



**IMPROVEMENT OF BIRTH REGISTRATION SYSTEM IN IRAQ WITH
THE USE OF ELECTRONIC GOVERNMENT SERVICES**

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**IMPROVEMENT OF BIRTH REGISTRATION SYSTEM IN IRAQ WITH
THE USE OF ELECTRONIC GOVERNMENT SERVICES**

**A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED
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**BY
DALYA SAMER AL-DULAIMI**

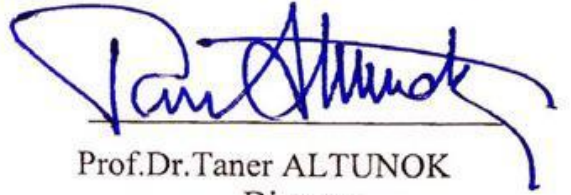
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ABSTRACT

IMPROVEMENT OF BIRTH REGISTRATION SYSTEM IN IRAQ WITH THE USE OF ELECTRONIC GOVERNMENT SERVICES

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E-government is considered to be a new phenomenon in the revolution of information and communication technology. In recent years, clear steps have been taken by many governments around the world towards the adoption of e-government in order to enhance the engagement of citizens and other parties with the government, thereby leading to efficiency, cost-effectiveness, trust, transparency and access to government public services.

E-government adoption is surrounded by major challenges, including technical, social, legislative and administrative barriers. The digital divide, in addition to other social and cultural issues, are considered to be important factors that impact on citizens' willingness to accept or resist this new innovation.

The scope of this research is to investigate in detail the birth registration system in Iraq, how it works and how the paper-based registration system can be transformed into an electronic system. As the research methodology, examples reported to the literature from similar countries are studied in addition to recent information published on those governments' websites. As a practical application, a quick design of interfaces has been carried out based on the roles of actors, places and actions related to the registration system.

The findings show the benefits of using e-government services to reduce the cost, time and effort required to obtain those services. Moreover, the findings state the considerable barriers related to the adoption of e-government applications. Finally, they indicate the possibility of starting to apply electronic applications with preliminary work.

Information resources, system analysis and design, legal issues and project management are the limitations of this research.

Finally, the research question, "Can the government of Iraq take the advantages and successful experiments of precedent countries in adopting e-government initiatives to improve birth registration service?" is addressed and it is concluded that Iraq needs to study precedent examples from around the world and thus start transforming services from paper-based model to electronic model.

Keywords: E-government, Birth Registration, Digital Divide, Iraq

ÖZ

IRAK DOĞUM KAYIT SİSTEMİNİN ELEKTRONİK DEVLETHİZMETLERİ LE İYİLEŞTİRİLMESİ

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Bilgi ve iletişim teknolojilerindeki gelişmelerle, e-
devlet yenibir rol olarak görülmektedir. Son yıllarda,
vatandaşların verdiği bilgilerinkatılımını arttırabilmek, busayede, verimliliği, fayda-
maliyette iyileştirmeyi, güveni,
saydamlığı ve kamu hizmetlerine erişimi arttırabilmek için e-
devlet yönünde devletler tarafından net adımlar atılmaktadır.

E-devlet hayatı geçirmek, teknik, sosyal, yasal ve idari birçok zorluğu içermektedir.
Sayısal uçurum, diğer sosyal ve kültürel konulara ek olarak,
vatandaşların buyeniliği kabul ve reddine etkiden önemli bir etkidir.

Bu araştırmanın içeriğine, Irak'taki doğum kayıtsisteminin ayrıntılı incelenmesi,
nasıl çalıştığı ve kağıt üzerinde yapılan işlemlerin elektronik ortamata taşınmasının nasıl yapıl

abileyeeđialınmıřtır. Arařtımayöntemiolarak,
literatürdekibenzerülkeörnekleriincelenmiřvebudevletlerin İnternet
safyalarındangüncelbilgileralınmıřtır.
Kayıtıřlemlerinderolalankiřilerinveolaylarınözetleincelenmesiylearabirimlertasarlan
mıřtır.

Bulgular, e-devlethizmetlerininkullanılmasındakifaydaları, para, zaman
vegayretmaliyetindüşürölmesiřeklindegöstermiřtır. Birdiđerbulgu da e-
devletuygulamalarınınageçiřteönemliengellerolduđunugöstermiřtır. Bununlaberaber,
elektronikuygulamalarınbařlatılmasınınınolasıolduđusonucunavarılabilir.

Sistemanalizivetasarımı, yasakonularveprojeýnetimibuararıřtırmadahariçtutulmuřtır.

Sonuçolarak, arařtırmasorusuolan "Irakdevleti, e-
devletprogramlarınadahaöncebařlamıřdevletlerinbařarılıdeneyimlerinialarakdođumk
ayıthizmetinigeliřtirebilir mi?"
tezdehedefalınmıřvebununuyapılmasıylahizmetlerdesayısaladönüřümüngerektiđisonu
cunavarılmıřtır.

AnahtarSözcükler: E-devlet, DođumKayıt,SayısalUçurum, Irak

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LIST OF ABBREVIATIONS

BR	Births Registration
CMI	Crisis Management Initiative
CRVS	Civil Registration of Vital Statistics
DPADM	Division of Public Administration and Development Management
DTI	Danish Technological Institute
E-Government	Electronic Government
e-NUIC	Electronic Northern Utah Immunization Coalition
EU	European Union
G2B	Government-to-Business
G2C	Government-to-Citizen
G2E	Government-to-Employee
G2G	Government-to-Government
GoL	Government of Liberia
GUI	Graphical User Interface
ICT	Information and communications technology
IDC	International Data Corporation
IDP	Internally Displaced People
ITU	International Telecommunication Union
SIS-ROH	Intra Hospital Death Registration System
UN	United Nations
UneGovDD	United Nations e-Government Development Database
UNDESA	United Nations Department of Economic and Social Affairs
UNICEF	United Nations Children's Emergency Fund
VAT	Value Added Tax

CHAPTER 1

INTRODUCTION

Information and Communications Technologies (ICTs) in recent years are playing an increasingly essential role in the daily lives of societies. Many governments across the world are moving towards the use of ICT to enhance the delivery of public goods and services to citizens, businesses and other government parties not only by developing the process and management of government but also by redefining old traditional concepts.

One of the applications of ICT adopted by governments is the e-government concept. E-government can be defined as services provided to citizens, re-engineering with the technology or procurement through the Internet.

The aim of e-government is the establishment of a long-term dynamic strategy to improve the efficiency, effectiveness, interactivity and transparency of the delivery of services to citizens, businesses, employees and government agencies.

1.1 Motivation

E-government is one of the tools investigated in the transformation process of public services and transparent government. E-government initiatives have emerged to enable citizens and other parties to interact and receive services from the government more rapidly and with less effort. Thus, such initiatives will promote efficiency, transparency and trust between government and other parties. Moreover, service delivery is expected to become more dependable, more convenient and less costly.

Birth certificates is one of the important basic services identified by the European Commission Directorate General Information Society and Media that are provided in order to enable citizens to obtain certificates electronically through government portals or via mobile devices.

1.2 Purpose and Scope

The birth registration rate in most of the countries with which we have dealt in our literature review was low due to several problems: Births data were registered manually, which led to delays in transferring data, errors, duplications and loss of records. Birth registration offices were located in towns and district centers which are far from rural areas. Therefore, it was difficult for people living in remote areas with no access to transportation and public services to travel to the closest city to register a child. Transport costs, time and effort often prevent many families from registering children. Moreover, parents and trustees of these countries were less aware and less educated about the importance of birth registration and the need for birth certificates for their children's future lives.

The use of ICTs and mobile technology was one of the prominent solutions adopted by countries such as Uganda, Botswana or Liberia to reduce barriers of access and affordability. Applying an integrated central database and digitization of paper-based and handwritten birth registration systems are positive advancements as they have greatly reduced potential errors through better controls and allowances for data and records to be available in a timely manner. Unfortunately technical details such as database structure could not be obtained.

The scope of this research focuses on birth registrations in Iraq. We will examine in detail the procedure of registering a birth and how the system works, the roles of actors and the places related to the registration process, including hospitals and health centers, births and deaths departments and civil status authorities in addition to how data is transferred between them.

Therefore, the research question for this study is formulated as follows:

Can the government of Iraq take the advantages and successful experiments of precedent countries in adopting e-government initiatives to improve birth registration service?

1.3 Thesis Outline

This thesis contains four chapters: an introduction, a background and literature review, data collection and analysis, findings and the conclusion of the study.

The content of each chapter is outlined as follows:

Chapter 1: Introduction

Chapter 1 is a quick and general view of the research which clearly states the motivation, purpose, scope of the study and the research question. The outline of this research can be found in the end of this chapter.

Chapter 2: Background and Literature review

This chapter is divided into two parts: The first part (2.1) presents the background of e-government, its models of delivery, objectives and measurements. It also focuses on the importance of obtaining birth certificates and the birth registration procedure in Iraq. The second part (2.2) presents the literature review that covers the process of registering a birth in several countries with the potential barriers and the solutions to overcome them. The second part also recognizes the cultural and social issues related to the adoption of e-government services.

Chapter 3: Designing of GUI's

Chapter 3 describes data gathering and the process of analysis to identify the roles of actors, places and the actions with the associated information required to complete a birth registration process in Iraq. Furthermore, the use case diagrams and GUI design are presented in this chapter to handle this information. Finally, Chapter 3 concludes with the discussion section.

Chapter 4: Conclusion

Chapter 4 summarizes the findings of this research, addresses the limitations that may restrict the findings and outlines possible future work. The conclusion and answer to the research question will be the end section of this chapter.

CHAPTER 2

BACKGROUND AND LITERATURE REVIEW

2.1 Background

This section gives definitions of the terms covered in this thesis as well as preliminary knowledge to provide essential background on e-government, delivery models and approaches to measurement. The section also informs the reader about current ways to register births in Iraq along with the potential errors that occur due to paperwork. Towards the end of the section, the aim of the thesis is supported by a quick visit to the benefits of adopting electronic initiatives in birth registration. The reader can skip this section in case he is familiar with the related terms and basic knowledge. However, we encourage covering it as the literature reviewed is closely tied to those concepts.

2.1.1 E- government

E-government represents a new approach to the delivery of services to citizens in order to raise a government's performance efficiency and to reduce bureaucracy suffered by citizens and facilitate the provision of information and data so as to take advantage of the digital transition. Therefore, several definitions are used to define e-government due to its coverage in many areas [1]. The following are some examples both from the literature and from organizations:

- 1. World Bank, 2001** – e-Government is the government which control systems of information and communication technologies that transform relations with citizens, private sector and/or other government agencies in order to enhance citizens' empowerment, strengthen accountability, increased transparency and improve government efficiency by facilitating delivery of services [2].

- 2. Tapscott, 1996**– e-Government is an Internet-adopted government which connects new technologies with legal systems internally and subsequently links this government information infrastructure externally with everything electronic and with everyone, such as the taxpayers, business customers, voters, suppliers and other institutions in society [3].
- 3. Abramson and Means, 2001**–E-government is the electronic interaction (transaction with information exchange) between the government, the public (citizens, businesses) and the employees [3].

Based on the above, the E-government can be simply defined as:

An application of ICTs to enhance the delivery of government services through improving service quality, enabling users to access government information so as to acquire the services wherever they are and whenever they want i.e. 24 hours a day, seven days a week via multiple channels, including the Internet. As we discuss at the end of this section, birth registration on electronic media through a network fulfills the requirements given in the definitions. Before going into deeper with the services offered online, it is beneficial to visit application domains of such initiatives.

According to Heeks [4], E-government can be investigated according to three critical elements: improving government processes (e-Administration), connecting citizens (e-Citizens and e-Services), and building external interactions (e-Society). See below Figure 1.



