Assessment of the Jordanian E-Government: An Empirical Study

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Abstract
This paper explores the use of the internet by Jordan government. The internet is used to deliver the services of the government. An evaluation technique is suggested to investigate the quality and sophistication of the ministries’ websites in Jordan. Performance analysis shows that most of the efforts regarding e-services are still limited to be informative. This study shows that there is a necessity to incorporate more interaction and do orientation for local citizens. This will help to gain better understanding of the E-government initiative in Jordan.

Keywords: e-government, website, evaluation schemes, website content analysis, government ministries

INTRODUCTION
Currently, most governments exchange information and services with citizens, businesses, and other arms of government to form a stabilized environment inside countries. The move from traditional government services to E-government services provides better public services and quality of life. It allows the population of the country to perform their administrative procedures with government agencies electronically, at any time and location of their choosing (Al-Omari and Al-Omary, 2006). This has many advantages for the citizens of any country such as: easy to access information, convenient services, quick response to requests, fast delivery of services, data security and confidentiality. Hence, this leads to a considerable convince in E-government. Currently, there are many definitions to explain the concept of E-government. “However, these definitions differ according to the varying E-government focus and are usually centered on technology, business, process, citizen, government or a functional perspective. For instance, Seifert and Petersen (2002) explain E-government with a functional focus; Burn and Robins (2003) define it with a citizens focus; Zhiyuan (2002) views E-government with a technology focus; Wassenaar (2000) classifies it with a business focus; Wimmer and Traunmuller (2000) take a more government centered view; and Bonham et al. (2001) defines it with a process focus” (Al-Shafi, S, and Weerakkody, V, 2007). E-Government was emerged to help people to take advantage from information technology. It has assessed in improving the way how services introduced to citizen. This includes the improvement of the quality of education and information, applying the power of law through enforcement agencies, finding advanced health care services and management, supporting stronger safety and security systems, and involving citizens in the democratic process.

The aim of the Jordan E-government program is to contribute to Jordan’s economic and social development by providing access to government electronic services and information for all citizens and officials regardless of location, economic status, IT literacy, and educational background. It is important to understand the needs of government officials and citizens and encourage the adoption of solutions wherever possible to make a fundamental change in the way services are delivered and managed. Jordan has a modest experience in E-government at the national level and this paper evaluates the aspects of national E-government applications. The Jordanian government is under the control of prime ministry. Currently, this umbrella consists of 25 ministries. Each ministry has a website except one ministry, which is the Ministry of Defense. In this paper, we will evaluate the remaining 24 websites and provide an evaluation for E-government in Jordan. The ministries of Jordan are Ministry of Agriculture, Awqaf Islamic Affairs and Holy Places, Culture, Education, Energy and Mineral Resources, Finance, Foreign Affairs, Health, Higher Education and Scientific Research, Industry and Trade, Information and Communications Technology, Interior, Justice, Labor, Municipal Affairs, Planning and International Cooperation, Political Development, Public Sector Development, Public Works and Housing, Social Development, Tourism and Antiquities, Transport, Water and Irrigation, Environment, and finally Ministry of Defense. Almost, each ministry has some organizations that follow its legislation. These organizations take different names such as
E-government still has a limited influence on Jordanian citizens. A survey was concluded by the Arab Advisors Group (AAG) reveals that the percentage of Jordanian households connected to ADSL is 11.7% of total households in year 2008 (Arab Advisors Group: http://www.arabadvisors.com). The survey also revealed that 20.5% of internet users in Jordan are e-commerce users. It has been estimated that the number of Jordan internet users who use e-commerce to be around 3.42% of the total population in Jordan (Arab Advisors Group: http://www.arabadvisors.com). The purpose of the proposed study is to evaluate government websites and to assess the performance of Jordan prefectures websites against Chandler and Emanuels model. This will highlight the strengths and weakness in the government and hence fix the weak areas. The proposed study will contribute “toward the ongoing discussion (Zhang, 2005) for the development of a worldwide evaluation scheme that would measure the quality and sophistication of E-government website” (Yannas, P, and Lappas, G, 2007). In addition, this will help us to gain better understanding of the environment.

