E-government and its Challenges in Developing Countries: Case Study Iraqi e-Government

[1]Mohammed Abdulameer Mohammed, [2]Burhanuddin Mohd. Aboobaider,
[1]Huda Ibrahim, [1]Harith Azam Abdullah, [3]Mohammed Hassan Ali,
[2]Mustafa Musa Jaber and [1]Aymen Shawkat
[1]School of Computing, UUM, Kedah, Malaysia
[2]Information and Communication Technology UTeM, Melaka, Malaysia
[3]Faculty of Computer Systems and Software Engineering UMP, Pahang, Malaysia

Abstract: Electronic government (e-Government) use information communication technology to provide electronic services to citizen 24/7 in any place by using the internet. Government in Iraq is trying hardly to improve e-Government to provide better e-Services to employee, citizens and private sector. Thus, Iraqi government gives the authorized to ministry of sciences and technology to build successful e-Government. However, e-Government in Iraq now has several kinds of challenges that effect its development. Thus, the main goal of this study is to increase the awareness of e-Government for government, employees, citizens and private sectors by identifying the e-Government in Iraq and explain its challenges.

Key words: E-government, challenges, influence, factors, employee

INTRODUCTION

E-government (called also electronic government or digital government) offers government's information to public electronically via information communication technology to achieve e-Service (Gauld, 2006). The objective of e-Government is to obtain rule of transparency, clearness and linking government with citizen. It increases the communication between government's employees and with citizen (Azri *et al.*, 2010). E-government have opportunities to more efficiency in work, less expenses and easier access to citizens within 24/7 (Al-Fakhri *et al.*, 2008). Therefore, citizens can interact electronically with government agencies from anyplace in anytime (Terpsiadou and Economides, 2009). There are several types of e-Government and these types depend on the service which is related to any sector in Government, for example Government to Business (G2B) which offer e-Services to business sector, Government to Citizen (G2C) which provides e-Information to people and government to government (G2G) which refers to make substitute channel between government's agencies. Moreover, e-Government can use to share information and knowledge electronically between these three parties in the society (Mohammed and Huda, 2014; Mohammed *et al.*, 2014, 2015).

The adoption of successful e-Government in Iraq can make huge change in the government's processes (Al-Dabbagh, 2011). Iraqi e-Government can help to expand the areas of citizens and businessmen to participate in new economy Iraq which based on knowledge. In order to get the full potential of e-Government must reform the administrative structure of the government and reform the management of government operations and information (Mohammed *et al.*, 2013). Iraqi e-Government has many difficulties in order to build its foundations correctly because of the current issues that the country faces such as, security and corruption. Moreover, it is necessary to change the mindset and the plan of action people in public administration and change the way that they communicate with citizens and businessmen. With all of these problems, there is lack of scientific research that tried to solve or provided a solution for Iraqi e-Government projects. Even so e-Government may build useful bridges with other cultures and countries specially by using the advanced technologies such as social media and mobile applications. There are few of researches have been done in the e-Government in Iraq, thus, this research is considered one of the studies that illustrate and identify the electronic government in Iraq and its services and challenges of developing it. The main two objectives of this study are to identify the e-Government technology in Iraq and to investigate the e-Government challenges in Iraq.

E-government development phases: There are many independent development phases in e-Government an each of them can start even before the other phases are completed. There are some stages modules for e-Government which have been done by Layne and Lee (2001), IBM Business Consulting Services (2003), Layne and Lee (2001), IBM Business Consulting Services (2003), Andersen and Henriksen (2006), IAB (2003) and Gartner (2003). Investigation classifies e-Government stages as diplomat of the Government's level of development mainly according to the content and deliverable services offered through official websites. Each development stage has different features of collaborations or interactions. Therefore, each government organization and agencies may reach different development level that means it do not depend on customer needs but it is based on the organization and agencies abilities.

