Challenges in E- governments: A case study-based on Iraq

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Abstract. An effective and competent way to deliver business and organizational mandates is via deploying Information and Communication Technology (ICT). Parts of a government’s job is to benefit their citizens, they do so by using ICT to update any services or facilities. As well as this, E-Governments aim to make citizens’ lives better in terms of society, politics, and economy. Governments move all of the administrations into “smart governments”. Unfortunately, some developing countries’ governments are unable to do such move due to several reasons. These include no interoperability of e-governments, little resources, and no management devotion. Thus, this work’s goal is to dedicate a framework of an e-government implementation for Iraq. Four main obstacles were identified for implementing e-governance in Iraq: political, technical, cultural, and legal. Examining the e-government implementation framework, opinions of 180 managers were received via an online survey. Most notably, there was no coordination between state instructions, lack of equipment’s for security, user lacking confidence, no information technology law and integrity. This study is unique and aims to develop a sufficient e-government in Iraq.

Keywords: Information and Communication Technology; E-Government; Management commitment.

1. Introduction
As a result of the spread of the Covid-19 in the world and the disruption of life in all its facilities, it is necessary to think about dispensing with paper transactions and moving towards electronic transactions using the e-Government system. Considering the alterations in organisational structures as well as information technology, the paths used to work things out have raised the amount of information around. Moreover, brand new records were formed presenting information in a totally distinguished way. Due to such theory, a lot of the information that would be generated using paper, is now produced electronically, for instance, an email in a database.

The phrase “E-Government” links to government agencies making usage of information and communication technologies (i.e. Wide Area Networks, the Internet, and mobile computing). They can move linkages with various businesses, parts of governments and lastly citizens. In turn, this would increase the success of service delivery and improve both communication and cooperation for all government departments [1]. Such technologies have significant benefits i.e. finer delivery of government services, developed communication with both businesses and industries and finally citizen empowerment via gaining information, or better government management. Summarizing, there would be a reduction in corruption, increase in transparency, better convenience, revenue build-up and reductions in price [1].
Projects focusing on E-Governments began in mid-1990s across the globe where every country runs its specified project. For example, [2] introduced the challenges for E-Governments in Jordon where the researchers found some obstacles facing the application of E-Governments. It is noteworthy to mention the education of digital divide, electronics, and bad communications infrastructure. A second example, [3] outlining the state in Pakistan where these were the major challenges against E-Governments: ICT Infrastructure, low ICT literacy, and professional workforce. A number of these studies are found in the exploitation stage whereas others are in the design and prototyping stage. It is believed that today’s society should switch to electronics. After research done, the significance of E-Governments is realized where all of enterprises, public officers, citizens, government administrations and agencies receive accurate information via a wide network [4]. A variety of limitations regarding implementing successful electronic public facilities are discussed [5,6]. Whilst reviewing developing countries, e-government projects are unsuccessful where a massive gap was noticed between developed and developing countries [7, 8]. The failure of these projects is due to the lack of appropriate resources as application of ICT is behind the expected. Bad ICT infrastructure, and deficient Information Technology (IT) human capital to spearhead ICT development [7, 9]. All of the following points affect the application of E-governments in developing countries: management aid, organisational quantity, user friendly, compatibility, competitive demand, strategic relevance and IT support infrastructure [9-12]. Considering the fact that E-government projects work for the long term, integrative implementation framework pathway is required, especially in developing countries [5,13]. When starting an e-Government system, it is a necessary step for all users to be recognised. Four key points regarding communities are found out which are as follows: Officeholder, Citizens, Government, and Business. These points are used in the developing process of an e-Government system. Figure 1 presents a clear grouping of e-Government applications followed by some details for each e-Government application [14].

![Diagram](image)

**Figure 1.** A clear grouping system of E-Government applications [14].

1.1. **Government-to-Officeholder e-Government (G-to-O e-Gov)**

This type provides support to all the following: public affair organizations, intra-organizational government officeholders, and lastly secondary organizations’ cooperative processes and methods of public affairs.
1.2. Government-to-Citizen e-Government (G-to-C e-Gov)
The G2C section consists of relationships between governments and their citizens occurring electronically [1]. The final goal behind this is citizens connecting with their government from the comfort of their houses. The application of G2C leads citizens to fill their curiosity and receive answers regarding government agencies. Additionally, citizens can use services like E-Voting and e-Assistance.

1.3. Government-to-Business e-Government (G-to-B e-Gov)
By being connected on a wide network, most businesses are familiar with the facilities offered by governments. Secure pathways are ensured throughout so each business uses the facility via a legal person’s identity. For instance, on-line customs declaration of goods or on-line clearance of goods [15].

