A PRELIMINARY WORK ON INVESTIGATING UNITED NATIONS'S E-GOVERNMENT CRITERIA IN MIDDLE EAST COUNTRIES

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—Abstract —

The benefits of e-government initiatives empowered by the information and communication technologies, are acknowledged widely with assessment criteria published by the United Nations regularly over the last 15 years. One of the reasons that United Nations has taken such assessment into agenda is the apparent advantages of such initiatives over the citizen, society and government.

In parallel literature review and current status of Middle East countries, these issues are investigated with examples: Internet users, awareness and training, culture, intention to use e-government applications of the citizens, portal and interoperability. It is noted that assessment of human capital indices for these countries should be read carefully while considering these topics.

The findings reveal the impact of human capital index on evaluating e-government performance; geographical area and population also affect the adoption of e-government. For this, follow-up work is suggested to investigate the

level of information and communication technology and computer literacy along with these factors in the region.

This research has limitations which include the sources of information, exclusive economic and legal issues and a number of measurement methods.

Key Words: *E-government, Performance, Information and Communications Technology, Human Capital Index*
JEL Classification: J24, E23

1. INTRODUCTION

Over the last fifteen years, we have experienced a revolution in information and communication technology (ICT); this includes the spread of mobile phones, reliance on email correspondence and the widespread dissemination of information on websites. This change has enabled development of applications in many fields. For example, e-learning, e-commerce, e-health and e-government.

In the current information age, ICT has considerable effect on most people's daily lives, including the socio-economic, political and cultural aspects of society around the world. These changes and developments in the world have stimulated governments to adopt e-government. Works such as (Abdalla 2012) acknowledge these changes as e-government initiatives have started in the early 1990s. E-government refers to the use of ICT to provide services electronically to society; this enhances and improves the efficiency, accountability, interactivity, transparency and accessibility to public services and access to information for citizens, businesses and other stakeholders. Meanwhile, most countries in the Middle East and North Africa are not shown in the top rank of the assessments. This work focuses initially on these countries before getting more concentrating on human capital index (HCI) and e-readiness of its nations as such issues are left for a follow-up work. The subjects covered include Internet users, awareness and training, culture, intention to use e-government applications of the citizens, portal and interoperability. The examples are selected once they have shown specific problems on the topics. Before that, three introductory subsections are spared for the background of e-government and assessment in the next section.

2. E-GOVERNMENT AND ASSESSMENT

This section explains the e-government concept from several perspectives, types of e-government delivery models and beneficiaries of electronic services, measurements of e-government performance and the indicators that depend on evaluations of e-government performance in the global measurements as case study of United Nations (UN) surveys.

2.1. E-government

There are many definitions for the concept of e-government as there is a variety on the attention and focus on what the government, researchers or organizations to use it. A quick visit on these definitions has yielded the following approaches.

As stated by Alshomrani (Alshomrani 2012), government interactions between ministries, departments and institutions can overcome the challenges of geographical and time constraints, as well as interaction with citizens, companies and other organizations. This can be achieved by using ICT. However, the author's approach excludes employees who are not citizens.

According to studies conducted by Misra (Misra 2007), the researcher suggested there are many perspectives to define e-government. Moreover, everyone can define the e-government term depending on view or usage. Two definitions of the term e-government were found.

The first view is as a department by the hierarchy of workers in institutions. The top level 1 of the pyramid sees e-government as e-services available on the Internet to meet the needs of citizens. Likewise, at least at level 2, the perception of it, e-government improves the services provided by the government to the community. At level 3, we see that it is a service available online. Finally, the last level 4 of the pyramid it sees it merely as computerization.

