

**INVESTIGATION OF A MOBILE GOVERNMENT A  
CASE STUDY IN IRAQ**

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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**To my parents....**

## **ABSTRACT**

The use of modern technology in the delivery of public services and information to citizens is the most important development aspired to by the developed countries. Hence, a lot of projects that support these ideas have been designed and created, such as E-government and Mobile Government. Mobile government is a new delivery channel for governments to convey information and services ubiquitously to businesses, residents, and other government departments through mobile devices or mobile technologies. Mobile government can be defined as reaching information in any place and time, and it is an extension for E-government services.

The existing research on mobile government has been investigated in detail, and the questions to be asked in the survey have been developed by the author. With the developed survey, the opinions of the Iraq people on mobile government, and the expectations of the people from the Iraq government have been established. Additionally, the studies in countries where mobile government is being used effectively have been investigated in detail in the thesis. At the end of the study, a mobile government application model has been developed and suggestions are made in this field based upon the results obtained in the survey.

Keywords: Iraq, Mobile Government, E-government, Mobile Technologies

## ÖZET

Gelişmiş ülkelerin en büyük arzularından biri de vatandaşlarına kamu hizmetleri hakkında bilgi verirken en son teknolojiyi kullanmaktır. Bundan dolayı, çeşitli ülkelerde bu sahada E-devlet ve mobil devlet gibi birçok proje üretilmiştir. Mobil devlet, özellikle bu sahada olan en son gelişmelerden birisidir. Bu yöntemle, devletler en son mobil cihazları kullanarak vatandaşlarına devlet daireleri, işletme, turizm ve bunun gibi çok çeşitli konularda anında ve her zaman hizmet verebilmektedirler. Mobil devlet, genel olarak E-devlet uygulamasının gelişmiş bir şekli olup burada maksat anında ve günün her anında vatandaşa hizmet vermektir.

Mobil devlet ile ilgili alanyazın incelenerek araştırmada kullanılacak anket araştırmacı tarafından geliştirildi. Geliştirilen anket ile Irak vatandaşlarının mobil devlet ile ilgili düşünceleri, Irak hükümeti'nden beklentileri belirlendi. Tezde ayrıca, mobil devlet uygulamalarının etkin ve verimli kullanıldığı ülkelerdeki çalışmalar da en ince detaylarına kadar incelendi. Çalışma sonunda elde edilen veriler doğrultusunda da, Irak hükümeti yapısına uygun olabilecek mobil devlet uygulama örneği geliştirilerek bu konuda öneriler geliştirilmiştir.

Anahtar Kelimeler: Irak, Mobil Devlet, E-devlet, Mobil Teknolojiler

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## **LIST OF ABBREVIATIONS**

**M-Government:** Mobile Government

**E-Government:** Electronic Government

**ITU:** International Telecommunication Union

**WWW:** World Wide Web

**ICT:** The Information and Communication Technologies

**IWC:** The Internet World Center

**USAID:** United States Agency for International Development

**GPS:** Global positioning system

**PCs:** Personal Computers

**PDAs:** Personal Digital Assistants

**SMS:** Short Message Services

**MMS:** Multimedia Messaging Services

**USSD:** Unstructured Supplementary Service Data

**WAP:** Wireless Application Protocol

**WIFI:** Wireless Fidelity

**3G:** Third – generation

**4G:** Fourth – generation

# **CHAPTER 1**

## **INTRODUCTION**

A government is the system by which a state or community is governed and a government more narrowly refers to the particular executive in control of a state at a given time. In American English, government refers to the larger system by which any state is organized. Furthermore, government is occasionally used in English as a synonym for governance.

The government services evolved in levels started from traditional services until the use of electronic devices in government job to increase reliability and reduce the time and effort. Today, the developed countries that have electronic governments find a simple way to convey information to citizen and get a feed back as soon as possible, and today technology is the best way the government use because it has proved its ability in government job.

Electronic Government (E-Government) is a well-known service in all over the world. E-government is the use of information technology by public sector organizations to reach out to its citizens in a modern, fast and effective way. In 2003, Iraq began to build its own E-government project with the help of Italian government to have a place among world ICT society (Sharief, Graul, & Ian, 2007).

With the growing of technology and the numbers of mobile users, the M-government began to appear and the new technology was used in government job and became an aspiration for many countries or governments.

### **1.1 Technologies of Government Services**

The aim of thesis is to focus on the important technologies used in government services and to investigate the main characteristics of these technologies specially when used in Iraqi's government and applied in performing government job.

E-government and M-government are the main technologies in this thesis which tries to explain them and propose a model for the Iraqi government according to the examples of the developed countries.

## **1.2 E-Government**

The World Wide Web (WWW) has become an important and an indispensable tool in the human life of people worldwide (Al-Sobhi and Kamal, 2010). Many people prefer the online version of a service as a fast and simple approach to achieving their human activities, including reading newspapers, paying bills, etc (Salem, 2006).

The information and communication technologies (ICT) rapidly develop, coupled with considerable enhancement in digital connectivity, governments are reassessing the way they work and interact with both internal and external organizations. Technology has motivated the governments to reconsider their internal and external relations and transactions. Therefore, in order to succeed and build for the future, the administrative processes of government are being transferred to electronic systems.

Governments worldwide plan to create an electronic approach (E-government) to government department and agencies in order to provide and facilitate many services to people anywhere and at any time, and to replace traditional routine procedures (United Nations, 2010) .

## **1.3 E-Government Statistic**

According to the European Commission (<http://epp.eurostat.ec.europa.eu>), the E-government has large popularity and widely used in the many developed countries in the world. The statistics of E-government came from the main types of electronic interaction with the public administration such as obtaining information, downloading forms and managing administrative procedures completely electronically.

In 2009, almost two thirds (65%) of EU enterprises either obtained information or downloaded official forms from public authorities' websites. More than half (55%) of these enterprises then returned the completed forms to public administrations, (44%) of the enterprises treated administrative procedures completely electronically, i.e. without the need for exchanging information in paper form. Around one tenth (11%) of the enterprises submitted a proposal using an electronic tendering system.

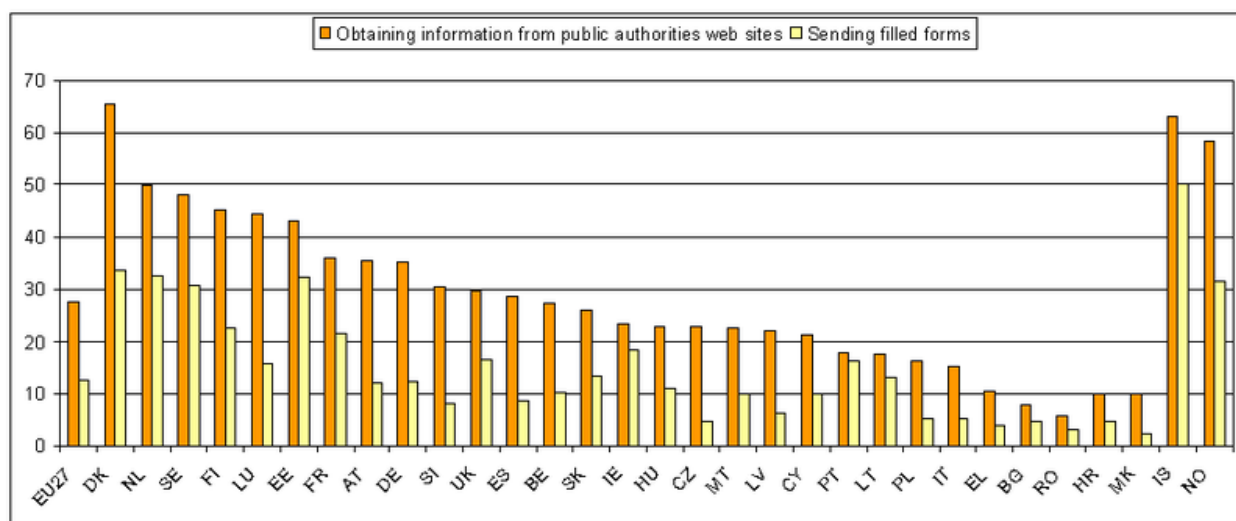


Figure 1.1: Online Interaction of Individuals with Public Authorities by Country  
2009(<http://epp.eurostat.ec.europa.eu>)

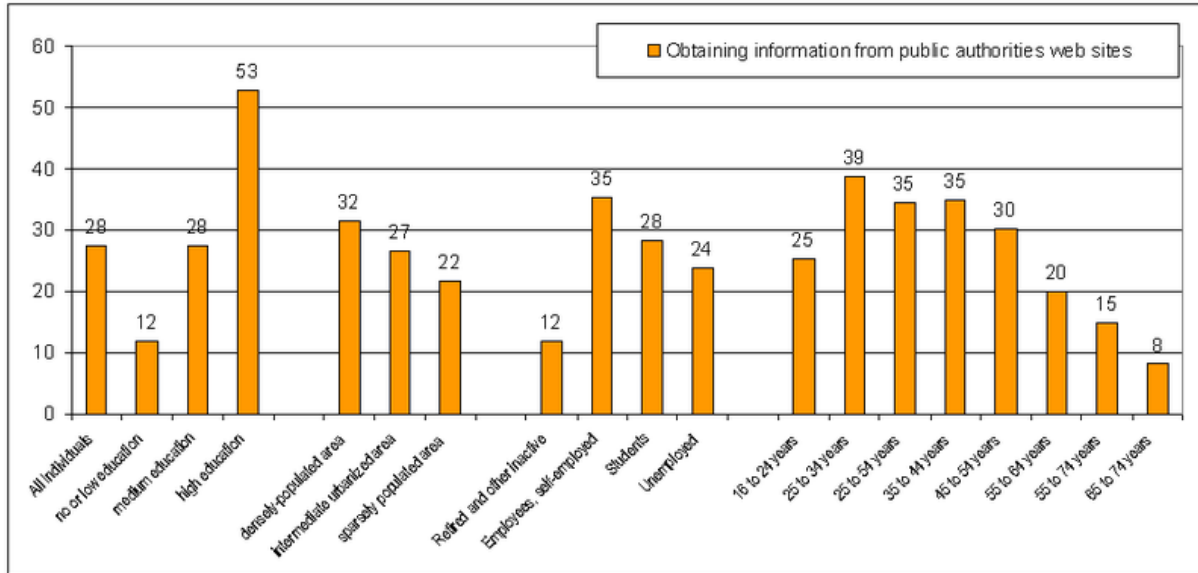


Figure 1.2: Obtaining Information Online from Public Authorities by Socioeconomic Breakdown 2009 (<http://epp.eurostat.ec.europa.eu>)

There are (28%) of the European citizens accessed information on public authorities' websites in 2009, and just (13%) of European citizens sent information electronically within 3 months prior to the survey in 2009. There is still a big potential for E-government services to citizens in Europe, which can be exploited in the next years.

In addition to the differences in the percentage of use of online services between the European countries, while almost two thirds (65%) of the citizens in Denmark have already looked for information from public authorities online, only (6%) of Romanian citizens have searched for information on public authorities websites.



## **1.4 M-Government**

M-government is an emerging trend and a new target in public service delivery; it has the potentiality for transforming governments by increasing their accessibility and citizen-centricity (Oghuma, 2012). M-government is part of a broader phenomenon of mobile-enabled development (m-development) or transformation by leveraging the mobile revolution to enable development impact. It takes electronic services and makes them available via mobile technologies using devices such as mobile phones and PDAs. These services bypass the need for traditional physical networks for communications and collaboration.

M-government has the ability to connect previously unconnected areas, information, and services from the government. In addition, the relatively lower cost of mobile phone technology versus internet technology has drastically lowered the entry barriers for citizens in developing countries to be connected to government services. Mobile phones allow citizens to get access to government services virtually in any place covered by a mobile network. Mobile devices are also easier to learn and to use by the elderly and blue-collars (Georgescu, 2011).

There is a very wide range of potential government services which can be delivered via mobile phone, including services related to health, education, employment, police, tax, judicial and legal systems, etc. Payments and financial services are also possible through mobile phones, which drastically expand the opportunities to incorporate m-services into the everyday lives of citizens. Mobile phone technology can also considerably expand the scope of e-democracy and e-participation, engaging citizens in democratic decision-making through various polls, m-voting, and other forms of communication between citizens and the government.

## **1.5 The Goal of the Thesis**

In the last few years, the republic of Iraq applied the E-government in government job or services after the wide use of E-government among the developed countries in the world. Owing to the current bad situation in Iraq and the difficulty of travelling from and into Baghdad, the capital of Iraq, to other Iraqi cities, the government of Iraq needed the use of technology in government job, this thesis investigates the applicability of M-government on Iraqi's government services and proposes or suggests a model for Iraqi's Mobile Government.

## **1.6 Important Apply M-Government on Iraqi's Case**

There are three major companies and mobile wireless connectivity in Iraq: Asiacell, Zain and Korak. Through the statistics offered by the companies, there are many mobile users in Iraq. The web site of the Asia Cell company ([www.asiacell.com](http://www.asiacell.com)) indicates that this company has about 10 million subscribers. Whereas, the website of Zain ([www.iq.zain.com](http://www.iq.zain.com)) shows that the Company has about 12 million subscribers Korark ([www.korektel.com](http://www.korektel.com)), on the other hand, have about 8 million subscribers.

Iraq has a population of about 35 million by the end of 2013; this means that the proportion of mobile users in Iraq is about (80%). This percentage is larger than the percentage of the users of Internet Technology in Iraq, where the number of Internet users in Iraq is about 7.1% according to Internet World States report (IWS, 2012).

The large differences in the numbers using internet technology and mobile technology users generate a great incentive for the application of Mobile Government in Iraq, to mobile technologies to deliver public services to citizens.

## **1.7 Limitations**

This thesis faces a lot of barriers and difficulties due to the security situation, in Iraq, so it could not take the reports and the conclusions drawn directly from the Iraqi Ministry of Communications and the Iraqi Ministry of Planning.

The thesis also faced the difficulty of writing a questionnaire among Iraqi citizens about the Mobile Government and E-government due to lack of awareness or knowledge of most of the Iraqi citizens, of these technologies or projects, and that the lack of use and lack of famous popularity despite the presence of an Iraqi electronic government.

## **1.8 Overview of the Thesis**

**Chapter Two:** This chapter reviews some of the previous studies and approaches related to the topic of this thesis.

**Chapter Three:** Explain about the history for Iraqi's E-government and what the aspects for these services, Iraqi E-government is background to Mobile Government so we should know well this services and what is mean.

**Chapter Four:** What is meant by M-government and what is the main benefit from it also explain the model which works on .In addition, what are the famous countries that apply these services on government job. This chapter also presents many examples for developed countries which use Mobile Government services.

**Chapter Five:** Propose M-government on Iraqi's government services and create survey to Iraqi people to get information about idea of mobile government, also suggestion model to Iraqi Mobile Government services and how access the information to citizens.

Mobile application is part of Mobile Government services so this thesis suggests the application to Iraqi government and it is designed according to the survey and Iraqi citizen requirements.

**Chapter Six:** Conclusions and Recommendation.

## **CHAPTER 2**

### **RELATED RESEARCH**

#### **2.1 Overview**

This chapter explains some of the important researches or similar ones related to M-government. These researches motivate this thesis for trying to apply M-government on Iraqi's government services and to investigate the applicability of M-government compared with the developed countries applying M-government like Sweden or United Arab Emirates.

#### **2.2 Related Research**

Minazo (2009) mentioned that too many people have a mobile phone. The numbers of mobile phones on the market are growing day after day. Moreover, the new products appear: iPhone from Apple, Smartphone and Windows Mobile. Customers are more demanding for those things and manufacturers have to be innovative to meet the requirement of customers.

Cavus and Younus (2013) discussed the large numbers of Mobile subscribers around the world and how to make use of the increase, in addition to how the occupation of Mobile Service technologies occupied great niche in our daily lives, where a mobile turned from being a device of communication to a device that has a lot of different tasks that go into various areas of our daily lives.

Shareef and Arreymbi (2010) investigated the Mobile Government or (M-government) developments within the wider context of E-government but mainly those efforts in Iraq. They have also analyzed other M-government implementations from a wider perspective. The precise attempts made by the developed countries in utilizing the latest technologies and applications for enhancing electronic government or (E-government) will be explored. Two main challenges have been identified in this paper; first, exploring the multi-channel delivery of E-government for enhancing information and service delivery to citizen.

Second, proposing an architectural design for M-government applications, through utilizing the Mobile Global Positioning System (GPS) use in traffic police information system to identify and establish the identities of drivers and vehicles in real time.

Roggenkamp (2004) described the methods of assessing a process of mobility need from a better understanding of mobility and a way of implementing a user perspective when defining new application fields and requirements for Mobile Government. He also described the main services which Mobile Government provide to citizens and how to exploit mobile technologies in government services.

Saha (2008) discussed that the adoption of a new technology will help the government to achieve efficiency in the implementation and delivery of public services to citizens. He also identified the factors of success behind the electronic receipt of government services that drew the attention of the citizen. In addition, he justified the success of marketing and electronic commerce or the use of technology in our life focusing on the fact that the work of the government is an easy use and quick access to information. This was through conducting a survey of users of E-government for all municipalities in Sweden.

Al-Masaeed (2013) defined the Mobile Government and what are the most important challenges faced in the case of services used in the Jordanian government. He also explained rates and statistics of the developing countries in terms of their use of the Mobile Services or the use of Internet technologies in addition to the signal that the educational level of the community or the citizen has a big role in the activation of services related to the use of technology

Alrazooqi and Desilva (2010) explained many important points for M-government and the main reasons to apply on government services. He also mentioned that Electronic government (E-government) is fast emerging to replace functions performed by traditional governments but the mobile and wireless technologies are penetrating even faster and more and more people prefer them than the landline connections.

The mobility of people and use of mobile require the provision of anytime, anywhere access to government resources and the governments need to move to M-governments. In this study, an M-government solution for Dubai government is proposed using a study based on Dubai Police.

Patel and White (2005) showed the approaches and experiences of South Africa in advancing M-government and how mobile technology can be used to improve government operations and service delivery. They also explained the ability to test and incubate solutions for developing country challenges. This is based on a number of South African realities including: - extensive penetration of mobile phones across all incomes groups including rural and remote households, the ease of use of the technology, a proliferation of solutions from the commercial sector, licensing obligations to be met by the mobile network providers, and finally, the reality that for many a mobile phone represents the sole source of communication. South Africa has made significant strides in advancing M-government in less than three years, but M-government is still in its infancy and will rapidly evolve over the next few years.

Song and Cornford (2006) analyzed the convergence of mobile computing and mobile communication technologies opens up new area for mobile interaction and mobile services. In addition, they analyzed the case of Beijing and mentioned that a distinct fluid organization emerges in Mobile Government practices in Beijing. With the challenges and opportunities provided by mobile ICT, governments should shift from manufacturing mentality to service mentality and be aware of the potentials of Mobile Government to transform the government to be more agile, responsive, accountable, and action oriented.

Diniz (2006) defined the Mobile Government saying that it means the delivery of public services by mobile and wireless devices; also Mobile Government should comprehend the wireless infrastructure and public service units for portable. Statistically in Brazil, priority is given to use of mobile technologies as a device in government's services. There is a significant increase in the number of mobile phone users compared with other devices.

