Overview of the electronic public services in agriculture in Jordan

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A B S T R A C T

Currently, the use of information technology is essential and offering electronic services which has become a necessity for all governments around the world. In Jordan, ICT sector is advanced in the Middle East and provides electronic services in various sectors. The goals of this paper are to find out the current situation and evaluate the quality of electronic public services for the Jordanian agricultural sector. In this paper, the government websites providing electronic services were analyzed to check the readiness of these websites and identify and verify electronic services in the agricultural sector. Seven main sites have been selected concerned with the agricultural sector in Jordan. Only three websites offer electronic services and in order to check these websites a survey of these websites was conducted based on literature criteria. These criteria checked the readiness of these websites from technical aspects, services, information security and ease of use for people with special needs. After the portal analysis, these websites showed general weakness in the management of sites, weakness in security tools for personal information, weakness in updated information and no websites showed any features for people with special needs. In addition to it, farmers and agricultural businesses in Jordan are currently not obliged by any law to use any electronic service, and they can still opt for traditional paper mail or personal visits.

1. Introduction

Since the internet has become a vital tool for the success of businesses, it was very necessary for the governments to exploit its use and provide the best services for their stakeholders and citizens. The revolutionary emergence of information and communication that took place in 1980s and 1990s did not only change the lifeline of people, but also the whole characteristics of the interaction between the governments and their citizens. The public and private sectors in the mid-1990s competed on how best they exploit the new technologies in improving their services and developing their relationships with their stakeholders (Szilágyi & Szilágyi 2009). In general as many previous studies have shown (Gatautis R., Medziausiene A., Tarute A. n.d.; Seri & Zanfei, 2016; Córdova et al., 2014), the private sector showed more enthusiasm towards using ICT for communications, interactions and transactions; whereas the governmental sector was hesitant about using them in the beginning. Nonetheless, this hesitation did not last long and it quickly dissipated by the early 2000s when the governments started to launch e-Government projects. Most of the technology experts found that the spread of e-Government in 2003 was surprisingly better than how it was a decade before and the e-government term started being more familiar than any time before (United Nations 2002; Gil-García & Pardo 2005; Ebrahim & Irani 2005). However, since it became important to all government to convert to the electronic services governments all over the world started converting their services to electronic in all sectors and the agriculture sector is no exception, here this paper identifies the current situation for the electronic services in the agriculture sector in Jordan.

Finally, this paper (first stage) tries to explore the current situation of the e-Government in Jordan. The basic idea was that the e-government has positive effects in terms of reducing costs, reducing bureaucracy and corruption in a country with many economic problems and challenges. On the other

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hand this paper will explore the current electronic services in the agriculture sector, in particular evaluating the current governmental websites in agricultural sector from the technical aspect, and counting the number of electronic and non-electronic services. Finally the quality of these websites were analyzed and some recommendations and suggestions were offered to enhance it.

In addition, because the agricultural sector is considered as one of the most important sectors that contribute to the economy and at the same time the importance of technology in improving this sector, this paper is about the current situation of the electronic services for the agricultural sector in Jordan and the services will be examined further and compared with other countries in other stages later.

1.1. E-Government

There are a numerous number of studies that attempted to define e-Government. They all converged on the idea that e-Government is the government's use of technology that aims to better serve its stakeholders. For instance, the World Bank defines it as "the governments' use of information technologies, such as the Wide Area Networks, the internet, and Mobile Computing, which have the potential to transform the traditional paper-based relationship between businesses, citizens, and governments to a more modern one. These technologies are thought to have a variety of good consequences, like better service delivery to citizens". E-Government is also "the use of ICT to improve, transform, and redefine any form of information exchange among the involved actors by developing and maintaining the dedicated inter-organizational systems, virtual organizational arrangements, and (inter)national institutional arrangements." (Rahim & Athmay 2013). Similarly, e-Government refers to the administration system in the government offices that uses modern technologies, like information, network and office automation technologies to handle the official affairs and provide public services for society (Lin et al. 2011).

Irrespective of having different definitions about e-Government, there is one common central concept that underlies all the above-mentioned definitions which is the use of technology or (ICT) by government' agenesis for public service delivery through different platforms and channels.

1.2. Electronic Services in agriculture (E-agriculture)

Agricultural sector is one of the most important sectors in the world because it is the main Food supplier. The technology in agriculture sector is still important and a national and global priority (Gelb & Parker 2005), but according to a study conducted by (Karetsos 2014), the agricultural sector is still one of the business sectors that have been left aside in terms of the application of new technologies, so agricultural information system needs to be developed and increase the electronic services.