The organization of this paper will be as follows. Section 2 will present the E-government sophistication levels. Section 3 is the proposed E-government evaluation Technique. Section 4 is the application of the E-government evaluation technique to the Jordan government. Section 5 is the discussion and section 6 is a conclusions.

E-Government Sophistication Levels

Societies and governments are changing rapidly. People, when interact with government; see themselves have the right to get high quality of services. The reason for this is that they see themselves as members of the business. At the same time, they do not need to know the details of the work in the government.

Today's, many governments around the world are joining the race for delivering modern E-government services to citizens with a full coordination between government units. The exclusive aim of E-government is to introduce more efficient and less cost services to citizens. The use of Information and Communications technology (ICT) provides the real opportunity to do this and to gradually improve government performance in terms of convenience, efficiency, and the quality of service. The implementation of E-government projects goes through number of stages before reaching highest stage (Irani et al, 2006). Currently the models that are exists are listed in table 1 (adapted from Irani, M. Al-Sebie and T. Elliman. (2006)).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Perception</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1: Cataloguing</td>
<td>Creating websites and making government information and services available online.</td>
<td>Layne and Lee</td>
</tr>
<tr>
<td>Stage 2: Transaction</td>
<td>Enables citizens to interact with their governments electronically.</td>
<td>Chandler and Emanuels</td>
</tr>
<tr>
<td>Stage 3: Vertical integration</td>
<td>Focuses on integrating disparate at different levels.</td>
<td></td>
</tr>
<tr>
<td>Stage 4: Horizontal integration</td>
<td>Focuses on integration of government services for different functions horizontally.</td>
<td></td>
</tr>
<tr>
<td>Stage 1: Emerging</td>
<td>Creating a government website with limited / static information.</td>
<td>United Nations – DPEPA</td>
</tr>
<tr>
<td>Stage 2: Enhanced</td>
<td>Updating information regularly.</td>
<td></td>
</tr>
<tr>
<td>Stage 3: Interactive</td>
<td>Provides users with reasonable levels of interaction enabling them to download forms and;</td>
<td></td>
</tr>
<tr>
<td>Stage 4: Transactional</td>
<td>Enables customers to complete transactions such as obtaining visas, licenses, passports, birth and death records, etc. online safely and securely.</td>
<td></td>
</tr>
<tr>
<td>Stage 5: Seamless or fully integrated</td>
<td>Provides services across administrative and departmental lines with the highest level of integration.</td>
<td></td>
</tr>
<tr>
<td>Stage 1: Publish</td>
<td>1. Information about activities of government available online.</td>
<td>Howard</td>
</tr>
<tr>
<td>Stage 2: Interact</td>
<td>2. Enables citizens to have simple interactions with their governments such as sending e-mail or ‘chat rooms’.</td>
<td></td>
</tr>
<tr>
<td>Stage 3: Transaction</td>
<td>3. Provides citizens with full benefits from transactions over the Internet, such as applying for programmers and services, purchasing licenses and permits.</td>
<td></td>
</tr>
<tr>
<td>Stage 4: Integration</td>
<td>4. Focuses on integration of government services and information from a single point.</td>
<td></td>
</tr>
<tr>
<td>Stage 5: Clustering of common services</td>
<td>5. With portals becoming better, government departments will disappear where government will seek to gather common services to hurry the process of delivery.</td>
<td></td>
</tr>
<tr>
<td>Stage 6: Full integration and enterpris e transform ation</td>
<td>6. Government departments will disappear others will appear; some departments will keep the same names but become entirely different internally.</td>
<td></td>
</tr>
</tbody>
</table>
There are differences between these models mainly in relation to the number, and the names of stages. This paper will adopt the four-stage model proposed by Chandler and Emanuel (2002). The reason for this is that it focuses partly on citizen-centric and functionality. In addition, it gave little technical security consideration at the transaction stage. It makes “an important distinction between facilitating unrestricted two-way communication, with technologies like email and discussion boards, and explicit transaction processing whereby citizens carry out a complete transaction via an online interface” (Irani et al., 2006). The four stages of Chandler and Emanuel’s model are listed below.