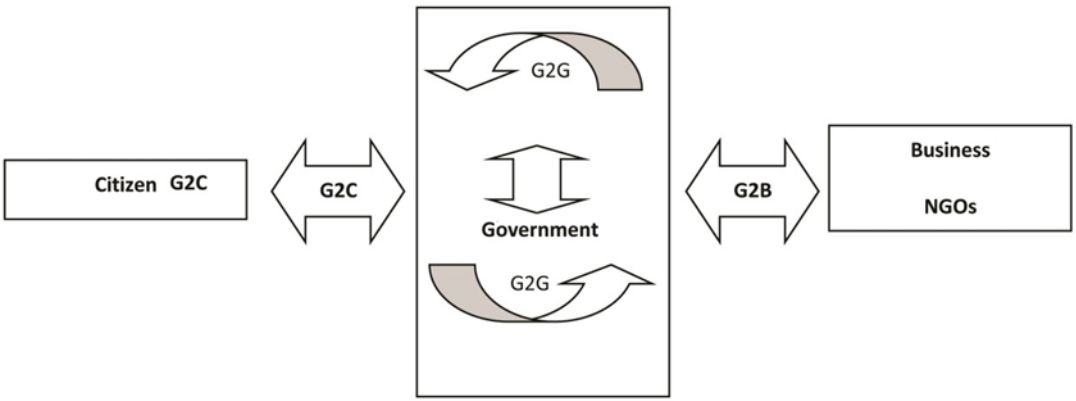
The second view of e-government is as one of the requirements needed by the government to improve the delivery of public services to the community.

E-government from our perspective is to transform traditional services and transactions into electronic services by using ICT across various channels to provide access for the beneficiaries, in less time, with more efficiency and at a higher speed in the execution of a transaction.

The primary goals of e-government can fall into three main groups that are prominent in e-governance concepts. These are citizens, businesses/interest groups and government. Three types of connections in e-government are government-to-government (G2G), government-to-business (G2B) and government-to-citizens (G2C). There are other different classifications of connections among government, business or citizens, but these three types can be

found in most approaches. Figure 1 shows the relationships between the many actors of e-government; NGOs stands for non-governmental organizations that runs for not-for-profit.

Figure-1: Interactions between main groups in e-government



2.2. Performance measurement in e-government

Currently, the use of IT has increased around the world to achieve efficiency in the provision of services within government and private institutions. In order to compare the success or failure rates of the performance of services, they have to rely on a number of indicators to know how to calculate the rate of success or failure and to work on the formulation of business strategies to achieve the required efficiency. This comparison also includes countries in the provision of electronic services for users so that there should be some indication of a comparison between the levels of service delivery between countries. The next section reviews one of the most widely recognized and used global measurement, UN surveys of the performance of e-services.

2.3. Indices used in United Nations surveys

One of the most holistic surveying evaluations of the performance of e-governments and which efficiently evaluates the impact of information