ICTs are one of the main contributors to growth and socio-economic development in business sectors, countries and regions where they are well dealt with. The good adoption and integration of ICTs have improved service delivery, created new jobs and opportunities, saved time and money (Botos et al. 2015). Moreover, many previous studies have shown more benefits like: promoting greater inclusion in the broader economy, raising efficiency by complementing other production factors, and fostering innovation by dramatically reducing transaction costs (Deichmann et al. 2016). Meanwhile, the rapid growth of mobile phone globally (Figure 1) provides new possibilities to access and share information. About more than half of the population in our world owns a mobile phone and it would be much higher when children are not counted.
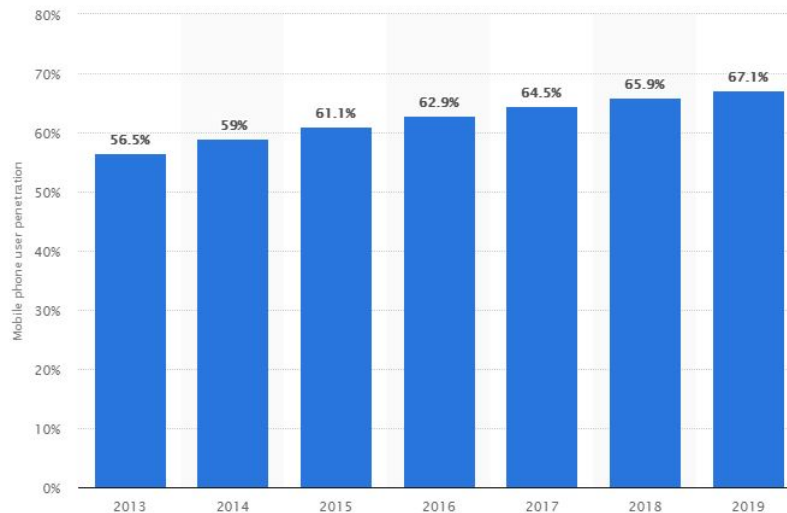
Figure 1. Mobile phone user penetration as percentage of the population worldwide from 2013 to 2019 (Statista 2016)

But in the other hand, many farming communities many people with old phones still rely on basic phones, which offer voice and text services mainly, but smart phone access is on the rise (Figure 2). The rapid growth of mobile broadband (Statista 2016) can provide a great opportunity for e-agriculture (Karetsos 2014). In sum, as second edition of the FAO report mentioned that ICTs have provided new opportunities to address the challenges faced by agriculture as well as information and knowledge gaps that ICT can also play a very important role in bridging these gaps in the sector. (Lengyel et al. 2018; FAO 2017)
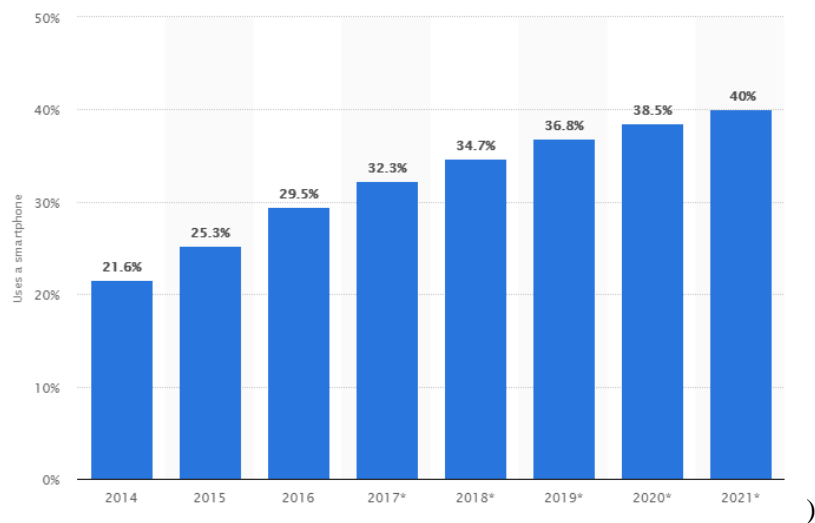

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Figure 2. Smartphone user penetration as percentage of total global population from 2014 to 2021 (Statista 2016)

2. E-Government in Jordan

The Jordanian ICT sector has grown tremendously since the late 1980s and early 1990s and since the establishment of Ministry of Information and Communications Technology (MOICT) in 2002, the ministry became more involved and enhanced cooperation within the ICT sector (MoICT 2016). Today, with about 89% of the Jordanian populations connected to the internet (We Are Social 2017). ICT sector is considered as one of the main sectors of the Jordanian economy With a GDP contribution worth around 4 percent in 2017 and more 84,000 jobs in this sector the ICT sector has witnessed significant growth over the years (Jordan Times 2017) (Figure 3).
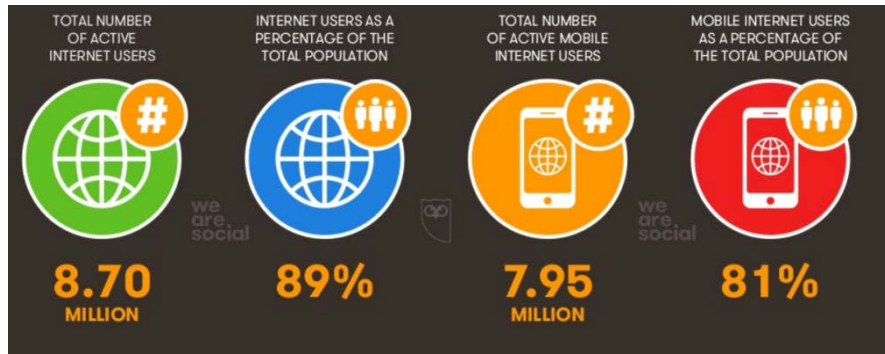
Figure 3. Jordanian internet and mobile phone users in 2017. (We Are Social 2017)