- **Information**: “this is a preliminary stage, were most of government services delivery is available on-line. Citizen can access government information over a website (static) – this is a one-way communication between government and citizen” (Geoffrey Karokola1 and Louise Yngström, 2009).

- **Interaction**: “this is the advanced stage of the former; simple interaction between citizens and governments are enhanced; various website features and functionality are available including search, and emails; at this stage the communication is two ways” (Geoffrey Karokola1 and Louise Yngström, 2009).

- **Interaction Transaction**: “refers to services that enable transactions of values between citizen and government; citizen can pay taxes, submit forms on-line” (Geoffrey Karokola1 and Louise Yngström, 2009).

- **Integration**: “this is the final stage where vertical and horizontal integration of services across government and agencies occurs. Citizen can access information on-line from one service centre.” (Geoffrey Karokola1 and Louise Yngström, 2009).

The first stage, which is the information stage, E-government means the presence of information about government services policies, and agencies on the web, providing one-way communication from government to citizen (G2C) without enabling interaction with public. Information stage is referred to as publishing stage (Howard, 2001) and emerging stage (United Nations, 2002).

The second stage, Interaction stage, involves simple interaction between government and citizen (G2C). For example, asking questions or exchanging data via e-mail, downloading specific forms.

The third stage, transaction stage, contains activities that are more complex. It involves services, which allow complete transactions to be achieved between government and citizens without going to an office. Such transactions need systems that concern with security and personalization. For example, digital signatures will be necessary to enable legal transfer of services. “Many researchers (Lee et al., 2005), (Holden et al., 2003), (Layne and Lee, 2001), (Sarikas and Weerakkody, 2007) identified that most E-government initiatives often stagnate at the transaction stage of development; only a few will succeed to offer sophisticated, value added and truly efficient and transparent online services using a single point of contact” (Dhillon et al., 2007).

The final stage, integration stage, is achieved when all information systems are integrated to allow complete services to be achieved across government agencies and departments by citizens. The complex feature in satisfying such integration is on the internal side which requires that government employees in different departments to work together and requires providing security for all personal data. This usually requires transformation of the whole organization. Therefore, this transformation requires trained or new hired employees to deal with the new technology and this integration. In this stage cost savings, efficiency, and customer satisfaction are reaching highest possible levels. The integration stage is also referred to as horizontal integration (Layne and Lee, 2001) and fully integrated stage (United Nations, 2002).

"The United Nations E-government Survey in 2009 presents a comparative assessment of the 192 United Nations Member States’ response to the ever-pressing demands of citizens and businesses for quality government services and products. The Survey evaluates the application of information and communication technologies by governments. The aims to which these technologies are put to use vary, but include: better access and delivery of services to citizens, improved interaction with citizens and business, and the empowerment of citizens through access to information. Overall, they result in a more effective and efficient government in general. This evaluation of E-government readiness place citizens at the forefront, by focusing on the governmental services and products that primarily affect them." (United Nations, 2009).

The United Nations E-government Survey in 2008 has ranked Jordan in the position of 50 in terms of E-government Readiness ranking and with E-government Readiness Index of 0.5480 out of 10. However, in year 2010, it is dropped to position 51 with an index of 0.5278 out of 10. It should be noted out that Jordan was in position 68 in year 2005. This means that the rank has been improved 18 positions. The growth in E-government by 17 positions is the highest among Western Asia countries since the survey study which was conducted in 2005.
A Proposed E-Government Evaluation Technique

The evaluation of Jordan E-government websites follows Chandler and Emanuels (2002) model. This model consists of four stages. Our proposed study considers each stage and expands it into more detailed sub-stages in order to be more realistic in our evaluation process. Each sub-stage will be evaluated depending on a set of properties that represent the overall feature of the sub-stage (refer to appendix A). It should be pointed out that this Appendix is the same criterion that is used by Yannas, P., Lappas, G. Each property will be evaluated as if it was very successful, successful, somewhat successful, unsuccessful, or not exist and each choice has strength out of 4 (see table 2).