Figure 1 Three critical elements of E-government

When we look in more detail, these domains show differences in application areas; however, there are considerable overlaps.

e-Administration– for computerization and automation of administrative tasks and for understanding of strategic connections among internal processes, functions and departments.

e-Citizens and e-Services– improving connections and interrelationships between governments and citizens by increasing the flow of information between them. A public service institution giving citizens the opportunity to request business licenses through a government website is considered one example of an e-service.

e-Society– attempts to extend the former e-services domain by concentrating on institutional stakeholders such as private sector service providers, civil community organizations and public agencies. Moreover, e-society focuses on constructing long lasting partnerships with social/economical communities, including the creation of business community portal.

With regard to the overlaps, a birth certificate is an example in both the e-administration and e-service domain. Although this domain-based investigation emerged from [4] to which African countries are subject, we see similar perspectives in other countries as well.

As shown in Figure 2, the three domains of e-government are rarely separated in their implementation. They should be considered as overlapping with e-government being able to exist in the overlapping area of these three application domains. To clarify: good e-government programs must take into account all three domains.

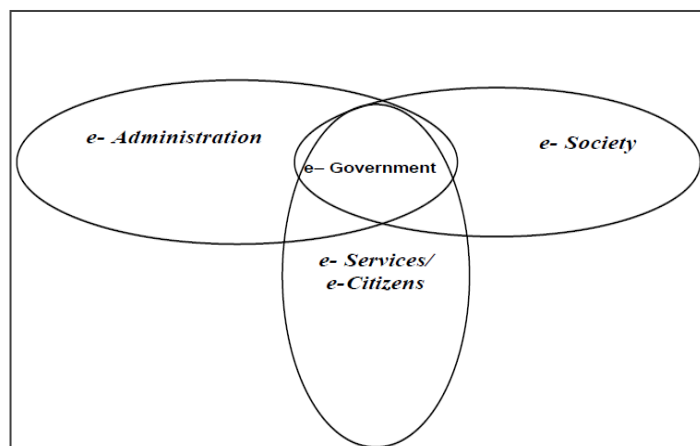


Figure 2 e-Administration, e-Society and e-Services/Citizens

Regarding service deliveries, we see different models depending on the nature of the participant, i.e., government, citizen or business. The next section gives the basics of such models.

2.1.2 E- government delivery models

E-government is comprised of two main parts in its implementation perspective: the front-office and the back-office as discussed in [5]. The front-office part is referred to as online service delivery to citizens (G2C) and to businesses (G2B) through the Internet. The back-office part is referred to as the internal government administration, sharing information both within and between government agencies (G2G) and the relationship between government and its employees (G2E) through the Internet or other digital channels, such as private networks.

More specifically, these four types of e-government may be characterized as discussed in Sections 2.1.2.1, 2.1.2.2, 2.1.2.3 and 2.1.2.4. Additionally, more examples are given in Section 2.1.4.2 where the European Union criteria for member countries are visited.

2.1.2.1 Government-to-Citizen (G2C)

Governments provide services and information online and make them more accessible by citizens, from any place, at any time possible and through various media channels such as PCs, mobile phones, TV or any wireless device, as shown in Figure 3. According to the ITU report [6], there are typical methods of citizen-centric approaches to e-government, such as organizing content around citizen needs; aligning the structure of pages in a website to minimize the number of clicks necessary to access a service, find information, or to complete a transaction; improving the effective properties of the site; enabling the user to customize site contents and facilitate communication between government and citizens.

There are different examples of G2C services, such as requesting and issuance of various permits, authorizations and certificates; payment services, including income tax refunds and social welfare payments; job search services; car registration and

public libraries. Moreover, the G2C relationship can be found when the citizen is interacting with government as a participant in democratic processes, e.g. e-voting.



Figure 3 Multiple Channels for accessing to G2C Services

2.1.2.2 Government-to-Business (G2B)

The G2B delivery model refers to the government electronic interactions with the private businesses to procure goods and services as seen in Figure 4. It allows e-transaction activities such as e-procurements, registration of a new company, corporate tax, bids and awards. Successful electronic G2B delivery requires ICT applications such as: a comprehensive e-procurement systems; i.e., a portal that contains of government procurement system in which all procurements such as registration, payment, contract, and tender functionalities are done electronically; e-customs system that could organize customs administration in import and export processes; e-Commerce facilities that support online buying and selling of goods and services [5].

2.1.2.3 Government-to-Government (G2G)

G2G model concentrates on providing services to governments through intergovernmental relationships. These relations allow online sharing of information, resources and databases between governmental agencies, departments and organizations at local, regional and national levels, thus it will increase accuracy and

improve efficiency and effectiveness of processes. For example, public hospitals and health care institutions can send birth certificates of new-born babies electronically to tax agencies or civil status departments for registration by sharing data between these governmental organizations [7]. As this certificate is one of the primary scopes of this thesis we study in more detail in several sections in the dissertation.

2.1.2.4 Government-to-Employee (G2E)

The G2E model refers to the relationship between government and employees. Moreover, many academics and researchers are including this model in the G2G block as many people nowadays consider employees as internal customers, and as a result, in order for the e-government approach to be customer-centric, it should also take into consideration the requirements and needs of this group. Tracking of tax records, providing health insurance and registering addresses are some examples. Furthermore, G2E is considered to be a successful way to provide e-learning, to bring employees together simultaneously and raise the sharing of knowledge among them, to enable employees to access relevant information as regards training and learning opportunities, civil rights laws, benefit policies, etc. [2].

This delivery model has overlaps with G2C services according to the nature of the participants.

Here, we need to remind the reader that not everybody working in a country is necessarily a citizen. To address anybody working whether or not they are citizens, this delivery model is articulated in the literature and by governments.

2.1.3 E-government Objectives

The e-government is associated with the actual government as a source of information and services to citizens, businesses and various organizations in the community. The strategic goal of e-government is to support and streamline governmental services to all concerned parties are: the government, citizens, businesses and employees. Thus, the e-government uses ICT tools to strengthen the quality, speed and ease of services provided for these parties [8].

E-government objectives can be listed as follows:

- The role of e-government on the agenda of internal government departments is to improve the speed, transparency, accountability, efficiency and effectiveness of transactions and to manage the performance of government processes.
- Foreign e-government targets are directed towards the needs of society and its expectations in a satisfactory manner by simplifying procedures and dealing with many available services.
- Provide services to citizens easily, rapidly and cheaply. Moreover, it reduces the friction between government employees and citizens.
- Increase the time required to perform a service so that citizens may acquire that service at any time throughout the day without committing to any specific official working hours.
- Raise the culture and awareness of citizens by encouraging them to use modern technology and to reduce the digital gap.
- Remove a number of images of corruption and mismanagement by achieving transparency and making information available equally to all institutions and citizens.
- Rationalization of government expenditure by reducing the number of working staff in addition to replacing the use of paper documents and stores with accumulated documents and moving towards the use of computers.
- Promotion of future plans of the state and its development projects.

Achieving these objectives is not an easy task. There are considerable obstacles which are limited not only to the technical problems but also include the reluctance to participate. Those obstacles create heterogeneity in the society. These differences are addressed as the digital divide/gap in the literature.

Social obstacles show the gap between those individuals with the capability of using information and communication technologies (ICTs) and those without. Researchers have reported several factors which increase the digital gap, such as low levels of

education, absence of digital literacy, lack of technical assistance, and limited access to the best quality ICT content [9]. Citizens with a high level of education are more likely to accept and interact with the e-government systems. It is quite important to educate the public and improve their attention to the significance and advantages of e-government services [10].

2.1.4 E-government Measurements

The main target of the measurement is enabling countries to analyze the progress in the scope of e-government and to compare the performance and development of information within and between other countries.

In this research we will investigate two measurements of e-government initiatives as they are adopted by the UN and EU.

2.1.4.1 UN Measurements

The interactive e-Government Development Database (UNeGovDD) was prepared by the Division for Public Administration and Development Management (DPADM) of the United Nations Department of Economic and Social Affairs (UNDESA) to provide this valuable information for research, education and planning purposes for governments and all members of civil society. In addition, this information can be easily accessible by visitors so that they can view and evaluate e-government assessment of countries at the UN's website <http://unpan3.un.org/egov kb>.

The UN e-Government Surveys display a systematic assessment of the use of ICTs to transform the public sector by promoting efficiency, effectiveness, accountability, transparency, citizen participation and access to public services in the 193 Member States of the United Nations and at all levels of development [11].

As explained in Section 2.1.2, not only are citizens the users of e-government applications but also businesses, employees and other government agencies can be users. For this reason, it is better to refer to them as services consumers.

The assessment is based upon four stages of online service development and it is beneficial to visit each stage in the following paragraphs:

Stage 1 Emerging information services

Government websites provide information about public policies, laws, regulations, governance and other relevant documentation. They have links to ministries, departments and other government services provided. Additionally, services consumers can easily obtain information for what is new in the national government and ministries. Furthermore, they can follow links to archived information. A web page providing information about the services/organizations as described in Figure 4 is an example of this stage [11].

Stage 2 Enhanced information services

Government websites deliver enhanced one-way e-communication between the government and services consumers. Downloadable forms for acquiring government services and applications are a good example to governments at this stage. Additionally, the sites are expected to provide audio and video features with multi-lingual options [11].

Stage 3 Transactional services

Government websites engage in two-way electronic communication with their services consumers, which may include requesting and receiving inputs on government policies, programs, plans, etc. Government websites process non-financial transactions, such as downloading and uploading forms, e-voting, filing taxes online and applying for licenses, permits and certificates. Moreover, they are able to handle financial transactions where money is transferred through a secure network to the government. Generally, at this stage all communication occurs in the digital format [11].

Stage 4 Connected services

Government websites have drastically changed the way in which governments can communicate with their citizens. Governments have moved from a government-centric to a user-centric approach. More clearly, e-services are now user-oriented rather than provider-oriented. Information, knowledge and data are transferred from

government agencies via integrated applications. At this stage and by using Web 2.0 and other interactive tools, websites are now proactive in requesting information and opinions from citizens. Governments also create an environment that allows services consumers to be more involved with government activities in order to have a voice in decision-making [11].

The page www.egov.gov.iq/egov_iraq/index.jsp?sid=1&id=344&pid=343&lid=6 from the Iraqi e-Government Portal in Figure 4 below shows the general information related to the issuance and registration of births in Iraq (Stage 1).

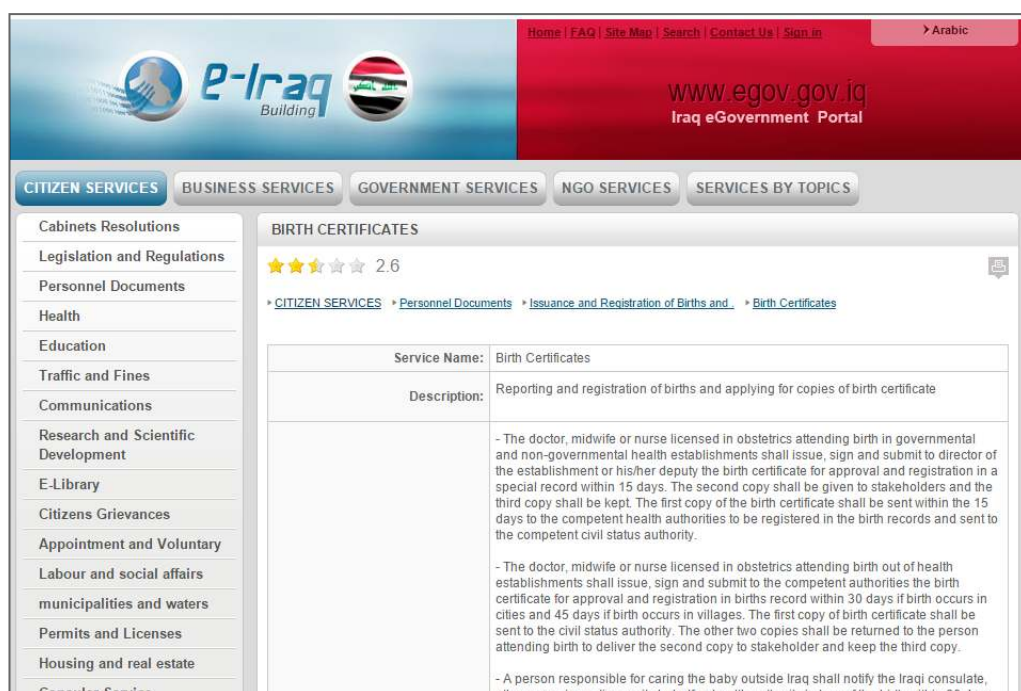


Figure 4 Iraqi E-government Portal

2.1.4.2 EU Measurements

The i2010e-Government benchmark considers one of the flagships studies in measuring public sector performance. It is a collaborative process which the European countries prepared and which is sponsored by the European Commission and companies such as Capgemini (a French IT company), Danish Technological Institute (DTI), International Data Corporation (IDC), Rand Europe and Sogeti. The 2010 benchmark presents a significant set of findings compared to previous years since its inception in 2001. It uses a comprehensive ranking system to identify European countries that have carried out the most e-government services.

