

# INVESTIGATION OF EXEMPLAR COUNTRIES TO OVERCOME BARRIERS IN BIRTH REGISTRATION IN IRAQ

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## ABSTRACT

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. A preliminary set of use cases are suggested based on a quick study of the birth registration 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. 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.

**Keywords:** *E-government, Birth Registration, E-Services, E-government Barriers, E-government Activation.*

## 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. Related to these aims 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. 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 [11]. 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 [15]. The use of ICTs including mobile technology is one of the prominent solutions adopted by countries such as Uganda, Botswana and 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 for this paper.

The scope of this research focuses on birth registrations in Iraq. We 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 among them. Therefore, the research question for this study is formulated as follows: "is e-government a luxury in birth registration in Iraq while there are many conflicts?" After we gave a quick and general view of the research which states the motivation, purpose, scope of the study and the research question we continue with the background and literature review in the following section. The countries visited in this paper have similarities with Iraq in different attributes: geography, lack of awareness, wars and internal conflicts, gender discrimination, influence of religious, social and cultural beliefs.

## 2. BACKGROUND

This section presents the background of e-government, its models of delivery, objectives and measurements; as the audience is expected to be familiar with these topics, we intend not to spend too much room. It also focuses on the importance of obtaining birth certificates and the birth registration procedure in Iraq. The literature review is given in the next section in blend with the barriers visited in the digital divide. There are many definitions for e-government term in the literature; examples include works such as [1] and [2]. We have adopted e-government notion 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 definition. Before going into deeper with the services offered online, it is beneficial to visit application domains of such initiatives. As this research takes many examples from Africa, we found Heeks' work [3] interesting to include in the literature. According to Heeks, 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). 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. 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 in a non-expensive way. 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. This reduces the friction between government employees and citizens with

trust. 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. Apparently, achieving these objectives is not an easy task. There are considerable obstacles which are limited not only to the technical problems but also reluctance of individuals 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 ICT 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 [4]. 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; this is underlined in [5] where the authors report their work on Saudi Arabia.

## 2.1 Birth Registration in Iraq

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 as expressed by the UNICEF [6]. 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. The social resistance in the subject countries, including Iraq is considerable as the following points are not digested carefully by the public.

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 examinations.

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 [7].

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 [7].

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.

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 were required to report a birth and that report must be made by the mayor with two witnesses as reported in a technical report [8] back in 1980; today, three decades after, the situation is not different. Figure 1 shows a screenshot from e-Iraq, government website, taken in July, 2015; today, the site is not active.

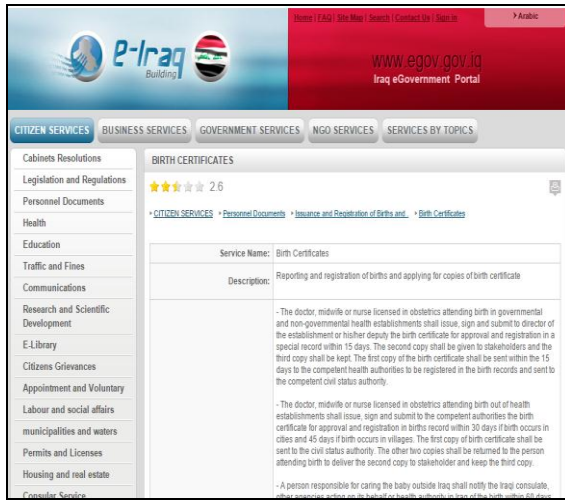


Figure 1: Information on Birth Certificate Service in Iraq [9]

Still, the birth registration is done manually. Figure 2 provides a sample certificate, issued over a birth.