The United Nation (UN) five stages has been chosen as main model because Iraqi government works together with United Nation Development Programme (UNDP) and they receive full support of UN to make this technology success in Iraq:

- Emerging: an official government online existence is recognized via a few independent official sites
- Information is limited, basic and static
- Enhanced: government sites augment; information becomes further energetic. Content and information is rationalized with better reliability
- Interactive: users can download forms, e-mail officials, interact via the web and compose schedules and needs
- Transactional: users can in fact pay for services or perform financial transactions online
- Seamless: full integration of e-Services across administrative boundaries. Total assimilation of e-Functions and services across administrative and departmental boundaries (Hashmi and Darem, 2008)

MATERIALS AND METHODS

Iraqi e-Government: In 2004, the Iraqi Ministry of Science and Technology (MST) signed the contract with an Italian company so as to formulate Iraqi e-Government project. During that time, Iraqi government began to utilize the e-Government technology. The project was composed of three steps as mentioned below:

- 1st project: creates the infrastructure of information technology and also to supply services as well to staff of Ministry of Science and Technology (2 years project)
- 2nd project: provides two kinds of services for the staff in all ministries of Iraq and for commerce section (5 years project)
- 3rd project: plans to supply services to Iraqi citizens (Long time project) (Alrahman, 2011; Fadhelalla, 2012)

The first Iraqi e-Government project was a small project related to e-traffic system. Eventually in 2010, Iraqi government decided to compose an e-Government project whereby the five most vital ministers would link to the prime minister's office (Alrahman, 2011). The Council of Ministers order no. 46 has established the e-Government committee in 2009 and it puts Ministry of Science and Technology as leader for the committee. Since, this time, the committee provides each Iraqi Ministry with an e-Government office. The Iraqi government pays more attention towards the e-Government which was made first in 2009 by international conference concerning e-Iraq in Baghdad. The conference was supported by the Prime Minister of Iraq and there were 250 participants from Iraq and UNDP present. Furthermore, 3000 staff from the e-Government was sent to acquire proper training in this country by UN tutor. Ultimatel, in 2011, the second forum was made by Iraqi e-Government executives and UNDP in order to assess the project and to create new plans for this project. Additionally, UNDP had trained 200 of Iraqi e-Government instructor their job to educate in all the e-Government centers in all Iraq to make 10000 educators. These trainers need to instruct government's employees and people in every state. Lastly in 2012 the board of e-Governance had made the second international conference of e-Iraq which was supported by the prime minister of Iraq as well. The >300 people from Iraq and many staff of UNDP came to this conference. In 2014 they decided to make the new conference of e-Government which called "digital local provinces: the bridge to the future" (Ian *et al.*, 2007).

The definition of e-Government in Iraq: Iraqi Development Plan has mentioned that the definition of the e-Governance and e-Government should comprise the eight elements. These eight elements include: the rule of law, participation, transparency, responsiveness and collective opinion, justice and inclusiveness, effectiveness and efficiency and accountability. Thus, Iraq government defined-government and e-Governance as follows:

- E-government: is the use of ICT for the delivery of government services to citizens and the business sector and civil society organizations
- E-governance: is the use of ICT to improve and strengthen the foundations of good governance

Vision of e-Government in Iraq: Iraqi e-Government has put a clear strategy vision for the Iraqi e-Government which aims to achieve perfect e-Government. Since 2010 Iraqi government has consulted with all stakeholders to guide the transformation process of e-Government. This vision took into consideration the needs and opportunities of national and local development. The vision of e-Government is suitable for Iraq's National Development Strategy and the Millennium Development Goals of Iraq and the National Development Plan as well as with public sector development approach. Moreover, it accounts the role of e-Governance in the day-to-day operations and the importance of implementation which has an impact on the improvement of internal and external procedures, Iraqi government has been defining the strategic vision for e-Governance for 5 years to come as follows.

"Iraq harnesses ICT tools to improve basic services to all and to promote all-round good governance, including increased public participation, better social equity and justice as well as a general enhancement of the transparency and effectiveness of public institutions in order to build the necessary platform for a competitive, robust and knowledge-based economy".