DGS Milestone (2013) explained that there are similarities between mobile devices and desktop devices, but the Mobile Government is a new perspective and has new properties that allow more reliability and flexibility to work. He also stressed that the mobile is the best to use, easy to download application, personalization features such as GPS and the variety of mobile devices and operating systems all make the Mobile Government the best.

Borucki and Kuschu (2005) showed that governments are under stress by citizens and the large competition between countries to become technologically advanced, so governments will work to continuously develop Mobile Government application model, and these updates and additions to serve citizens, use of mobile technologies to enhance government activities that pave the way for the mobile government. As well as, the applications and services developed are becoming increasingly popular. While governments seem to be very effective in providing better or more significant services through these new technologies, there is yet little evidence how these developments influence the operations of governmental organizations.

International Telecommunication Union (ITU) (2011) explained that the application of this technology requires a qualified staff. Therefore, governments should focus on preparing such requirements by providing the staff who can control the government and work in technology area.

Antoviksi and Gusev (2005) displayed that the following five principles: interoperability, security, openness, flexibility and scalability should be incorporated in Mobile Government depending on a short survey report for Macedonia, with special attention in bridging the gap between developing and developed countries.

Zalesak (2002) presented several definitions of the Mobile Government (M-government) where it was defined as a functional subset of all-inclusive E-government services provided to its users, both citizens and civil servants, including unique opportunities through freedom of mobile access to provide services and information literally from any place.

### **2.3 Summary**

According to this related researches, the M-government is target to many developed countries because it has many advantages when applied on government services. The growing number of mobile users made a good environment to the M-government to delivery public services to citizens by a simple and fast way. With the M-government benefits and advantages, there are principles interoperability, security, openness, flexibility and scalability, the government should focus on these principles.



## **CHAPTER 3**

### **IRAQI'S E-GOVERNMENT**

#### **3.1 Overview**

In this chapter, clarification and explanation for Iraqi's E-government through mentioning the most important sections and the important services that Iraqi's E-government provides to the Iraqi citizens. The Iraqi's E-government has a especial model which serves as the base the government work on and the Iraqi's E-government has many challenges and issues which are obstacles in government work. With the provided services, and the working model of E-government of Iraq, it will be important to clarify the difficulties and obstacles in addition to the challenges facing the Iraqi E-government work and what are the reasons.

#### **3.2 Iraqi's E-Government**

The Iraqi's E-government is a government of a new-born that has no experience compared with the European countries or the U.S. The Iraqi's E-government has been able to meet some of the requirements; including the use of technology specifically computers and the Internet to help reduce the voltage for the citizens and reduce the time to securely and properly deliver information.

To know the Iraqi's E-government, the history of this government should first be known. In addition to its divisions and the most important services provided to Iraqi citizens in addition to the model used.

##### **3.2.1. History**

In 2004, the United Nations asked the developed countries in united nation to support the new Iraqi government for institution building. Italian Minister for Innovation and Technologies and the Iraqi Minister of Science and Technology sign a contract in which the Italian Government commits to provide technical assistance for the construction of new Iraqi government project.

Iraq Government is in the special situation of evolution an E-government project is in an area that is receptive to innovative ideas; these information ideas will be a motivation of good future. Due to the current situation of security since 2003, Iraq needs a simple way to access the information to citizens without any dangers so it started to build E-government. The Iraqi's E-government project is the first step for the evolution of an efficient E-government platform, able to help the reconstruction of the infrastructure of the Country (Sharief, Graul and Ian, 2007).

The USAID (United States Agency for International Development) and Iraq Ministry of Science and Technology made strategies from 2007-2010 to develop Iraqi's E-government. The Iraqi's E-government strategies will have the best possible chance of success if the process moves forward with providing high levels and sponsorship (Sharief, Graul and Ian, 2007).

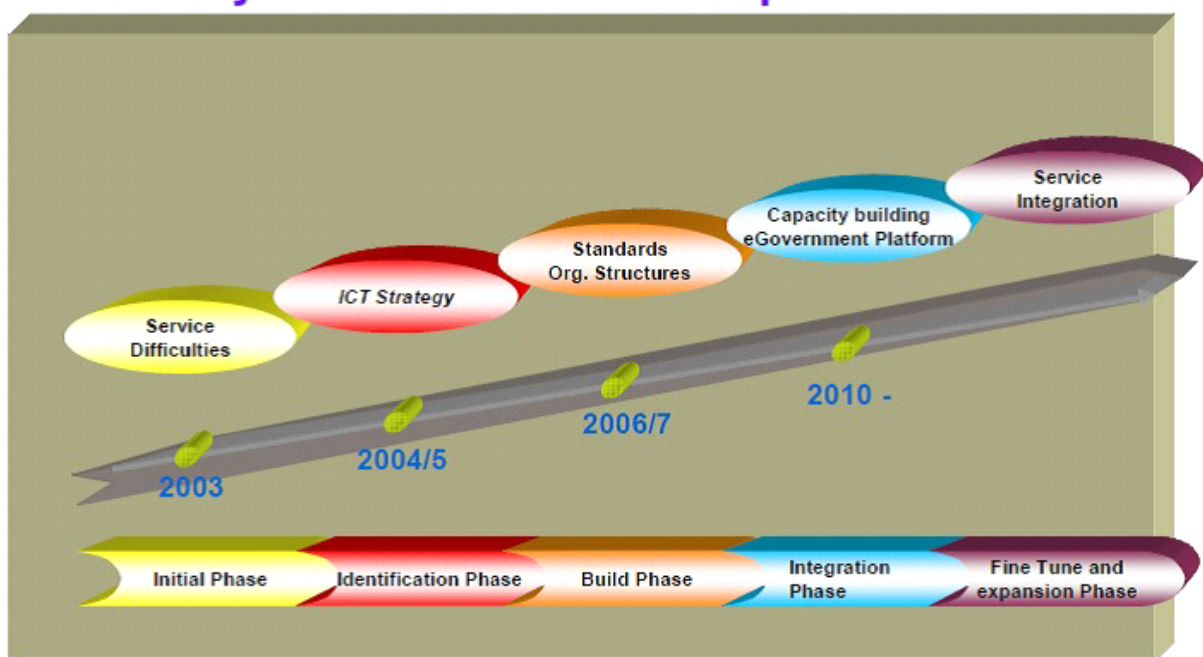


Figure 3.1: Pathway to E-Government in Iraq (Sharief, Graul and Ian, 2007)

### 3.2.2. Model

The Iraqi's E-government ,like any project , has a model or life cycle designed to apply on Iraqi situation, and from the model, the main members or the main concepts can be seen and how to interact between them.

Figure 3.2 shows that the Iraqi's E-government has four dimensions people, process, technology and resources, with these dimensions the Iraqi's government will face many problems and difficulties.

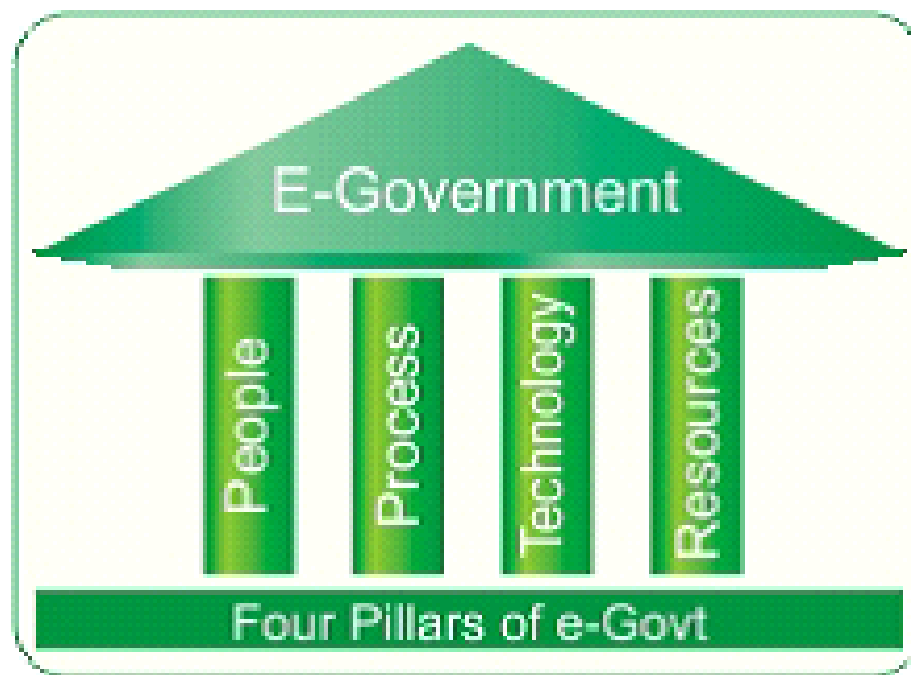


Figure 3.2: The Four Pillars of E-Government (National Institute for Smart Government, India, 2007)

**People:** The management of people is one of the biggest problems or difficulties to the success of the Iraqi's E-government project, because the government has too many projects with different areas and the people contribute in the success of these projects. In addition , the scale of transformation is big and needs enormous resources not just in terms of money but also the expertise, skills and commitment of the people (Chandrasekhar, 2007).

**Process:** A fresh set of process parameters and related workflow should be created because it will open new relations between the government and citizen.

**Technology:** Today, the Information and Communication Technology is very important to all countries or government because it is more efficient and effective manner, and mostly of lower costs than earlier.

**Resources:** There are a plethora of problems to the successful implementation of large E-government projects so resources management is needed.

### 3.2.3. Services

After having an idea about Iraqi's E-government the services this project provides should be acknowledged. According to the (<http://www.egov.gov.iq>), the Iraqi's E-government has many services and it's divided on four sections and each section has deferent services.



Figure 3.3: Home page for Iraqi E-government (<http://www.egov.gov.iq>)

The four main sections are:

#### 1- Citizen Services

Citizens services provides electronic gate for Iraqi citizens. Citizens Services contain the information and services that the citizens need by connecting citizens with government departments concerned, and the provision of information on the Internet for the requested service.

Citizens services provides the applicant with all relevant information, required documents, forms, links and contact information on the services provided by deferent government ministries.

## **2- Business Services**

Business services provides the gate of electronic business services for business owners in Iraq and it helps all persons seeking for support from the Iraqi's government especially in business.

## **3- Government Services**

Government Services provides services to the Iraqi government institutions by connecting with the state departments concerned.

## **4- NGO Services**

It provides services to community organizations, non-governmental organizations and linked with government departments via Internet or online.

The important services in these sections are:

- **Cabinets Resolutions**

This section provides the Cabinet Resolutions taken by the Council of Ministries, and it also provides the important correspondence and main interaction with the government.

- **Legislation and Regulations**

This section provides access to information related to legislation and regulations. The base of the Iraqi legislation and regulations has information about explaining and interpreting legal materials associated.

- **Personnel Documents**

This section is for Iraqi citizens residing in Iraq. It provides the data which they need to get the documents of staff by connecting government departments concerned with citizens.

In this section, the applicant can find all relevant information, the required documents, links, forms and contact information on the services provided by deferent government ministries.

- **Health**

With the support of the Ministry of Health system, this section tries to help the citizen to know the health system for Iraqi government. It contains the important information such as public hospitals and main health centers.

- **Education**

Despite the importance given to this section in the Iraqi constitution and in the development plans and economic policies, there are some problems towards the development of this sector and the evolution of its inputs and outputs. This section explains the education system in the Iraqi government.

- **Traffic and Fines**

This section is responsible for The General Traffic Directorate of the Iraq Interior Ministry, and it has many tasks such as the provision of vehicle registration in Iraq, the issuance of driver's license, the issuance of deferent permits and the collection of traffic fines, etc.

- **Communications**

Today, telecommunications has become an important sector in many governments and profitable at the same time. Telecommunications can strengthen state revenues significantly through the activities of this sector.

- **Research and Scientific Development**

The Iraqi's government seeks bridging the digital divisions with the developed world by keeping up with the scientific and technological developments taking place in the world for technology transfer in Iraq and advancement of scientific research.

- **E-Library**

This section facilitates access to major libraries in Iraq, in addition to scientific journals and research centers for free.

- **Citizens Grievances**

In this section, the main links that help the Iraqi citizen to solve problem faced in government job can be found.

- **Appointment and Voluntary**

This section has the links from which the Iraqi citizen can get a job in Iraqi's government by simple and fast way.

- **Labor and social affairs**

The Iraqi citizen can register in this section to get support from government such as loans in any government department.

- **Permits and Licenses**

This section contains details on the issuance of licenses of the Republic of Iraq, for example, selling or buying licenses and importing or exporting licenses.

- **Housing and Real Estate**

The Iraqi citizen by this section can apply a form to get a plot of residential land.

- **Business Registration**

Business registration section aims to make Iraq an effective country through the workings of market mechanisms and to actively participate in the global economy, in addition to the embodiment of the principle of international partnership.

This section contains various links that will help Iraq develop its economy and its business such as registration for companies to work in Iraq in addition to the services of the industrial sector.

- **Industry**

This section focuses on the industrial aspect in Iraq, where it gives enough information on the most important rules in the field of industry and developing Iraqi.

- **Investment**

This section contains all information related to laws of investment and links of interest to the Iraqi citizen.

- **NGO Registration**

This section is concerned with non-governmental organizations that work in Iraq and it provides online information about the requested service.



### **3.3 Issues and Challenges for Iraqi's E-Government**

The most important issues and challenges facing the Iraqi's E-government security situation is deterioration , and terrorism, the daily attacks to the institutions of the state, especially in recent years, which makes the E- government restricted because of bombings and vandalism.

Internet use or Internet service minimizes deterioration in the Iraqi government. Internet service is the worst in Iraq compared with neighboring countries such as Turkey and Saudi Arabia.

There is a significant lack of qualified cadres and personnel to manage the electronic government because the Iraqi government is a new one and do not have any experience in information technology.

### **3.4 Summary**

Electronic Iraqi government is present, but there are small number of users of E-government, due to the limited number of Internet users in Iraq, in addition to the weakness of Internet services due to terrorist acts and armed attacks. E-government is based on four pillars, and these pillars are the people, technology, processes and resources where effectiveness depends and an efficient E-government on those pillars. Electronic Iraqi government provides Iraqi citizens with different set of services in various areas, where services include business and public services in addition to the departments of health and education as well as several fields.

## **CHAPTER 4**

### **MOBILE GOVERNMENT**

#### **4.1 Overview**

This chapter defines Mobile Government and presents the reasons for the need for this sector especially in the developing countries. Mobile Government Services are projects using technologies and mobile devices to deliver the service or data, so Mobile Government has benefits and significant characteristics and all of them will be explained in this chapter. A general model of Mobile Government is very important in addition to the most important technologies in the government. It is also important in applying Mobile Government on general government services, in this chapter, the most important challenges of the Mobile Government will be explained with many examples of the Mobile Services Government in developed countries such as the United Kingdom, Turkey and the United Arab Emirates.

#### **4.2 Define Mobile Government**

Mobile Government is a new delivery channel for governments. It supports information and services accessibility ubiquitously to businesses, residents, and other government departments through mobile devices or mobile technologies (Al-masaeed, 2013). Mobile Government can also be defined as conveying information in any place and time, and the Mobile Government is an extension for E-government services.

The first person to search in Mobile Government is Professor I. Kushchu in Japan where he wrote too many reports and researches about the benefit of applying Mobile Government on government services.

### 4.3 Why Mobile Government

There are many reasons to use mobile devices in government services and perhaps the main reason is that a developing country like Iraq has a higher mobile penetration rate than that of internet use which opens doors of opportunities for such countries to bridge the technology gap and gain a better reach through Mobile government.

According to ITU, there is a difference between numbers of mobile cellular subscribers and internet users between years 2000 – 2010.

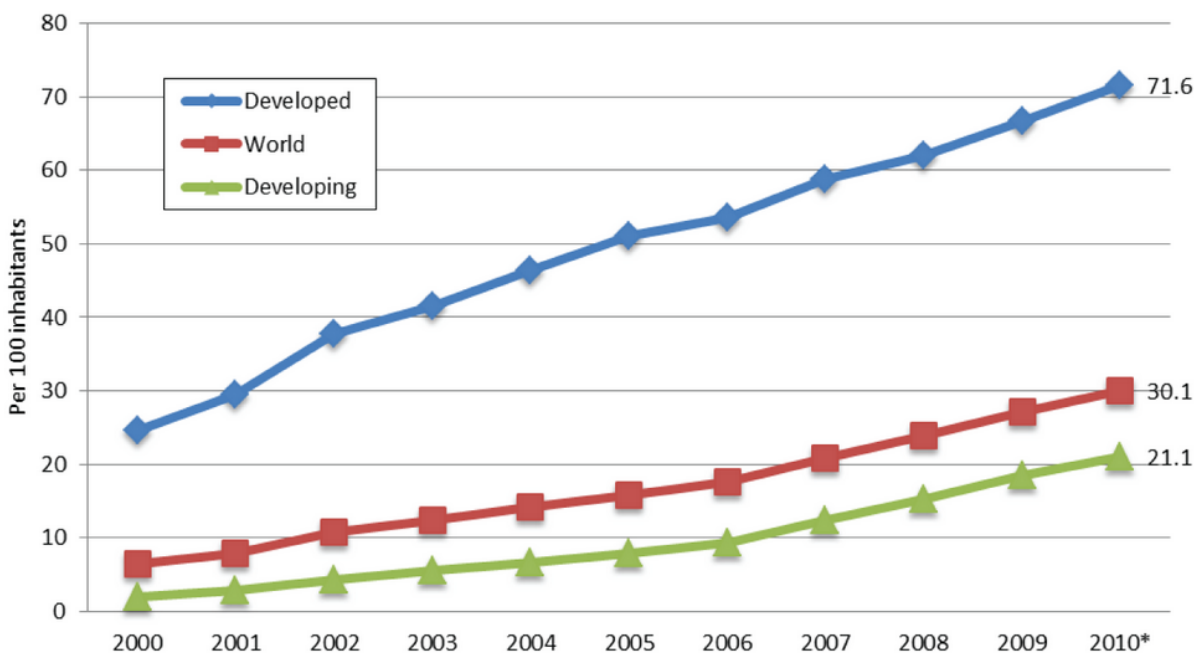


Figure 4.1: Internet Users per 100 Inhabitants, 2000-2010 (ITU, 2013a)

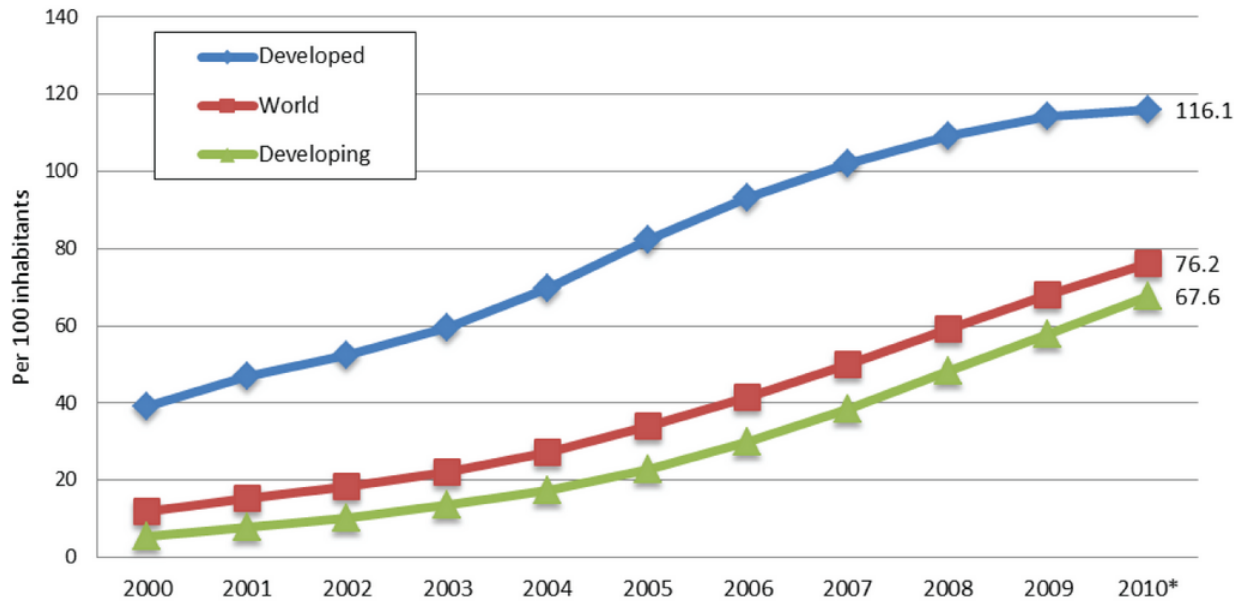


Figure 4.2: Mobile Cellular Subscriptions per 100 Inhabitants, 2000-2010 (ITU, 2013b)

#### 4.4 Mobile Government Benefit

Mobile Government application benefits are divided into three parts, the first is the benefit for the government and the second is the benefit for citizens, and the last business benefit, because the Mobile Government is a link between citizens, government and business (Pandey and Sekhar, 2013).