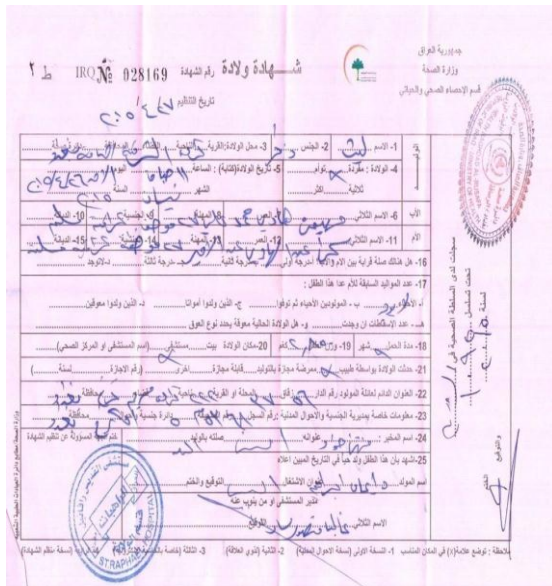


Figure 2: Sample Birth Certificate issued in Iraq [9]

A birth certificate in Iraq includes the following necessary information: Information related to the child: name, gender, type of birth as single, twins, triplets or more, date and time of the birth. 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, parents' census record or national ID,

record number, paper number and name of governorate. Information related to the birth: birth place as house or hospital with the name, birth occurred by doctor, certified nurse, certified midwife or others, informant's 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. As recorded on the certificate, it is a common practice to give birth outside of hospitals in Iraq. The registration procedure, depending on the place of birth, can be done as follows:

**Birth that 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 [9]. Figure 3 shows the procedure, graphically.

**Birth that 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 the birth occurs in cities and 45 days if the 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 [10]. 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 [9].

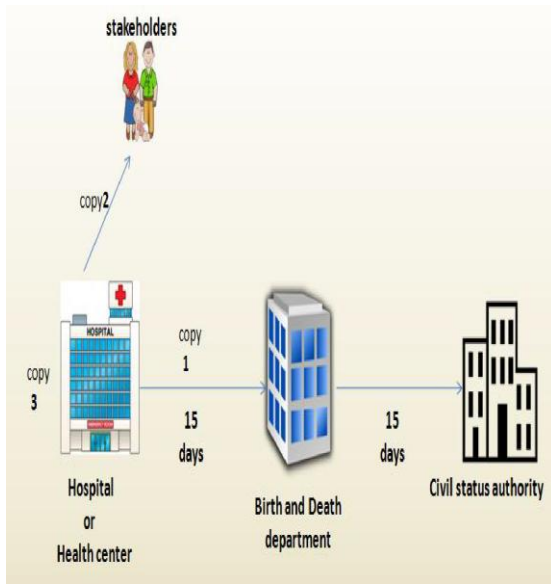


Figure 3: Birth Registration Procedure in Iraq [9]

## 2.2 Barriers

The literature review given in this section covers the process of registering a birth in several countries with the potential barriers and the solutions to overcome them. This section also recognizes cultural and social issues related to the adoption of e-government services. The reasons that make governments tend to use electronic ways in providing birth certificate belong to several barriers that might happen 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 endured destructive wars that dramatically affected on the coverage of civil registration and vital Statistics (CRVS).

### 2.2.1 Geography

Two of the challenges that 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 [10] by the World Health Organization 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 identification 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 Identification numbers through hospitals and implementing an advanced CRVS system that can integrate with other governmental information flows and allowing cross-country information updates [10].

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 [11]. Figure 4 shows the statistics of registered births in Uganda 2012 through the use of mobile phones.

According to the births registration process in Vanuatu, giving an extensive coverage of nearly 30%, 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 [11].



A recent report [12] by Prism informs that birth registration rates for children aged less than 1 increased from 35% to 57% through 2013 to 2014 with the IT connectivity to provincial centers and the development of a national CRVS database.