Strategic objectives of iraqi e-Government: In order to achieve the vision mentioned to ensure access to the advantages mentioned above, the strategic objectives recommended are as follows:
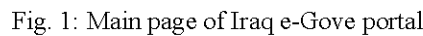
- ˢᵗStrategic objective: promote interaction between citizens and the state to promote the participation of civil society in public affairs and promote social integration
- 2nd strategic objective: deployment and support of new e-Governance services in the provinces so that all citizens access to the promotion of equal opportunities
- 3rd strategic objective: increase the capacity and response of public institutions through the use of information and communication technology to achieve good governance and enhance efficiency, transparency and accountability

- 4th strategic objective: contribute to the development of an enabling environment for sound economic growth
- 5th strategic objective: promote the development of a knowledge-based society and bridge the digital divide

Iraqi e-Government has many dimensions such as politic, administrative regulation, human resource, technical and technology and security, each one is facing many kinds of problem such as administrative and technical problems. Nonetheless, these administrative and technical issues lead to weaknesses in Iraqi e-Government and because of that some states are still in the primary step of e-Government (Ali, 2013).

Action plan of iraqi e-Government: Strategic plan for the Iraq's e-Government is based on ten key elements (introduced by the committee of Iraq's e-Government). This plan addresses and highlights the transformative impact of information and communication technology. The ten elements covered by the action plan linked closely together, allowing the opportunity for the implementation of the priority areas in an integrated manner. The priority activities for each key of the ten elements have been identified based on the consultations between multiple stakeholders and ten elements are: Awareness, communication and commitment, Human capacity building, Conversational interface standards, Institutions and change management, legal framework, communications infrastructure, management of financial resources, monitoring and evaluation, delivering services to citizens and Data and information systems.

E-Government achievements in Iraqi: Iraqi e-Government has many important achievements such as e-Health system, e-Education system, e-Municipal system, e-Personal record and E-form. Most of these projects are launching in portal of Iraq which is called e-Iraq Portal.

Iraq e-Gov portal: Iraqi portal has provided service to citizen, business, government sector and non-government sector. Moreover, this portal provides discussion forums and inquiries/comments and so on and also there are many links for Iraqi ministries in the portal (Zuabi and Mahmud, 2011). The e-Iraq portal can be access from any one by using the internet, whether from outside or inside Iraq. Figure 1 shows the main page of the Iraqi e-Gov portal.

Fig. 1: Main page of Iraq e-Gove portal

E-health: Iraqi hospitals are going to adopt ICT to provide electronic services to their patients. Strategy and roadmap for Iraqi e-Health vision has formulated as follows.

"Provide excellent health services, efficient and effective for all through the integration of primary health care via the applications and information technology standards and telecommunications developed that can be easily accessed and which focuses on the citizen."

E-education: The strategy and road map of Iraqi e-Education vision the Iraqi has formulated as follows. "The use of information and communication technology to enhance the effectiveness and efficiency of the sector, based on the optimal use of resources through appropriate educational environment for students and ensure the development of the skills of teachers and to provide educational opportunities for all."

There are studies of using ICT in higher education in Iraq (Mohammed *et al.*, 2012) hus, Iraqi government built some of Iraq projects in e-education which were identified such as:

- The project to check and evaluate the result of the exams
- Information system of attendance in Baghdad
- The gate of e-Curriculum for students
- The project of integrating two systems: educational Management Information System with Educational Management Information System

- The e-System of hiring teachers
- The project of increasing level of awareness for main managers in the ministry

The important achievements are:

- The Project of e-School: provides PCs and internet
- Provides e-Certificates for the secondary school
- Develop the IT skills for the teachers
- Project of Development Planning System
- The project of facilitating to buy a laptop for each tutor'

Avicenna project considered as important project in North Africa and now UNESCO and European Union are supporting it in Iraqi. This educational system uses to improve the education electronically in Iraq universities.