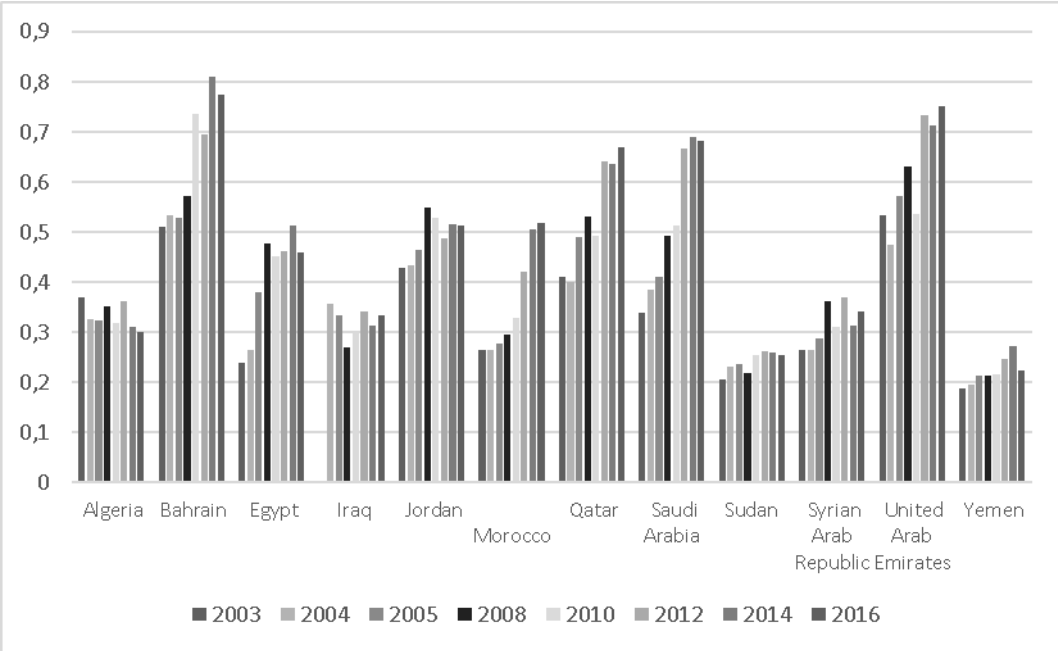
technology and communication is the UN survey. It focuses on how to use ICT in the government to provide electronic services to the community. Furthermore, it works on the ranking of countries according to sequences in the provision of electronic services depending on the location of the E-Government Development Index (EGDI). UN's Department of Economic and Social Affairs report their surveys every two years. There are reports from 2002 to 2016 to discover the strengths and weaknesses of each country and to benefit from the experiences of other countries to improve the delivery of electronic services to the community. Member states are included in the survey. The EGDI depends on three components: online service, technological infrastructure and human capital (United Nations Department of Economic and Social Affairs 2014).

EGDI is a composite measure of the readiness and capacity of countries to use e-government by using ICT. It covers all members of the UN. Components derive from three dimensions: the Online Service Index (OSI), the Telecommunications Infrastructure Index (TII) and the HCI. Each of these dimensions has a component that can be analyzed, separately. However, each dimension takes one-third of the weight assigned to OSI, TII, and HCI. EGDI has the following components (United Nations Department of Economic and Social Affairs 2012):

EGDI = 1/3 (OSI normalized + TII normalized + HCI normalized)

Figure 2 shows the indices of twelve countries from the region since 2003. As seen, not every country getting better but Bahrain and UAE are promoting their indices through years. Yemen, Sudan, Syria, Iraq and Algeria are not only staying behind but also they are not promising for the future projection.

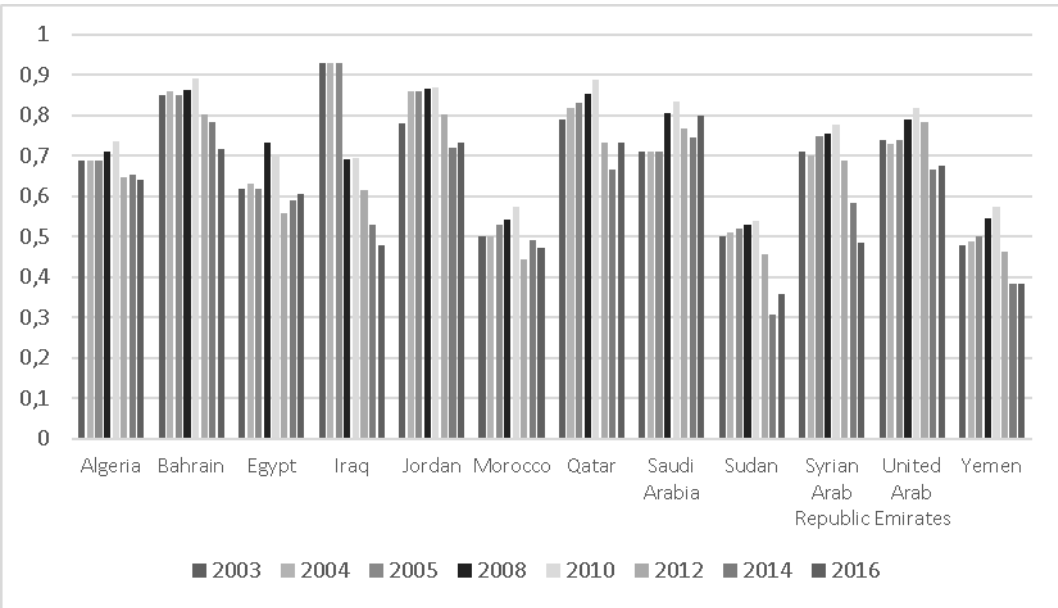
Figure-2: EGDI through years



Source: UN Surveys.