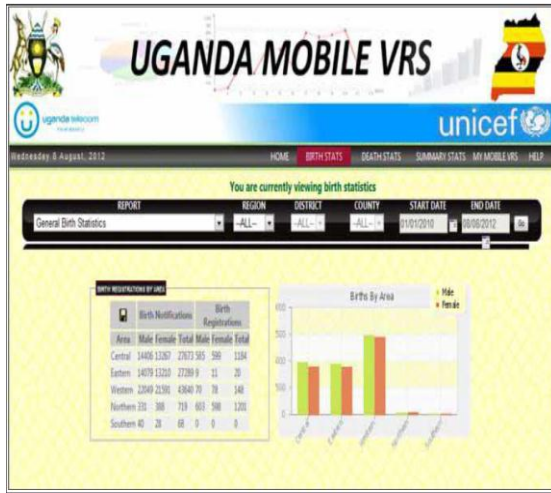


Figure 4: Uganda mobile vital registration statistics website [11]

### 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 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. Global System for Mobile Communication operator, 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 [13].

According to [14], many parents who live in rural areas of China 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, 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 birth registration as it improves the awareness of government agencies and citizens about birth registration.

There was an obvious and clear lack of awareness by the Liberian population about the need for birth registration. The process of birth registration 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 younger than 13 years) by 2018 [15].

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. 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 [16].

### 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.

War and conflict in Liberia were the basic reasons for the destruction of civil society institutions. 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 was approximately 4% [17]. The government of Liberia has set up suitable ICT solutions to improve the birth registration process in Liberia [18].

The registration system in Mozambique during the colonial period is based on racial discrimination with low coverage of CRVS. After the end of the civil war, 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 to increase registration coverage and also to modernize it by using mobile registration units in registering children and adults [19].

### **2.3 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 [13]. 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. 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.

#### **2.3.1 Gender discrimination**

Some studies have shown that gender discrimination is considered to be one aspect of the socio-cultural differences among people. Venkatesh et al. [20] in their research on gender differences

show that men tend to be more task-oriented than women. Nysveen et al. [21] 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 [22]. 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 [23].

#### **2.3.2 Religious beliefs**

Researchers have studied e.g. [24] the impact of using IT on societies where norms, religion and traditions play an important role in people's lives. The religion of Islam is the dominant attribute of Arab culture and society. It is the basic principle for Arab thought and action [25]. 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 [5].

#### **2.3.3 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 [24]. This kind of practice, which is diffused throughout government departments, spreads corruption in society and increases inequality among individuals. As indicated by [22], the use of e-government would greatly limit Wasta and all people would be provided equal opportunity to carry out governmental transactions.

#### **2.3.4 Resistance to change**

E-government is a new phenomenon which is the transition from manual processes of work to electronic processes. This transformation creates a new environment entirely different and more

advanced from what has been used over many years between government departments [5].

Employees would be worried about losing their jobs as well as the possibility of being replaced by technologies [24]. 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 [1].

Bureaucracy is considered to be one of the causes of citizens are 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 receiving papers with signatures or stamps to prove that their documents are authorized, original and valid [26]. Another important factor that may increase the resistance of citizens towards the new technology is mistrust of using e-government services. Citizens believe that sharing their personal information such as name, picture, identification number, online or electronically are not sufficiently secure because it can be easily intercepted and used by multiple parties not directly linked to the specific service; hence, there is a potential of resistance to the new medium [27].

### 3. E-SERVICES PROPOSED

In previous sections we mentioned to the procedure of the registration of births in Iraq along with an example of the current birth certificate (Figure 2) 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 section, with the information that we have collected, we will address the problem by suggesting a potential e-service for birth registration process in Iraq whether births occur inside or outside health centers. We will represent events, actions and required information by using case diagrams so that GUIs can be designed for suggested e-services. 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:

- Mother: the person who gives the 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 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 Database (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 CSA who receives birth certificates.
- Births data officer: a worker in the births data office of the CSA.
- Registry office: an office located within the CSA.

#### 3.1 Suggested Use Case Diagrams

Births in Iraq commonly do not only occur at health centers but also outside, usually at home. 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.