The availability of 20 public government services and their sophistication are measured through 14,000 public specialized provider websites at local, regional and national levels across 32 participating European countries and it is performed by a multi-lingual team of researchers [12].

The analysis of the online sophistication of 20 public government services takes into consideration the following essential units:

Online sophistication: The extent to which government services allow interaction and/or transactions between the administration and citizens or businesses. This measurement covers 20 basic public services, such as obtaining birth and death certificates, online tax filing, enrolling in higher education, registering a new company, etc. [13].

The online sophistication ranking maintains and assesses service delivery against a 5-stage maturity model, as shown in Figure 5: 1) Information, 2) One-way interaction, 3) Two-way interaction, 4) Transaction and 5) Targetisation.

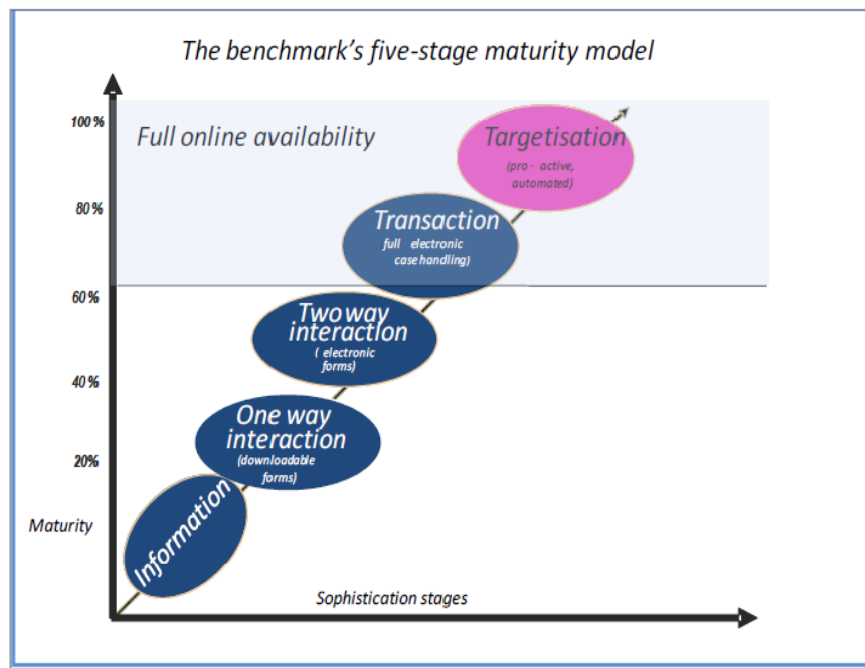


Figure 5 The benchmark's five-stage maturity model

Information: is the necessary information to start bringing public services online [14].

- **One-way interaction:** available websites to the public that provide the ability to obtain a requested service by download applications and forms from the Internet [14].
- **Two-way Interaction:** available websites to the public that provide the ability to exchange the electronic applications and forms from, and on, the Internet. For example, uploading electronic official forms and online submission of examination results [14].
- **Transactions:** websites available to the public that provide the ability to handle electronic services on the Internet, including the decision to service and delivering them, which does not require any paper documents by the applicant. For example, online bill payment [14].
- **Targetisation:** services can be executed electronically without the need for a recipient. For example, child allowance is an automated social security service in Sweden. When a child is born, the hospital sends the birth certificate to the tax agency to register the birth; then the Swedish insurance agency pays the child allowance to the parents automatically.

Online availability of basic and extended services: for each Life Event, the e-government Benchmark covers all relevant interactions with the government which an individual or business may seek. This demands that the Benchmark must consider both the availability of:

- **Basic services:** services that are needed to fulfil the major requirements of a life event. For example, core registration and other transactional services
- **Extended services:** services that go beyond the basic requirements of a life event. For example, government attempts to provide services for convenience and competitiveness in a ‘providing environment.’

Basic services are those which are driven by regulation and are compulsory in nature, whereas extended services are convenience services that complement basic services.

Offering a combination of basic and extended services requires additional collaboration across government organizations, such as tax authorities and private

civil insurance companies. Such collaboration may contribute to the wellbeing of the user or the competitiveness of a business [15].

Looking at Figure 6, which shows per country the online availability of basic and extended services across the three life events, it is clear that on average the online availability of basic and extended services does not vary so much.

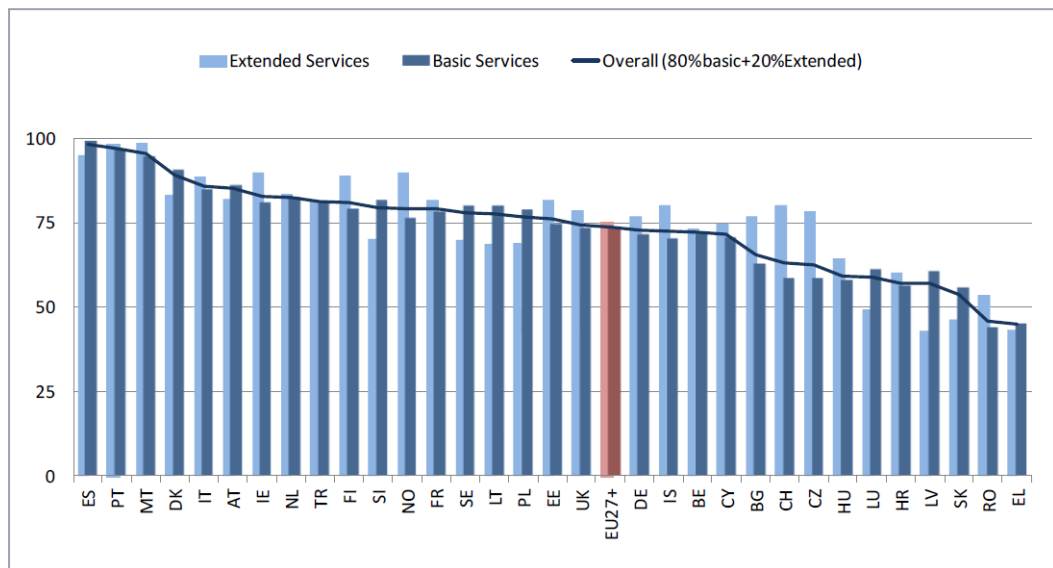


Figure 6Online availability of basic and extended services
(Average of 3 Life Events, %)

User experience of services: The extent to which the 20 basic e-Government basic services are easy to use. This covers aspects of user needs, requirements and user satisfaction [13]. A positive user experience is a prerequisite for iterative visits and comprehensiveness of electronic government services. There are five indicators have been used to assess user experience Figure 7:

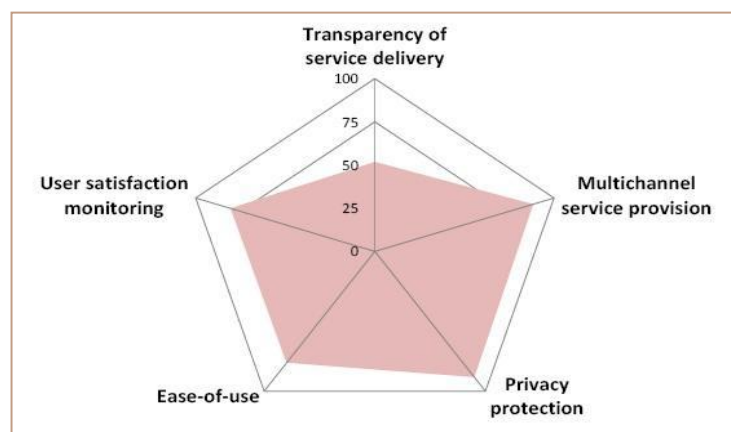


Figure 7Five indicators used to assess user experience

- **Transparency of service delivery:** tracing and tracking of provided service, the ability to conduct services in steps and indication of time and duration to complete a service.
- **Multichannel service provision:** Can we get the service by using alternative channels than the Internet (e.g. call center).
- **Privacy Protection:** Is there any privacy regulation concerned with the user when putting his/her personal data on the website?
- **Ease of use:** does the website provide guidance such as Demo, FAQ, live support and can documents be added to applications and/or requests?
- **User Satisfaction Monitoring:** Do websites allow for user feedback, complaints and reporting on this?

Portal sophistication: This indicator is assumed to identify the user-centric, most mature and personalized portals that provide direct access to a wide range of e-government services [13]. The indicator includes the following measurement dimensions of the availability of the 20 public services through the portal as we can see in Figure 8:

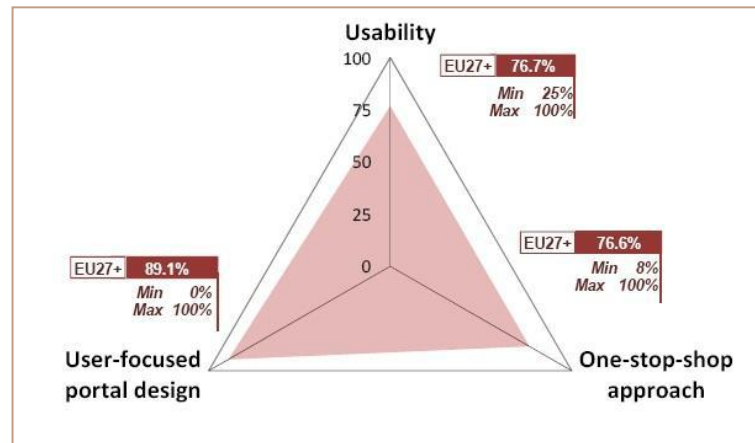


Figure 8 User Experiences of Portals, EU27+

- **Usability:** Can we choose a channel, does the website allow tracking and tracing, is there help functionality available and are the privacy policies properly mentioned and explained?

- **One-stop-shop approach:** What is the proportion of the 20 basic services that are available on the main portal(s)?
- **User-focused portal design:** can we find information on the different websites easily and are they structured by theme or life events for example?

2.1.5 Twenty basic public e-government services as defined by the EU

E-government services is an effective cost and time saving way to provide better services for citizens and businesses and bring convenience to them, to enhance open and transparent participatory government and so to contribute in the economic sustainability of regions. There are 20 basic public services as identified by the European Commission Directorate General Information Society and Media. Twelve of these services are aimed to help citizens and eight of them are allocated to serve businesses as we can see in Table 1.

Citizens	Businesses
Income Taxes	Social Contribution for Employees
Job Search	Corporate Tax
Social Security Benefits	Registration of a New Company
Personal Documents	Submission of Data to the Statistical Office
Vehicle Registration	Custom Declaration
Application for Building Permission	Environment-related Permits
Declaration to the Police	Value Added Tax (VAT)
Public Libraries	Public Procurement
Online Certificates	

Enrolment in Higher Education	
Announcement of Moving	
Health-related Services	

Table 1E-government Services as defined by the EU

First, we will represent in details the twelve basic services that are used to help the citizens:

- **Income tax:** declaration, notification of assessment, standard procedure to declare labor income tax of an employee. Citizens should pay tax electronically in any manner and at any time; a government website should provide related information about all kinds of taxes and forms [16].
- **Job search services:** standard procedure to obtain job offerings as organized by official job offices. Citizens can seek employment by searching through related government websites for availability. All necessary documents can be submitted online; therefore, a job-seeker does not require showing up at a government office to submit the documentation.
- **Social security benefits:**
 - **Unemployment benefits:** a social security benefit given by government to help unemployed and low-income people financially.
 - **Child allowances:** the money granted by government and received by the parents of newborn child. Requirements to receive this money differ from one country to another in the EU countries.
 - **Medical costs:** standard procedure to get reimbursement of costs covered by compulsory medical insurance. Citizens pay for the government monthly or yearly depending on the rules of the country.
 - **Student grants:** grants provided by the government to assist students for living and tuition fees as a way to support higher education.