Table (2): Property evaluation and evaluation strength

<table>
<thead>
<tr>
<th>Property Evaluation</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very successful</td>
<td>4</td>
</tr>
<tr>
<td>Successful</td>
<td>3</td>
</tr>
<tr>
<td>Somewhat successful</td>
<td>2</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>1</td>
</tr>
<tr>
<td>Not exist</td>
<td>0</td>
</tr>
</tbody>
</table>

Thus, it is also the most challenging phase to reach it (Layne and Lee, 2001). In addition, many researchers talked about the high impact of the transformation stage and stated that most E-government program often stagnate at this stage (Lee et al, 2005), (Holden et al, 2003), (Layne and Lee, 2001) (Sarikas and Weerakkody, 2007). Researchers such as Mansar (2006) and Layne and Lee (2001) “highlights that business process re-engineering is particularly important when E-government projects reach the later stages of development such as the transformational stage where all services are centralized in a one-stop-shop environment.” (Dhillon, G et al, 2007). It is clear that for E-government, later stages have greater impact than earlier stages. This forces later stages to be assigned highest rank among evaluation. Therefore, we used the same percentage of maturity for each stage that was adapted (Chandler & Emanuels, 2002) and (Yannas, P, & Lappas, G, 2007)

- Information stage: 15%, Interaction stage: 20%, Transaction stage: 35%, Integration stage: 30%

Then, every sub-stage is given a weight corresponding to its importance and effect on the stage itself and the whole E-government implementation. The whole weighted ranking technique for the main four stages setup to 100 points. Each stage has been assigned a different weight. The reason why we assigned different weights to different stages is popped up from the fact that each stage has different impact on E-government. For example the transaction stage has the greater impact on the implementation of E-government (Dhillon, G et al, 2007) so we assigned it a weight of 35%. The transformation stage of E-government implementation takes the highest level of maturity for E-government implementation.

The attractiveness sub-stage of the first stage includes that some websites make some multimedia such as video before browsing the website. This might have a positive or negative impact. In fact, the professional users of the web consider it as disadvantage since it wastes some of their time during site downloading while first time users and low experience users might consider it as a positive and interesting property. The navigability sub-stage helps in evaluating the usability of the website and in evaluating the tools used to help visitor of the site to find what they are looking for quickly and easily. This means that the user should find pages with one or two clicks, and the user should use few navigation clicks and he should not have to go numerous levels to find his page.

Application of the E-Government Evolution Technique to Jordan Government

The increased focus on using E-government by people in Jordan, where there is almost a website for each ministry, emphasizes the need for having an evaluation that provides an analysis about the Jordanian E-government project. This evaluation helps those who are concerned in the implementation and use of E-government to learn the factors resulting in the success or a failure of such project. This also provides for a feedback to the stakeholders involved in the project regarding the efficiency of the E-government Jordan project.

Table 3 gives the average evaluation of the three IT researchers to the E-government based on the appendix A. The minimum requirement for each one of these researcher is to have at least undergraduate studies in IT.

Table 3: E-governments evaluation in Jordan using the Appendix (the average evaluation of the three IT researchers)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Highest possible score (Max. limit)</th>
<th>Average score</th>
<th>high score</th>
<th>Lowest score</th>
<th>Best ministry</th>
<th>Worst ministry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>15</td>
<td>8.5</td>
<td>11</td>
<td>4</td>
<td>Finance</td>
<td>Municipal Affairs</td>
</tr>
<tr>
<td>Interaction</td>
<td>20</td>
<td>7.4</td>
<td>12</td>
<td>3.5</td>
<td>Finance</td>
<td>Interior</td>
</tr>
<tr>
<td>Transaction</td>
<td>35</td>
<td>14.8</td>
<td>19</td>
<td>12</td>
<td>Higher Education and Scientific Research</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>Integration</td>
<td>30</td>
<td>11.3</td>
<td>16</td>
<td>10.5</td>
<td>Tourism and Antiquities</td>
<td>Municipal Affairs</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>41.8</td>
<td>58</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is clear from Table 3 that the government in Jordan is making significant progress in implementing E-government, but there exist many reasons for continuing expansion and improvement in E-government.