Jordan considers that e-Government implementation will provide new channels and means of access to information and data services that result in economic and social developments. Jordan began to pursue the project of e-Government in 2001 after King Abdullah II launched the e-Government initiative, and in April 2002 after establishing MOICT to be responsible for articulating policy in the areas of Information Technology, Telecommunications. The king put the ministry in charge of implementing the e-Government project throughout the country (MoICT 2016). The e-Government portal was launched in late 2006. The main aim of the government was to orientate itself towards the customer approach and providing services to people, regardless of their location, economic status, education, or ICT abilities.
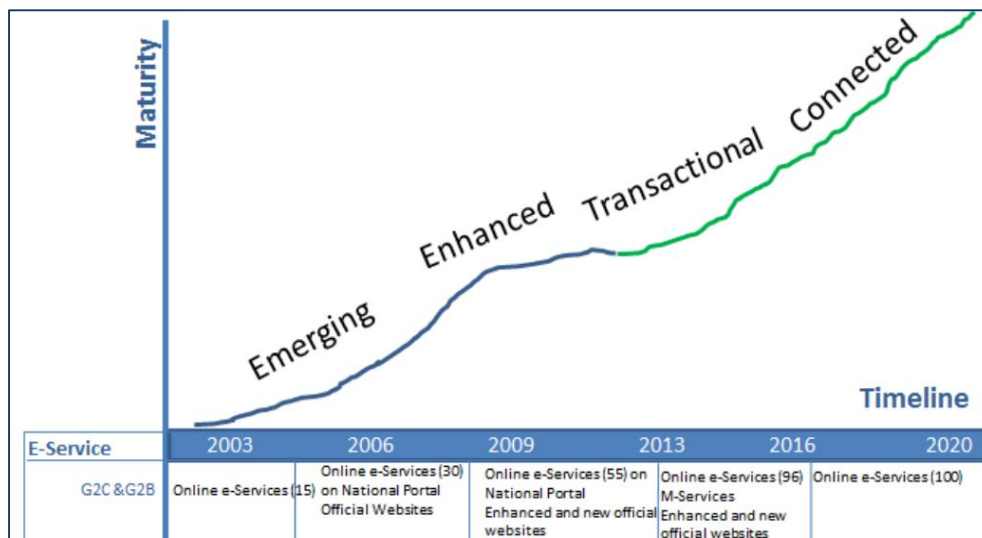

Figure 4. Jordan e-Government Current and Target Maturity (MoICT 2013)

According to the Ministry of Information and Communication Technology (MoICT) the Jordanian e-government milestones showed in Figure 4. The report showed that since the launch of the program in 2001, the program has achieved some successes and faced some challenges, during 2001-2003, Jordanian government and the MoICT reviewed the process to implement e-government in Jordanian society and major plan at that time was to set and develop roadmaps to guide the implementation of the e-government project. Based upon the priorities defined in the roadmap, they distinguished five governmental institutions to be the first institutions to apply e-services (MoICT 2016).

Afterwards, the program has produced a National e-Government Strategy and Roadmap (2006-2009) and during this time the program succeeded in the establishment of 107 Units of e-Government in government agencies, with active reporting mechanism between those agencies and e-Government Program as well (G2G) and Launch a Gateway for SMS that supports 77 government agencies (MoICT 2016).

In 2010 the government has produced a strategy for the years (2010-2013) and at the end of this strategy the program activated many services like "Jordanian Payment Gateway" which enables users

to make an online payment, "Mobile Portal" that provide 40 e-services to mobile customers. In addition to it, the program gave over 13000 training opportunities on ICT literacy, project management, vendor certified training programs and IT professionals at this stage. Currently Citizens and Businesses have access to about 100 e-Services on the National Government Portal provided by 45 governmental agencies include police clearance, drivers, and vehicle licensing, e-Tax, a real estate registry, and national exam registration and results. An additional 70 e-services will be launched in 2016, according to the ICT Minister in Jordan (MoICT 2016).