- **Personal documents:** Standard procedures to obtain any necessary personal documents electronically, such as passports and driver's licenses for personal vehicles not for professional use.
- **Vehicle registration:** Standard procedures to purchase, register new, used or imported vehicles through related government websites. Citizens are now able to submit any relevant documents online regarding vehicles without needing to proceed to a vehicles registration office.
- **Application for building permission:** citizens are now able to obtain building or renovation permission for a personal building (regular, initial request) by online submission. All relevant documents and information related to the building should be received by the government websites. The applicant can receive an e-mail as a response if the government website provides transactional services.
- **Declaration to police:** standard procedure to declare a theft of personal goods (e.g. burglary of car or home) officially to a local police office via the Internet. Citizens have the ability to access national information via a police network, such as online theft declarations, databases of terrorists and organized crime groups, and detection of criminals through criminal records databases.
- **Public libraries:** standard procedure to access online the catalogues of public libraries to search for and obtain specific information on books, CDs, etc.
- **Online certificates:** citizens can submit relevant documents electronically through a government website or via a mobile device and place an order to obtain birth, marriage or death certificates.
- **Enrolment in Higher Education:** students can enroll at a university or any other institution of higher education in the country. Universities can provide their own websites and through these websites students can register or select courses without paper-based work as the processes are online.
- **Announcement of moving:** online announcement of a person's change of address or moving within the country.

- **Health related services:** the government can provide a portal by which information about doctors and hospitals are obtained. Patients can easily make appointments online or be informed about the location of nearby hospitals and pharmacies.

Below, we will address in details the eight basic services that are allocated for business purposes:

- **Social contributions for employees:** is a system of medical and social payment and pension insurance of employees. This payment is paid to those employees who work in the public or private sector to obtain benefits in medical and social costs. After retirement, they receive monthly pension insurance. Such information can be provided through digital platforms.
- **Corporate tax:** forms can be submitted and payments can be performed electronically. Functionalities follow up the status in tax offices, check account balances and obtain information about regulations and updates via the Internet [16].
- **Registration of a new company:** The most important procedure to register a new company online and store any relevant documents electronically.
- **Submission of data to the statistical office:** the standard procedure aims at finding how the government can easily submit online statistical data and cut company red tape through interoperability of data-sets.
- **Custom declaration:** customs declaration is related to the regular activities of a corporation and can be fully submitted in an electronic environment.
- **Environment-related permits:** obtaining online permission for issues related to the environment. An environmental permits or request for exemption may be considered necessary if a business somehow affects the environment.
- **Value Added Tax (VAT):** VAT is a tax on purchase prices. It is a value that is added to a service or product. Organizations or commercial businesses must be able to submit and pay online.

- **Public procurement:** the procurement of products and services on behalf of the public sector. A government website must provide any forms and information related to public procurement requirements.

2.1.6 Birth certificate

Birth registration is the first official recording of a child's birth by the state. It is a permanent and legal record of a child's existence. It is considered to be a part of the national civil registration system that admits the person's existence before the law, establishes family ties and tracks the vital events of an individual's life from live birth to marriage and death [17].

Registering a child's birth enables that child to obtain a birth certificate. A birth certificate is a certified extract from the births registration and as such it is a personal document that proves the registration is issued to an individual as proof of their name and their relationship with their parents and the state. The registration of a birth and issuance of a birth certificate are therefore still two distinct interlinked events [18].

Obtaining a birth certificate has several advantages as mentioned below:

- A birth certificate is the most significant document which provides legal and national identity (citizenship) to a child so as to be considered a part of society
- Birth certificates are required to be able to access social services such as:
 - **Education:** to enroll in a school, every child needs a birth certificate which carries their name and proves their age. They are needed to obtain a primary school diploma and thus advance to secondary school. They are also required in order to sit for exams.
 - **Health:** a registered child's family may have access to community health centers and community healthcare workers. Children may obtain free or subsidized immunization programs and other important healthcare programs [19].

- A birth certificate is needed to acquire any necessary personal documents such as passports and driver's licenses.
- A birth certificate records a person's age, and as children under the age of 18 are entitled to specific rights and legal protection, proof of age can offer children protection against exploitation, including child labor, illegal adoption, trafficking, early marriage and early military recruitment.
- As an adult, a birth certificate can facilitate financial assistance, including opening a bank account, access to credits, loans from banks and microfinance schemes [19].
- By having a birth certificate, an adult may have the right to marry, vote and be employed in the formal sector. For example, to work legally or pay taxes.

2.1.7 Birth registration in Iraq

Iraq is one of the countries where birth registration and record keeping are the responsibilities of the Ministry of Health, where all paperwork relating to the birth is handed to the family by hospital personnel. In the case that there is no attendant at birth, the parents or relatives are required to report a birth and that report must be made by the mayor with two witnesses [20].

جمهورية العراق
وزارة الصحة
قسم الإحصاء الصحي والحياتي

شهادة ولادة رقم الشهادة 028169 IRO № ط ٢ تاريخ التنظيم ٢٠١٥

1- الاسم	2- الجنس	3- محل الولادة: القرية...
4- الولادة: مفردة...	5- تاريخ الولادة (كتابتة): الساعة...	6- الشهر...
7- الأب	8- الأم	9- الاسم الثلاثي
10- العمر...	11- المولودين الأحياء ثم توفوا...	12- هل هنالك صلة قرابة بين الأم والأب...
13- عدد المواليد السابقة للأم عدا هذا الطفل...	14- عدد الإسهالات إن وجدت...	15- عدد الحمل...
16- حدثت الولادة بواسطة طبيب...	17- عنوان الدائم لعائلة المولود رقم الدار...	18- معلومات خاصة بـمديرية الجنسية والأحوال المدنية...
19- اسم المخبر...	20- شاهد بان هذا الطفل ولد حياً في التاريخ المبين أعلاه...	21- اسم المولود...

ملاحظة: توضع علامة (x) في المكان المناسب 1- النسخة الأولى (نسخة الأحوال المعقولة) 2- الثانية (لذوي العلاقة) 3- الثالثة (خاصة بالكلية معقولة) 4- الرابعة (نسخة منظم الشهادة)

Figure 9 Birth Certificate in Iraq

A birth certificate in Iraq includes the following necessary information:

1- Information related to the child

- Name
- Gender
- Type of birth: single-twins-triplets-more
- Date of birth: day-month-year-time

2- Information related to the parents

- Full name-age-occupation-nationality-religion
- Is there any kinship between the mother and father?
- Number of previous births for mother except this child
- Duration of pregnancy
- Permanent address of the family born: house no.-alley-district-township-city
- Parents' census record or national ID-record no.-paper no.-name of governorate

3- Information related to the birth

- Birth place: house-hospital and name of hospital
- Birth occurred by:doctor-certified nurse-certified midwife-Others
- Informer name,address, his/her relation to newborn
- Name of the person supervising birth, address, signature and seal, his/her certification that baby was born alive on date indicated
- Hospital director or his/her deputy's full name

More detailed explanations/descriptions of the processes are given in Chapter 3.

Birth registration procedure in Iraq (depending on the place of birth) can be done as follows:

a) If a birth occurs inside a health establishment (governmental or private):

Attending doctor, midwife or nurse licensed in obstetrics signs and issues the birth certificate in triplicate and then submits them to the director of the establishment. The director of the establishment or his/her deputy approves and records the birth certificates in a special register. The first copy of the birth certificate is sent within 15 days to the births and deaths department to be registered in the births record and then within 15 days it is sent to the civil status authority. The second copy is given to the stakeholders (parents, relatives, etc.) immediately after registration; the third copy is kept by the health establishment [21]. Figure 10 shows the procedure more clearly.

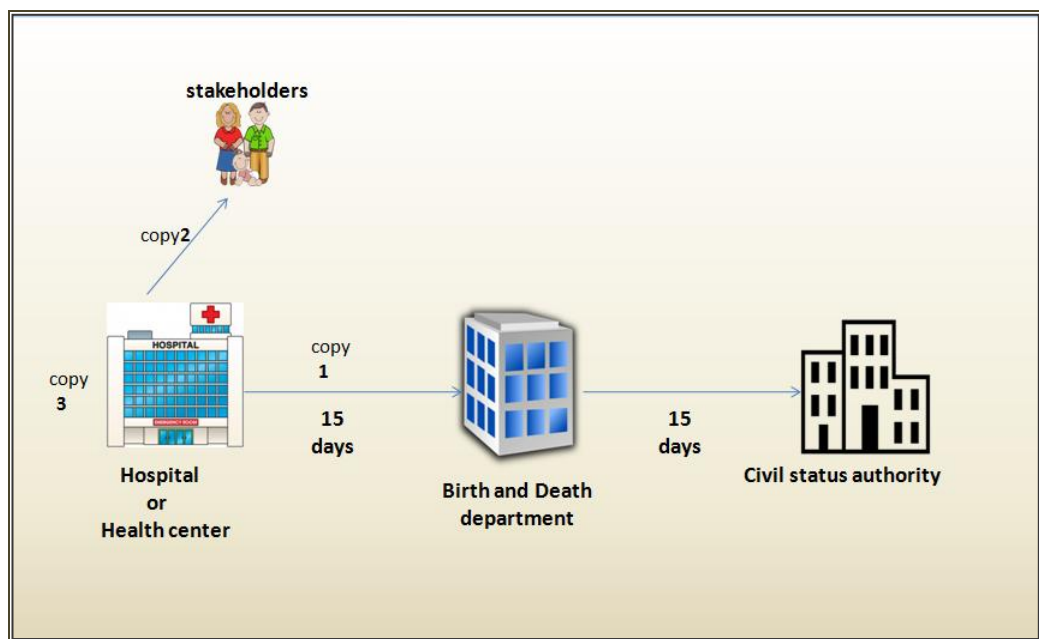


Figure 10 Birth Registration Procedure in Iraq

b) If a birth occurs outside a health establishment:

A doctor, midwife or nurse licensed in obstetrics attending birth outside a health establishment issues, signs and submits a birth certificate to the births and deaths department for approval and registration in the births record within 30 days if a birth occurs in cities and 45 days if a birth occurs in a village.

The first copy of the birth certificate is sent to the civil status authority and the other two copies are returned to the person attending the birth to deliver the second copy to the stakeholders. The third copy is retained [21].

Late birth registration case also has been taken into consideration and can be processed as follows:

If a birth or death certificate is issued and is not notified within the stated legal period, the stakeholder shall refer to the births and deaths department to register the certificate.

The births and deaths department shall register the certificate after verifying its content and the stakeholders pay a fee due to late registration. The registered certificate shall be submitted to the competent personal status authority within 15 days from receiving the application of the births and deaths department [21].

2.2 Literature Review

The reasons that make governments tend to use electronic ways in providing birth certificate belong to several barriers that might happened while implementing birth registration process in traditional way. These barriers may include geography barriers: in this section, we will show some countries that have suffered from centralization of birth registration offices, long distances and low population problems. Lack of awareness: citizens of several countries are less aware and educate about the importance of registering a birth. War and internal conflict: countries which referred in this section were endured to destructive wars that dramatically affected on the coverage of civil registration and vital Statistics.

2.2.1 Geography

Two of the challenges faced by the citizens of several countries in order to obtain birth certificate including long distances and low population density. People are required to travel long distances to reach the nearest registration offices.

According to a report by the World Health Organization ‘draft report’ in 2013:

Namibia had a problem of decreasing registration from the period 2000 to 2007 due to its low population density and the great distances people were required to travel to reach registration points. To solve these challenges, Namibia improved the CRVS by decentralizing registration, decreasing travel distances, thereby facilitating the service to poor people by reducing the cost and burden of travel. Moreover, sub-regional offices for registration were created, supported by a technology that allowed video conferencing and distance training of staff. Additionally, there are opportunities to link the CR system with other government department systems such as those related to the issuing of ID cards and passports.