HCI is one of the three criteria of the EGDI. According to UN, HCI takes one-third from the other criteria to evaluate the ranking of electronic government performance. However, the major sources for data of human capital indicators include the UN scientific, educational and cultural organization (United Nations Department of Economic and Social Affairs 2012).

Figure-3: HCI through years



Source: UN Surveys.

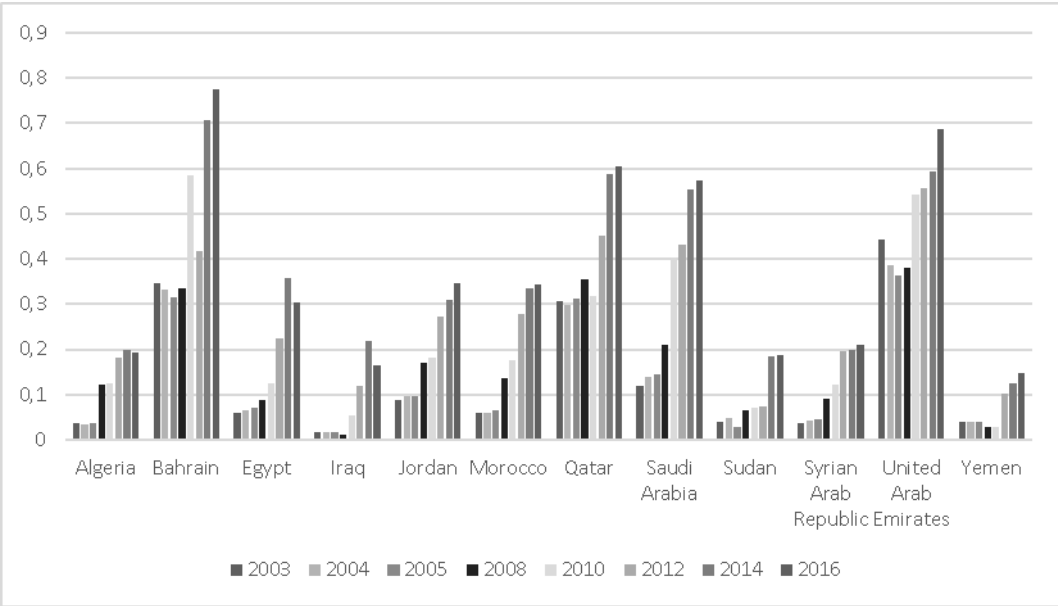
Except Sudan and Yemen, we see these countries having indices above 0,5 (Figure 3); however, a general declining is also remarkable after 2010.

Telecommunications Infrastructure Index (TII) is an average composite of Internet users, fixed broadband subscriptions, wireless broadband subscriptions, fixed telephone subscriptions and mobile cellular subscriptions indicators. By the years, its components have been updated.

The sources of the TII, and the major source of data in each case, are the ITU and the Word Bank database. The value of the TII in 2003 is an average of six components of the indicator.