1.4. Citizen-to-Citizen e-Government (C-to-C e-Gov)
Here, the Government negotiates information according to the situation. For example, the government solves any issues regarding citizens’ debates or provides short-term jobs to citizens that survived a certain disaster. In turn, such citizens are able to work and earn a living. Concluding, the government aids its citizens via manpower and information [14].

1.5. Business-to-Business e-Government (B-to-B e-Gov)
This section is like C-to-C e-Government application. This specific type is where the government has a mediator part in negotiating information. For instance, business may bid on contracts consisting of sensitive information, allowed by the government itself. Such businesses would be able to form things like warships, tanks, and warplanes. All of these represent a country’s weaponry [14].

1.6. Citizen-to-Government e-Government (C-to-G e-Gov)
The formation of communities relying totally on electronics occurs as a result of citizens’ needs. These needs are referred to demand aggregate driven. For instance, asking for assistance is something that citizens can do, as well as recommending particular things to the citizenry [14].

1.7. Business-to-Government e-Government (B-to-G e-Gov)
This uses an alike application to C-to-G e-Government. However, here communities based on electronics result from businesses’ needs. These needs are referred to demand aggregate driven. For instance, businesses are able to ask for governmental patronage or schemes from various businesses [14].

2. Methodology
The overall system architecture, as shown in Figure 2, consists of various clients’ communication means such as smart-phone, tablet, laptop, Internet, and route. In other words, it means that the end-user can either give his/her feedback via a computer or a mobile. In the case of a mobile, a wireless router must be connected to the network to provide a connection to the mobile for adding more flexibility to the user regarding the questionnaire.
The researcher used a questionnaire as primary data to analyze the challenges in an E-government and the extent of its applicability in government institutions. A questionnaire contains different types of questions related to a specific field in order to cover maximum information from individuals. Anyone can complete the questionnaire by either email or telephone or using face-to-face interviews. A special type of questionnaires depends on the web, which is a fast-growing and promising methodology. The method occurs when an e-mail or a message is received for instance via social media requesting to click on a URL address that will direct the person to a website to fill in a questionnaire form. For the sample, a huge number of users coming from a pre-determined population of interest was chosen. Respondents were able to give demographic data via a 5-point Likert rating scale. When spotting potential research participants, a specified criterion is used. According to the findings, male represented 46.7% of the sample whereas females represented 53.3%. This data is demonstrated in Table 1.

| Gender | Frequency | Percent (%) |
|--------|-----------|-------------|
| Male   | 84        | 46.7        |
| Female | 96        | 53.3        |
| Total  | 180       | 100.0       |

It was noted that all respondents outlined a tertiary qualification where 5.6% of them specified that they are degree-holders, 94.5 % hold post-graduate qualifications distributed between master and doctoral degrees as shown in Table 2.

| Education     | Frequency | Percent (%) |
|---------------|-----------|-------------|
| Bachelor’s degree | 10        | 5.6         |
| Master’s degree    | 88        | 48.9        |
| Doctorate’s degree  | 82        | 45.6        |
| Total              | 180       | 100.0       |
In terms of age, 42.8% of the respondents aged between 30 to 39 years old. 38% of them were between 40 to 49 years old. Also, 10% were between 20 to 29 years old. Lastly, 8.3% of them aged equal or greater than 50 years old. This data is demonstrated in Table 3.

| Age         | Frequency | Percent (%) |
|-------------|-----------|-------------|
| 20-29 years | 18        | 10.0        |
| 30-39 years | 77        | 42.8        |
| 40-49 years | 70        | 38.9        |
| ≥ 50 years  | 15        | 8.3         |
| Total       | 180       | 100.0       |

### 3. Case study analysis

This work aims to define obstacles through E-governments implementation. Data was analyzed quantitatively and Tables (4,5,6,7) depict the beliefs of the 180 participants based on the questions linked to the E-government.