The researcher conducted a survey in Jordan in order to measure some indicators. A one hundred copy of a survey was distributed and then collected. There were only 95 surveys has been filled. The survey results showed that only 62% of the people access the E-government website when they need it. Results showed that the people between the ages of 25-29 use the E-government more than any other age group. Respondents are required to answer the percentage of usefulness and the level of information provided. Results of the answers are depicted in Figure 1

![Figure 1: User Satisfaction with E-government website content](image-url)

In addition, the respondents were asked to answer how much they trust the website. The majority says that they have trust and confidence in the safety of the E-government website and its content. Figure 2 shows the level of trust and safety.

![Figure 2: Level of Citizens trust in E-government and perceptions about security](image-url)

The author think that the reason for this is that the web designers list only accurate information, otherwise, inaccurate information might cause problems to them. In rare cases, some people get a snapshot of screen with inaccurate information and try to re-size the government in the court.

**DISCUSSION**

The growth of internet has directed Jordan government to computerize its services in order to allow citizens to benefit from it. This has led to the electronic delivery of governmental services and information. The quality of the service will measure if the government is able to provide the service anytime, anywhere, and full-integrated transactions. E-government is seen as no longer an option but a necessity for all countries aiming for better and efficient governance. It increases the credibility of the government. This paper evaluates the websites of the E-government of Jordan.

The study shows the average and high score for each stage (information, interaction, transaction, and integration stage) as listed in table 3. The researcher feels that the updates of some website are not performed on daily or weekly base. For one case, the Arabic version for one ministry was detected broken.

There is a drop in the percentage of services that are available at the interaction stage, and then only a small fraction of services is available at the transaction stage. Therefore, ministry websites needs more development, there are still many weaknesses in the Jordanian E-government project, and there exist many points that need further improvement.

The obvious lack of strong online services in interaction stage and transaction stage in comparison to information stage is easy to understand. A ministry can quickly build a web site and publish information. However, building interactive web sites with powerful interaction and transaction capabilities and with links into the ministry’s existing IT systems requires vision and planning to ensure a coordinated approach to support seamless delivery of services to citizens and businesses. In addition, a mechanism is required to regularly refresh the website.
It should be noted that the first few minutes or seconds affect the evaluation of the website. In fact, some studies show that the first 50 seconds is significant to make a good first impression, which can influence users' memories positively to use its service (Lindgaard et al, 2006).

CONCLUSIONS
One of the most important objectives of E-government evaluation is to identify the degree of success of the project and whether the E-government was a success or failure and then to learn from this evaluation in order to develop and strengthen the weak areas of the project.

In general, every ministry in Jordan started providing some level of E-government services on their website. From this study, it is clear that governments and citizens will not appreciate the full benefits of governmental websites and electronic provision of services until more possibilities in the transaction stage are implemented. In addition, other issues such as lack of awareness among older people, bureaucratic business practices, and the social cultural issues should be addressed.

It is clear the importance of the existence of the E-government in bringing more convenience to the citizens of Jordan. The new generation, which is internet literate, has a high willing to use the e-services of the Jordan government since it saves time and money. However, extra efforts must be achieved in order to improve the quality. Without a strong design of E-government websites, citizens will get bothered and not use the websites. In addition, the government will lose the benefits of using electronic technology to provide the service.