Index value = (current value – lower value) / (higher value – lower value)

Figure-4: TII through years

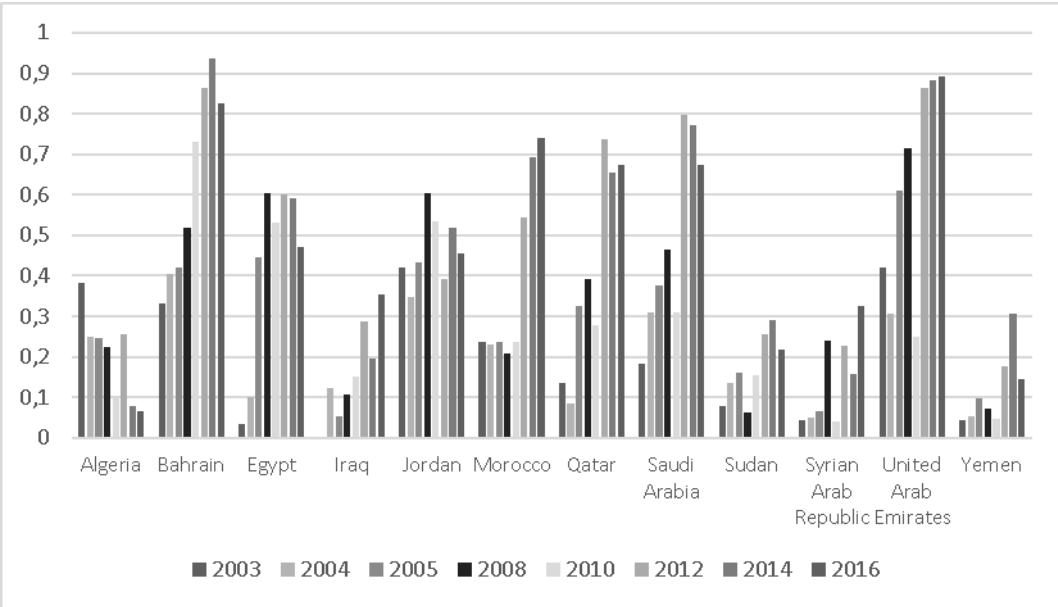


Source: UN Surveys.

The required infrastructure lacks, considerably (Figure 4). In recent years, we see "jumps" in geographically small countries such as Bahrain, Qatar and UAE, with an exception of Saudi Arabia. On the other side, remaining countries are around 0,3 or below, which is really considerably.

Online Service Index (OSI) is based on four stages – Emerging, Enhanced, Transactional, and Connected – that determine the level of development of countries and their presence on the Internet.

Figure-5: OSI through years



Source: UN Surveys.

Similar to TII, same countries show peaks in OSI (Figure 5). Bahrain, UAE, Saudi Arabia and Qatar have bigger index values. We can add Morocco to the list as we see a leap since 2012.

Stage 1: Emerging information services
At this stage, linking government websites and ministries with each other facilitates government departments and citizens' access to information or news online through the Internet pages of the national government and ministries, and at this stage it provides information without user-involved interactivity.

Stage 2: Enhanced information services
Government websites deliver enhanced one-way e-communication between the government and the citizen. Users can download forms and search for documents on government websites. In addition, these websites provide tips, such as audio and video. Some limited e-services can be provided for citizens on websites, such

as submitting personal information or submitting requests for non-electronic forms.

Stage 3: Transactional services
Government websites that allow two-way interaction with their citizens provide options to exchange information, successfully. Additionally, some government websites that process non-financial transactions allow the downloading and uploading of forms, licenses, online tax filing, e-voting, permits and applying for certificates. Moreover, they can be handle financial transactions if money is transferred via a secure network to government.

Stage 4: Connected services
This is identified and targeted as the most advanced level of e-government initiatives. Its presence on the Internet can be characterized by the integration of any link with all users of e-government services (G2G, G2C, G2B). This is a two-way interaction between the government and users interactively as well as between government institutions and users so that the government can provide its services in an end-user centric way e.g. the citizen logs on portal and chooses available services; so the user does not have to go to the service provider's website because all such places are seen as government side.

2.4. Internet users

E-government services are offered on the Internet or via other e-applications. Nevertheless, Internet users play an important role in evaluating the performance of e-government in UN surveys and other international measurements.