2.1. Agricultural Sector in Jordan

Agriculture in all countries is considered as one of the economic pillars. And recently, agriculture has started to become a major role in the protection of the environment and ensuring an environmental balance that would secure sustainable use of resources and preserve them for future generations. In Jordan, despite the sector's declining contribution to GDP in the last decades (4.0%) (Figure 5) and employs seven percent of the labor force according to the Jordanian Department of Statistic. But it is still considered the base for integrated rural development, a source of income and employment for rural and Badiya (desert) people and a generator of activities in the other economic sub-sectors.
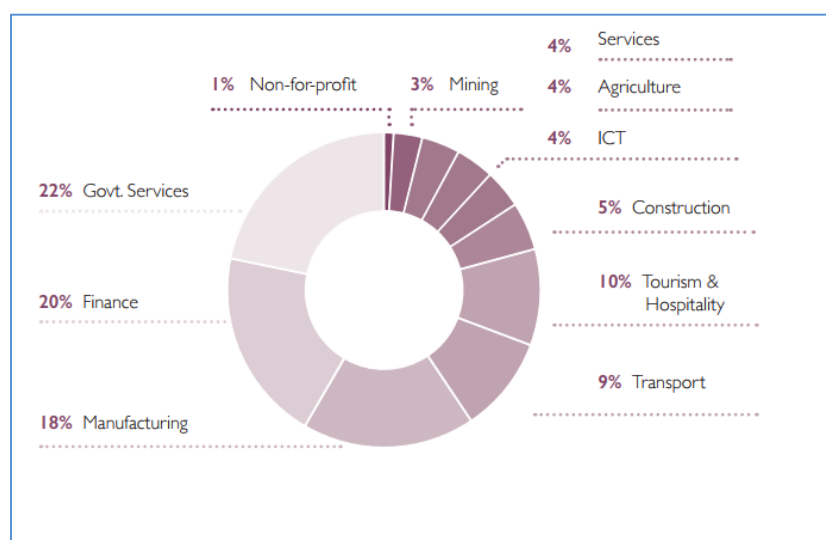

Figure 5. Sectoral Contribution to the Jordanian Economy (Department of Statistics 2017)

On other hand, the Sector is still facing a large number of challenges which is increased with the low and fluctuating rainfall, successive of drought years and environmental changes as well as the various risks related to the decline in the role of the agricultural sector at the national economy which leads to focus all the efforts to enhance agricultural development that connected with the recent and future plans for economic and social developments, political and environmental developments to reduce the negative effects and to promote its sustainability.

One of the most important factors that influences the improvement of the agricultural sector is the use of technology and that has shown impact in many countries around the world (FAO and International Telecommunication Union 2016) but in Jordan, the use of technology in the agricultural sector is still limited and substandard (Saravanan 2010). In this paper, the governmental websites and the electronic services of the agriculture sector were reviewed.

2.2. Electronic Services in agriculture sector in Jordan

Many governments' agencies around the world are already developed and have implemented portals and websites where various electronic services for farmers are provided (Ntaliani et al. 2010). After surveying the governmental websites it was revealed that Jordan offered agricultural services on the internet through three main websites.

First the Jordanian e-Government website (https://jordan.gov.jo), second the Jordanian Ministry of Agriculture (http://www.moa.gov.jo) and the National Agricultural Information System (NAIS) (http://www.nais-jordan.gov.jo). And four other websites:

1. National Center for Agricultural Research and Extension (NCARE). (http://www.ncare.gov.jo)
2. Bee Research Department. (http://www.jordanbru.info/)
3. Olive Research and Extension Program in Jordan. (http://www.ncare.gov.jo/OliveProgram)
4. Agricultural Credit Corporation. (http://www.acc.gov.jo)

However, it is noted that there is no unified gate that deals only with agricultural services or the agricultural sector. In this paper, we scanned all the agriculture related websites run by the government agensis for farmers, these websites were reviewed and nine technical criteria were used to determine the readiness of these websites to provide services.

3. Methods

The objective of this paper is to analyze the Front office of e-Government offering agricultural services according to (Budai & Tózsa 2011) "is the face of public administration and it includes all interfaces, where public administration and customer are in contact with each other according to this meaning, there are also here online and offline solutions". Although nowadays front office solutions mean practically electronic solutions in this interface where the user and the office or the administration can meet and the user can access to all the services related to him/her.

In addition, e-Government front office is electronic where the communication between the user and the office is electronic without physical presence or any time limit (24/7) for example:

- CRM-system,
- Official websites portals,
- mobile portals.

Here, in this paper we will focus on the second channel (The official websites portals) that provides electronic services in the agriculture sector and tries to assist them by checking the quality of these websites, the readiness of them to offer electronic services, how many services they provide and the quality of these services, here below in Table 1. It is shown the eight websites that are related to agriculture in Jordan. This table shows the agencies who manage these websites, if the information provided is useful, and the number of services provided, both in electronic or non electronic services.

Table 1. Websites related to agriculture in Jordan (own source)

Websites / criteria	Responsible party	Useful information	Number of services	Offline services	Online services
https://jordan.gov.jo	Ministry of Information and Communication Technology	Yes	2037	1888	149
http://moa.gov.jo	Ministry of Agriculture	Yes	135	133	3
http://www.nais-jordan.gov.jo	Ministry of Agriculture	Yes*	-	-	-

http://www.ncare.gov.jo	Ministry of Agriculture	Yes	10	10	-
http://www.jordanbru.info/	Minstry of Agriculture	Yes*	-	-	-
http://www.ncare.gov.jo/Olive Program	Minstry of Agriculture	No	0	0	0
http://www.acc.gov.jo	Minstry of Agriculture	Yes	11	4	7

*The website shows some useful information for the people in agriculture sector eg.(regulations, guidelines…ect) but doesn't show any actual dedicated service functions (electronic or nonelectronic).