### 3.1.1 Births that occur inside hospitals or health establishments

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. Figure 5 shows the top view of case diagram.

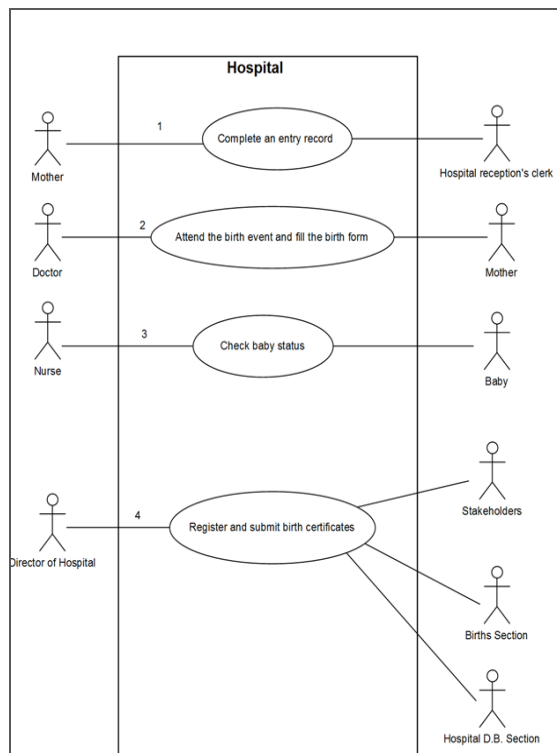


Figure 5: Hospital use case diagram

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 6 shows the process of case diagram.

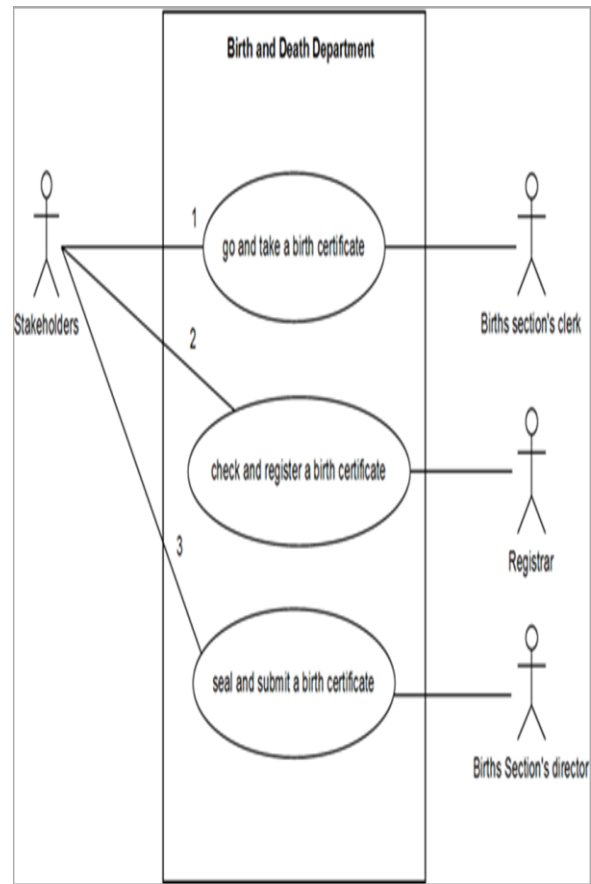


Figure 6: Birth and Death Department use case diagram

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 the documents to the CSA to request a national ID card for their newborn child. Figure 7 shows the process as use case diagram.