There are works such as (Qadir and Allal 2014) reporting limited deployment of the Internet in Algeria and the proportion of whose users of this technology is still weak in Algeria even compared to neighboring countries. For example, Morocco, a close neighbor, has a rate of 14.36% while this rate is only 5.33% in Algeria. This is one of the reasons that determine the prevalence of, and benefits from, the use of e-services provided by the Algerian e-government.

Elsewhere in Middle Eastern countries, for instance, in Bahrain, we note that the proportion of Internet users reached 88% in 2014 while in 2012 it was 55%.

Reports by the Telecommunications Regulatory Authority of Bahrain and reports issued by international organizations showed that increased competition in the broadband market continues to deliver significant benefits to subscribers of broadband services in Bahrain, and through the provision of various services and innovative technologies, lower prices and more attractive features, higher speeds and larger capacity data are provided. The satisfaction rate for consumers of broadband services and prices in Bahrain amounted to 87% in 2014 compared with 60% in 2011 and 36% in 2007. This increased the value for money paid by the subscriber for broadband services. According to studies results to compare prices, which were published by the Commission in May of 2015, the broadband prices through fixed lines provided to individual consumers in Bahrain dropped by up to 38% between 2012 and 2013 and by up to 65% for the prices of broadband via mobile lines during the same period (AlWatan, 2015). UN Surveys report of Internet users in Bahrain as 21%, 51%, 55% and 88% in years 2008, 2010, 2012 and 2014, respectively.

2.5. Awareness and training

One of the important points regarding distribution of e-government services and arrival for citizens is awareness. Where it is necessary that there be awareness about the system and services and what its benefits are, it will then be implemented successfully.

One of the challenges for the Jordanian government when using the e-government services in society is the knowledge of citizens about e-government projects and how to deal with those services. According to data obtained from Jordan, it was found that 55% of the citizens do not know about e-government projects provided in Jordan. At the same time, 41% of those citizens expressed interest in using e-government projects. However, the Jordanians were ready to use those services but there was a lack of awareness about those e-government services according to (Odat and Khazaaleh 2012). Still, the same work reports Jordanian government has to focus in order to develop and improve suitable programs to increase the level of awareness of their citizens regarding e-government services and their benefits. Furthermore, the Jordanian government has to improve and increase the

experiences and skills in using ICT in the community that it will affect as well as increase the level of citizens who use e-government services.

In another case study in Egypt, awareness proves to be one of the challenges to the success of e-government. Hence, the government should customize programs to work to implement advertising campaigns for electronic services and focus attention on raising awareness in all sectors; this includes the use of advertising campaigns on television, radio, newspapers and other electronic media as well as an integration of educational materials projects with electronic services and work partnerships between the public and private sectors to share their experiences and skills (Gebba and Zakaria 2012).

In Sudan, we found a different situation with work reported in (Li and Abdalla 2014). The immigration of people who have skills in information technology and communications in Sudan to the Arab states or a European state is one of the problems faced by the government of Sudan when implementing e-government. It is necessary to train people to be aware and educated in the use of information technology, as there is a lack of staff who are experienced in ICT. This would offset any limits of awareness and also enhance the use of information technology.

2.6. Culture

In many developing countries, one of the challenges is overcoming certain cultural issues in society. This challenge of culture includes languages, religion, experiences, backgrounds, social characteristics and different probabilities of implementing e-government applications. A government facing such a problem has to first know the strengths and weaknesses that exist between members of society. They need to build a plan that contains all the community and is able to deliver all services to all citizens so as to achieve the required readiness towards the successful implementation of e-government.

One of the methods adopted by the Saudi government to increase students' active participation in the use of ICT was a focus on developing the education system. They focused especially on the English language and ICT use. This enables them to visit global sites easily on the World Wide Web and to know the benefits of the

available information technology, thus leading to encouraging students to develop their skills when using the new ICT (Alshehri and Drew 2010).