##### 1-Government Benefits

When the government applies the mobile government, it will reduce the effort and cost. Mobile Technology has spread widely in the world today as the government will reach a wider range of services such as connecting to people with disabilities and the elderly as well as access to the citizens who live outside the country.

The quick flow of information is another benefit in case of announcing important projects of the government or employment announcements systematically, in addition to transparency that will monitor the government work.

## 2-Citizen Benefits

According to an article published in the British Daily Mail site, Mobile users can't leave their phone alone for six minutes and check it up to 150 times a day. This fact gives an importance to mobile use to obtain all the information from the government without any tiredness or fatigue or stand in queues, in addition to the constant interaction with the government and the application of laws (<http://www.dailymail.co.uk>).

## 3-Business Benefit

Business is one of the important areas in daily life, which has many dealings with the government. Fast performance and low effort are the most important benefits obtained by the business sector as well as the process of interaction in the rapid resolution of issues relating to government and business.

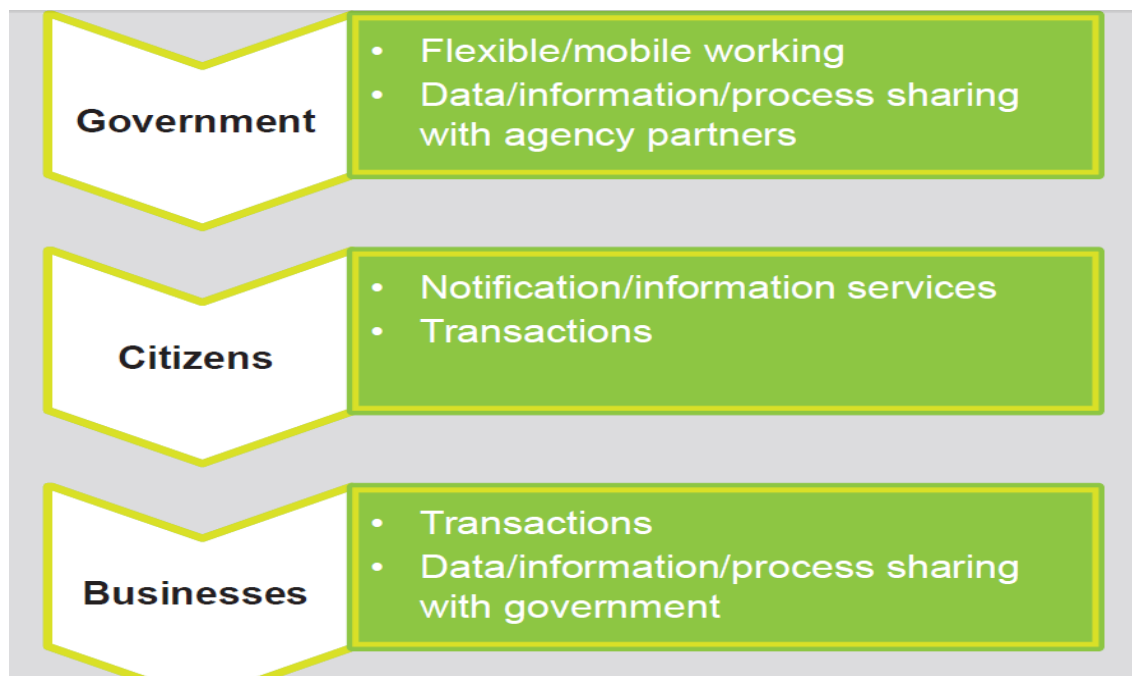


Figure 4.3: Mobile Government Benefit

#### **4.5 Mobile Technology and Government Services**

Technology and techniques of mobile phone have significantly expanded, especially in the earlier years, to be able to assist governments in their work and offer various kinds of services to various segments of society.

M-government affords a powerful and transformational capacity to both extend access to existing services, and expand the delivery of new services – and to increase active citizen participation in government operations, moving beyond the initial concentration of E-government on commerce and e-taxation, and improving internal operations.

The integration of mobile devices and new media applications that provide quick access to integrated data, empowered citizens and location-based services from any place at any time is the cornerstone of the emerging impact of mobile governance.

Today, the Mobile Government has become very important especially in the technologically advanced countries. For example, this technology has been used in the coordination of real-time location information for emergency response in United States, Turkey and France, also supporting farmers by providing information about weather and market price alerts in Uganda, Malaysia and China (Roy, 2012).

#### **4.6 Mobile Technology Option**

Mobile technology has a variety of services and options that help in performing government services. It facilitates the work of the government and the delivery of information to the farthest extent quickly and accurately.

In this thesis , the most important services provided by the mobile phone and their usage in the work of the government must be known especially in the work of the Government of Iraq and applying it in Iraq.

Mobile solutions or options can be established in deferent ways, with diverse choices in terms of networks, channels, information systems and enterprise architecture, applications and devices.

The main technology option or main services the mobile can provide are:

**1- Voice XML**

It is the main service for which Mobile was made in 1971 by Martin Cooper, voice service is a familiar and reliable service and does not require high education and experience where it is possible to easily evolve and develop their systems in multiple languages, whether local or global.

This service has been developed to make recent voice mail stores the voice messages in addition to the user-specific voice tag to increase the reliability and security (Boyle and Greer, 2013).

**2- SMS**

SMS means the Short Messaging Service, despite the simplicity of this service, it is especially popular among the mobile phone users, where it became an integral part of daily life after service overcome e-mail and Instant Messaging and Fax.

SMS services is used very actively in the notice of the citizens, telling them news and weather updates directly to add support for business and alerts in situations of emergency (Susanto and Goodwin, 2010).

**3- MMS**

MMS means the Multimedia Messaging Services, it is comparable to the SMS service, but the service has the characteristics of extra work that it allows sending and receiving voice, photo and video from and to mobile devices with the help of the Internet.

MMS also have the characteristic of economically sending messages whose large size cannot be sent by SMS service. This service is widely used in communication between the public and social media (Quirk, 2010).

#### **4- USSD**

USSD means Unstructured Supplementary Service Data; it is created specifically for standard GSM devices. This service is different from MMS messaging service in that it is transferred via a wireless data connection.

USSD is free, logical, simple, inexpensive and accessible, with great potential for mobile banking, accessing news services, submission services, feedback, directories and voting,. USSD is fast and allows for mass usage. However, messages cannot be saved or forwarded, the codes may be difficult to remember, and usage is not always reliable due to session-based timeouts (Quirk, 2010).

#### **5- WAP**

WAP means Wireless Application Protocol; it is a protocol designed for mobile phones that enables them to communicate with wireless devices to easily access the information and services safely and directly.

The features of this service are that it has reduced costs and increased mobile phone feature (Quirk, 2010).

#### **6- Data Applications and Mobile Web**

Data applications and mobile web – Data service includes the transfer of data to or from the mobile telephone, now prompt by the power and speed of 3G and 4G technologies. The spread of better devices and the availability of better data coverage are two trends boost growth of mobile Internet (Morgan Stanley report, 2009).

Having better services and smaller, cheaper devices has led to a huge explosion in mobile technology that far outpaces the growth of any other computing cycle, as seen in Figure 4.4.



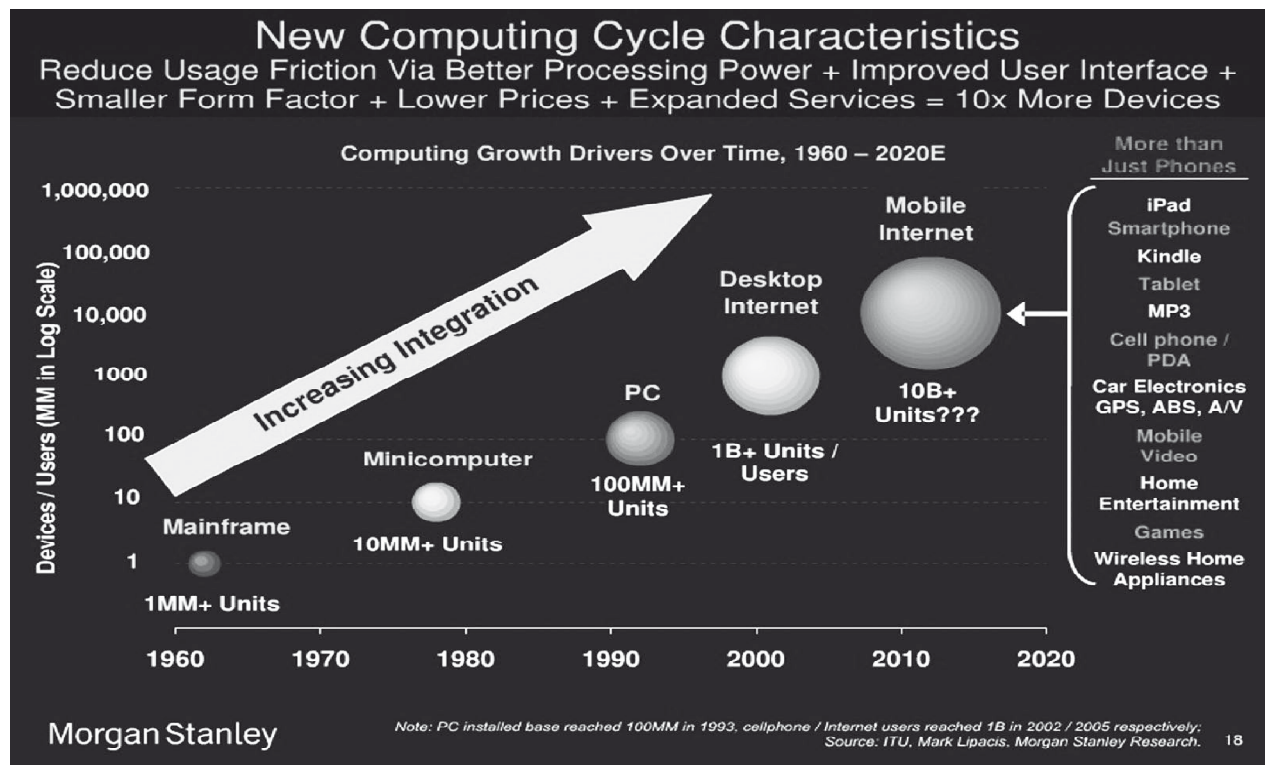


Figure 4.4: Growth of Mobile Internet (Morgan Stanley Report, 2009)

#### 4.7 Models of M-Government

Each project has a plan to work on and Mobil government has a plan which is called a model, and by model, the information and data move from section to section and the aspect of these information and data all can be seen.

In general, there are four primary delivery models of Mobile Government (ITU, 2011):

- Government-to-citizens (G2C)
- Government-to-government (G2G)
- Government-to-business (G2B)
- Government-to-employees (G2E)

Figure 4.5 shows the relation between each section and what is the deferent among each others

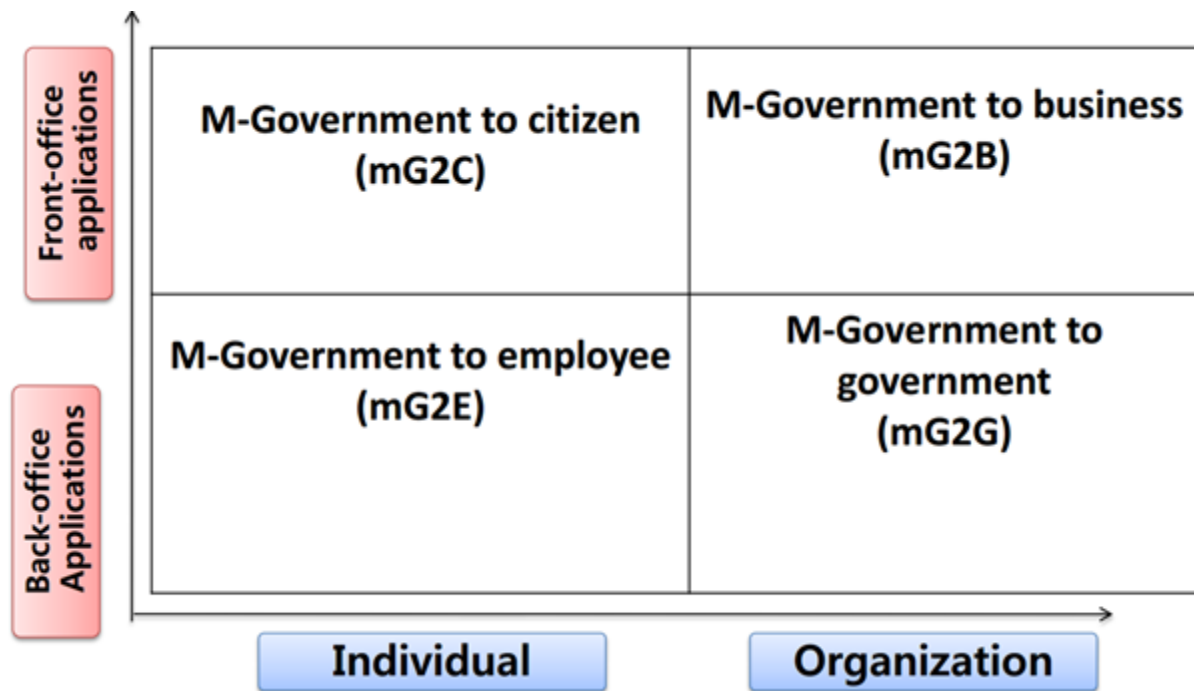


Figure 4.5 Models of M-Government (ITU, 2011)

### Government-to-citizens (G2C)

Government-to-Citizens services provide the interacting between citizens with government in a way which is responsive to citizen. Government-to-Citizens services allow citizens to get government information such as accessing data, requesting services, completing transactions, reporting problems, submitting comments , requesting emergency assistance and asking questions.

M-government G2C services fall into four section:

1. Educational and informational services.
2. Interactive services.
3. Transactional services.
4. Government and citizen engagement.

### **Government-to-government (G2G)**

By Government-to-government services, the governments transform themselves into a connected entity that responds more efficiently and effectively to the needs of its citizens by evolution integrated back-office infrastructure.

M-government G2C services fall into four sections:

1. Coordination of government activities for inspections, controls and supervisions
2. Security services.
3. Access to knowledge bases and records (public safety, health).
4. Emergency management

### **Government-to-business (G2B)**

Government to business (G2B) services provides information regarding policies, payment of taxes, regulations, applications related to procurement, licensing and permitting, as well as G2B support of medium and small enterprises and business development.

### **Government-to-employees (G2E)**

By Government to employees (G2E) services, government provides training, tools and data access to their staffs that not only assist those employees in their daily operations, but also improve organizational accountability and efficiencies. Mobile technologies have a significant impact on improving G2E services, especially for staff who work in secondary and field crews or remote locations, enabling real-time access to enter, share and retrieve information.

#### 4.8 Business Model for Mobile Government

Private and public sector may participate in the development of Mobile Government which benefits all parties through the exchange of expertise and resources, and as we have mentioned earlier it has a special section that provides services to the business sector and to the government of Mobile which has a special business model to work on.

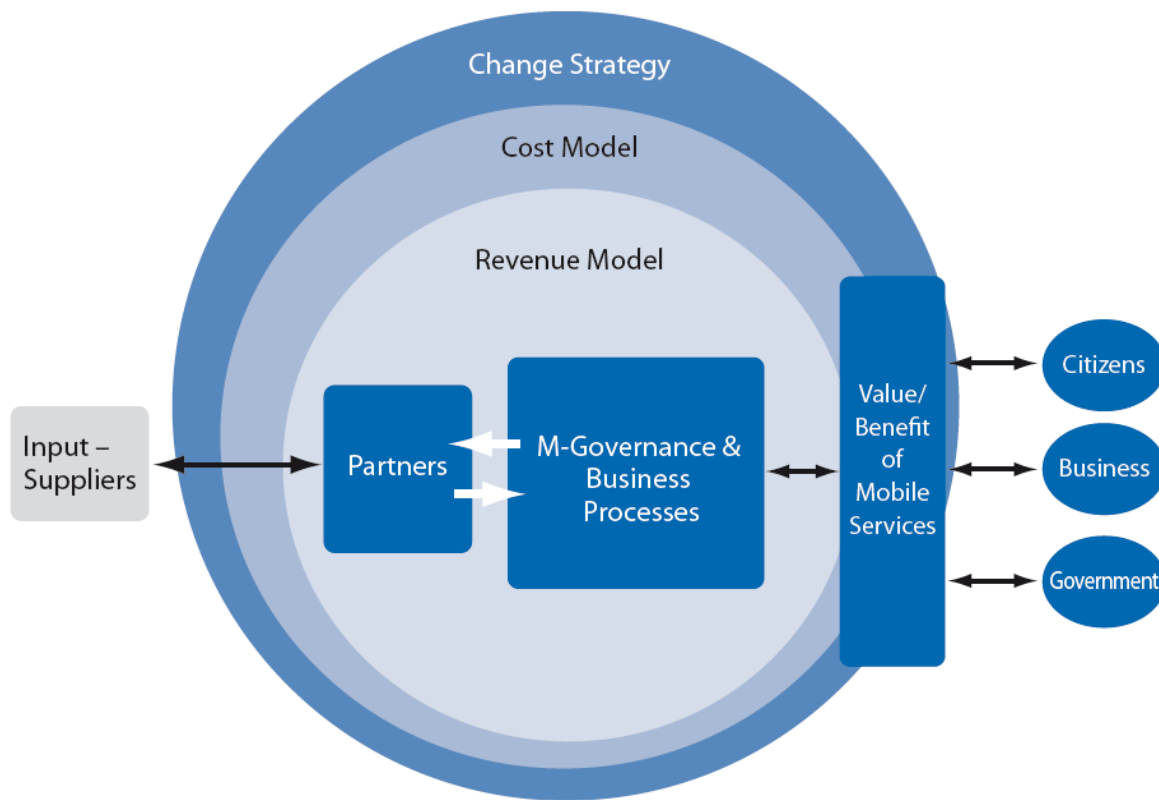


Figure 4.6: Business Model for Mobile Government (ITU, 2011)

This business model (Figure 4.6) is adapted and improved to successfully address change factors, and a commitment to ongoing management, such as emerging technologies, new users and economic climates.