E-municipal: Figure 2 shows the website that the Ministry of Municipal is going to provide soon for the citizen in Iraq, this system contains public services to Iraqi people online. The w-municipal can be used by any citizen through the login to the system. Moreover, till now e-Municipal in Iraq is provided just two services such as grant land and subscriptions water.
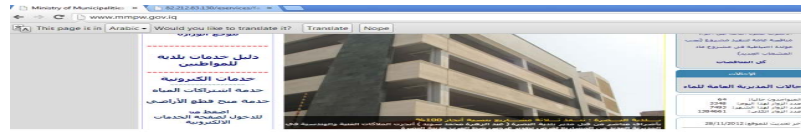
E-personal records of citizens: Figure 3 shows the e-Citizen record of applying for Iraqi passport by using the internet.

Fig. 2: E-municipality

Fig. 3: E-passport record

Fig. 4: E-form of driving test

e-Form: recently some of the Iraqi agencies have made online form to apply for a driving test (Alrahman, 2011). Agency of traffic police has provided website to full up form to apply driving testalso there is option to check the car finewhich has shown in Fig. 4.

E-follow up: Department of scolarship amd cultural relationship uses many e-Systems in order to provide better e-Services to its staff and cutomer (Mohammed *et al*., 2014). Figure 5 show the e-Follow up system in department of scholarship

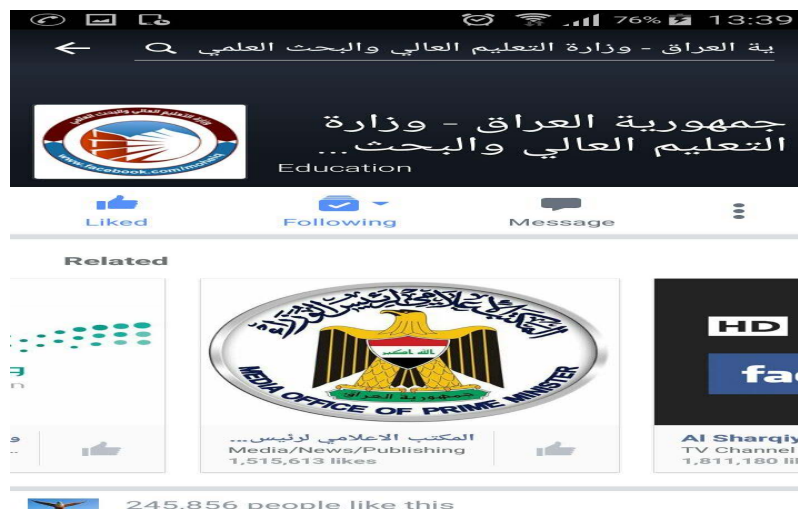Fig. 5: Follow up system (Mohammad *et al.*, 2014)

Fig. 6: Facebook page for ministry of higher education in Iraq

and culture relationship in Iraq. Moreover, this department also apply e-Form system for its customers.

Social media for government: Iraqi government has utilized the social media such as, Facebook in order to provide electronic services and share their data and information with citizens. This because the social media is common used and also cheap to provide the services. Nowadays, most of the Iraqi citizens have used the Facebook in different reasons such as for social purpose and also for businesses. With use of mobile and internet this facilities can be very useful to the Iraqi government on one hand and Iraqi people on other hand. Figure 6 shows the use of Facebook by Ministry of Higher Education and Scientific Research in Iraq in order to

provide services to its customers. Moreover, the YouTube has come after the Facebook as the second social media tool which used between Iraqis. The use of Internet and Facebook have been increase in Iraq 38% in 2014. This percentage can be increase more because the adoption of 3G in internet in 2015. Therefore, it might reach 50% within this year.