On the other hand, religion and systems of tribal culture distinguish Saudi culture from most Middle Eastern countries. This culture affects Saudi society in many areas, including a delay in the use of the Internet in Saudi Arabia. The first time involved many arguments among stakeholders and leaders to consider many religious, social and cultural factors. One of the reasons was the government's fear of the Internet being used for unwanted sites. After the use of filters to filter and control sites was agreed upon, the Internet was used in Saudi Arabia (Al-Shehry, Rogerson et al. 2006).

In Iraq, other social factors determine the spread and use of the Internet, such as not being able to keep Internet cafes open late into the night in many cities in Iraq. Moreover, many families did not want to be involved with the Internet service at home. All these factors lead to limited learning of the use the Internet in all age groups, thereby giving Iraq a lower proportion in the use of the Internet compared to other countries, which will affect the use of e-government services (Al-Hammadany and Heshmati 2011).

2.7. Intention to use e-government services

The citizen is one of the obstacles to the success of the application of e-government. If there exists considerable reluctance, negative attitudes may prevail along with the preference to use traditional methods such as paper and long waiting times in queues (Alomari, Sandhu et al. 2009). Additionally; other factors include age and level of education of users, the proportion of daily use of the Internet and the proportion of the use of e-services and e-government (Al-Hammadany and Heshmati 2011).

The problem becomes more complicated once we address how to convince the citizen to use electronic services (Baradei, Shamma et al. 2012). Many people prefer to use services traditionally by standing in queues and by using paper despite the existence of opportunities to use the same services via the Internet. However, the Egyptian government is promoting and supporting awareness campaigns to persuade people to use electronic services, particularly the over-20-

years age group as those who are younger already have faith that the technology is useful to them.

In another study (Shafi and Weerakkody 2009), the researchers found that the Qatari government has stepped up media campaigns of the benefits of electronic services at the beginning of the application of their e-government project. This is leading to an increased awareness and encourages citizens to use electronic services.

Another study (Al-Khafaji, Shittuline et al. 2012) concludes that the resistance to change is one of the challenges facing the implementation of e-government. In Iraq for instance, in public institutions, "old" employees resist change to the traditional work flow. The reason for this is the fear of loss of jobs after the implementation of e-government, a typical "computer will replace me" reaction.

2.8. Portal

A portal is a gateway to all e-services that are offered to users on the Internet by governments. However, a portal at stage four is in the OSI section. Some countries are taken as examples in this section to explain the weaknesses and how they can be solved, as in Yemen. Moreover, there is Dubai portal as a success example as to how they provide services on a portal according to user categories. Furthermore, it explains which websites are established on the Internet and at which levels in the OSI stages.

In Yemen, the national project in information technology established the portal web site with the address http://www.yemen.gov.ye/portal (Yemen Government, 2016) to link all government websites at the portal of Yemen to provide an easy way for users to visit, obtain information and use the services of the government. However, it was reported in 2012 that there are problems on the portal of Yemen (Al-wazir and Zheng 2012).

At the time of access, researchers have seen many links not working, including:

Payment of bills for basic services with address
http://www.e-bill.post.ye

Employment Ministry of Civil Service enquiries and requests for service with the address mocsi.gov.ye/modules.php?name=appserver&file=appnum

Driving License Order Service
www.moi.gov.ye/moi1/AServices1/moror/d2.aspx?sid=1

Many ministries or institutes of the government have a website on the Internet. However, not all are linked to the portal. Moreover, there is a paucity of continuous updating of data of websites. The website of the portal is available only in the Arabic language at time of access.

At the time of writing, researchers visited the website and found that the problem still exists. The reasons for this problem are due the fact that there is a lack of qualified human resources to implement and handle the project as well as a failure to allocate a sufficient budget for the project according to (Al-wazir and Zheng 2012).

As stated by (Al-wazir and Zheng 2012), to bring the government of Yemen to a high point in the OSI, they have to:

. Redesign the portal of Yemen to include all information that users or visitors need and an easy way to reach all information and services.