Business model Mobile Government includes agreeing and identifying upon:

- 1) The requirements for and allocation of partner resources and competencies.
- 2) A users-group for the mobile service.
- 3) The specific value and benefit of mobile services to that group.
- 4) The costs to acquire distribute and produce the mobile services.
- 5) The activities and business processes that will produce the mobile services.
- 6) Benefit or revenue to the partners/ providers.
- 7) Suppliers of required resources, including financial capital and physical, human, as well as policy makers.

#### **4.9 Challengers**

Mobile Government is a new area or environment and certainly it will face too much problems and challengers .In this thesis, these challenges will be explained and what it's important when the Mobile Government provide the services.

The cost is the important challenges facing the government project Mobile, because the Mobile Government will use many resources such as communication tools and networks to deliver service to the citizen, as well as training sessions for employees to be qualified to work in the field of information technology.

Mobile Government should be Interoperability and compatible between the parts and the absence of conflicting information for example the Mobile Government contains employment announcements to the ministry of certainty at the same time, the ministry publishes advertisements also through the Mobile Government itself, but of its own in the Mobile Government and this situation also occur at the news service where possible recurrence or conflicting news. In this situation citizen loses the confidence in the Mobile Government so you must work in a systematic and structured manner (Wu and Wei, 2009).

Mobile use culture and the educational level of citizens is one of the challenges facing the Mobile government, where the citizen must know the use all resources of mobile for example calling, send text messages or multimedia services etc.

Mobile Government must be of high security and privacy, because it will be used in very special things; therefore, complete security and confidentiality of personal data such as bank accounts and documents are required.

#### **4.10 Examples of M-Government**

To study the possibility of achieving or using Mobile Government in Iraq, the most advanced countries in the use of Mobile Government and the most important services provided by Mobile government must be known.

The country most commonly uses the Mobile Government are:

##### **Turkey**

Through research and reports that have been seen, Turkey has developed the use of mobile services and technologies in the government by seeking to deliver information and data safely and fast.

The services provided by the Turkey Mobile Government are:

a- TBS (Trafik Bilgi Sistemi) or Traffic Information System

It is a service providing information about the drivers of vehicles and drivers' licenses and vehicle registration in Turkey. With the help of this service vehicles are queried shortly thereby increasing the effectiveness of the General Directorate of Traffic in Turkey (Milas, 2011).

b- Earthquake Monitoring and Information System

A project designed in the Turkish city of Istanbul; where it works on connecting devices that detect earthquakes with a certain Observatory. This observatory, in the event of earthquakes, sends notices by SMS service to the relevant departments such as civil defense, municipalities, and units of emergency telling them every detail (Arkitera, 2002).

## United States of America

The United States of America is one of the countries that used Mobile Government and famous of mobile devices and smart regular addition to the vast amount of designers to mobile application.

### a- iBurgh

It is a mobile application that enables a U.S. citizen to portray the problems that exist in the city, in addition to the description of this problem where this application helps administrators identify the problem quickly to find a solution quickly (post-gazette, 2009).

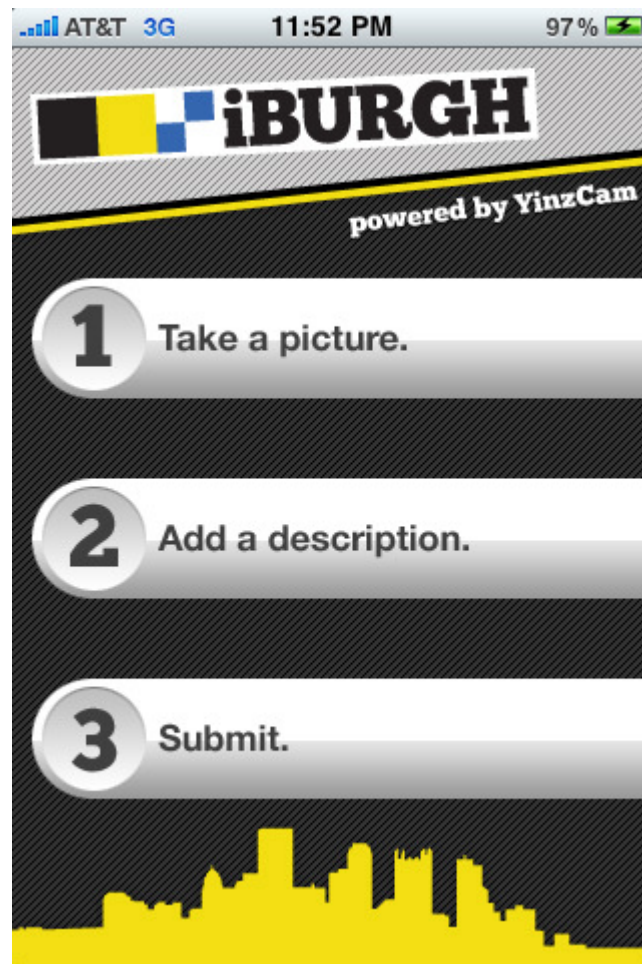


Figure 4.7: iBurgh Application (Post-gazette, 2009).

b- Electronic Benefits Transfer (EBT)

This service was used in the United States during Katrina Hurricane the role of technology was significantly observed in reducing the number of casualties and deaths and the delivery of aid to all those affected (EBT, 2012).

c- Wireless fleet management solution using in the Insecticide Control

This service is implemented in the U.S. state of Florida, where the service is working on the control of insects and mosquitoes to reduce the spread of disease. This service provides compounds linked with each other by mobile technologies where you work notifications for any risk of this happening by insects in addition to the delivery of reports to the department responsible (Florida key, 2009).



Figure 4.8: The Insecticide Control Application

d- Wireless Communication System in the field in case of fire

This service is used specifically in the state of New York in the U.S., where installed fire in the city's management system provides wireless communication between headquarters and the field as firefighters also used technically BlackBerry to assist in the delivery of reports or urgent alarm about the danger (NYC, 2013a).



## United Kingdom

The United Kingdom was one of the first countries that have used and applied Mobile Government on government services, where United Kingdom supported a lot of conferences that discuss the work of the Mobile government.

### a- North London Strategic Alliance Street Wardens Project

This service helps in guarding the street using mobile technologies specifically GPRS or Bluetooth for immediate conversion of information in addition to the possible use in the filming of crimes and informing headquarters to give orders to take action quickly against the people concerned (NLSA, 2013b)

### b- Voting through the use of text messaging using mobile phones

It was provided by Norwich City Council and Ipswich Borough Council in United Kingdom to make new way by use SMS service and mobile to voting (Drosso and Marias, 2005).



Figure 4.9: Voting by use SMS

## Sweden

Sweden, a country with a good environment in the use of mobile technology in government services where there is 88% of Sweden's population use mobile which worked great motivator for the Swedish government in the implementation of Mobile government.

### a- Access Public Services via Mobile Digital Signatures

Using digital signatures that provide technology Mobile Swedish citizen can have access to public services safely and fast (SP, 2007).



Figure 4.10: Mobile Signature Application

### b- Jobs openings via SMS

This service works by SMS service where advertising and inquiries about vacancies are available to enable its users to send their CV and receive the result of acceptance or a date for the interview (Statskontoret, 2012).

## **Korea**

Korea has the same condition of the previous countries where mobile is widely used and the evolution in the mobile industry in Korea made it one of the developed countries in the application of Mobile government.

### **a- Mobile Portal of the Government of the Republic of Korea**

This service is designed to help Korean citizens access to information provided by the Korean government smoothly and fast, this service is not only to get to regulations and laws, but also statistics related to voting for a particular issue (Kipo, 2007).

### **b- Cafe of Invention**

This service is designed by Korean Intellectual Property Office in December 2010 where this service provides information on all patents, News and Conditions intellectual property (Kipo, 2007).

### **c- Mobile Message Service**

By this service taxes in Korea are paid, where service allows querying the value of the taxes that must be paid and the dates (Mgov, 2012).

## **China**

China's problems in population inflation and the large numbers of citizens who need quick delivery of government services. To solve this problem, the government of China has used the technology of Mobile to cover the electronic delivery of services.

### **a- Mobile Field Inspection System**

It is a service designed to help inspectors of environmental issues in China by helping in the work of Quick Reports for any hazardous situation to take the necessary action (Yang and Wang, 2011).

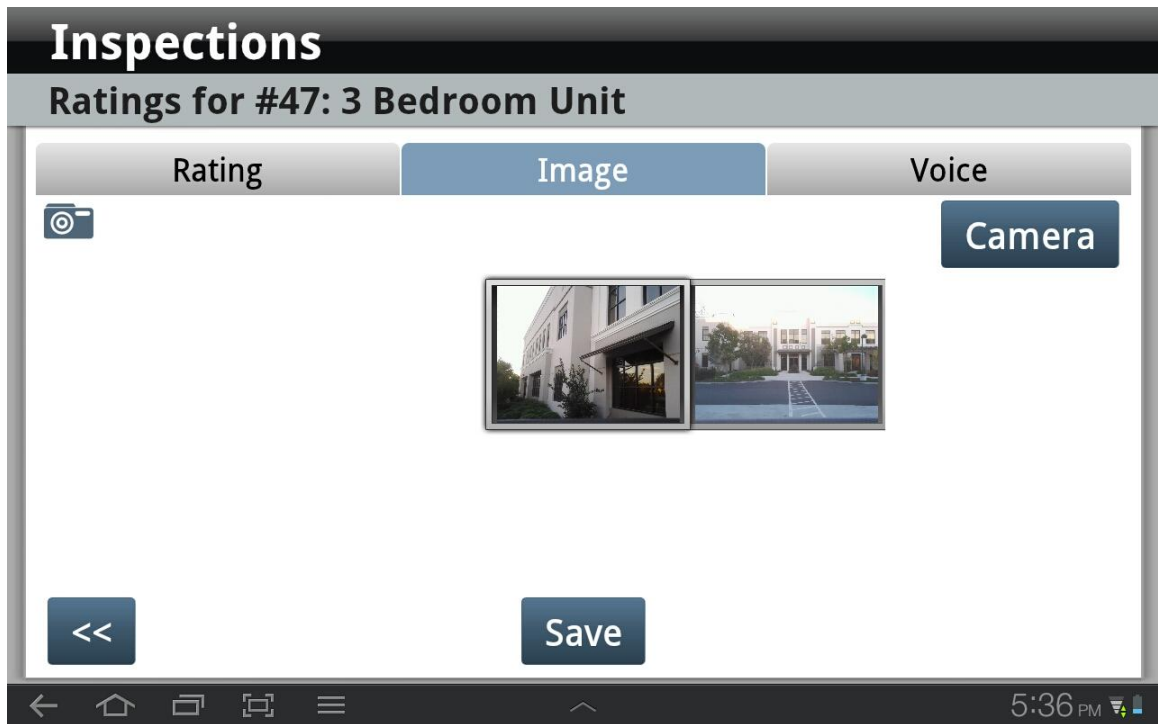


Figure 4.11: Inspection Application

b- Mobile Government Initiative in Beijing

It uses an integrated Mobile Government in Beijing as it works to provide citizens with information and services in a safe and easy way , helping officials to solve the problems faced by the citizen smoothly (Mobility china, 2007).

c- Use of SMS to deliver tax information to citizens

It is also used in the city of Beijing in China, the mission of this service is the administration of taxes and sending the information about tax collection (Mobility china, 2007).

## Spain

Spain is one of the countries that widely use Mobile Government, the evidence for that is the large number of services provided by the government for the benefit of the Spanish citizen in his daily life.

a- Information service on government offices

This service works to transform the Web sites of government departments to Mobile Applications so they can be used quickly and easily by citizens, which reduces time and effort (Madrid, 2011).

b- Municipal Transport Company of Madrid.

This service was used in the Spanish city of Madrid specifically in terms of the municipal Department of Transport. This service provides sending the query to the times and places and parking buses within the city (EMT, 2013).

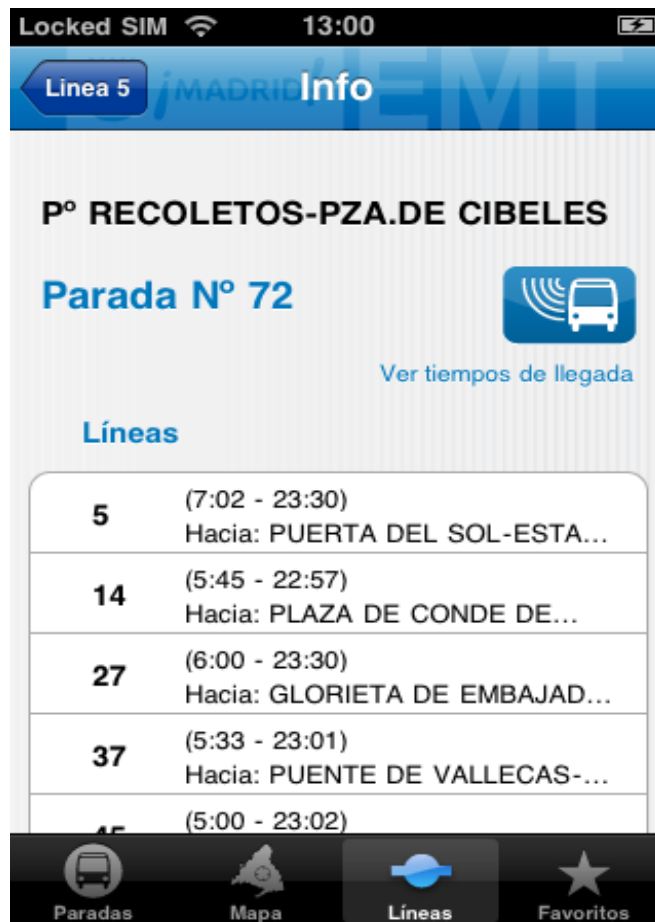


Figure 4.12: Municipal Transport Application

c- Payment gateway for services in the Basque region

It means the electronic payment service by mobile technologies where by this service citizens can pay taxes, traffic fines, and customs (PAE, 2010).

d- Booking Medical Appointment

This service is designed for patients, by sending messages to mobile telling them the dates of their attendance to their own hospital (Castell, 2008).



Figure 4.13: Medical Appointment Application

## **Italy**

Italy is one of the technologically advanced European countries, where Italy has designed the Electronic Iraqi government as mentioned in the first chapter. It is a source of techniques and technology.

### **a- MiaPA Services**

This service was designed in 2010 in Italy, an innovative service for smart digital devices, this service provides many things, including finding locations of public libraries in addition to the work of the stats for the views of the citizens of a particular command (GovernoItaliano, 2010).

### **b- Services for School and Motoring**

It is a service designed in Italy to help families in following -up their children in schools, where this service provides a variety of services relating to the relationship between the school and the families of the students in addition to sending reports to parents, and this service provides communication with the driver of school bus and reporting date for arrival (ilportaledellautomobilista, 2010).

## **Arabic Countries**

Despite the delay in the Arab countries, in terms of technology, there are some serious attempts in the application and use of Mobile Government services in the government, and there are some examples such as:

### **a- Mobile Information Gateway in Bahrain**

It is a service provided for visitors and expatriates in Bahrain to provide them with phone numbers hotels and restaurants in addition to important, such as phone numbers, police and ambulance.

**b- SMS notification for tenders and job information in Oman**

It is used by the Tender Board of Oman and the Omani Ministry of Manpower by sending messages to clients that include data, information or Advertising jobs (Omanet, 2010).

**c- mPay for United Arab Emirate**

Dubai Smart Government has designed this service with the aim of bringing more ease and convenience to users, particularly in situations where users have to make emergency payment of fines or fees for a continued service or charges to avoid a new fine (Government of Dubai, 2013).



Figure 4.14: mPay in United Arab Emirate



#### **4.11 Summary**

The Mobil government has become more techniques required by governments and citizens to apply in daily life, and that because of their features and characteristics of the many assists in the service of the government and the citizen at the same time. The Mobil Government has technologies of SMS, MMS, USSD, WAP, Voice, Data application and Mobil web, where these techniques are working to establish projects and services that help government and citizens to reduce the time and effort in delivering and receiving public services and information. The large number of mobile subscribers in developing countries is a strong motivation to make the Mobile Government required more than the techniques used, and that because the Mobile Government was working with mobile devices and techniques.

General Model of Mobile Government is divided into four parts according to the provided services to different people:

1. Government-to-citizens (G2C)
2. Government-to-government (G2G)
3. Government-to-business (G2B)
4. Government-to-employees (G2E)

## **CHAPTER 5**

### **METHODOLOGY**

#### **5.1 Overview**

The main objective of this thesis is to investigate the implementation of the proposal of Mobile Government on the services provided by the Iraqi government, so there must be a background or information on the situation in Iraq, which will apply Mobile Government. During this chapter we will explain and demonstrate what are the means or the model that was used to gather information and opinions from people in addition to the most important details of this category of the society and the cause of their choice.

#### **5.2 Research Model**

In this thesis, survey model was used to take information about the implementation of the Mobile Government on Iraqi case. Survey methodology studies the sampling of individual units from a population and the associated survey data collection techniques, such as questionnaire construction and methods for improving the number and accuracy of responses to surveys.

Statistical surveys are undertaken with a view towards making statistical inferences about the population being studied, and this depends strongly on the survey questions used. Polls about public opinion, public health surveys, market research surveys, government surveys and censuses are all examples of quantitative research that use contemporary survey methodology to answers questions about a population. Although censuses do not include a "sample", they do include other aspects of survey methodology, like questionnaires, interviewers, and no response follow-up techniques. Surveys provide important information for all kinds of public information and research fields, e.g., marketing research, psychology, health professionals and sociology.

### 5.3 Participants

This survey was distributed among the students of the University of Mosul in Iraq, specifically among the students of the Faculty of sciences of Computing and Mathematics, the main reason to choose this category of Iraqi compound that these students have extensive information and advanced in technology and services in the community in addition to the fact that the university complex is a mixture of all the Iraqi governorates which helps in taking different opinions on the topic, also all students of the Faculty of Computer Science and Mathematics are proficient in English, and this is another reason for their choice in that this survey is written in English.

The participants in this survey were 100 aged between 20-23, including 43 women and 57 men, all Iraqis.