Similarly, Botswana, which faces similar challenges to Namibia involving a thinly populated country and long distances, has also found solutions by decentralizing birth registrations, issuing national ID numbers through hospitals and implementing

an advanced CRVS system that can integrate with other governmental information flows and allowing cross-country information updates [22].

Uganda and Senegal were examples of countries that had challenges of geography and communication where the rural people live at a great distance from urban centers. Village chiefs and registration agents have to travel long distances to register the births that occur in their areas. This can be costly, time consuming and unpractical. Mobile technologies have started to be implemented as a positive solution for the challenges mentioned above [23].

Below, Figure 11 shows the statistics of registered births in Uganda 2012 through the use of mobile phones.

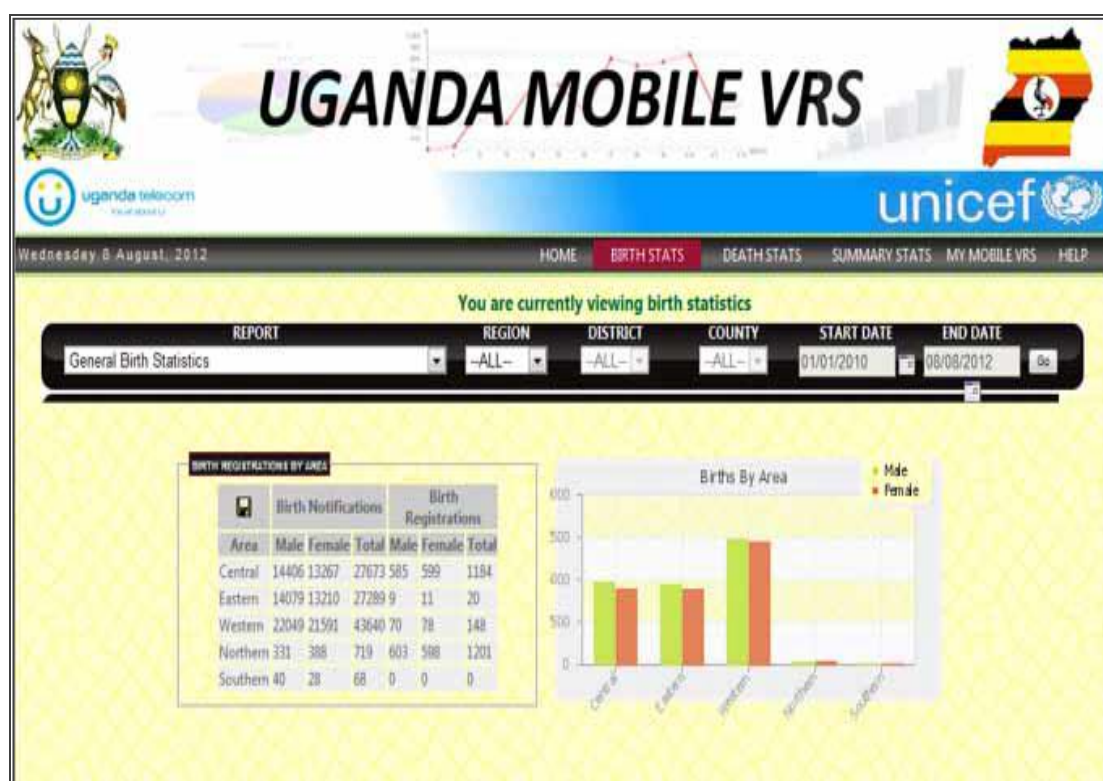


Figure 11 Uganda mobile vital registration statistics website

According to the births registration process in Vanuatu, giving an extensive coverage of nearly 30 percent, UNICEF reported that coverage of births registrations is good in urban areas while it is low in rural areas. This is due to several barriers including low population densities, geographical isolation, and unsuitable transport

infrastructure that parents may face in rural areas. While accessing registration services, parents may make wasted journeys. Offices often have inappropriate and irregular opening hours, and staff may be absent. Additionally, there may be a lack of paper and other materials. The main goal is to notify the Civil Registration Department about the occurrence of any birth; therefore, mobile phones or other wireless devices could considerably improve the birth notification and registration process in Vanuatu [24].

2.2.2 Lack of awareness

The main cause of non-registration in many countries is due to the general lack of awareness among parents and trustees regarding the importance of, and the need for, birth registration and certificates for their child's future life.

People in Bangladesh, as indicated in [25], were not sufficiently aware of the importance of birth certificates as they are a proof of age, identity or being a gateway to accessing social services. The state is not capable of taking protective measures against issues such as child early marriage, child trafficking, child labor, etc., and raising awareness among parents by applying a communication strategy as a means to promote and disseminate advocacy materials such as leaflets, posters, also audio-visual resources through mass media to notify the importance of birth registration as a child's right. In addition, a communication activity should involve all local languages spoken by indigenous populations and minorities.

Many people in Senegal believe that they should pay a fee to register their child while it is only needed when to obtain a copy of a birth certificate. Such a belief exists due to low awareness among the rural population regarding the reasons for the necessity to register a birth. Moreover, literacy is still low and legal documents are often not well understood by citizens. Orange's mobile birth registration solution in Senegal is an excellent example of solving what was previously a social barrier. Parents adopted and trusted the new solution quickly and the village chiefs understood instantly that a mobile-based solution is an up-to-date solution which could help them to save both money and time [23].

According to [26], many parents who live in rural areas do not give importance to the registration of births, where they believed that a child's life is not affected significantly without having *Hukou* (one of the most important components of the household management system in China). Without Hukou registration, a child cannot obtain his or her rights. In rural areas, the social security system is not robust, and there are few welfare measures linked with Hukou. Furthermore, some parents do not register their children until census time or if the Hukou is needed for some special cases, such as when children enroll in school. Effective advocacy and advertising becomes a positive feature of BR as it improves the awareness of government agencies and citizens about BR. Different media tools such as the Internet, radio, TV, newspapers can publicize the importance of BR and as a result, this will increase citizens' enthusiasm for BR.

There was an obvious and clear lack of awareness by the Liberian population about the need for birth registration. Health practitioners commonly referred to the process of birth notification as birth registration. At the district level, the flow of birth notification data was inconsistent, not well-timed and usually never complete. Raising social mobilization increases demand for birth registration through the establishment of regular educational campaigns and public awareness in order to achieve the universal birth registration coverage (80% of children fewer than 13 years) by 2018 [27].

According to a UNICEF report, the birth registration rate in the Solomon Islands is considered to be the lowest in the Pacific region with just 0.1% of births being registered formally in 2007. There was lack of information and awareness about the importance of birth registration. 88% of parents claimed that their children had been registered; however, only 32% of relevant respondents could show birth certificates for these children and sometimes there was confusion with other documents, such as baptism certificates.

Communication programs such as advocacy and social mobilization can improve the knowledge of the population about the necessity of registering a birth and how it is vital.

Moreover, there are initiatives that included regular newspapers, articles and radio broadcasts to inform the public of birth registration services and the active use of information [28].

2.2.3 Wars and internal conflicts

War and civil conflict are considered to be two causes that lead to the destruction of countries in terms of infrastructure and human capital resources. Studies of several countries in Africa, as mentioned below, show the extent of the impact of this barrier on birth registration processes.

Angola, which has suffered more than 30 years of armed conflict, faces major obstacles in the birth registration process. However, even in the most difficult circumstances, the importance of birth registration is still considered to be a fundamental human right. Between 1998 and 1999, the number of internally displaced people in Angola (IDP) who have been officially recognized has increased from 524,000 to 1.7 million. These IDPs included children who were separated from their families, particularly those more affected because many of them had not been registered and did not have any proof of identity. Therefore, efforts have been made to reunite them with their families. Moreover it was necessary to prove their real age to prevent their recruitment into the armed forces.

Despite the difficult internal situation, the Angolan Government has realized the importance of birth registration. Therefore, in March 1998, it saw the launch of the national registration campaign for children and it registered approximately half a million children. This campaign was the basis of a new and more ambitious initiative: a second campaign was launched in August 2001 to register three million children by the end of 2002 [18].

In Côte d'Ivoire, birth registration rates have declined as a result of the armed conflict in the country. This conflict led to the destruction of civil registration offices, the discontinuation of public services and to the lack of state control over more than half of the country in addition to the negative impact on many IDPs. Thus, the birth registration rate significantly reduced from 72% in 2000 to 55% in 2006.

At the end of the conflict in 2008, the government of Côte d'Ivoire implemented a national civil registration program using a comprehensive, long-term strategy plan to facilitate the access to the civil registration system and to increase birth registration rates [25].

War and conflict in Liberia were the basic reasons for the destruction of civil society institutions. Even after the end of the war, many basic services were still unavailable. One of the important aspects that have been affected by this barrier was the registration of births. In 2007, a demography survey showed that the registration rate for children under five years of age was approximately 4% [29]. The government of Liberia (GoL) has collaborated with Crisis Management Initiative (CMI) to quickly reinstate key functions of the state administration in order to show the benefits of peace through efficient service delivery. It also set up suitable ICT solutions to improve the birth registration process in Liberia [30].

The registration system in Mozambique during the colonial period is based on racial discrimination with low coverage of civil registration and vital statistics. After independence, there was a marked shortage in the number of qualified CRVS staff due to the displacement of large numbers of professional staff colonists. In 1980, there were initial steps to develop CRVS including new legislation. However, this progress was not remarkable and stopped during the period of civil war from 1976 to 1992.

After the end of the civil war, legislation and new mechanisms for CRVS were established. The constitution states that all citizens are entitled to have their names, families and compulsory civil registration for births, deaths and marriages. Recently, the government has improved the electronic government strategy (e-NUIC) with a strategic plan for an information system for health (SIS-ROH) to increase registration coverage and also to modernize it by using mobile registration units in registering children and adults [31].

2.2.4 Adoption of e-government initiatives

The adoption of e-government has the ability to provide better services to citizens at lower cost and in less time. However, it has problems of acceptance. One of the most challenging issues in e-government diffusion is to understand why people accept or reject new IT services. The acceptance of e-government mainly relies on citizen willingness to adopt this new innovation. Therefore, the issues relating to the adoption of e-government are not only taken from technological perspectives but also from cultural and social perspectives [32]. Several terms may be included in cultural and social issues, such as gender discrimination, *Wasta*, religious beliefs, etc. We also referred to challenges of resistance to change and the factors that made citizens not accept and resist change in the way services are delivered.

2.2.4.1 Cultural and social issues

Culture is still considered the most complicated barrier when dealing with new systems of technology. Included are several issues such as gender discrimination, religious beliefs and *Wasta*.

Gender discrimination

Some studies have shown that gender discrimination is considered to be one aspect of the socio-cultural differences between people. Venkatesh et al. [33] in their research on gender differences shows that men tend to be more task-oriented than women. Nysveen et al. [34] claim that women tend to have lower self-efficacy and lower computer skills than men. In contrast, Levy has found that gender discrimination is considered to be an insignificant factor in the use of e-government services.

As indicated in Arab Human Development reports, Kuwaiti women face less gender inequality than women in other Arab countries. In Kuwait, both females and males were receiving similar educational and learning opportunities. Therefore, online services would enable many women, especially younger generations, to carry out governmental transactions [35].

However in Saudi Arabia, due to cultural and religious issues, gender discrimination is a crucial factor that should be taken into consideration while analyzing the adoption of e-government services [36].

Religious beliefs

Researchers have studied the impact of using information technology on societies where norms, religion and traditions play an important role in people's lives [37]. The religion of Islam is the dominant attribute of Arab culture and society. It is the basic principle for Arab thought and action [38]. In Saudi Arabia, the Islamic religion is reflected in many aspects of Saudi social life. Researchers believe that government should highly consider those facts in providing e-services to its citizens and ensure that these services must comply with Islamic rules [10].