**Table 4. Political Impacts.**

| Item                                           | Very unimportant | Somewhat unimportant | Neutral | Somewhat important | Very important |
|------------------------------------------------|------------------|----------------------|---------|--------------------|----------------|
|                                                 | Frequency        | Percent (%)          | Frequency| Percent (%)  | Frequency        | Percent (%)  | Frequency| Percent (%)  | Frequency        | Percent (%)  |
| Lack of Laws on E-government                   | 6                | 3.3                  | 13      | 7.2               | 0              | 0            | 73      | 40.6          | 88              | 48.9          |
| Lack of formulate security issues              | 8                | 4.4                  | 9       | 5.0               | 0              | 0            | 82      | 45.6          | 81              | 45.0          |
| Absence of coordination between state institutions | 9                | 5.0                  | 4       | 2.2               | 1              | 0.6          | 74      | 41.1          | 92              | 51.1          |

In the political impact, from viewpoints of the respondents, there is a variety of political problems that need to be examined. Therefore, both facilities and procedures require specific reflection. The respondents express of their opinions as follow:

A) 89% claim lack of laws on E-government.
B) 90% claim lack of formulates security issues.
C) 92% claim absence of coordination between state instructions.
According to above result, it is clear that the political impact has significant effect on E-government applied, where in our study (Iraq) there is many political issues that make a challenge to applied the E-government.

In additional, the results indicate that there is a significant correlation between political impacts with values ranging from 0.427 to 0.532, and this indicates that political impacts are interrelated and dependent on each other as shown in Table 5.

In order to make E-government applicable the decision maker should be improve the cooperation between the difference government departments in order to make the transfer of files through internet. This will be improving the E-government applied.

Table 5. Correlations matrix for political impacts.

| Correlations                  | Absence of policy impacts | Lack of Laws on E-government | Lack of formulate security issues | Absence of agreement between state institutions |
|-------------------------------|---------------------------|------------------------------|----------------------------------|-----------------------------------------------|
| Pearson Correlation           |                           | .497**                       | .532**                          | .429**                                        |
| Sig. (2-tailed)               |                           | .000                         | .000                            | .000                                          |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6. Technical Impacts.

| Item                                | Very unimportant | Somewhat unimportant | Neutral | Somewhat important | Very important |
|-------------------------------------|------------------|----------------------|---------|-------------------|----------------|
| Unauthorized access                 | 3                | 18                   | 10.0    | 77                | 82             |
| Resource manipulation as system     | 4                | 14                   | 7.8     | 86                | 76             |

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In the technical impact, citizens have a fear from the security side represented by a hacked E-government system. The respondents express their opinions as follows:
A) 88% claim unauthorized access.
B) 90% claim Resource manipulation as system configuration or reprogramming.
C) 93% claim Lack of equipment’s for security.
D) 88% claim Availability of technical staff.

The result indicates that there is no control on the Internet used, this make the hacker to hack any system easily, therefore, it is need from decision maker to legislation the laws that organize the using of Internet. There is a significant correlation between technical impacts with values ranging from 0.311 to 0.632 and this indicates that technical impacts are interrelated and dependent on each other as shown in Table 7.

In order to overcome this challenge, it is preferred to planning and following specific policy that required a huge investment for the purchase of hardware and software. Also, training and encourage the government employee to use the Internet for there working. This may be improve the e-government.

**Table 7. Correlations matrix for technical impacts.**

| Correlations              | Unauthorized access | Resource manipulation as system configuration or re-programming | Lack of equipment for security | Availability of technical staff |
|---------------------------|---------------------|-----------------------------------------------------------------|--------------------------------|--------------------------------|
| Unauthorized access       | Pearson Correlation 1 | .632**              | .441**              | .311**                       |
| Resource manipulation     | Pearson Correlation .632** | 1                  | .382**              | .365**                       |
| as system configuration   | Sig. (2-tailed) .000  | .000               | .000               | .000                         |
| or re-programming         | Sig. (2-tailed) .000  | .000               | .000               | .000                         |
| Lack of equipment for     | Pearson Correlation .441** | .382**              | 1                  | .439**                       |
| security                  | Sig. (2-tailed) .000  | .000               | .000               | .000                         |
Table 8. Cultural Impacts.

| Item                                | Very unimportant | Somewhat unimportant | Neutral | Somewhat important | Very important |
|-------------------------------------|------------------|----------------------|---------|--------------------|---------------|
|                                     | Frequency (%)    | Frequency (%)        | Frequency (%) | Frequency (%)       | Frequency (%) |
| Participant lacking cognition of utilizing information services | 13 (7.2)         | 10 (5.6)             | 0 (0)   | 82 (45.6)          | 75 (41.7)     |
| Participant lacking confidence     | 3 (1.7)          | 6 (3.3)              | 0 (0)   | 73 (40.6)          | 98 (54.4)     |
| Warning of participant’s private data | 4 (2.2)         | 11 (6.1)             | 0 (0)   | 81 (45.0)          | 84 (46.7)     |

Supplying information to the public in a language that they understand and are comfortable with, and generally, it is the local language.

In the cultural impact, low ICT literacy, is one of important factors that impact the E-government because it shows that people are not aware of technology of E-governments. The respondents express their opinions as follows:

a- 87% claim participant lacked cognition of utilizing information services.
b- 95% claim participant lacked confidence.
c- 93.7% claim warning of participant’s private data.