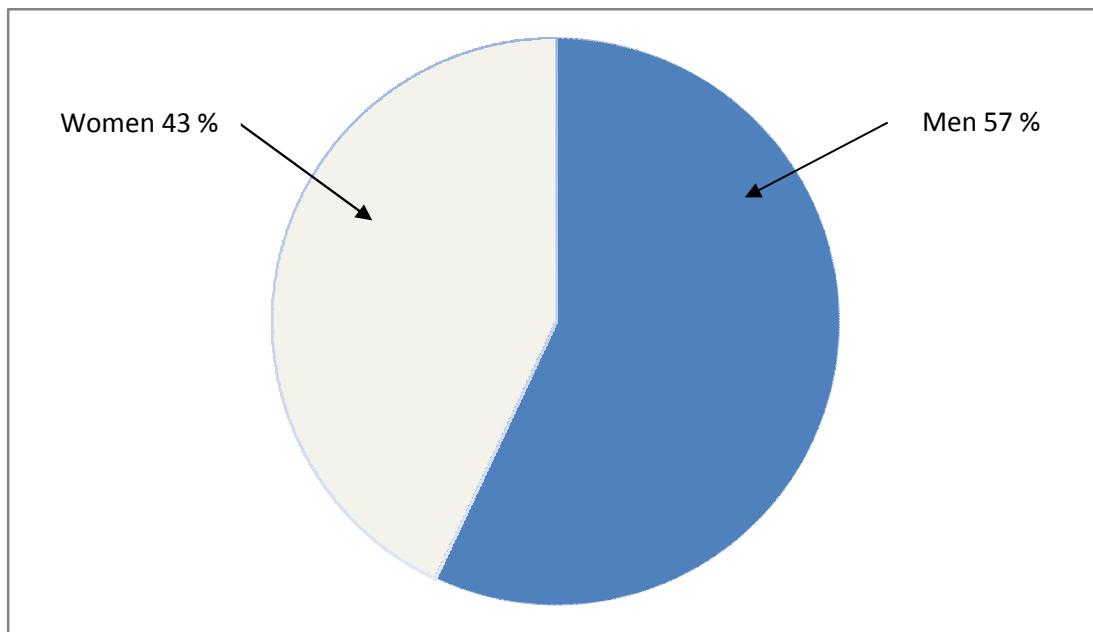


Figure 5.1: Rate Woman and Men in Survey

## **5.4 Data Collection Tools**

There are several ways of administering a survey. The choice between administration modes is influenced by several factors, including costs, coverage of the target population, flexibility of asking questions, respondents' willingness to participate and response accuracy.

Different methods create mode effects that change how respondents answer, and different methods have different advantages. The most common modes of administration can be summarized as Telephone, Mail (post), online surveys, Personal in-home surveys, Personal mall or street intercept survey, Hybrids of the above.

In this thesis, the traditional way of choosing a paper and pen to gather information for the survey has been used, due to the previously mentioned fact of limited users of Internet in Iraq online survey can hardly be used.

The questions adopted in this survey will help create an idea of the Iraqi case and the proposal Mobile Government with which it can meet the demands of the Iraqi citizen, the type of questions was a multiple choice (nine questions) one to be easy to answer questions and gather information and results and determine the percentages for each answer.

## **5.5 Data Analysis**

After collecting data, it must be analyzed by certain criteria to get useful results, as there are many types and ways to process data analysis.

The percentage and frequency methods are the methods used to analyze the data for this survey in this thesis, and for easiness of these methods in addition to the advantages of this method the possibility of knowing most of the opinions.

The reason for choosing the number of participants surveyed 100 is to facilitate the analysis of the evidence and the results, and by collecting the number of participants for each answer directly and will get percentage of those answer.

In the next chapter, there is an explanation of the results in addition to the analysis of this survey to see its effect on the proposed Mobile Government on Iraqi case.

## **5.6 Summary**

There are many types of survey methods, but in this survey percentage method was used so as to take easy answers and opinions in addition to the ease of collecting the answers and results. By this survey an idea of the Iraqi environment will be formulated , which will be implemented by the Mobile Government in addition to the Mobile What the most important aspects and features that must be owned by the Iraqi M-government in the future. Choose the type and formats of the survey questions based on the topic or information that is meant knowledge of the researcher in the questions that have been raised in this research was required to know everything related to the achievement of the Mobile Government on the Iraqi case.

## CHAPTER 6

### PROPOSAL M-GOVERNMENT FOR IRAQI'S GOVERNMENT

#### 6.1 Overview

In this chapter, the answers and the results obtained by the survey in this thesis will be clarified in addition to the form questions that put in the survey. By the survey and examples of previous Mobile Governments, a model for the Iraqi Mobile Government has been proposed based on the criteria and the foundations of Mobile Government adopted in developed countries.

#### 6.2 Survey Result

During the writing of this thesis, a survey that contains some questions pertaining to the field of Mobile Government was designed and applied to the case of Iraq, the survey was distributed among students of the University of Mosul in Iraq, specifically in the Faculty of Computer Science. Based on this survey, a set of conclusions was generated and the information used in the construction of the Iraqi mobile government.

##### 6.2.1. Usage of E-Government

The answers for question “*Did you use E-government before?*” were the 65% of the participants have known what is mean E-government but they didn't use before, as there are 30% of the participants whose have used E-government in them transactions with Iraqi's Government. While there are only 4% of the participants whose didn't use E-government and just 1% who don't know what's mean E-government.

This indicates that the case of Iraq is a good environment for the use of Mobile Government, because most of the answers indicate that the Iraqi citizen has a background in the use of technology in the access to public services.

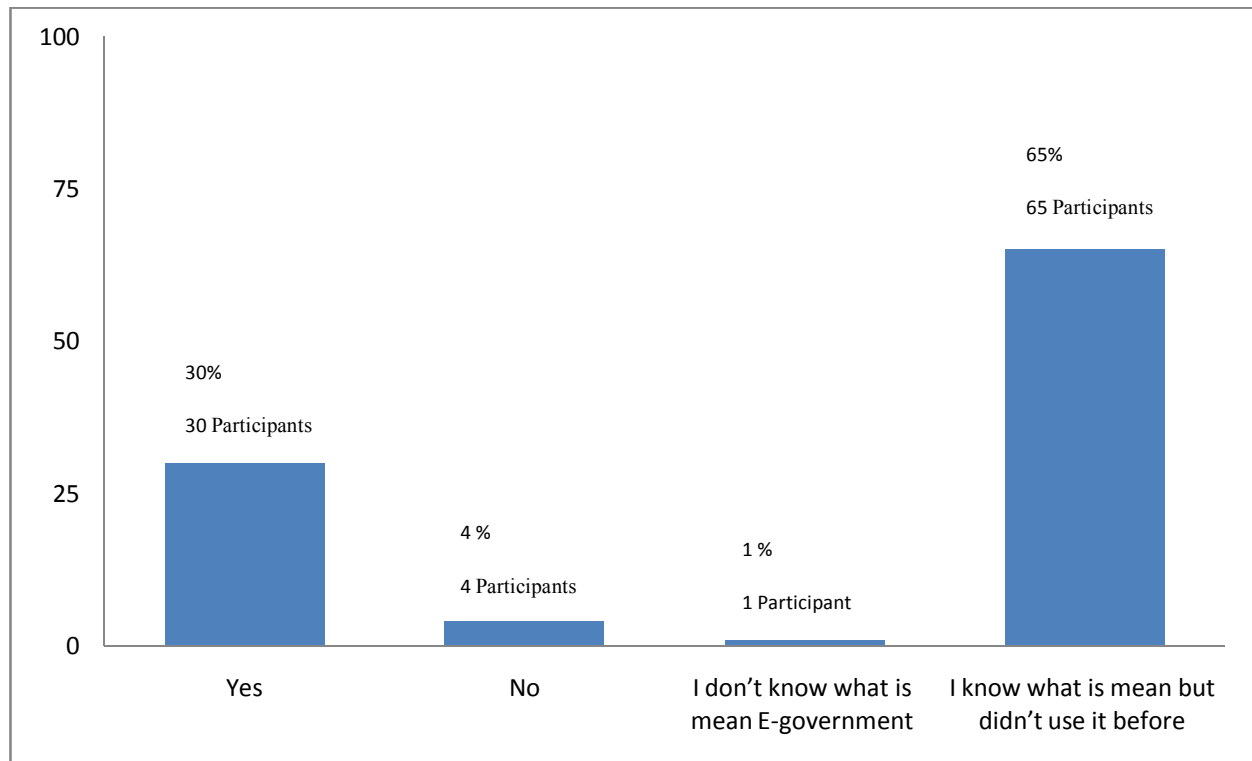


Figure 6.1: Percentages and Frequency about Usage of E-Government

### 6.2.2. Mobile Government Knowledge

The answers for question “*Do you know what’s mean Mobile Government or M-government?*” were 37% of the participants they don’t know what is mean Mobile Government or M-government and 32% heard about Mobile government but they don’t know what is mean exactly, while 23% of the participants said the Mobile government is something belong to Mobile or Mobile technologies and only 8% have known what is mean Mobile Government, that means that the Iraqi citizen need to education Mobile Government because it is new area and new filed in Iraqi’s case.

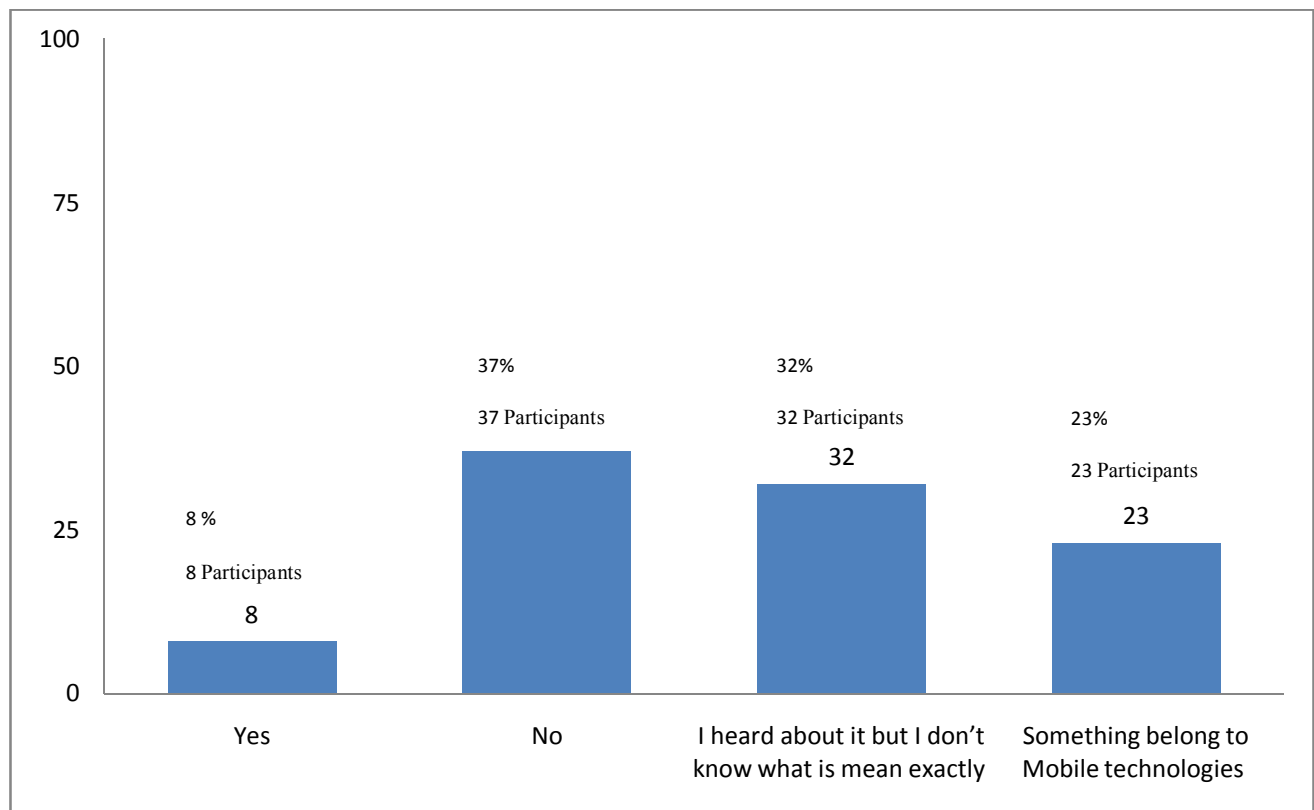


Figure 6.2: Percentages and Frequency about Mobile Government Knowledge

### 6.2.3. Usage of Devices

The answers for question “*Which device are you using more?*” were 73 % of the participants said Mobile and 22% selected Laptop, while 4% of the participants used Smart Mobile and only 1% have chosen PC, this is what gives a strong motivation for the use the Mobile device in the work of the Iraqi government and create Iraqi’s Mobile Government because the Mobile device is the environment which Mobile Government work on.



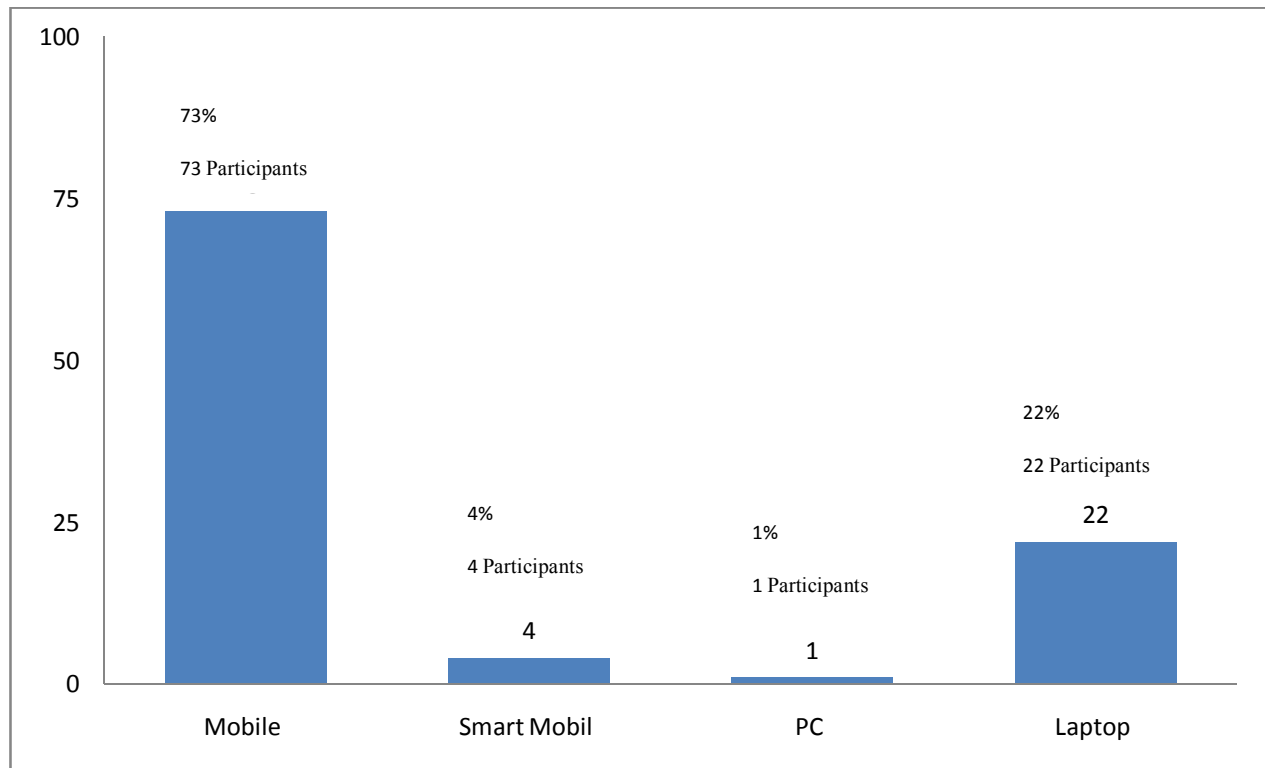


Figure 6.3: Percentages and Frequency about Usage of Devices

#### 6.2.4. Mobile Type

The answers for this question “*What is your mobile type?*” were 45% of the participants selected Samsung and 42 % said iPhone, while 10% of the participants selected Nokia and only 3% who use Black Berry. The knowing the more types commonly used for the Iraqi people are very important, because Mobile will be the platform that will work on techniques and the application of the Mobile Government.

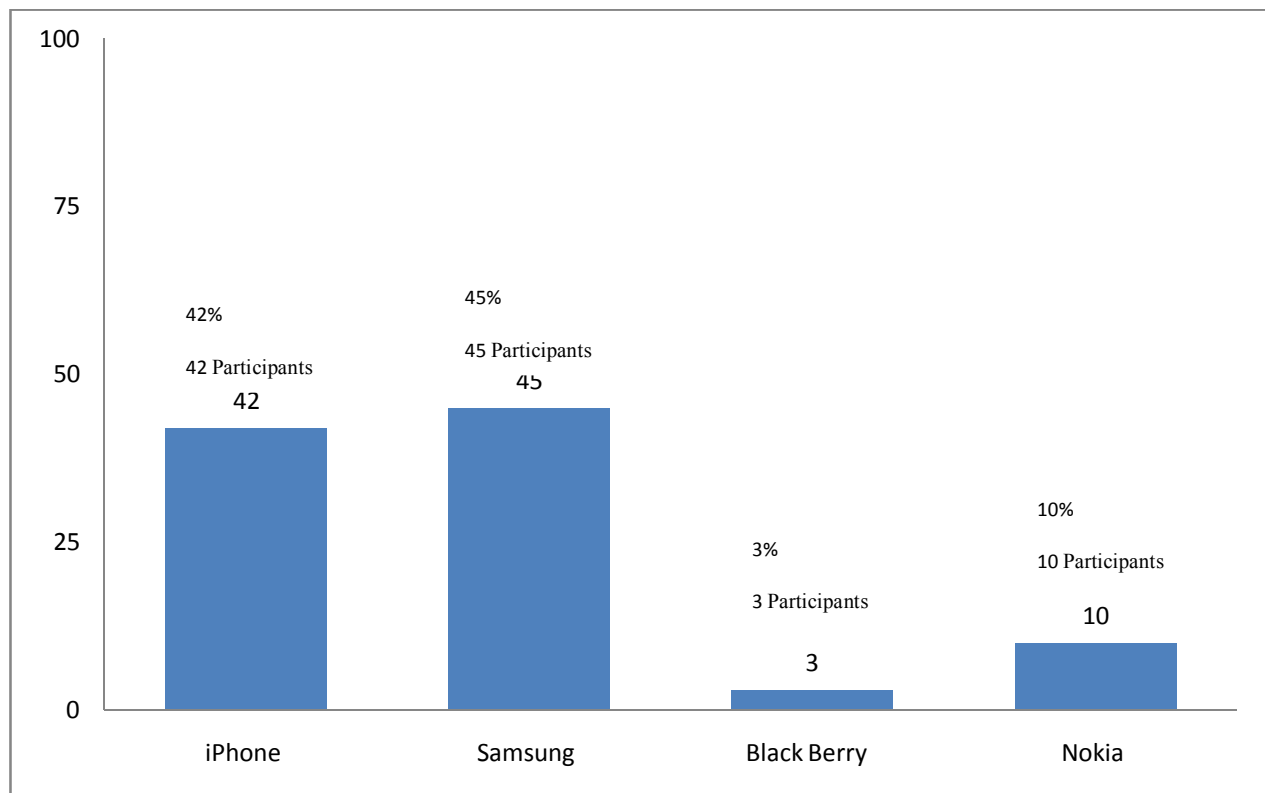


Figure 6.4: Percentages and Frequency about Mobile Type

#### 6.2.5. Mobile Technology Used

The answers for question “Which mobile technology are you using more?” were 42% of the participants use SMS and 30% who use Voice, in addition there are 17% selected Data application and Mobile Web, as 4% of the participants said MMS and it was same rate for WAP technology, and only 3% who use USSD, this question helps Iraqi Mobile Government designers to focus on the most widely used mobile technology in Iraqi society to be exploited properly.