Wasta

Wasta is an Arabic term which is considered to be one of the significant factors related to e-government adoption in Arab countries that should be overcome. It is the process of using the power of someone's interpersonal connections in order to obtain advantages that would not normally be obtainable [37]. This kind of practice, which is diffused throughout government departments, spreads corruption in society and increases inequality among individuals. As indicated by [35], the use of e-government would greatly limit *Wasta* and all people would be provided equal opportunity to carry out governmental transactions.

2.2.4.2 Resistance to change

Electronic government is a new phenomenon which is the transition from manual processes of work to electronic processes. This transformation will create a new environment entirely different and more advanced from what has been utilized over many years between government departments [10].

Employees would be worried about the changes related to e-government technical innovation, including fear of losing jobs as well as the possibility of being replaced by technologies [37]. Furthermore, it is very difficult in a short time to stop traditional ways of working and learn new approaches to working.

Dealing with this resistance successfully means guaranteeing the existence of incentives for employees to learn and establish well-structured plans that adopt employee participation over all stages of a change [2].

Bureaucracy is considered to be one of the causes of citizens' still preferring a paper-based system rather than a web-based system in the delivery of government services. In Egypt, citizens are more likely to acquire their services face-to-face with a government employee and they are accustomed to receiving papers with signatures or stamps to prove that their documents are authorized, original and valid [39].

Another important factor that may increase the resistance of citizens towards the new technology is mistrust of using e-government services. Citizens believe that e-services websites are not sufficiently secure to share their personal information (name, picture, ID number, etc.) online or electronically because it can be easily intercepted and used by multiple parties not directly linked to the specific service. Therefore, there is the possibility of resistance to the new medium [40].

CHAPTER 3

GUI DESIGN

3.1 Introduction

We had previously mentioned in Chapter 2 in Section 2.1.7 the procedure of the registration of births in Iraq along with an example of the current birth certificate (Figure 9) used. The certificate is the first legal rights document to prove a child's existence in society. It also contains basic and important information about the child, the parents and information related to the birth event.

In this chapter; with the information that we have collected, we will address in more detail the steps of births registration in Iraq whether births occur inside or outside health centers. We will represent events, actions and required information by using case diagrams so that we can design GUIs. It is essential to identify the actors, actions and information as well as how they are related to each other.

Through the use case diagrams, the following terminology should be visited:

➤ Actors and places

- Mother: the person who gives birth.
- Hospital reception clerk: a worker at the hospital reception.
- Doctor: a worker in the hospital who is licensed in obstetrics to attend the birth event.
- Nurse: a worker at the hospital who is licensed in obstetrics to check the baby after its birth.
- Midwife: the person who is licensed in obstetrics to attend the birth event outside a hospital or health establishment.

- Baby: a very young child who comes newly to the world.
- Director of the hospital: the person who directs and manages the hospital.
- Stakeholders: people who have the responsibility of childcare (parents, relatives, etc.).
- Births section: the section located in the births and deaths department.
- Hospital Data Base (D.B.) section: the section located in the hospital which contains all data.
- Births section clerk: a worker in the births section who receives birth certificates.
- Registrar: a worker in the births section who registers birth certificates.
- Births section director: the person who directs and manages the births section.
- Civil Status Authority (CSA): the place with the task of preserving up-to-date documents recording a person's vital events.
- CSA reception clerk: a worker in the Civil Status Authority who receives birth certificates.
- Births data officer: a worker in the births data office of the Civil Status Authority.
- Registry office: an office located within the Civil Status Authority.

Births not only occur at health centers but also outside, most commonly, in homes. Therefore, it is not an uncommon practice to call a midwife to help in the delivery of the baby. The following sections distinguish both cases by considering the place of the birth.

3.2 Births that occur inside hospitals or health establishments

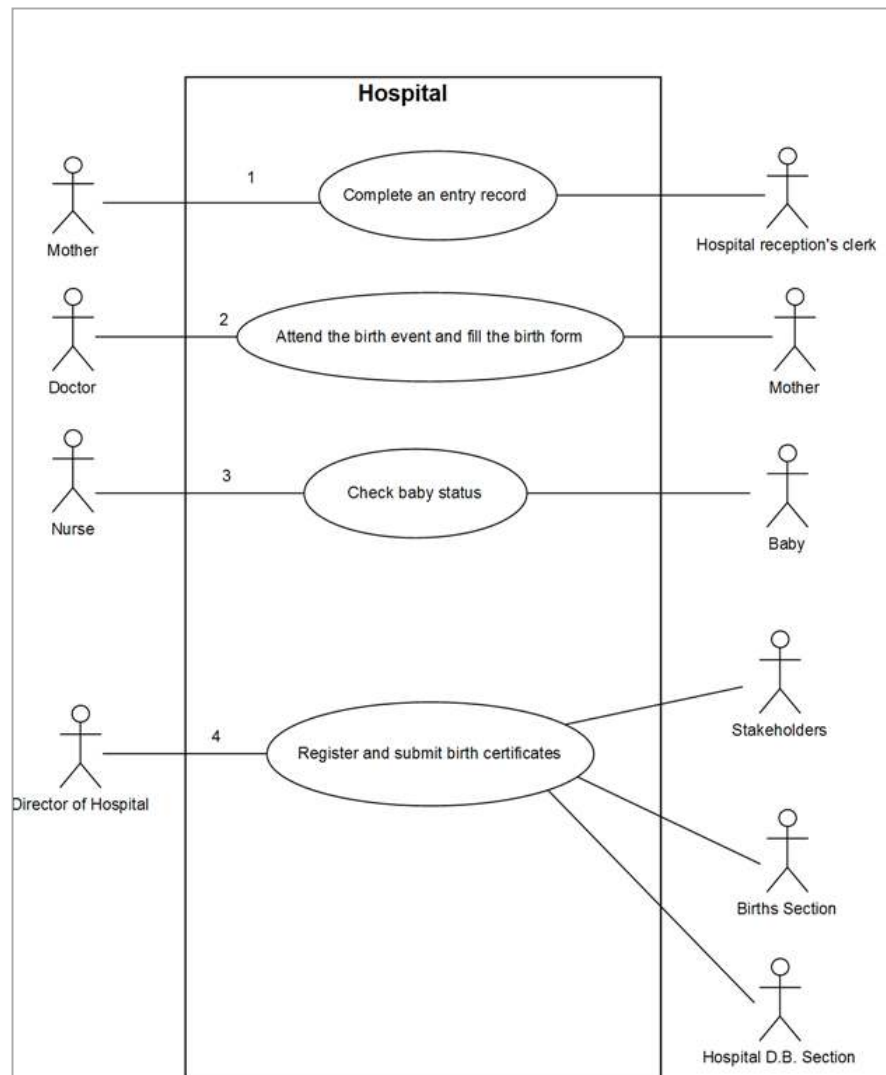


Figure 12 Hospital use case diagram

1. **Associated information:** the parent's name, entry date, entry time and entry fee.

Action: the hospital reception clerk fills in and completes a small receipt or an entry record including any general information for the parents.

- 2- **Associated information:** the mother's information (name, age, status, duration of pregnancy, etc.) and after the birth, the baby's required information (weight, height, sex, etc.).

Action: an attending doctor licensed in obstetrics (who helps the mother to give birth) signs, issues the certificate in triplicate to the director of the hospital, who approves and registers the birth certificates.

3- Associated information: the baby's information.

Action: the nurse checks the baby's status and fills in the information.

4- Associated information: the parent's and baby's information.

Action: the director of the hospital registers the birth certificates in a special register and submits them within 15 days to the births section, stakeholders and hospital D.B. section.

The stakeholders, after 15 days, must go and take with them a copy of the birth certificate to be checked, registered and sealed by the births and deaths department (births section).

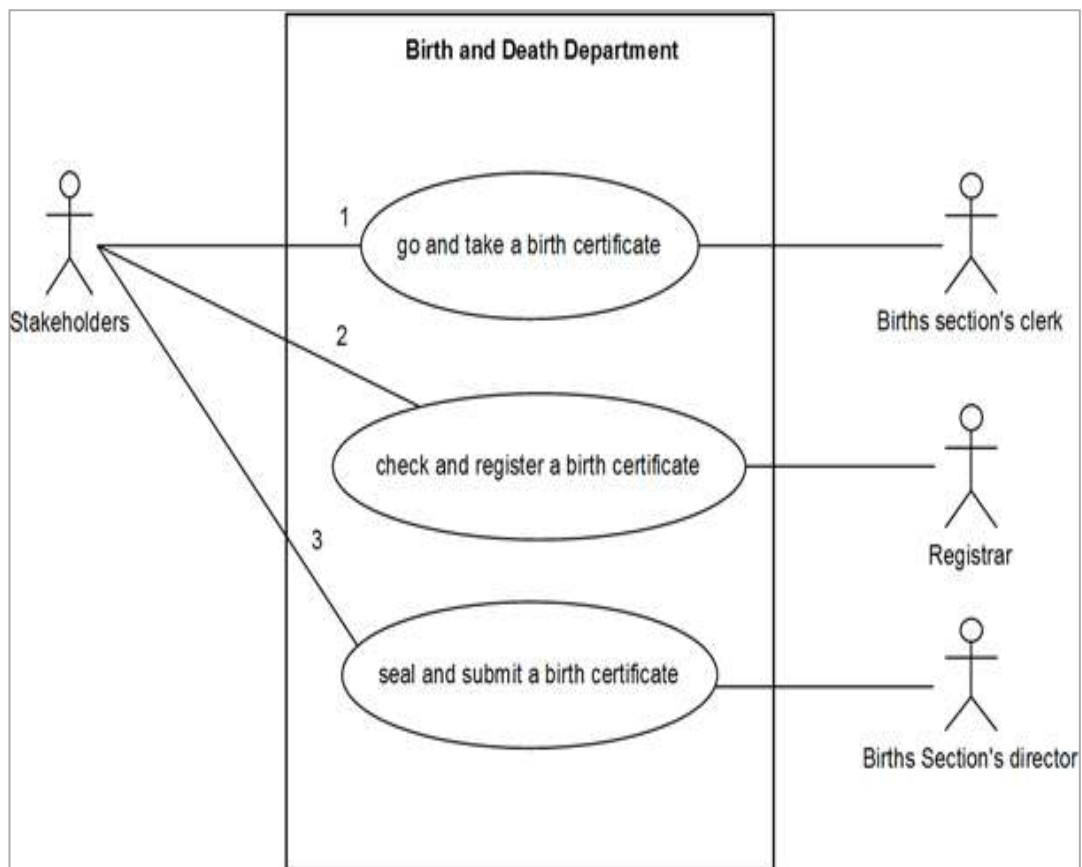


Figure 13Birth and Death department use case diagram

1- Associated information: the birth certificate which is owned by the stakeholders.

Action: the clerk of births section takes the birth certificate from the stakeholders.

2- Associated information: the birth certificate which is owned by the stakeholders.

Action: the registrar checks the information on the birth certificate and then registers it in the births record.

3- Associated information: the birth certificate which is owned by the stakeholders.

Action: the director of the births section seals the birth certificate and submits it to the stakeholders.

Then, the stakeholders, after at least another 15 days, go and take with them the sealed birth certificate with other necessary documents related to the parents (parents' marriage certificate, census record, national ID, number of record, register and name of governorate should be referred) and bring everything to the Civil Status authority to request a national ID card for their newborn child.