In the culture impact, the result of the factors could be used interrupt that the people in the third world such as Iraq. Lacked to knowledge and how to investigate the Internet to achieve their work. Additionally, the lacked confidence this consider another challenge that faced the e-government application in Iraq. There is a significant correlation between cultural impacts with values ranging from 0.282 to 0.533, and this indicates that cultural impacts are interrelated and dependent on each other as shown in Table 9.

In order to overcome this challenge, it is required to provide the information to the people using Simple and understanding language.
Table 9. Correlations matrix for cultural impacts.

| Correlations | Participant lacking cognition of utilizing information services | Participant lacking confidence | Warning of participant’s private data |
|--------------|---------------------------------------------------------------|-------------------------------|--------------------------------------|
| Difficulties in using IT equipment | 1 | .370** | .533** | .375** |
| Participant lacking cognition of utilizing information services | Pearson Correlation | .370** | 1 | .325** | .282** |
| Participant lacking confidence | Pearson Correlation | .533** | .325** | 1 | .467** |
| Warning of participant’s private data | Pearson Correlation | .375** | .282** | .467** | 1 |
| Difficulties in using IT equipment | Sig. (2-tailed) | .000 | .000 | .000 |
| Participant lacking cognition of utilizing information services | Sig. (2-tailed) | .000 | .000 | .000 |
| Participant lacking confidence | Sig. (2-tailed) | .000 | .000 | .000 |
| Warning of participant’s private data | Sig. (2-tailed) | .000 | .000 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10. Legal Impacts

| Item | Very unimportant | Somewhat unimportant | Neutral | Somewhat important | Very important |
|------|------------------|----------------------|---------|--------------------|---------------|
|      | Frequency | Percent (%) | Frequency | Percent (%) | Frequency | Percent (%) | Frequency | Percent (%) | Frequency | Percent (%) |
| Problems of network crime | 3 1.7 | 8 4.4 | 0 0 | 84 46.7 | 85 47.2 |
| Lack of information technology law | 3 1.7 | 6 3.3 | 0 0 | 81 45.0 | 90 50.0 |
| Integrity | 3 1.7 | 11 6.1 | 0 0 | 52 28.9 | 114 63.3 |

In legal impact, citizens have a number of problems related to networking crime and impartiality. The respondents express their opinions as follows:
a- 93% claim network crime issues.
b- 95% claim disappearance of information technology law.
c- 92% claim integrity.

The result showed that all three factors related to legal impact high percentage as shown above, this could be happen due to lacked of the awareness and misunderstanding the risks they may be occur due to network crime.

There is a significant correlation between legal impacts with values ranging from 0.018 to 0.403 and this indicates that legal impacts are interrelated and dependent on each other as shown in Table. 11.

| Correlations                           | Network crime issues | Disappearance of information technology law | Integrity |
|----------------------------------------|----------------------|---------------------------------------------|-----------|
| Problems of network crime              | Pearson Correlation  | .352**                                      | .180*     |
|                                        | Sig. (2-tailed)      | .000                                        | .015      |
| Lack of information technology law     | Pearson Correlation  | .352**                                      | 1         |
|                                        | Sig. (2-tailed)      | .000                                        | .403**    |
| Integrity                              | Pearson Correlation  | .180*                                      | .403**    |
|                                        | Sig. (2-tailed)      | .015                                        | 1         |

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4. Conclusions
E-government is an effective and competent way to deliver business and organisational mandates via deploying Information and Communication Technology (ICT). The phrase “E-Government” links to government agencies making usage of information and communication technologies (i.e. Wide Area Networks, the Internet, and mobile computing). They can move linkages with various businesses, parts of governments and lastly citizens. In this study some issues and challenges that faced the local authorities during E-government implementation was highlighted. These challenges include political, technical, cultural, and legal and each one of these challenges has specific weight. The result indicates that these factors are related to each other and that any improvement or development of a factor will influence the whole system. In order to help the decision maker to overcome these challenges, the priorities of these challenges should be defined. These include work on electronic literacy, the ability to formulate laws for E-governments, provide digital security, and distribute confidence among citizens and institutions to deal with the digital revolution represented by an E-government. In order to achieve and apply E-government successfully, the government should be tried to solve the problems and provide the infrastructure that consider necessary to apply E-government. Additionally, more research in this field which related to other factors that effect on E-government implementation should be done.

For further research on this topic, it is advised to study greater determinants that impact E-governments, as well as searching for the possibility of developing the system in Iraq.

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