In order to achieve that, a survey of these websites was conducted based on nine determinants and elements identified by Budai and Tózsa (Budai & Tózsa 2011) in their book (The Current Break through Points in Public Administration) the author chose this reference because this book talked about the Hungarian e-government and we will use the same reference in comparing between the Jordanian and the Hungarian situation in the coming articles. The nine determinants we have chosen are as follows:

Accessibility and easy availability **(A&E)**
- user friendly interface,
- simple,
- quick download,
- compatibility with Popular browsers (Explorer, Netscape and Firefox).

General basic function **(GBF)**
- searching,
- the possibility of feedback or contact (email address, phone number),
- help to use the portal,
- systematization of content according to value and depending on user's habit.
The website is flexible to change depends on the user (citizen, business, researcher, tourist, a foreigner, etc.) and this paper will check basic functions as follows:

Up to date and actualized information (**UTD&AI**)

Offering services (**OS**)

(e-) public administration services (electronic services) (**ES**)

Data security, protection of personal data (**DS**)

Possibly multilingualism (**PM**)
- choice of language (Arabic and English)

Portal functions (**PF**)
- news, events, press conferences,
- information of common interest (schedules ,cultural programs),
- basic information (local time, weather, number of visitor, etc),
- faultless operation ,quick communication.

W3C, WAI recommendations (**W3C,WAI**)

World Wide Web Consortium, Web Accessibility Initiative (http://www.w3.org/wai/): the recommendations to make the services and the websites accessible and easy to use for the mentally handicapped people or the people who live under disadvantageous conditions. In addition to the above, we must make sure of the following:

- Reading system, icon or voice control, Braille interface, changeable font size (for weakly sighted people),
- Substitution of mouse, voice controlling interface, optional waiting period during interactions (for physically handicapped people).

Moreover, the plus sign (+) shows that the website offers the function while the minus sign (-) shows it does not, the author will scan all the eight websites manually and examine the nine determinants and put (+) or (-) sings based on the Table 2 below:

Table 2. Determinants and the description (Based on Budai & Tózsa 2011)

	Determinants	**Description**
1	Accessibility and easy availability (**A&E**)	- User friendly interface (all portal functions easy to use and works) **1 mark.** - Simple (use graphics, explore easily inside the website) **1 mark.** - Quick download (downloads functions work easily) **1 mark.** - Compatibility with Popular browsers try to access with 3 main browser: Explorer, Netscape ,Firefox) **1 mark.** **The result : >=2 (+) >2 (-)**
2	General basic function (**GBF**)	- Searching. - The possibility of feedback or contact (email address, phone number). - Help to use the portal. - Systematization of content according to value and depending on user's habit. **The result : >=2(+) >2 (-)**
3	Up to date and actualized information (**UTD&AI**)	- The information and advertisements on the site are current **The result : Yes (+) NO (-)**
4	Offering services (**OS**)	- The website explains how to access to services both electronic or non-electronic. **The result : Yes (+) NO (-)**
5	Public administration services (electronic services) (**ES**)	- The site offers electronic services. **The result : Yes (+) NO (-)**
6	Portal functions (**PF**)	- News, events, press conferences. - Information of common interest (schedules, cultural programs). - Basic information (local time, weather, number of visitor, etc). - Quick communication. **The result : >=2(+) >2 (-)**
7	Possibly multilingualism (**PM**)	- The site allows you to change the language (Arabic, English). **The result : Yes (+) NO (-)**
8	Data security , protection of personal data (**DS**)	- The website mention any way of user information protection **The result : Yes (+) NO (-)**

9	W3C , WAI recommendations (**W3C,WAI**)	The author chose four major functions to verify: - Reading system, icon or voice control. - Changeable font size (for weakly sighted people). - Voice controlling interface. - Optional waiting period during interactions (for physically handicapped people). **The result : >=2(+) >2 (-)**

4. Results and discussion

After a comrehansive survey of the seven websites selected and according to the previously mentioned 9 criteria identified by the authors, the final results appear in Table 3. The authors will discuss these results for each website and there will be detailed information to these results.

<div align="center">**Table 3.** All Portals websites criteria. (Own source)</div>

Websites / criteria	A&E	GBF	UTD	OS	ES	DS	PM	PF	W3C , WAI
https://jordan.gov.jo	+	+	+	+	+	+	+	+	-
http://moa.gov.jo	+	+	-	+	+	-	-	-	-
http://www.nais-jordan.gov.jo	+	+	+	-	-	-	+	+	-
http://www.ncare.gov.jo	+	+	+	+	-	-	+	+	-
http://www.jordanbru.info/	-	+	-	-	-	-	+	-	-
http://www.ncare.gov.jo/OliveProgram	-	-	-	-	-	-	-	-	-
http://www.acc.gov.jo	+	+	+	+	+	+	+	+	-

Abbreviations in the table: Determinants (See in Table 2)

e-Government Portal (https://jordan.gov.jo)