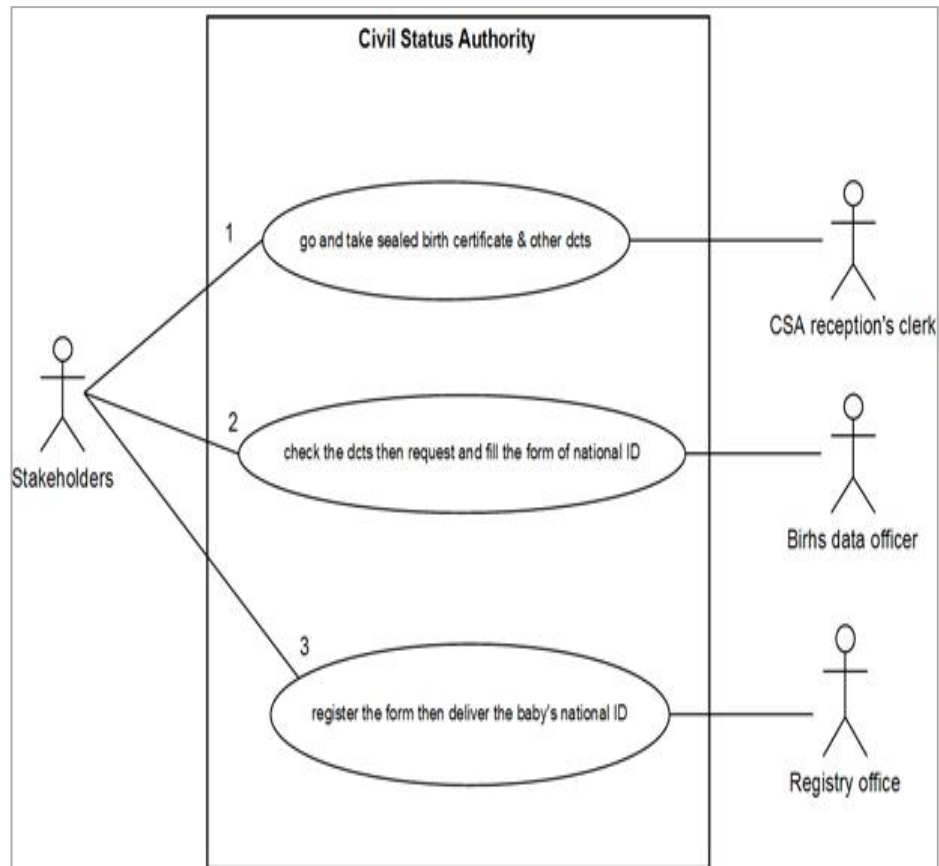


Figure 14 Civil Status Authority use case diagram

- 1- Associated information:** the sealed birth certificate, parents' marriage certificate, census record and national ID.

Action: the clerk of the CSA reception receives all necessary documents from the stakeholders.

- 2- Associated information:** the sealed birth certificate, parents' marriage certificate, census record and national ID.

Action: the officer of births data checks every document and then fills in and completes the form with the information for the stakeholders which is requested for their baby's national ID.

- 3- Associated information:** information written in the requested form for the baby's national ID.

Action: the worker at the registry office registers the form and then makes the new national ID for the baby and delivers it to the stakeholders.

3.3 Births that occur outside hospitals or health establishments

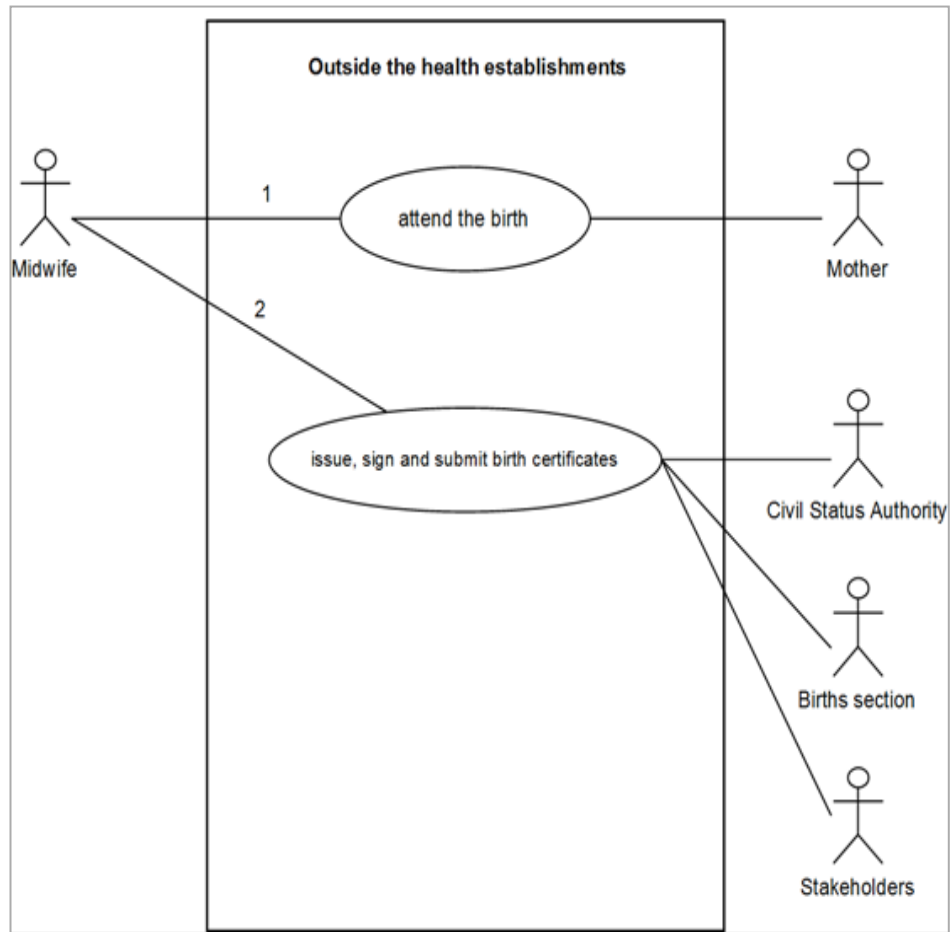


Figure 15 Outside the health establishments use case diagram

1- Associated information: mother's information (name, age, status, pregnancy duration, etc.).

Action: the midwife helps the mother to give birth.

2- Associated information: parents' and baby's information.

Action: the midwife attending the birth issues and signs the birth certificate in triplicate and submits them to the Civil Status Authority, births section and stakeholders.

3.4 Interfaces

GUIs are designed in this section as a way to illustrate the roles of each actor and their actions related to the birth registration process in Iraq. We will give a simple scenario to clarify more the actions from the time of the family's entry into the hospital to the time they obtain the birth certificate.

Before giving birth:

- 1- Mr. and Mrs. Al-Dulaimi decided to go to the hospital at the time of birth. Once they enter the hospital, the hospital reception clerk obtains general information from them in addition to their entry time, date and fee, and fills in a small receipt or an entry record, as shown in Figure 16 and then gives it to Dr. Mary, who will help Mrs. Al-Dulaimi in the birth process.

Hospital's entry receipt
Filled by hospital's reception clerk

* Required

Mother's name * الاسم الثلاثي للأم
Sara Maher Al-Dulaimi

Father's full name * الاسم الثلاثي للأب
Ahmed Samer Al-Dulaimi

A specialist doctor's name * إسم الطبيب المختص
Dr. Mary Omar

Entry date * تاريخ الدخول
01/09/2009

Entry time * وقت الدخول
09:00 AM
Example: 11:00 AM

Entry fee * رسم الدخول
5000 ID

Submit

Figure 16 The form to be filled by hospital reception clerk

- 2- When Mrs. Al- Dulaimi goes to the doctor concerned, Dr. Mary will fill in any necessary information of Mrs. Al-Dulaimi and then checks whether she is ready to give birth. See Figure 17.

Mother's information

Filled by Dr. Mary

* Required

Mother's full name

Sara Maher Al- Dulaimi

إسم الأم الثلاثي

Age *

28

العمر

Pregnancy duration *

9 months

فترة الحمل

Number of previous births for mother except this child *

0

عدد المواليد السابقة للأم عدا هذا الطفل

Is the mother ready to give a birth? *

☒ Yes

☐ No

هل الأم مستعدة للولادة؟

Submit

Figure 17 The form including mother's information.

After giving a birth:

- 1- The nurse checks the condition of the baby and fills in the form with information related to the baby and gives this information to Dr. Mary, the doctor who attended the birth.

Baby's information

Filled by a nurse licensed in obstetrics

* Required

Baby's name * إسم الطفل

Gender * الجنس

☐ male

☒ female

Baby's weight * وزن الطفل

Type of birth * نوع الولادة

☒ single

☐ twins

☐ triple

☐ more

Figure 18The form including baby's information

- 2- Dr. Mary will organize and fill in the birth certificate with the information related to the parents (Mr. and Mrs. Al-Dulaimi), information about the baby and birth and submit it in three copies to the director of the hospital. After submission, Mr. and Mrs. Al-Dulaimi will receive a copy of their baby's birth certificate.

Birth Certificate

To be filled by Dr. Mary

* Required

Baby's name	إسم الطفل
Dilara	
Baby's gender	جنس الطفل
Female	
Date of birth *	تاريخ الولادة
01/09/2009	
Time of birth *	وقت الولادة
11:00 AM	
Example: 11:00 AM	
Place of birth *	مكان الولادة
☐ house	
☒ hospital	

(Continued to the next page)

If birth occurred in hospital, hospital's name: * Green apple Hospital	إذا حدثت الولادة في المستشفى.. اسم المستشفى
Type of birth Single	نوع الولادة
Mother's name Sara Maher Al- Dulaimi	إسم الأم
Mother's age 28	عمر الأم
Mother's occupation * Lecturer	وظيفة الأم
Mother's nationality * Iraqi	جنسية الأم
Mother's religion * Muslim	ديانة الأم

Father's name Ahmed Samer Al- Dulaimi	إسم الأب
Father's age * 30	عمر الأب
Father's occupation * Dentist	وظيفة الأب
Father's nationality * Iraqi	جنسية الأب
Father's religion * Muslim	ديانة الأب
Is there any kinship between the mother and father? * ☐ first degree ☐ second degree ☐ third degree ☒ no	
Number of previous births for mother except this baby 0	عدد المواليد السابقة للأم قبل هذا الطفل

(Continued to the next page)

Pregnancy duration	فترة الحمل
9 months	
baby's weight	وزن الطفل
2, 85 gm	
Permanent address of the baby's family: house no. , alley, district, township, city *	العنوان الدائم لعائلة الطفل
Baghdad, AL-Karkh, Hay Al- Mansur alley:635 district:22 house no:8	
Parents' census record no. , paper no. , and name of governorate: *	رقم هوية دائرة الاحوال المدنية والسجل والصحيفة واسم المحافظة للأبوين
record no: 68 paper no: 53 AL-Karkh-Baghdad	
Birth occurred by *	حدثت الولادة بواسطة:
☒ certified doctor ☐ certified nurse ☐ certified midwife	

(Continued to the next page)

Name of the person who supervised on the birth *
اسم الشخص الذي اشرف على الولادة

Dr. Mary

His/her address *
عنوانه /ـا

Palestine street - Baghdad

His/her certification *
شهادة المشرف على الولادة

I certify that this baby was born at the indicated date

Hospital director or his/her deputy full name *
الأسم الكامل لمدير المستشفى او من ينوب عنه

Mr. Mustafa Al- Bayati

Submit

Figure 19 The birth certificate to be given by the hospital

3.5 Discussion

Use case diagrams are essential to represent actors who refer to particular roles of the systems. However, they are not enough alone as we discuss further in the limitations (section 4.2). Furthermore, what is represented in this chapter is quite abstract level and does not distinguish the primary and secondary actors, the generated and received information or the responsibilities of running and maintaining the system. Additionally, the events are required to be analyzed in-place in order to understand any triggering events.

Nevertheless, the chapter still serves the thesis by showing that even a simple and quick data collection process may be sufficient to start designing digital platforms to handle information.

CHAPTER 4

CONCLUSION

4.1 Findings

Finding 1: With the use of e-government applications, it has become possible to acquire services at lower cost, with less effort and in less time.

As we referred previously in the literature review (Section 2.2), birth registration rates in Uganda were low due to several challenges. Birth registration records were paper-based; therefore, they were more vulnerable to damage, destruction and loss. Moreover, inaccurate information caused delays in registration. There was also a lack of active communication between births registration offices in villages and urban areas. Births registration was a centralized system and in order to register a birth, people were required to travel long distances from their areas of birth. This can be impractical in terms of time, effort and money. Mobile technologies have begun to be implemented as an efficient and positive solution to address these challenges. The use of mobile technology minimizes the time of transferring information between parties in rural villages and urban areas, which will result in a more efficient and comprehensive process. The use of smart phones also helps to build a more effective central digital database which successively helps in data accuracy. The Uganda Telecom Company in partnership with UNICEF played a valuable role and initiated the improvement of the births registration rate as it considered that mobile operators could contribute to the development and welfare of citizens.