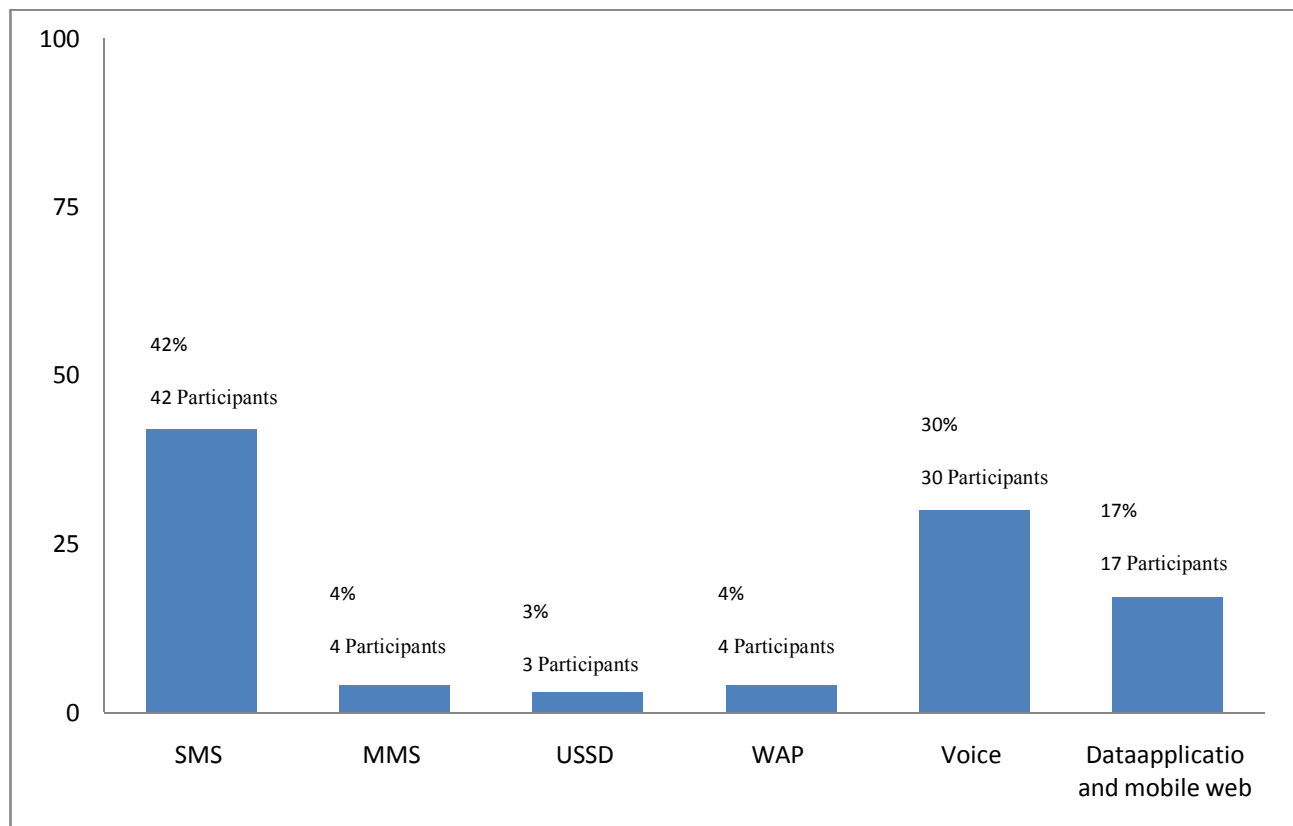


Figure 6.5: Percentages and Frequency about Mobile Technology Used

#### 6.2.6. Training

The answers for question “*If the Iraqi government is established, what is the way you prefer to learn how use it?*” were 52% of the participants preferred Multimedia in educate the Iraqi citizen how use Mobile Government and 22% who said work Seminar to learn use way, while 14% of the participants saw Education Course should be the way and only 12% who selected the Book, this indicates the importance of the integration of Multimedia in the Iraqi Mobile Government project.

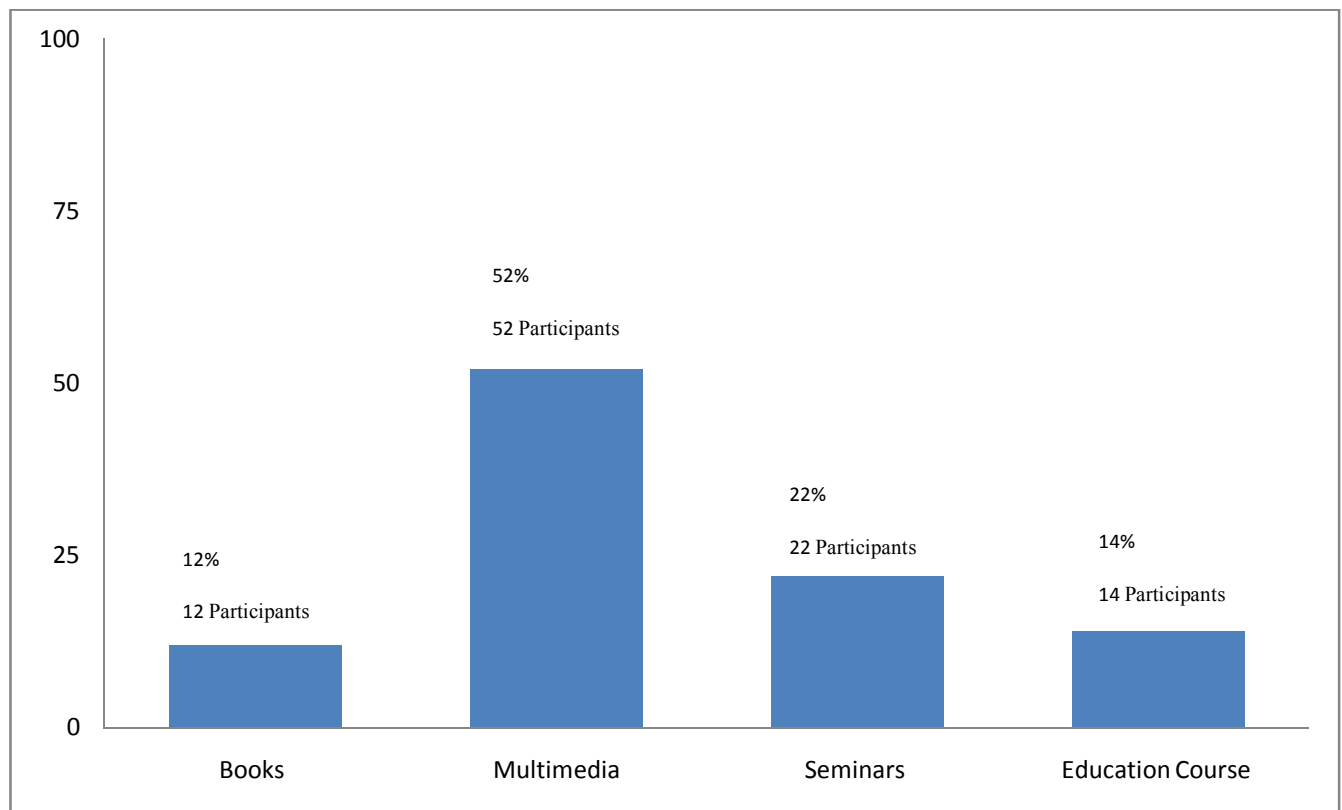


Figure 6.6: Percentages and Frequency about Training

### 6.2.7. Services and Departments

The answers for question “*If the Iraqi government is established, what are the services and departments that prefer to be present in the Iraqi Mobile government?*” were 33% of the participants wanted to put News section in Mobile Government and 32% who prefer Education, also 12 % of the participants saw Job is very important section and 10% who selected Voting, while 8% said Weather and same percent for Exchange Rate, and only 7% who have chosen Health, this question also helps the Iraqi Mobile Government designers, so that they provide the services required by the citizens that are necessary.

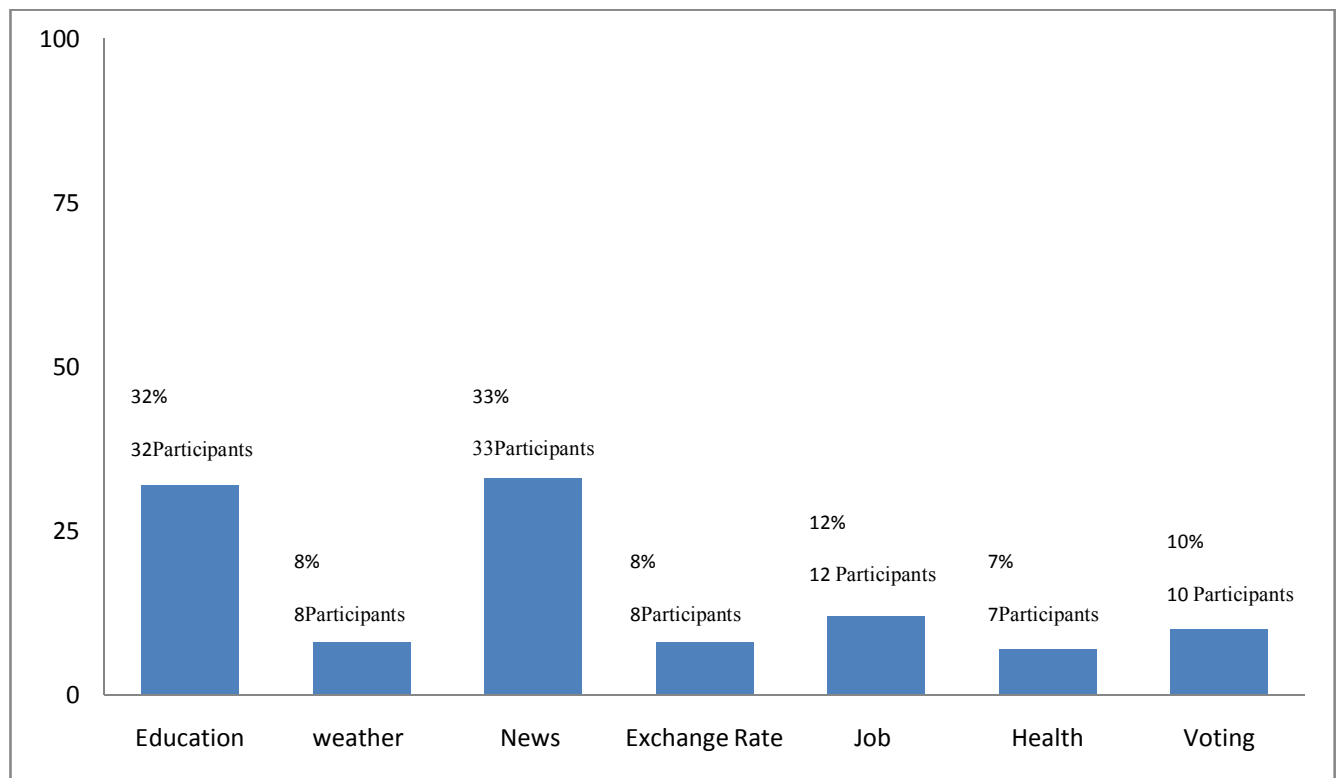


Figure 6.7: Percentages and Frequency about Services and Departments

### 6.2.8. Prefer Language

The answers for question “*If the Iraqi government is established, which language you prefer to be?*” were 73% of the participants preferred to be Iraqi’s Mobile Government in Arabic and English, and 22% wanted Arabic, while 5% of the participants selected Arabic and French and no any one have chosen only English because Iraq is Arabic country and all people can speak Arabic in addition most of tourism can speak English.

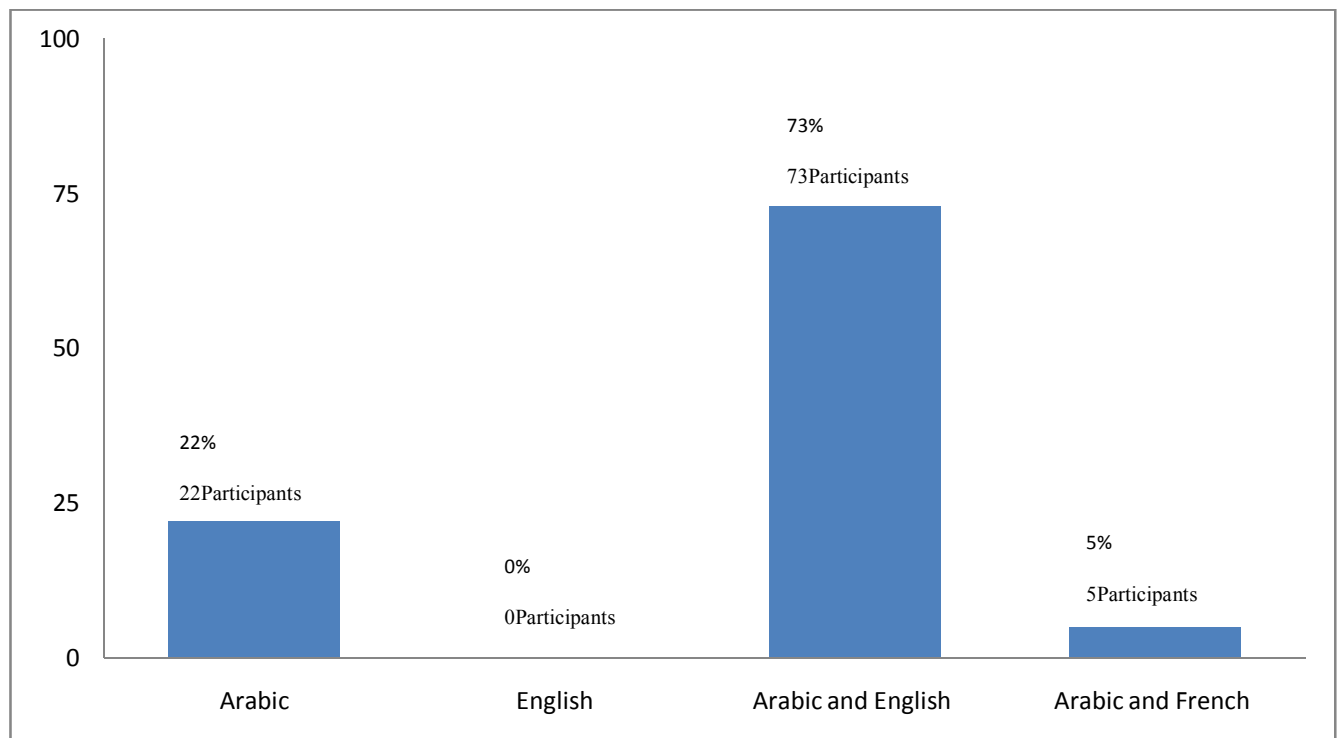


Figure 6.8: Percentages and Frequency about Prefer Language

### 6.2.9 Participants Opinions about Mobile Government

The answers for question “*What do you think the idea of the Iraqi Mobile government?*” were 71% of the participants saw the idea of Mobile Government is excellent and 25% how selected Good, while 4% of the participants have chosen Acceptable and no any one said about Mobile Government un acceptable idea, this shows that the Iraqi citizen is looking forward to the use of technology in everyday life, but there are barriers and challenges that prevent the development of services as required.

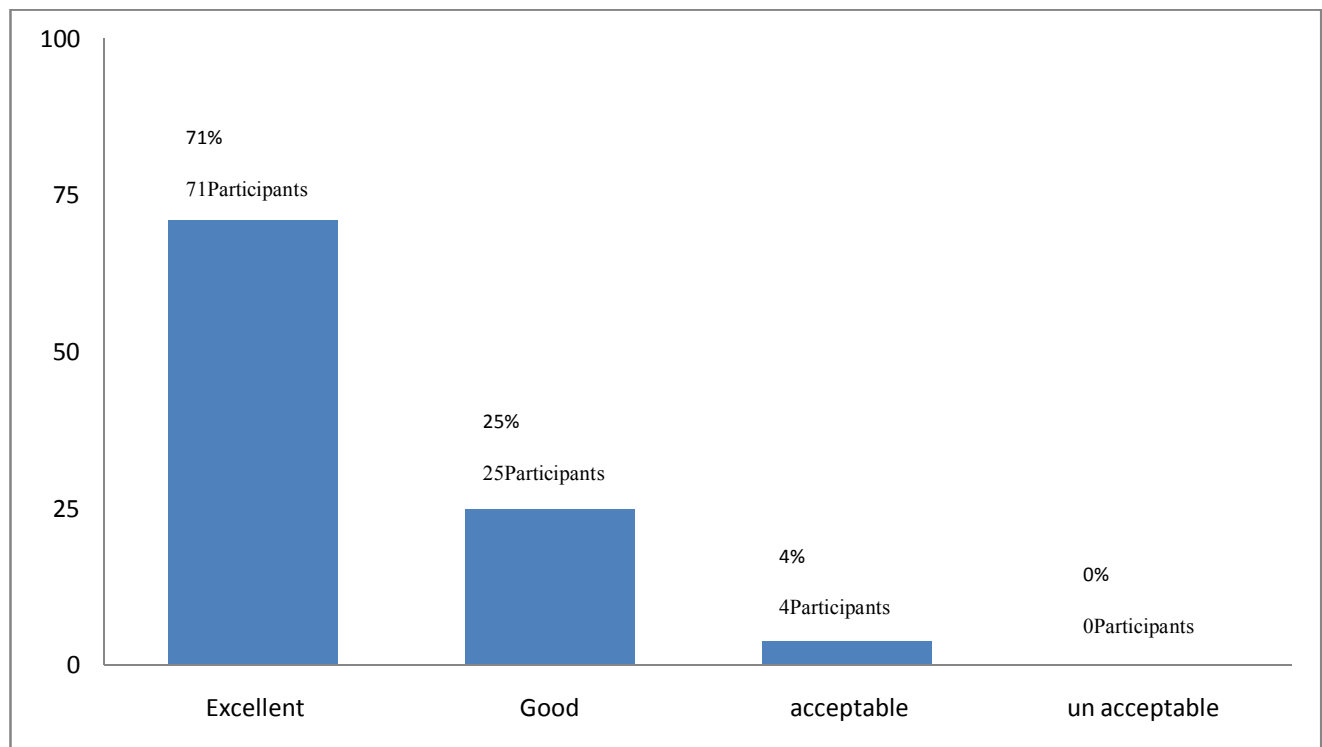


Figure 6.9: Percentages and Frequency about Participants Opinions about Mobile Government

### 6.3 Important and benefits from Iraqi's Mobile Government

By using Mobile government, Iraq or the Iraqi's government will be one of the developed countries that are using mobile technology in the delivery of public services to citizens. As previously mentioned, the percentage of mobile subscribers in Iraq is very large that there is a suitable and good environment for the work of the Mobile Government of Technologies in Iraq, which increases the importance of the use of these techniques.

The importance of the Iraqi's Mobile Government is in the expansion of the framework of the services provided by the Iraqi government to include work to deliver these services to mobile device users, also evolve new ways to create relations between the Iraqi's government and Iraqi citizen by electronic interaction.