The e-Government Portal (Figure 6) which was launched in September 2006 in Jordan provided all the citizens, businesses, and governmental agencies with an entrance gate and an access for all the services and information offered by the government for illustration, (Alsmadi, 2011). The government has later made a decision that it is the responsibility of each ministry in the government to develop and maintain its own official website to deliver information and services (Saleh et al. 2013).
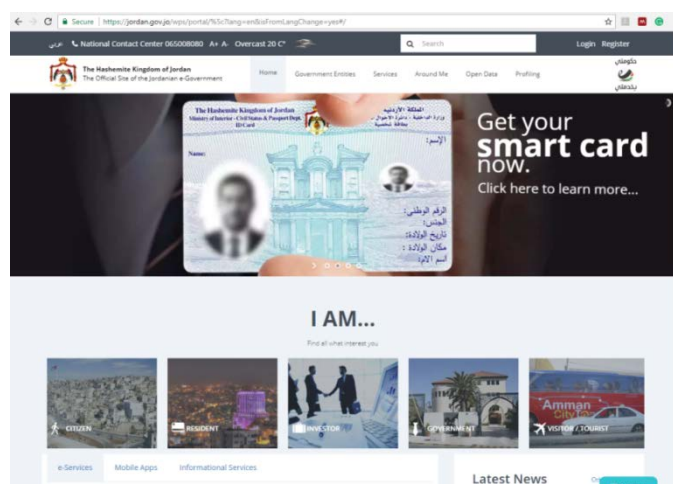
Figure 6. Jordanian e-Government Portal (www.Jordan.gov.jo) (MoICT 2016)

Furthermore, citizens and businesses nowadays have an access to about 100 e-services on the National Government Portal provided by 45 governmental agencies. These e-services included police clearance, drivers and vehicle licensing, e-Tax, a real estate registry, and national exam registration and results. There are other 50 e-services that were planned to be launched in 2016 and 70 more in 2017, according to the ICT Minister in Jordan (MoICT, 2016). Finally, The Jordanian e-Government appears on the internet through the website (https://jordan.gov.jo). And as you noticed in Table 3 this website, in general, looks good enough and has fulfilled all the criteria, but on the other hand, unfortunately, the portal is still not offering any features for the weakly sighted people or physically handicapped people. The agricultural electronic services are still of limited number and after having checked all services that this website provides just six electronic services were provided in the agriculture sector.

Ministry of Agriculture (http://moa.gov.jo)

Ministry of Agriculture was founded in 1939. The Ministry is responsible for organizing and developing the agricultural sector to achieve mainly the sustainability of production and resources without harming the environment. The Ministry is also responsible for increasing farmers' income and improve their standard of living, conservation and efficient utilization of agricultural resources and the environment and finally encourage youth people to work on the agricultural production (Ministry of Agriculture 2017b). As we can see in Table 3 above this website, in general, needs to improve the information on this website as they are out of date and it is not shown any kind of data security or any W3C, WAI recommendations, moreover it has weaknesses in the portal functions (news, events, local time weather, etc) and finally it doesn't have function to change the language (Arabic-English).

National Agricultural Information System (NAIS) (http://www.nais-jordan.gov.jo)

Reliable agricultural information plays a major role in the planning of agricultural development and formulating relevant policies. The availability of this information is important in order to enable those who are involved in the agricultural sector, whether they are institutions or individuals, to make decisions on scientific and valid bases. However, the currently available agricultural information in Jordan is still inadequate as due to many factors.

The NAIS is a Jordanian platform for information dissemination and knowledge sharing and exchange for Agricultural Research and Development (ARD) for stakeholders of the agricultural sector in Jordan. The NAIS trying to play a major link between the Ministry of Agriculture and other Agricultural stakeholders to establish an efficient and effective information system that will support agricultural development in Jordan and would strengthen and improve agricultural information generation, management, dissemination and exchange for policy-makers using web-based applications and tools, in order to:
- Support policy and decision-making in relation to national planning.
- Provide the basis for monitoring and assessing agricultural production and development.
- Support research and development, and disseminate the outputs.

- Support extension services.
- Provide an institutional memory for the MOA(NAIS 2017).

Finally after we checked the website it fulfilled 5 out of 9 cretreia the website looks simple and has a user-friendly interface but it doesn't show any kind of data security or any W3C, WAI recommendations, moreover it doesn't offer any services either electronic or non-electronic.

National Center for Agricultural Research and Extension (http://www.ncare.gov.jo)

The NCARE was established in the late 1950's when the Department of Research and Extension had been created. In 2007 NCARE was reformed to include the extension activities. The center receives primarily founds from the government and secondly from other national and international donors to support the implementation of proposed projects. The NCARE consists of a main headquarter in Amman and seven regional centers located in other Jordanian cities. It also operates (13) research stations representing different agro-ecological conditions and (13) extension field units throughout Jordan (NCARE 2017b).

In conclusion and based on results in (Table 3) this website looks good enough and has fulfilled the majority of the criteria, but unfortunately, the portal is still not offering any features for the visitors with specific needs (weakly sighted people or physically handicapped) and the site offers just 10 offline services (the user has to appear physically), it does not offer any electronic services.

