading and ordering forms relating agency services are provided in the new proposed model. In this stage the researcher proposed the basic interact information services such as providing many forms in the website that the citizen can download and print rather than waste...
time and go to MoHSER location. There are many forms that can be provided in the website and can be downloaded such as student’s scholarship form, Application for Participation at a Conference or Symposium form, job application form and private universities licensing form.

FIGURE 7: An e-government Service Model for MoHESR-Yemen Adopted from (SAFAD, 2000)

C. Proposed Model Stage 3: Several Specific Online Services

This stage includes picking up and leaving personal information related to the services provided by the agency. This includes initiating and following agency specific services by the agency. Based on the respondents from the citizens that suggest many online services to be added, the researcher in this model suggested some online services in order to achieve the goal of this stage. The online services that should be added to make the citizen start dealing with the MoHESR, are online scholarship system, culture attaché system, an online electronic forms and services, online certificate equivalency system, online recommended universities finder system and.

D. Proposed Model Stage 4: Integrate the Services with other Agencies under MoHESR

In the last stage here this model addresses the integration of services between government agencies. This is the realization of a one-stop government that regardless of organizational boundaries provides services at one point of entry even where several agencies are involved. This stage shows the last level of implanting the e-government services that can
achieve its goals and objectives. The researcher here proposed that the services that should be done are to integrate services with agencies under MoHESR such as universities and culture attaches.

6. CONCLUSION

As mentioned earlier, the goals of this study is to identify the e-services requirements of MoHESR and to propose an e-government service model in improving e-services for MoHESR in order to engage citizen with the agency and to gain the benefits of using those services. By analyzing the questionnaire, the results of questionnaire analysis and the studying of the literature review, researcher comes out with requirements that improve the e-government service model for MoHESR. The model showed in this study defined requirements for successful implementation of e-government services as new interesting multi-language website; simple services to interact with the website; several specific online services; integrate the services with other agencies under MoHESR. The study identified these requirements and steps for successful implementation of e-government services in MoHESR to follow. Requirements are used for mapping the proposed requirements of e-government services implementation of MoHESR and existing model of SAFAD [1]. First and foremost, as it can clearly be noticed that the results have therefore contributed to a substantial development of the customized model, this subsequently led to a successful implementation of e-government service of MoHESR in Yemen. Model generality led to a sense of flexibility that allowed it to be utilized and applied in other agencies with similar contexts as MoHESR. Successful implementation of e-government service in MoHESR is witnessed as the model is exposed to the Publics of users. Ability to easily access information online at any time, in any place and be updated with any newly uploaded information is one of the benefits citizens can get via utilizing MoHESR’s model; they can also complete their procedures as well as application of scholarships smoothly and get the results online. However, not only citizens who will enjoy maximum benefits & advantages of MoHESR, but also MoHESR’s employees; whom tasks can be accomplished easily via accessing required information and disseminate it to those in need anytime. Operational and communication cost of the agency itself will be reduced saving a lot of time and efforts subsequently leading to citizen's satisfaction and consent to the agency’s works. Further research in various directions is what the results of this study point toward. Indeed, a need for more research to seek citizen satisfaction should be carried out as well as an obligation to reach out service needs and adoption of e-government service in Yemen must be accomplished.

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REFERENCES