Mobile Government has public benefits mentioned in the previous chapter, but there are benefits of belonging to the Iraqi case if Mobile Government project is applied on the Iraqi government services, and the main benefits are:

**1- Reliability**

As mentioned that there are 80% of mobile subscribers in Iraq, and by using Mobile Government there will be reliability in the delivery of public services to 80% of the Iraqi people.

**2- Cost**

There will be a reduction in the costs of public service delivery to the Iraqi government because of the reduced number of staff with the increase in the quality of their work.

**3- Time and Effort**

Iraqi citizen spends a long time in travelling and standing in long queues to wait for the completion of the transaction, using the Mobile Government there will be a shortcut for the time and effort spent by the Iraqi citizen.

**4- Availability**

The Mobile Government technologies work in 24 hours in day and 7 days in week, so it will be more available compared with other services in Iraqi's government.

**5- Different Delivery**

Mobile Government has many types of service delivery methods, where as previously mentioned that the government of Mobile has different techniques that can be exploited by the Iraqi government in the delivery of public services.

The voice, SMS, MMS, Internet all of these methods are considered methods for delivery information and data that will give the Iraqi government different ways to deliver information.



#### **6.4 Integrate Multimedia with Iraqi's M-Government**

The Iraqi Mobile Government will be a new system service with no previous experience in the work, whether for citizens or government, so the Iraqi's Mobile Government need to integrate other services to support the education of the Iraqi people to know how to use mobile government.

The best services today that integrate with Mobile Government is Multimedia, where the Multimedia work on facilitating the work of the Mobile Government because most of the transactions between the citizen and the Iraqi government are the texts and pictures or voice messages that are supported by property Multimedia.

By integrating Multimedia with Mobile Government technologies will be utilized in the process of explaining how to use the mobile government, through the work of the special video explaining the process, use or collection of images that help to educate Iraqi society to accept the use of Mobile Government.

#### **6.5 Iraqi's Mobile Government Security**

The Iraqi Mobile Government has confidential and very special information for Iraqi citizens, such as documents or private bank accounts or information concerning the business or economic, so the Iraqi Mobile Government needs to work on establishing password or protection system to regulate the entry of citizens to the Iraqi Mobile Government safely.

Recently, especially in developed countries in the use of techniques of Mobile in the work of government, new formulas have been used for protection and security, rather than the old formulas, such as password and user name, as used formats such as iris recognition and fingerprint in addition to the Mobile signature that are more secure than the older formats.

The evolutions of mobile technologies have evolved with the methods of protection. Most modern mobile devices are supported with a camera that helps to capture images of the eye in addition to mobile devices which feature a modern touch that helps in the analysis of signatures and fingerprint.

## **6.6 Feedback Data in Iraqi's M-Government**

Iraqi Mobile Government is not the only service delivery of public services for the Iraqi people but it will contain a special section on the process of feedback information by the citizen to the government.

It includes forms for the appointment, paying fines and taxes, statistics that the Iraqi government does and a lot of services that need to be supported by feedback service to complete the work of the Iraqi government.

Many applicants for the Iraqi army and police were exposed to terrorist attacks, causing the death of a lot of applicants in addition to material losses, using the Iraqi mobile government; especially the feedback service there will provide safety for applicants in addition to the arrangement in the work of the Iraqi government.

## **6.7 Suggested Model to Iraqi's M-Government**

From previous examples of Mobile Government to different countries of the world, and studies mentioned in the previous chapters, a simple model was designed to the Iraqi's mobile government.

The Iraqi government and the Iraqi citizens should know the location and status of Mobile Government services provided by the Iraqi government. Figure 6.1 shows that the Iraqi government is inclusive for all services provided to citizens, whether they support technology, or prefer the usual way.

From previous studies and definitions, it is proved that the Mobile Government is part of the work of the E-government, but it differs from E-government, due to its requirements and a special technique that makes it different from the E-government, but part of the work.



Figure 6.10: M-Government Location in Government Services

Figure 6.11 is a proposed model for the work of the Iraqi Mobile government, where the Iraqi government departments will provide the Mobile Government with a set of data and services to be delivered to the citizen. After receiving this data and services, the government arranges it and put its specific formulas to be visible and usable by the Iraqi people, the Iraqi Mobile Government uses the modern mobile technologies to reach the information fast and safety with less time and effort.

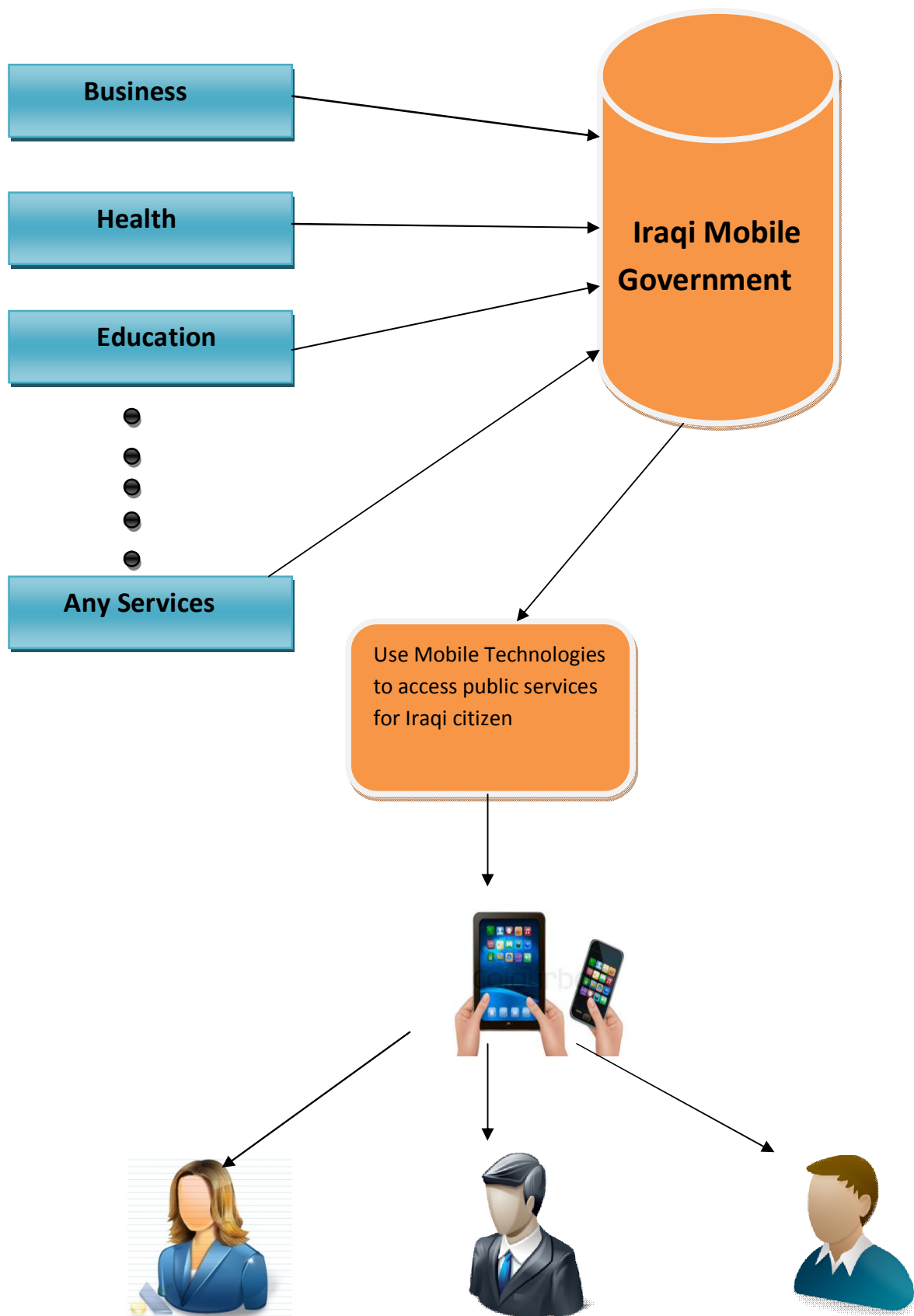


Figure 6.11: Proposal Model of Iraqi's Mobile Government (M-Government )

## 6.8 Proposed Homepage of Iraqi's M-Government

Mobile applications are part of the services provided by the Mobile Government and also that services are very popular and have many uses according the statistics. Developed countries have designed their own mobile applications to help in providing public services and facilitating contact between the administrator and the citizen. An example of this the United Arab Emirates made a contest to establish a special application to Dubai government by certain standards to help the government in the provision of public services and to communicate with citizens (<http://www.mgov-award.ae/en/>).



Figure 6.12: Website the Competition for Best M-Government in Dubai

From the idea proposed in this thesis and the interface to the application of the Iraqi government to be utilized in the future to establish a special application that helps the Iraqi government in communicating with the Iraqi citizen.

This interface is designed according to the views and the answers obtained from the survey, which was conducted in Iraq to be responsive to the requirements of the Iraqi citizen.

Often the first interface for the application contains the name of the state and the state flag in addition to the freedom to choose the language you want by your application, these standards of advanced countries designed interface for the application of the first Iraqi government see Figure 6.13.



Figure 6.13: The First Homepage

As previously mentioned, Mobile Government contains confidential information and private citizen so there must be a password and user name to allow access to the application of the Iraqi government, which helps to work in an orderly and safe.

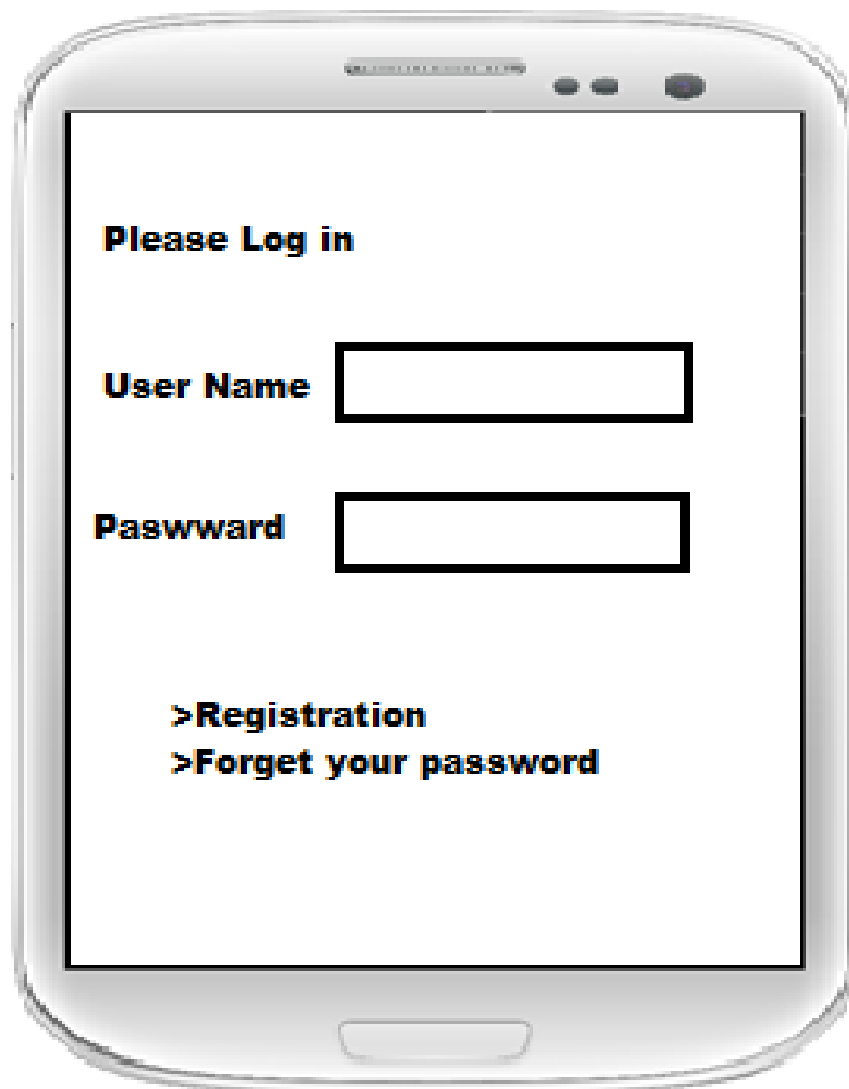


Figure 6.14: Security Page

The main home page or user interface always contains the most important fields and government departments that help the citizens in their daily lives, as is always the main interface is not fixed and changes can be made as needed or as required by the citizen.



Figure 6.15: Main Homepage

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## Page News

This page will be concerned with the situation of the Iraqi special news events in addition to the global news and international; also advantage of this page can be taken in access to breaking news.

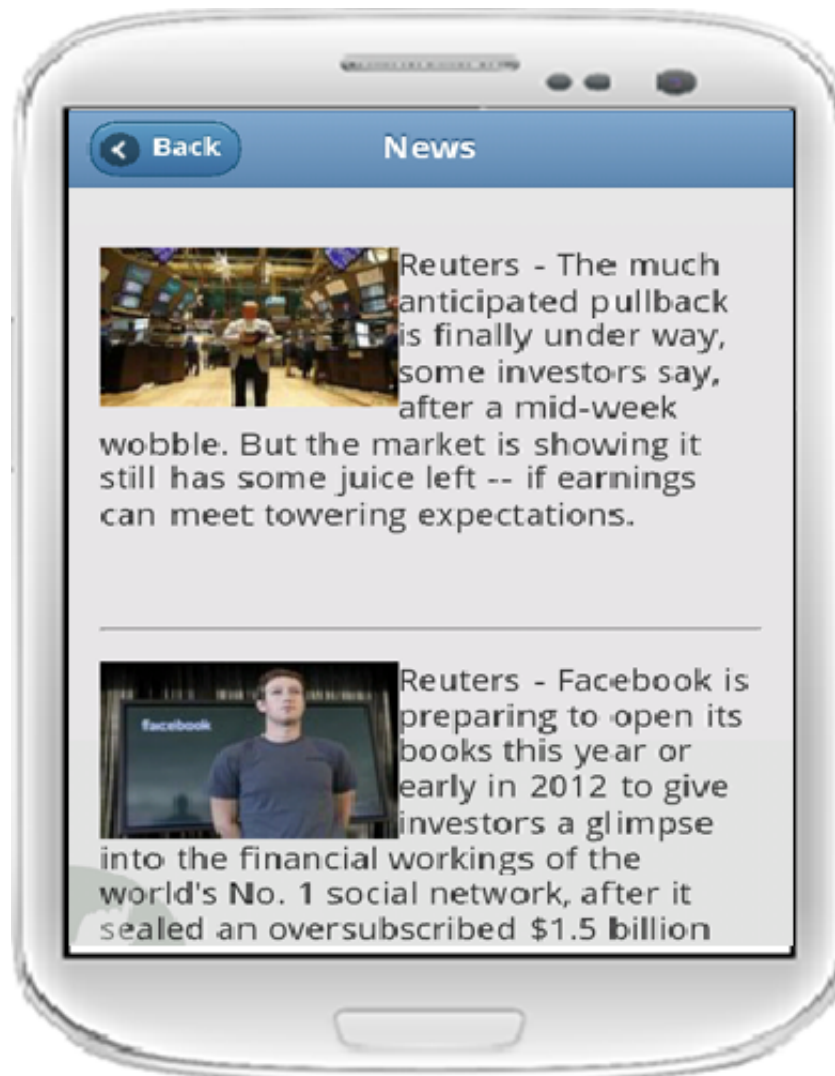


Figure 6.16: News Page

## Job Page

These pages are pages that are always needed by the Iraqi citizen, because of the great benefit of this page to find jobs and employment opportunities for the unemployed.

This page has browser helps to find a job by the name and location of the work, in addition to that, the Iraqi citizen can present his own CV through this page because the Iraqi Mobile Government is suggested to be equipped with feedback feature.

**what** Job title, keywords, or company

Sales Manager

**where** City, state, or zip code (optional)

Baghdad

Find Jobs

Recent Searches

Regional sales -	- 10 new	>
Regional Manager -		>
Sales \$80,000 -	- 7 new	>

Figure 6.17: Job Page

## Rate of Money Exchange Page

Converting currencies, the exchange rate of the Iraqi dinar are the important things needed by the Iraqi citizen in his daily life so a special page is put in the application of the Iraqi government to help the Iraqi people to know the exchange rates of world currencies in addition to the exchange rate of the Iraqi dinar either other currencies.



Figure 6.18: Exchange Rate Money Page

## Education Page

Education system and the important scientific are the most needed information by citizen today. By using the Iraqi Mobile Government application ,the citizen will know easily the educational structure in the country and rules in addition to the locations and names for universities and schools.



Figure 6.19: Education Page

## Health Page

Health page contains emergency numbers, information about health insurance and locations and names for hospitals and pharmacies. This page is used to help iraqi people in emergency situations which need the citizen request for help or reach to the nearest hospital or pharmacy.

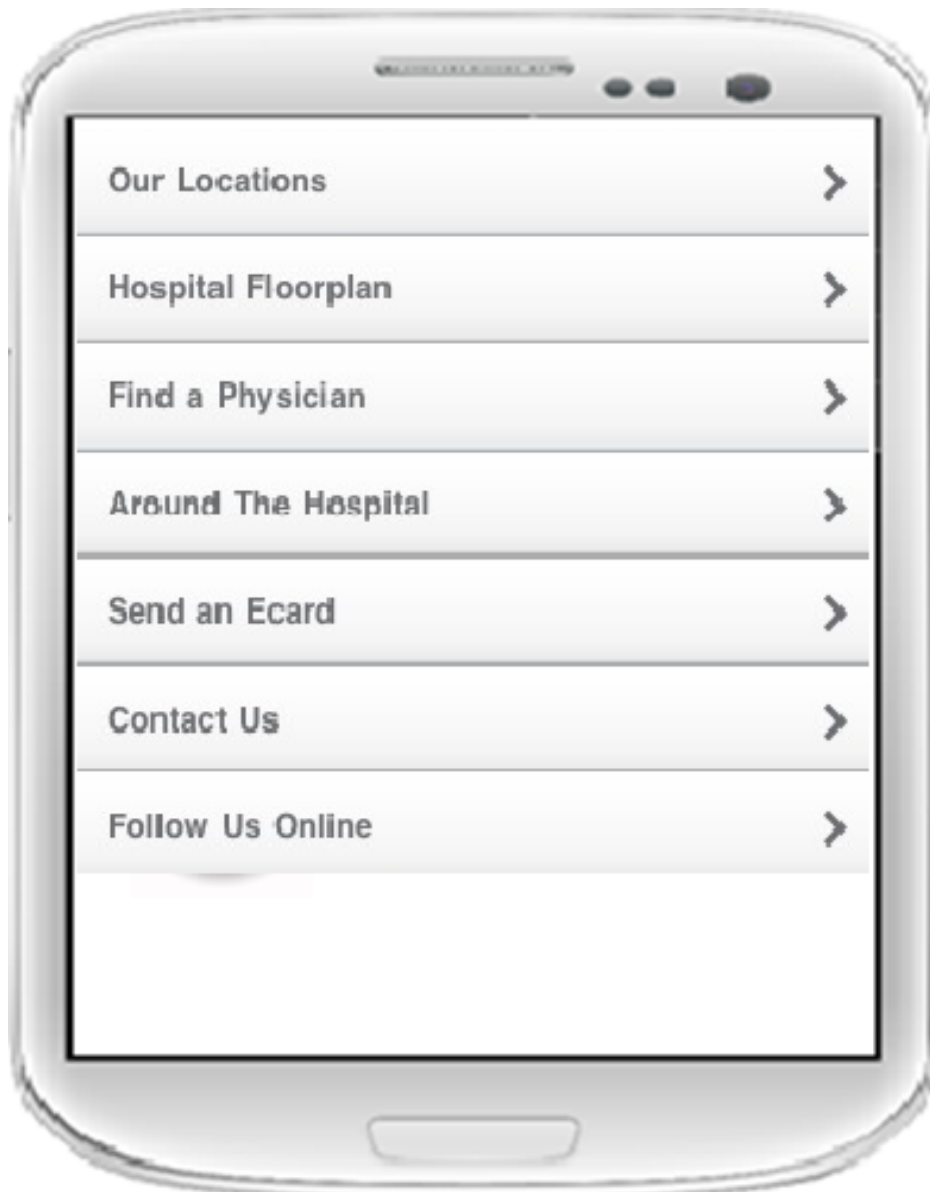


Figure 6.20: Health Page

## Weather Page

By this page, weather in Iraqi can be shown, this page will help staff, students and business owners in the event of snow or rain to reduce or stop their office hours.