Multimedia for government: Multimedia is defined as the combining of differentmedia types such as sound, animation, text, graphics and video for the presentation of information by making use of computers (Bornman and von Solms, 1993). For example, citizen understand better by using the words with pictures rather than words alone. However, multimedia can use the, audio, drawing, image,

Fig. 7: Multimedia by ministry of health

Fig. 8: Mobile app for Iraqi government

video and text. Iraqi government has been used multimedia in many sectors such as, Ministry of Municipals and Ministry of Health. Figure 7 examines the use of multimedia by Ministry of Health.

Mobile app for government: The Iraqi government has also used the mobile application in order to provide faster services to citizen. Many applications have been applied in several government sectors. This can show the willing of government in Iraq to enhance the services and improve the quality of this services. That also can encourage the public and private sectors to use the mobile application to provide e-Services. The mobile

applications are easy and friendly to use by the citizens thus, the government should work more on this method to help its organizations and its people. Figure 8 illustrates the use of mobile application in one of government sector in Iraq.

RESULTS AND DISCUSSION

Challenges of e-Government in Iraq: E-Government has many barriers but these challenges are different from government to another. Thus, depends on previous studies of e-Government in Iraq this study find out five categories of challenges as follow, politics,

organizational, human capability, technical and security. Moreover, each one of these challenges has many factors that influence positively or negatively on the government-to-government in Iraqi e-Government.

The influencing factors of this part are limited budget, law framework, slow process for decision making, Bureaucracy, Transparency and Monitoring. Budget is defined as the budget that organizations obtain from the government. Rules and regulations that sustain both e-Government and its transactions and transformations are referred as law framework (Ian *et al.*, 2007). Decisions that the politics take about e-Government are known as the slow process of making the decisions (Ali, 2013). Power of top managers is defined to be the bureaucracy. Transparency refers to the channels of communication that are completely open opened between stakeholders and officials (Ali, 2013). Specialist staff or parties' member and sometimes both of them do monitor and control e-Government and is referred as Monitoring (Abed, 2007; Alwan, 2010).

A good management support is essential in electronic government of organization so as to accomplish its goals by implementing the new styles and latest technology in the administration. The influencing factors of this part are organizational structure, trust, top management support and validity and reliability of information. Iraqi organizations adhere to organizational structure and thus referred as organizational structure (Ian *et al.*, 2007). It is necessary to modify the structure of the organizations in Iraq in order to suit the new requirement and services of citizen (Ali, 2013). Trust is referred as the trust and belief that exist between the organizations' employees and managers in the e-Government project. Good manager tend to be optimistic toward his or her staff, by supporting and encouraging them to exert more effort to their job and vice versa. Validity and reliability of information that the government offers to citizen, employee and private sector is known as the validity and reliability of information.

Information and communication technology is based highly upon human thought which provides huge significance to the improvement of human resources and constructing the so-called intellectual capital that can adapt to changing circumstances and technologies. This section has many influencing factors namely: lack of technical person, resistance for new technology, Incompatibility of technician staff, Illiteracy computer and internet and threat to personal freedoms. Technical person is a vital factor of e-Government which can be used to devise program, sustain problems and manage the operations (Ian *et al.*, 2007). Many employees are reluctant to change, especially for new technology

because they do not accept to modify their routine and perform extra works. Government ought to supply similar skill of information technology in each organization. E-government systems are founded upon computer and internet to offer the e-Services. Employees are anxious about losing their own free will because they suppose that the novel technology will limit their spaces.

The main influencing factors in this part are the Interoperability, Lack of awareness and Lack of devices and Infrastructure. The usage of similar level of software and hardware in all the organization that can improve the exchange of information between them is known as Interoperability (Mohammed *et al.*, 2012). Government member, managers, employees, citizen and private sector do not have much knowledge or experience pertaining to e-Government technology. There is dearth of e-Government devices in Iraqi market (Ian *et al.*, 2007). Infrastructure of e-Government comprises three main objects (Ahmed *et al.*, 2012).