. Yemen as a country has a civilization as well as historical and cultural documents. Therefore, the Yemeni government should focus on this aspect and on the promotion of sites concerned with archaeological sites.

Hence, they have to create a web site and link other ministries or institutes which deal with the civilization, historical and cultural links with the portal to provide documents and all information for the tourism of Yemen portal.

The other study portal of the Dubai e-government website (www.dubai.ae) was established in 2002 with the GIN project. In 2008, the portal of Dubai provided 2,300 services divided into four categories (visitors, businesses, citizens and

residents). These categories are available in Arabic and English languages (Sethi and Sethi 2008).

2.9. Interoperability

This section discusses some examples of the role of linking government institutions with each other, such as how the United Arab Emirates provided services online. On the other hand, some countries lacked the provision to link government institutions with each other as is the case in Yemen and also to clarify some e services offered by government from any level depending on OSI.

According to a study by (Al-wazir and Zheng 2012), one of the requirements of the government of Yemen is to connect every ministry and institute to one central database for the different types of e-government applications.

Moreover, the central database would act as a hosting for public information for all government institutions and departments. In addition, providing high speed and low time to deal with information is an easy way to update all information in all government departments and institutes. Therefore, a government needs to provide WAN infrastructure to connect every department and institute. However, this would have government institutes prepare to take modern data and network security measures.

Same study, (Al-wazir and Zheng 2012), reports on problems the Yemeni government is facing; basically, these include lack of provision for the network to connect all government departments and the institutes. On the other hand, some government offices do not have telephony networks. Furthermore, the telecommunication infrastructure in Yemen has a low point greater than other countries.

In another study (Sethi and Sethi 2008), the Dubai government linked every government department through the established Government Information Network project, which started work at the end of 2005. This project provided many advantages to government departments, such as access to the Internet, linking departments and institutions with each other, high-speed sharing of documents and more security. However, more than 30 institutions participated in

this project and one body supervised every one of these departments in Dubai. Finally, it facilitates the use of this system with the government portal to show any information and services that citizens may find necessary.

In another study, computerized records in Syria linked every government department to allow citizens to access information via the Internet without the need to travel to government offices (Hakmeh 2012) back till 2012; apparently, at time of writing, a functional government serving whole Syria can be nominated, hardy.

3. DISCUSSION AND CONCLUSION

According to the previous studies, it is shown many obstacles that affect the performance of e-services and e-governments has been rated constraints on EGDI of UN survey. These obstacles can be clustered under TII, OSI or HCI.

The links between government institutions through the database and portal are used to share information between departments and sections, which is one of the points that should be the focus of governments. This facilitates the citizens' use of information and institutions' provision of, and meeting citizens' needs for services and information in the minimum time, without repetition and with timely accessibility. Moreover, governments should also develop the infrastructure to fulfill the requirements of the public as well as the basics of the success of e-services and e-government and increase the interoperability in the government's departments. This reaches a point to increase the EGDI in OSI indictors of a country.

However, the important point that has attracted our attention during the studies are that most services and projects depend on the HCI, which was found in the examples cited in awareness, training, culture and intention to use e-government.

The researchers observe clear gap between the citizens and the use of e-services in spite of provision through government portals, responsible institutions or other channels in many countries in the region. This gap appears due to the lack of awareness in the community about the e-services of the government as well as a shortage in training and knowledge to use ICT and through the culture

experienced by citizens within the community. This may also show through the existing gap in the educational level of the community or the services used by users according to age and education groups; however, it is too early for such a conclusion.

There is an apparent view that e-government is not well adopted in these countries; however, we see that HCI in these countries is not so low; since HCI is a component of EGDI, this component may artificially make EGDI to have higher value than the reality. For this reason, a follow-up work can focus on some analyses on the Middle Eastern and Arab countries in order to explain the effects of the HCI, to open its weight as an indicator that has been adopted in UN surveys for the performance of e-government.

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