Finding 2: There will be considerable barriers to achieve finding 1.

To adopt the concept of e-government and new technologies, we must take into consideration several obstacles which are not only limited to the technical issues but are also cultural and social issues and citizens' willingness and acceptance to use the new innovation.

Gender discrimination, *Wasta*, religious beliefs, bureaucracy, lack of digital literacy, low levels of education and other factors can effect and increase the digital gap and resistance to change in society (Section 2.2.4).

Finding 3: Similarities between Iraq and some African countries.

According to previous studies that we had mentioned in the literature review (Section 2.2); the African countries especially had faced several obstacles in the process of birth registration. Civil war and internal conflict are considered to be two substantial reasons that lead to lack of security, instability and the destruction of countries. As a result, birth registration rates decline in these countries in addition to the negative impact on many IDPs, who have been separated from their families and are forced into being recruited into the armed forces (Section 2.2.3).

After the end of conflict in these countries, there were obvious initiatives to reinstate state establishments and resume the delivery of services to citizens. This is a major stage of successful post-conflict recovery. Therefore, in order to support the consolidation of peace, states must be supported to build capacities to achieve that end. Reinstating the basic functions of government can be facilitated by setting up proper ICT solutions as a vehicle to strengthen the concrete realization of fundamental civil rights in a post-conflict society.

We can take advantage of these successful experiences that have occurred in these African countries and apply them in Iraq, which is still suffering from internal instability.

Finding 4: A preliminary work to start electronic applications is possible

Merely with quick information collection and by looking at the basic actors and actions relating to the birth registration process in Iraq (as seen in Chapter 3), we may draw use case diagrams that are technically achievable.

4.2 Limitations

Limitation 1: Collecting information

Information and vivid examples have been collected to understand how births are registered in Iraq, whether occurring inside or outside hospitals and health centers. We identified actors, actions and places that are responsible for the registration process and presented them by using use case diagrams and GUI designs.

However, this information alone is insufficient. It is necessary to go to some places to observe and know in detail the sequence and interrelated actions of registering a birth. This limitation mostly restricts finding 4.

Limitation 2: System analysis and design

In Chapter 3, we identified the actors, actions and information associated with the births registration system and represented them by drawing use case diagrams. Technology, databases behind the system, structured ER diagrams and deployment models need to be taken into consideration when analyzing the system. This limitation relates to finding 4.

Limitation 3: Legal issues

Organizational barriers on the legal side are excluded from this study.

Can a hospital give information to government agencies electronically?

Can a doctor have permission to sign and seal by electronic signature on forms?

All these legal questions can limit findings 2 and 4.

Limitation 4: Project management

Budgeting, the number of skilled human resources and time are required to establish a system. This scope is not discussed in the study and may be a limitation to findings 1 and 2.

4.3 Future works

Future work 1: Users and system requirements

Getting in touch with the authorities, government agencies and end users to know their requirements would strengthen the study and make it more complete.

A follow-up study can be conducted to overcome limits 1, 2 and 4.

Future work 2: Investigation of legal issues

Further research is needed to investigate in depth government rules and legal barriers.

Such work would complement this study and address limitation 3.

Future work 3: Investigation of social issues

A complementary study may be conducted to discover the visibility of e-government initiatives and to understand the reasons behind social issues such as gender discrimination, *Wasta*, religious beliefs and resistance to change.

Such research can be a solution to limitation 4.

4.4 Conclusion

The thesis has taken the birth certificate case as an example and it concludes that diffusion and adoption of innovations hence e-government services require setting up clear objectives by considering technical and social barriers; otherwise, potential problems should be expected as a digital gap, which hinders getting benefits of transformed government.

Returning to the research question:

“Can the government of Iraq take the advantages and successful experiments of precedent countries in adopting e-government initiatives to improve birth registration service?”

Through the light of our findings in (Section 4.1) and considering the limitations in (Section 4.2), we can give a sound answer that Iraq needs to study examples from the World and to start transforming birth registration service from paper-based model to electronic model.

REFERENCES

- 1- **Ali L., (2007),** *"Electronic Government Between Theoretical and Practical Application"*, Conference Arab Organization for Administrative Development, Dubai, pp.2-3.
- 2- **Valentina D.N., (2004),** *"Electronic Government for Developing Countries: Opportunities and Challenges"*, PhD Thesis, University of Shkoder, Albania, pp.4-6.
- 3- **NugiN.,(2012),***"E-Government: Challenges and Opportunities in Botswana"*, Master Thesis, University of Botswana, Botswana, vol.2, no.17, pp. 40-41.
- 4- **Richard H.,(2002),** *"E-Government in Africa: Promise and Practice"*, Master Thesis, University of Manchester, UK, vol.2, no.13, pp. 6.
- 5- **ESCAP, APCICT., (2010),***"E-Government Applications"*, IEEE United Nations Asian and Pacific Training Centre, pp.2.
- 6- **Jon P. G., (2008),** *"Electronic Government for Developing Countries"*, Survey International Telecommunication Union for University of Illinois, Geneva, pp. 16-18.
- 7- **Bashar A. A., (2014),***"Effects of E- Government and GIS Technology for Developing Services"*, Master Thesis, Cankaya University, Turkiye, pp. 7-10.
- 8- **Sahar K. R., (2009),***"Electronic Government and The Capabilities for Activates Practices: Strategical Approach"*, Master Thesis, Al-Mustansiriya University, Iraq, pp. 16-18.
- 9- <http://unchronicle.un.org/article/role-e-governance-bridging-digital-divide/index.html>, (Data Download Date:28.03.2015).
- 10- **Alshehri M., (2010),** *"Challenges of E-government Services Adoption in Saudi Arabia from an E-ready Citizen Perspective"*, Journal of Emerging Trends in Computing and Information Sciences, vol.5,no.3, pp.25-30.
- 11- **UN., (2012),** *"E-government Survey"*, Survey Department of Economic and Social Affairs, USA, ISBN: 978-92-1-055353-7, pp. 123-124.
- 12- **Cappgemini. Rand Europe., (2009),** *"Smarter, Faster, Better e- Government"*, Survey European Commission, pp.2.
- 13- **Cappgemini. Rand Europe., (2010),***"Digitizing Public Services in Europe: Putting Ambition into Action"*, Survey European Commission, pp.244.

- 14- <http://www.egov.gov.iq/egov-iraq/index.jsp?sid=1&id=360&pid=332>,(Data Download Date: 10.04.2015).
- 15- **Dinand T., (2012),**"*Assessing User Centric E-Government Performance in Europe E-Government Benchmark*", IEEE Survey European Commission, ISBN 978-92-79-29951-3, pp.35.
- 16- **Patrick W., (2006),)**, "*Online Availability of Public Services: How Is Europe Progressing*", IEEE Survey European Commission, pp. 52-63, pp. 64-67.
- 17- **UNICEF., (2013),** "*A Passport to Protection: A guide to Birth Registration Programming*", Survey UNICEF, New York, pp.29.
- 18- **UNICEF., (2002),** "*Birth Registration Right from The Start*", Survey UNICEF, Innocenti Research Centre in Florence, Italy, pp.2-3.
- 19- **Ronald W., (2012),** "*A Note on Universal Birth Registration*", Working Document The World Day of Prayer and Action for Children Secretariat, New York, pp.5-7.
- 20- **Adnan S., (1980),** "*Registration of Vital Events in Iraq*", Paper work Ministry of Health, Iraq, no.10, pp.2.
- 21- <http://www.egov.gov.iq/egov-iraq/index.jsp?sid=1&id=344&pid=343&lid=6&lng=en>, (Data Download Date: 01.05.2015).
- 22- **Sundeep S., (2013),** "*Systematic Review of eCRVS and mCRVS Interventions in Low Middle Income Countries*", Report of World Health Organization, pp.19.
- 23- **GSMA Mobile Identity Team,(2013),** "*Mobile Birth Registration in Sub-Saharan Africa: A case Study of Orange Senegal and Uganda Telecom Solutions*", IEEE Report, pp. 5-10.
- 24- **Johannes G., (2009),**"*Giving Every Child a Sense of Belonging: Improving Birth Registration in Developing Countries*", Sixth International Conference on Information Technology: New Generations, New Zealand, pp.1542-1544.
- 25- **Mariana M.,(2010),**"*UNICEF Good Practices in Integrating Birth Registration into Health Systems*", Working Paper UNICEF, New York, pp.19-24.
- 26- **Shuzhuo Li., (2010),** "*Birth Registration in China: Practices, Problems, and Policies*", Paper Work of the Ministry of Education, China, DOI 10.1007/s11113-009-9141-x, pp. 311-316.

- 27- **MHSW, (2014),** *"Birth Registration Improvement Plan Final"*, Working paper of Ministry of Health and Social Welfare, Liberia, pp.9-11.
- 28- **Salote A., (2009),** *"Protect Me with Love and Care"*, A baseline report for the Solomon Islands, pp. 1-5.
- 29- **Hannes T., (2011),** *"Mobile Birth Registration in Liberia"*, CMI project mid-term review, ISBN 978-951-38-7501-5, pp.55.
- 30- **Tuulia V., (2010),** *"Mobile Solution for Birth Registration in Liberia. A Case Study of Using ICT in State Building"*, IEEE Ninth International Conference on Mobile Business, pp.448-458.
- 31- **WHO, (2014),** *"Civil Registration and Vital Statistics Investment Planning"*, Report of a technical consultation, Addis Ababa, pp. 10-20.
- 32- **Manjot K.,(2015),** *"E-Government: Challenges for Acceptance and Adoption in State of Punjab"*, International Journal of Computer Applications, vol. 105, no. 15, pp.21-22.
- 33- **Venkatesh V., (2003),** *"User Acceptance of Information Technology: Toward a Unified View"*, Journal of MIS Quarterly, USA, vol.27,no.3, pp.425-427.
- 34- **Nysveen H.,(2005),** *"Explaining Intention to Use Mobile Chat Services: Moderating Effects of Gender"*, Journal of Consumer Marketing, vol.22, no.5, pp. 247-256.
- 35- **SuhaAlAwadhi, (2009),** *"Factors Influencing the Adoption of E-government Services"*, Academy Publisher, vol.4, no.6, pp.587-589.
- 36- **Saleh Alghamdi, (2014),** *"Towards a Comprehensive Model for E-Government Adoption and Utilization Analysis: The Case of Saudi Arabia"*, IEEE conference on Computer Science and Information Systems, vol.2, pp. 1217–1225.
- 37- **Mohammad K. Alomari, (2014),** *"DiscoveringCitizensReaction Towards E-Government: Factors in E- Government Adoption"*, Journal of Technology and Management, Qatar University, vol.11, no.1, pp. 5-20.
- 38- **Hill C.,(1998),** *"A Qualitative Assessment of Arab Culture and Information Technology Transfer"*, Journal of Global Information Management, Georgia State University, USA, vol.6, no3, pp.29-38.
- 39- **Hany A. Abdelghaffar,(2008),** *"Citizens' Readiness for E-government in Developing Countries"*, PhD thesis, Middlesex University, pp. 64-66.
- 40- **Merrill W., (2002),** *"Encouraging Citizen Adoption of e-Government by Building Trust "*, IEEE, USA, vol.12, no3 pp. 158-161.

APPENDICES A

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Al- Dulaimi, Dalya

Date and Place of Birth: 1 September 1986, Baghdad

Marital Status: Single

Phone: +964 7801884178

Email: daliadelaimy86@gmail.com



EDUCATION

Degree	Institution	Year of Graduation
M.Sc.	Çankaya University Mathematics and Computer Science	2015
B.Sc.	Baghdad University Computer Science	2008
High School	Al Mutamayizat High School	2004

FOREIN LANGUAGES

Advanced English, Intermediate Turkish, Beginner French.

HOBBIES

Travel, Sports, Art and Drawing, Fashion, Photography.