There are numerous of techniques to overcome the information system and the subsequent loss of privacy and the privacy of recipient and this characteristic corresponds to a major hurdle that sponsor the overthrow of the e-Government project. Technical security and Environment security have huge effect. Government ought to protect communication and database systems to secure the information from any illicit disturbance (Zuabi and Mahmud, 2011; Al Qasimi and Hassan, 2013). Environment security has a good effect in the use of e-Government system (Mohammed *et al.*, 2013).

Individual challenge focuses on the employees in government organization (Mohammed *et al.*, 2013). The employees in organization is an important item because the e-Government bases on their usage. Individual plays a crucial role in order to manage the use of e-Government to provide e-Services to citizen. When the staff knows the benefits of e-Government that can make them use it more. Moreover, the ability of using the technology and IT knowledge skill can play an important role in applying an e-Government or succeed this project in government sector (Alrahman, 2011). Moreover, there are issues of the ability of the citizens to use these technologies because that can prevent the customers from using it. Therefore, the result might be failure of e-Government projects in Iraq.

CONCLUSION

It is obvious that Iraq's government gives good attention to e-Government systems for the purpose of providing e-Services to Iraqi citizens in many fields. However, Iraq's government needs more effort to improve

these services. These services include e-Payment for tax and rent and e-Bill for water, electricity, phone and internet. Therefore, the government should do its best to solve the problem of the e-Government like the issues of electronic information sharing among its agencies. Iraqi government sector should give more attention for the e-Paying in order to make collect fee from the customers easily for both government and citizen. Moreover, they should provide more security for online payment. Therefore, this is new challenge for Iraq government nowadays and they should pass it in order to develop its e-Government projects. Iraq's e-Government systems have critical weakness of sharing the information. This research is going to create a framework to increase the electronic information sharing among Iraq's agencies. This study has introduced the e-Government in Iraq with some of the important issues that Iraqi government faces. The use of ICT in Iraq has rapidly increased but it need more manage and enhance. Government also can use many technology in order to support its e-Government systems such as data warehouse, cloud computing and also the mobile applications. Now a days Iraqi government has faced finical issues, thus, cloud computing can be useful to help government to adopt technology with low cost. However, there are many barriers of Iraqi e-Government need to be explained such as how to provide better e-Services and how to make the citizen more satisfy. Thus, the next study will focus on them. Moreover, it is important to use the e-Government to increase the e-Participation among government staff and also it can be useful to find e-Participation effect in government and society as well. Therefore, further studies should focus on e-Participation, its impact and how we can increase to support policy and decision making. Successful e-Government systems can decrease the corruption in the government organizations. Finally, as a conclusion, more study need to be done on this field because till now there are few researches on e-Government and its services.

REFERENCES

Abed, G.F., 2007. Obstacles to the adoption of e-Government applications to study a sample of opinions staff number of government departments in the province of Salah Al-Din. Tikrit J. Administrat. Econ. Sci., 7: 43-57.

Ahmed, M.A., T.H. Jasem and A.A. Hassan, 2012. Readiness of local administrations to adopt e-governance case study in the office of the province of Nineveh. J. Econ. Administration, 93: 281-298.

Al Qasimi, M.M. and E.M. Hassan, 2013. Electronic government implementation requirements in Iraqi organizations: Exploratory study for managerial leadership views in the municipality directorate of Mosul. Tanmiat Al-Rafidain, 35: 9-26.

Al-Dabbagh, M., 2011. Electronic Government in Iraq: Challenges of development and implementation. M.A. Thesis, Orebro University, Swedish Business School at Orebro University, Iraq.

Al-Fakhri, M.O., R.A. Cropf, G. Higgs and P. Kelly, 2008. E-Government in Saudi Arabia: Between promise and reality. Int. J. Electron. Govern. Res., 4: 59-85.

Ali, A.H., 2013. Relationship with e-Government program automation system of government action. Kut J. Econ. Admin. Sci., 9: 85-111.

Alrahman, A.A.A., 2011. Human resources investment as an introduction to improve the efficiency and activity of workers in E-Government. J. Planner Dev., 24: 1-17.