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REFERENCES


Navigability getting to any page quickly (only one or two clicks) (3), avoiding splash pages (3)

Attractiveness information presented in a consistent, simple, and concise form (4)
Resizing the text (2), Print option (2), Dynamic HTML, Cool color (2)
Innovative ideas (3), Video files (2), Speech files (2)
Proper use of italics, bold, underlining (3), White space,
Dynamic media are portrayed in introductory video before entering main page (2), video files (2), speech files (2), music in the site (2)
Animating text (2), animating graphics (2), photos (2), clips (2), banners (2), avoiding annoying pop-up advertisements (2), and 3D simulation (2) like a panoramic view of the area by using mouse clicks. The characteristics of design sophistication are portrayed in layout consistency (1), proper use of italics (1), proper use of bold (1), proper background (1), the use of no more than three main colors (1), proper editorial appearance (1) avoiding clash classes between colors, letters etc.

Content Services to prefecture citizens Access to Official Documents (4), Job Announcements (4), Staff Members (4), Contact Information for Staff Members (4), Organization Departments (4), Required Application Documents (4), Information for Citizen Service Centers (4)


Content Prefecture achievements Description of the Action Plan (projects) used in Election Campaign (2); Completed Projects so far (2); Technical and Financial Details of Projects (2); Photos from completed Projects Action Plan (2); Multimedia usage for promoting projects (2); Description of next projects (2); current state of projects (2); Financial Information of New Projects (2); Call for Project Participation (2); Project Reports (2)

Content Leader information Leader CV (1); Details of Studies (1); Political Achievements (1); Professional Achievements (1); Achievements in Prefecture (1); Family Details (1); Personal Photo (1); Political Photos (1); Professional Photos (1); Family Photos (1); Photos of action plan (1); Photos from Local Events (1); Multimedia Usage for promoting the leader (1)

Content Members of the council List of names (1); Photos of members (1); Members CV’s (1); Multimedia usage for promoting members (1); Contact details of Members (1)

Content Promotion of prefecture area Sightseeing Photos (1); Museum Photos (1); Local Events Photos (1); Local Products Photos (1); Multimedia usage for Sightseeing (1); Multimedia usage for Museums (1); Multimedia usage for Local Events (1); Multimedia usage for Local Products (1); Weather Forecast (1)

Content Local enterprises, NGOs etc Prefecture and Municipality Organizations (1); Local Public Agencies (1); Local Professional Organizations and Associations (1); Local Cultural Organizations (1); Local Athletic Organization and Clubs (1); Local Business Enterprises (1); Local Media (1)

Content Links to local enterprises, NGOs etc Link to Prefecture and Municipality Organizations (1); Link to Local Public Agencies (1); Link to Local Professional Organizations and Associations (1); Link to Local Cultural Organizations (1); Link to Local Athletic Organization and Clubs (1); Link to Local Business Enterprises (1); Link to Local Media (1)

Content Other information etc Calendar (1); Anniversary (1); Change Language (1); Local Elections (1); Other (1)

Update Frequency Date Updated (4); Press Releases (4); Archives of Press Releases (4); Content Update (daily 4, weekly 2, monthly 1); News (daily 4, weekly 2, monthly 1); Newsletters ( Weekly 4, Monthly 3, 3-months 2, semester 1); Site Statistics (4)

Passive C2G Contact Address (4); Telephones (4); Fax Number (4); Contact Emails (12); Contact Form (12); Registration to Newsletter (12); Registration to Newsgroup (12)

Passive C2G E-pollls (10); Online Surveys (10); Send your Opinion (10); Guestsbook (10); Send this site/file (10); E-cards (10); Sign for E-petitions (10)

Real Time C2G Video Conferences (12); Netmeetings (12); Online Reviews and Debates (12); Online Radio (12); Online Interactive Games (12)

Real Time C2G Discussion Forums (20); Chat Rooms (20); Bi-directional Newsgroups (20)

Transaction Stage Online Official Forms Completion and Submittal (50); Online Access to Public Databases (50); Online Payments (50); Online Certification Requesting and Issuing (50); Download Official Documents and Programs (50)

Prefecture integration Different level of confidentiality access (40); Inter-departmental functional operations or traditional administrative operations appearing on the web (40); Group-oriented access menus (40)

Site Personalization Allow users to personalize the context of the site (40); Subscription services for parts of the site (40); Use of cookies/logs to segment users and expose them to site versions that suit their personal style (50).