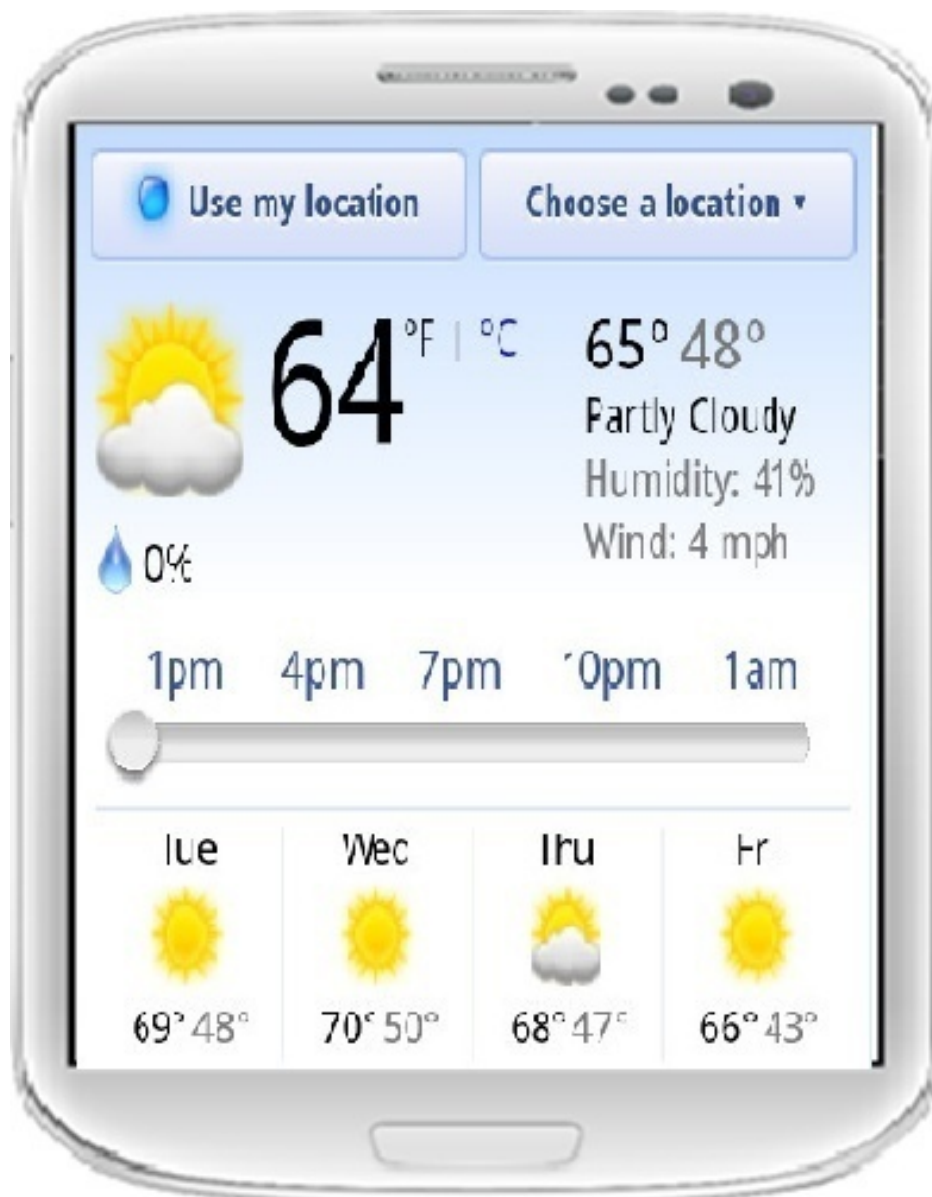


Figure 6.21: Weather Page

## Dictionary Page

The integration of the dictionary page in the application of the Iraqi government increases the efficiency to meet the needs of the Iraqi citizens and foreign citizens, and that in helping him them to learn Arabic terminology that may be encountered in Iraq.

It is possible to integrate more than one language depending on the nationality of visitors to Iraq, such as English and French.

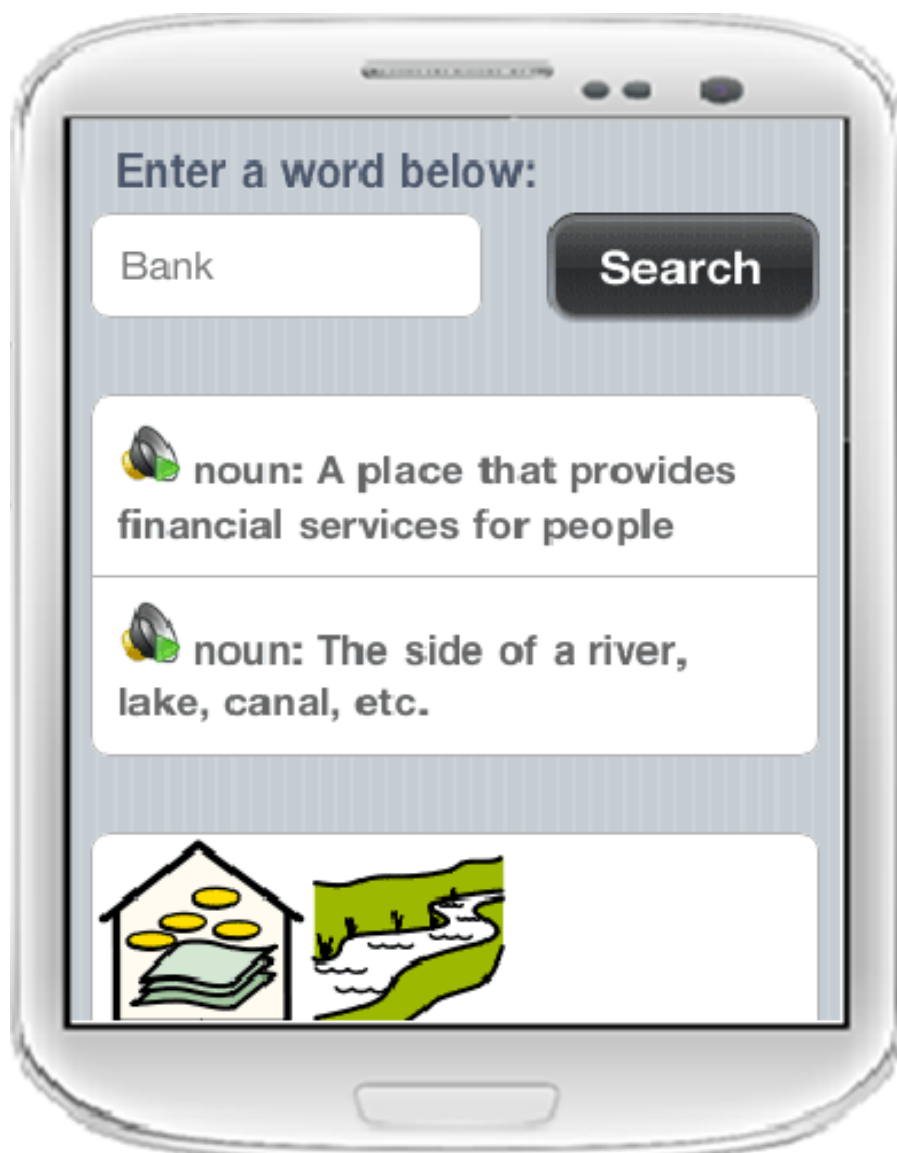


Figure 6.22: Dictionary Page

## Payment Page

The most developed countries that use Mobile Government focus on a page or section of payments, where some countries have allocated special applications to help citizens pay their dues.

Traffic fines, customs, service tax in addition to the e-marketing services are granted by the payments page; where it is possible to choose the service by which they want to pay their dues in addition to the selection of payment type such as Visa, Master Card or Bank Transfer

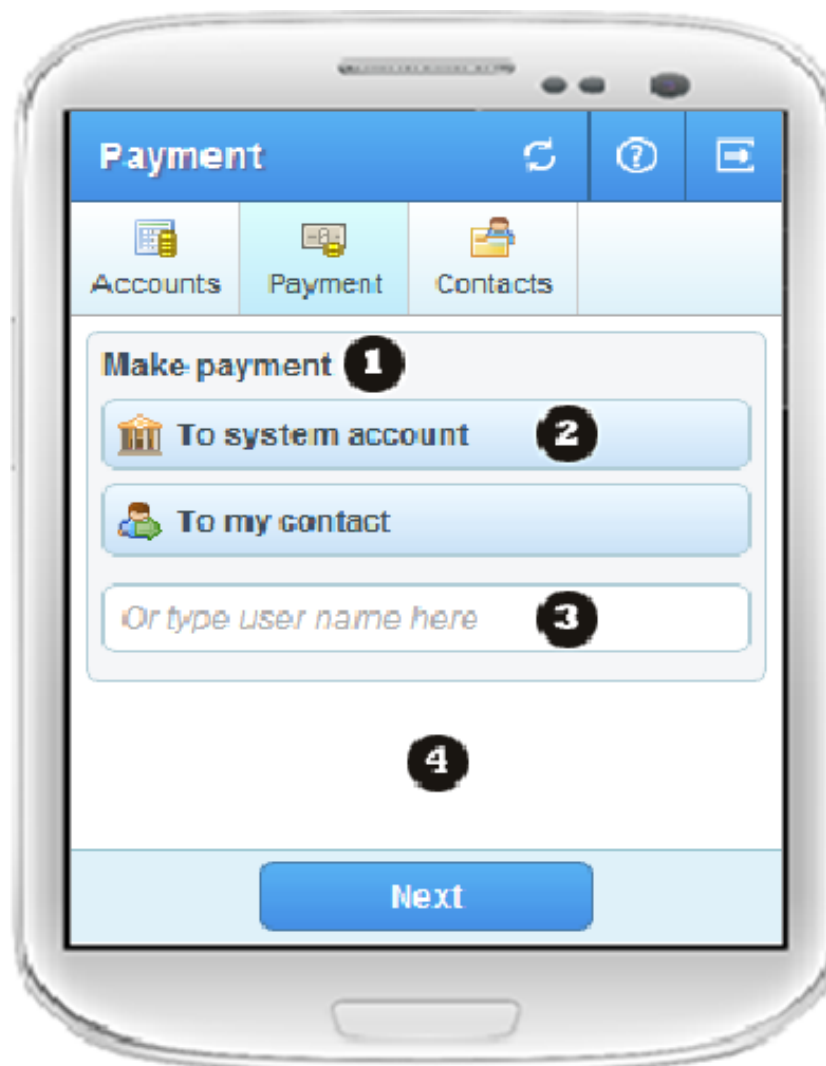


Figure 6.23: Payment Page



## **Social Network Page**

Today most of the countries of the world are using social networks to communicate with their citizens, where most countries have used Facebook pages and Twitter accounts as well YouTube, so a special page stating accounts in social networks must be put to make it easier for citizens to follow and communicate with them.



Figure 6.24: Social Network Page

## 6.9 Summary

The Iraqi case is a good environment for the Mobile Government work due to the large number of mobile users' techniques, where the number of mobile subscribers is about 80% of the population of Iraq, giving the benefits and features for project Iraqi Mobile Government. There are benefits and advantages to the field of Mobile Government, the most important advantages and benefits of the project Iraqi Mobile Government are: different delivery Reliability, availability, minimizing time and effort, and minimizing cost. The survey, which was designed in this thesis, gave very important information useful in the process of building the Iraqi government, where the most important information given are:

- 1- The Iraqi case has information about use of technology in government services.
- 2- Mobile device is the most widely used device in Iraq.
- 3- The field of the Mobile Government is unknown in Iraq so more education efforts are needed to teach the staff how to apply this technology.
- 4- Education, News and find jobs are the most services required in Iraq.
- 5- SMS, MMS and voice are the most mobile technologies used in Iraq, so these technologies should be taken into consideration to access the public services.
- 6- In general, the project of Mobile Government is required in the Iraqi case, depending on the results of the survey.

Iraqi Mobile Government will have special and secret data, so it needs a security system to make Iraqi Mobile Government more secure. The Model of Iraqi Mobile Government came after conducting a study and survey on a certain category of the Iraqi people, as well as studying the experiences and examples from Mobile Government applications in some developed countries.

## **CHAPTER 7**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **7.1 Conclusions**

The use of technology in the delivery of public services by the government to the citizen is aspired to by most of the developed countries to earn that accuracy in work and reduce the time in addition to reliability in the delivery of information to the largest possible number of citizens, so Mobile Government became one of the most important projects that got the focus of most advanced countries of the world.

The technology and techniques of mobile phone have significantly expanded, especially recently to assist the Government in its work and offer various kinds of services to various segments of society. Mobile Government affords a powerful and transformational capacity to both extending access to existing services, and expanding the delivery of new services – and to increase active citizen participation in government operations, moving beyond the initial concentration of E-government on commerce and e-taxation, and improving internal operations.

Mobile Government is defined as a new delivery channel for governments, support to access information and services ubiquitously to businesses, residents, and other government departments through mobile devices or mobile technologies. Mobile Government can also be defined as conveying the information in any place and time, and the Mobile Government is extension for E-government services.

E-government is considered as the background for the work of the Government of Mobile, Before Mobile application on any government in Iraq, we must know if there is an electronic Iraqi government applied actually and what percentage of its users and the areas of services in addition to what are the most important challenges and weaknesses.

Iraqi E-government is too weak and underutilized in spite of the large number and variety of services they provide because of the lack of Internet users in Iraq, where according to the statistics of Internet World Center (IWC) there are only 7% of the population of Iraq are using the internet and so the users of E-government of Iraq will exceed this percentage.

According to the references and reports in this thesis, in developing countries, mobile phone subscribers' number is more than the number of internet users, giving large motivation to take advantage of the application or implementation of Mobile Services Government which works on the Mobile subscription and Mobile Technologies.

According to communications companies, Asiacell, Zain and Korak in Iraq, more than 80% of the populations of Iraq are mobile subscribers and this is something which gives a strong motivation to use Mobile Government to provide public services currently provided by the Iraqi government for the Iraqi people.

Mobile Government consists of a set of techniques that are used in the delivery of public services and information from the government to the citizen, and techniques are SMS, MMS, USSD, WAP, Voice and Data application and Mobile Web.

Generally, the Model of Mobile Government is divided to four parts according to the provided services to different people:

1. Government-to-citizens (G2C)
2. Government-to-government (G2G)
3. Government-to-business (G2B)
4. Government-to-employees (G2E)

A set of examples of Mobile Government of the various countries of the world are also mentioned in the thesis, where these varied examples of different areas that are designed for it.

In this thesis, a survey of a certain category of the Iraqi people was conducted to know the case of Iraq about applying Mobile Government, where 100 students from the University of Mosul in Iraq, Faculty of Computer Science and Mathematics were chosen to answer 9 questions put in the survey, where we have the results and the most important of which are:

- 1- The Iraqi case has information about the use of technology in government services.
- 2- Mobile device is the most common one in Iraq.
- 3- Filed of the Mobile Government unknown in Iraq so it is need to education this filed before apply in Iraqi case.
- 4- Education, News and find jobs are the most services required in Iraq.
- 5- SMS, MMS and voice are the most mobile technologies used in Iraq, so these technologies should be considered to access the public services.
- 6- Iraqi people selected to be Iraqi Mobile Government has two languages Arabic and English.
- 7- The multimedia was selected to be the way that Iraqi people to use it to know the way to use Mobile government.
- 8- In general, the project of Mobile Government is required in the Iraqi case, depending on the results of the survey.

During this thesis, a model for Iraqi Mobile Government is proposed according to the previous survey and the examples from developed countries, and also during research process in this thesis different Mobile Applications of Mobile Government were found, and Mobile Application is one of the Mobile Government technologies.

## **7.2 Recommendations**

The most important recommendations that are recommended for all researchers in this area is to expand the survey to include all segments of Iraqi society, in addition to the use of modern survey types such as: telephone, mail (post), online surveys, personal in-home surveys, personal mall or street intercept survey and hybrids of the above. As well as questions that will help to take the idea of Iraq case can be added and what are the aspects, and if well suited for the implementation of Mobile Government.

Expanding the model of the Iraqi Mobile Government and proposing a model in which the designer can see the most important processes within the Mobile Government, in addition to detailing and monitoring the movement of information and data from the Iraqi Mobile Government to the Iraqi citizen.

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## APPENDIX

### APPLY MOBILE GOVERNMENT ON IRAQI'S CASE

#### INTRODUCTION

This is an academic research about Apply Mobile Government on Iraqi's Case and takes opinions from Iraqi citizens. The questions will be anonymous and the result of the questionnaire will be used for academic purpose only. It may take you no more than 10 minutes to complete. Thank you very much for your patience.

#### 1- Did you use E-government before?

- ☐ Yes
- ☐ No
- ☐ I don't know what is meant by E-government
- ☐ I know what it means but I have not used it before

#### 2- Do you know what is meant by Mobile Government or M-government?

- ☐ Yes
- ☐ No
- ☐ I heard about it but I don't know what it means exactly
- ☐ Something belong to Mobile technologies

#### 3- Which device are you using more?

- ☐ Mobile
- ☐ Smart Mobile (ipad, ipod,... ect)
- ☐ Pc
- ☐ Laptop

4- What is your mobile type?

- ☐ iPhone
- ☐ Samsung
- ☐ Black Berry
- ☐ Nokia

5- Which mobile technology are you using more?

- ☐ SMS
- ☐ MMS
- ☐ USSD
- ☐ WAP
- ☐ Voice
- ☐ Data application and mobile web

6- If the Iraqi government is established, what is the way you prefer to learn how use it?

- ☐ Book
- ☐ Multimedia
- ☐ Seminars
- ☐ Education Course

7- If the Iraqi Mobile government is established, what are the services and departments that you prefer to be present in the Iraqi Mobile government?

- ☐ Education
- ☐ Weather
- ☐ News
- ☐ Exchange rate
- ☐ Appointments and Job
- ☐ Health
- ☐ Voting

8- If the Iraqi Mobile government is established, which language do you prefer to be used?

- ☐ Arabic
- ☐ English
- ☐ Arabic and English
- ☐ Arabic and French

9- What do you think of the idea of the Iraqi Mobile government?

- ☐ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Un acceptable