Bee Research Department (http://www.jordanbru.info/)

Bee Research Department was established in 2001, the Department is the first of its kind in Jordan and the Middle East, it includes a group of modern and unique laboratories such as pollen grains studies laboratory and honey bee diseases identification using biotechnology techniques laboratory in addition to the honey bee hereditary bank. The bee research department was documented as a global source for the local honey bees (NCARE 2017a). It appears on the internet. Unfortunately, this website fulfilled just 2 out 9 criteria (Table 3) and when we go through this website we can see it looks unuseful with a complex interface and doesn't show any kind of data security or any W3C, WAI recommendations, moreover it doesn't offer any services even electronic or non-electronic or changing language function, so in conclusion, it needs to restructure.

Olive Research and Extension Program in Jordan (http://www.ncare.gov.jo/OliveProgram)

In view of the importance of the olive tree in the Jordanian agricultural sector in general as it covers 36% of the total cultivated area in Jordan (86100 hectares) according to statistics of the Ministry of Agriculture for 2014. So, this department has been established in 2002 to improve the quantity and quality of olive production, build an information base for the olive sector and transfer the results of olive research to farmers by all possible means (NCARE 2017c). However, the appearance of this department on the internet still so shy.and this website looks the worse between all websites and as you can see in (Table 3) it didn't fulfill any of criteria mentioned before, it looks unuseful with a complex interface, out of date information and doesn't show any kind of data security or any W3C, WAI recommendations, moreover it doesn't offer any services neither electronic or non-electronic or changing language function, so in summary, it needs to restructure.

Agricultural Credit Corporation (http://www.acc.gov.jo)

The idea of agricultural lending goes back to the Othman empire before the existence of Jordan. However, after the establishment of the state of Jordan, this institution went through various changes until 1960 when the Jordanian government decided to merge all institutions acting in this field into one institution called the Agricultural Credit Corporation (Ministry of Agriculture 2017a). This website fulfilled 8 out of 9 criteria and it seems one of the best websites we have checked with a simple and friendly interface, up to date information and most of the criteria we have, moreover, it offers 4 electronic services. The website is still not offering any features for the weakly sighted people or physically handicapped people (reading system, icon or voice control, voice controlling interface, optional waiting period during interactions).

Discussion

After conducting this survey and analysis of all the websites dealing with the agriculture sector, the results were as following:

- Most websites showed easy access and use interfaces, simple and compatibility with popular browsers except two websites.
- In general basic function, all websites showed flexibility to change depending on the user and basic functions like searching, the possibility of feedback or contact (email address, phone number) and help to use the portal except for only one site.
- Up to date and actualized information, only 50% of these websites have continuously updated the information on their sites.
- Offering services (offline and online): there were 4 websites out of 7 that provided services across the site.
- Only 3 websites have offered these services electronically.
- Data security and protection of personal data, only two websites have been established and clarified to protect users' information and data.
- Most of the websites offers the change of language (Arabic and English).
- Portal functions: 4 websites of 7 showed such features as
  - News, events, press conferences.
  - Information of common interest (schedules, cultural programs).
  - Basic information (local time, weather, number of visitors, etc).
- Finally, unfortunately, no site has shown services that are in line with W3C, WAI recommendations such as reading system, icon or voice control, Braille interface, changeable font size (For weakly sighted people) or substitution of mouse, voice controlling interface, optional waiting period during interactions (for physically handicapped people).

5. Conclusion

In conclusion, many studies have shown the importance of the use of technology in agriculture and the importance of the use of the internet in communication and provision of services in the agricultural sector. Official portals are the facade of government institutions, such as mirror, reflects the communication between these institutions and users. In this paper we made a survey for the institutions on the internet that provide agricultural services to know the current status of these websites and readiness to provide electronic services for business and workers in the agricultural sector. These websites still under the required level and need comprehensive review in future. For example, it has been shown that most of them do not provide electronic services and even the number of electronic services provided through these websites are still limited (no more than 10 services). These portals did not show high-security tools for protecting user information and personal data. In addition to it, these websites do not have any features for people with special needs that allow them to use these websites.

Finally this paper is the first phase of the research to study the current situation of the electronic services in the agricultural sector in Jordan. In the second stage of the research, there will be a collection phase to find the successful experiences from the European Union and an attempt to improve the current situation of the electronic services in Jordan of this sector. Hopefully these selected services could lead to the development in Jordan's agriculture. Further research will go deeper into these electronic services and know how to increase them and explore the level of acceptance for these services in Jordan.

References

Alsmadi, I 2011, 'Security Challenges For Expanding E-governments' Services', International Journal of Advanced Science and Technology, 37.

Botos, Sz, Herdon, M & Várallyai, L 2015, 'Readiness for Future Internet Services in Rural Areas', Procedia Economics and Finance, 19, pp. 383–390. https://doi.org/10.1016/S2212-5671(15)00039-8

Budai, BB & Tózsa, I 2011, The Current Break through Points in Public Administration First edit., Covrinus University Budapest.

Córdova, FM, Durán, C & Galindo, R 2014, 'Comparative analysis of ICT in public–private systems: The OHIM

case in the European Union and the Internal Revenue System in Chile', Procedia - Procedia Computer Science, 31(31), pp. 95–104. Available at: www.sciencedirect.com [Accessed March 24, 2018].