Alwan, S.A., 2010. The possibility of applied electronic government in Basrah governorate a survey study of manager's opinions in public administrations. Econ. Sci., 7: 88-117.

Andersen, K.V. and H.Z. Henriksen, 2006. E-Government maturity models: Extension of the layne and lee model. Govt. Inform. Q., 23: 236-248.

Azri, A.A., A.Z. Salti and A.W. Karaghouli, 2010. The successful implementation of e-Government transformation: A case study in Oman. Proceedings of the European and Mediterranean Conference on Information Systems, April 12-13, 2010, Abu Dhabi, UAE, pp: 1-11.

Bornman, H. and S.H. von Solms, 1993. Hypermedia, multimedia and hypertext: Definitions and overview. Elect. Library, 11: 259-268.

Fadhelalla, J.S., 2012. Planning to build a base for evaluating e-Government services in Iraq. J. Center Market Res. Consumer Prot. Univ. Baghdad, 4: 71-106.

Gauld, R., 2006. E-Government: What is it and will it transform government. Policy Q., 2: 37-43.

Hashmi, A.A. and A.B. Darem, 2008. Understanding phases of E-Government project. New Delhi, 17: 152-157.

IAB., 2003. High payoff in electronic government: Measuring the return on e-Government investments. Intergovernmental Advisory, USA., Board, May 2003.

IBM Business Consulting Services, 2003. How e-Government are you? e-Government in France: State of play and perspectives. https://www-07.ibm.com/services/pdf/bcs_egovernment.pdf.

Ian, M., M. Sharief and B. Graul, 2007. Government of Iraq e-Government strategy 2007-2010. USAID. http://pdf.usaid.gov/pdf_docs/Pnadq380.pdf.

Layne, K. and J. Lee, 2001. Developing fully functional e-Government: A four stage model. Govt. Inform. Q., 18: 122-136.

Mohammed, M.A. and I. Huda, 2014. Identify the influence factors of electronic information sharing in higher education sector. Presented Pap. Knowl. Manage. Int. Conf., 2: 931-944.

Mohammed, M.A., A.H. Hussein and M.M. Anad, 2013. General e-Government structure for Iraqi decentralization government. Proceedings of the IEEE Conference on e-Learning, e-Management and e-Services, December 2-4, 2013, Kuching, Malaysia, pp: 152-156.

Mohammed, M.A., A.R. Hasson, A.R. Shawkat and N.J. Al-Khafaji, 2012. E-Government architecture uses data warehouse techniques to increase information sharing in Iraqi universities. Proceedings of the IEEE Symposium on E-Learning, E-Management and E-Services, October 21-24, 2012, Kuala Lumpur, pp: 1-5.

Mohammed, M.A., I. Huda and M.N. Maslinda, 2014. Electronic information sharing to improve decision making in public universities. Asian J. Applied Sci., 2: 957-963.

Mohammed, M.A., I. Huda and M.N. Maslinda, 2015. Electronic information sharing between public universities and ministry of higher education and scientific research: A pilot study. J. Theoret. Applied Inform. Technol., 77: 151-163.

Mohammed, M.A., M.H. Kadhim, A. Fuad and M.M. Jaber, 2014. Follow up system for directorate of scholarship and cultural relations in Iraq. Proceedings of the IEEE International Conference on Computer, Communications and Control Technology, September 2-4, 2014, Langkawi, Malaysia, pp: 182-187.

Terpsiadou, M.H. and A.A. Economides, 2009. The use of information systems in the Greek public financial services: The case of TAXIS. Govt. Inform. Q., 26: 468-476.

Zuabi, A.H. and M. Mahmud, 2011. Implementation of e-Government in Arab countries: A literature review. Proceedings of the 2011 International Conference on Research and Innovation in Information Systems, November 23-24, 2011, IEEE, Kuala Lumpur, ISBN: 978-1-61284-295-0, pp: 1-5.