Deichmann, U, Goyal, A & Mishra, D 2016, 'Will digital technologies transform agriculture in developing countries?', Agricultural Economics, 47(S1), pp. 21–33. Available at: http://documents.worldbank.org/curated/en/481581468194054206/pdf/WPS7669.pdf [Accessed March 25, 2018].

Department of Statistics, J 2017, Department of Statistics., Available at: http://dosweb.dos.gov.jo/ [Accessed December 31, 2017].

Ebrahim, Z & Irani, Z 2005, 'E-government adoption: architecture and barriers', Business Process Management Journal, 11(5), pp. 589–611.

FAO 2017, Information And Communication Technologies For Agriculture And Rural Development, Available at: http://www.fao.org/3/a-i6733e.pdf [Accessed March 26, 2018].

FAO and International Telecommunication Union 2016, E-Agriculture Strategy Guide Piloted in Asia-Pacific countries,

Gatautis, R, Medziausiene, A, Tarute, A & EV 2015, Towards ICT Impact Framework: Private and Public Sectors Perspective. Available at: http://www.joebm.com/papers/229-A10016.pdf [Accessed March 24, 2018].

Gelb, E & Parker, C 2005, 'Is ICT Adoption for Agriculture Still an Important Issue ?' In ICT in Agriculture: Perspectives of Technological Innovation. pp. 1–8. Available at: http://departments.agri.huji.ac.il/economics/gelb-gelb-parker.pdf [Accessed March 25, 2018].

Gil-García, JR & Pardo, TA 2005, 'E-government success factors: Mapping practical tools to theoretical foundations', Government Information Quarterly, 22(2), pp. 187–216.

Jordan Times 2017, ICT sector contributes. Jordan Times.

Karetsos, S 2014, 'Developing a smartphone app for m-government in agriculture', Journal of Agricultural Informatic, 5(1), pp. 1–8. Available at: http://real.mtak.hu/23955/1/129_615_1_PB_u.pdf.

Lengyel, P, Török, É, Pancsira, J & Füzesi I 2018 'Co-authorship network analysis of scientific articles on wine production' JOURNAL OF ECOAGRITOURISM 14:(1) pp. 89-95.

Lin, F, Fofanah, SS & Liang, D 2011, Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. Government Information Quarterly, 28(2), pp. 271–279.

Ministry of Agriculture 2017a, Agricultural Credit Corporation. Available at: http://www.acc.gov.jo [Accessed December 31, 2017].

Ministry of Agriculture 2017b, Ministry of Agriculture. Available at: http://moa.gov.jo/ar-jo/home.aspx [Accessed December 31, 2018].

MoICT 2016, E-Government Program. Available at: http://www.moict.gov.jo/Pages/E-Government-Program-Objectives.aspx [Accessed December 15, 2016].

NAIS 2017, National Agricultural Information System. Available at: http://www.nais-jordan.gov.jo [Accessed December 31, 2018].

NCARE 2017a, Bee Research department. Available at: http://www.jordanbru.info/ [Accessed December 30, 2017].

NCARE 2017b, National Center for Agricultural Research and Extension. Available at: http://www.ncare.gov.jo [Accessed December 30, 2017].

NCARE 2017c, Olive research and extension program in Jordan. Available at: http://www.ncare.gov.jo/OliveProgram%0D%0A [Accessed December 30, 2017].

Ntaliani, M. et al., 2010, 'Agricultural e-government services: An implementation framework and case study', Computers and Electronics in Agriculture, 70(2), pp. 337–347. Available at: http://www.sciencedirect.com/science/article/pii/S0168169909001884 [Accessed December 31, 2017].

Rahim, AA & Athmay, A 2013, Citizens ' Perceptions towards e-Governance : Field Study , 7(9), pp. 631–639.

Saleh, ZI, Obei, RA & Khamayseh, Y 2013, 'A Framework for an E-government Based on Service Oriented Architecture for Jordan', I.J. In formation Engineering and Electronic Business, 3(3), pp. 1–10.

Saravanan, R 2010, ICTs for Agricultural Extension: Global Experiments, Innovations and Experiences, New india publishing.

Seri, DP & Zanfei, A 2016, 'The role of ICT, skills and organizational change in public sector performance', Argomenti, pp. 5–30.

Statista 2016, Mobile phone penetration worldwide 2013-2019 | Statistic. Mobile phone user penetration as percentage of the population worldwide from 2013 to 2019. Available at: https://www.statista.com/statistics/470018/mobile-phone-user-penetration-worldwide/ [Accessed March 25, 2018].

Szilágyi, R & Szilágyi, E 2009, 'E-government readiness - where are we going ? A short overview of E-government in Hungary', 4th Aspects and Visions of Applied Economics and Informatics, (March).

United Nations 2002, Benchmarking E-government: A Global Perspective Assessing the Progress of the UN Member States,

We Are Social 2017, Digital in 2017: Global Overview - We Are Social. We Are Social. Available at: https://wearesocial.com/special-reports/digital-in-2017-global-overview [Accessed March 26, 2018].