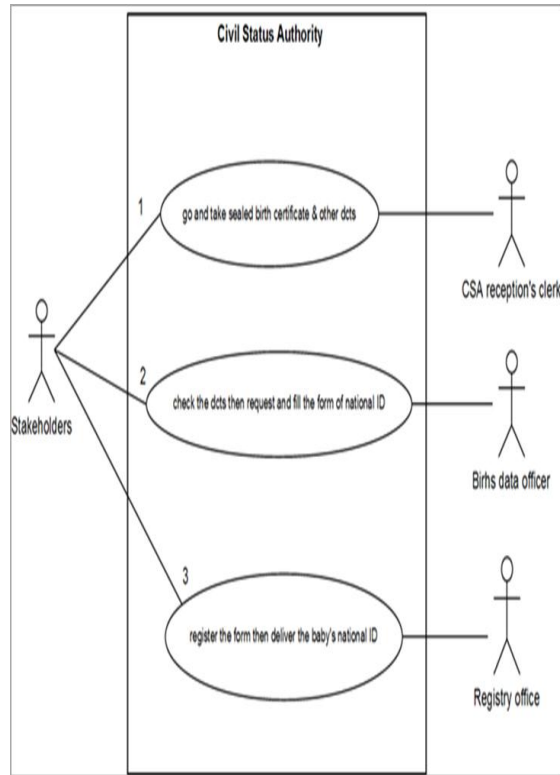


Figure 7: Civil Status Authority use case diagram

### 3.1.2 Births that occur outside hospitals or health establishments

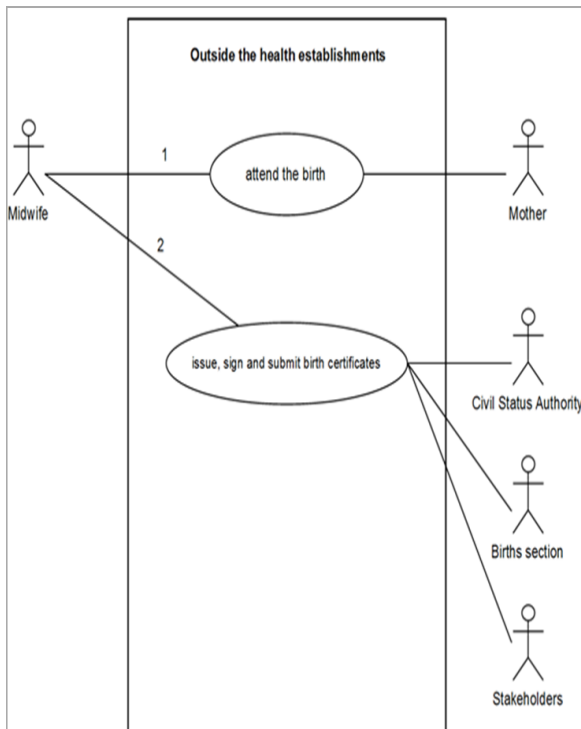


Figure 8: Outside the health establishments use case diagram

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.

## 4. FINDINGS AND DISCUSSION

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 section 2.2.1, 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, and lack of digital literacy, low levels of education and other factors can effect and increase the digital gap and resistance to change in society.

Finding 3: Similarities between Iraq and exemplar countries. According to previous studies that we had mentioned in section 2.2.3, 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 displaced people, who have been separated from their families and are forced into being recruited into the armed forces. 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. Thus, 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.

When it comes to discuss these findings, we have to consider organizational, legal and fiscal factors which are excluded from this study. Budgeting, the number of skilled human resources and time are required to establish a system. This scope is not covered in the study.

Future works to cover investigation of legal and social issues are further research avenues. Further research is needed to investigate in depth government rules and legal barriers. Additionally, 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, waste, religious beliefs and resistance to change.

Finally, this work 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 to give rise to digital gap, which hinders getting benefits of transformed government. The third section makes a very quick attempt to nominate the parties involved in a potential e-service for birth registration. At the end of the day, the end-users will use any proposed

system and they are not expected to be IT experts. Providing user friendly interfaces is just the beginning as the real problem starts with breaking reluctance of the users to participate e-government services.

## 5. CONCLUSION

We can say that “thinking of the electronic government initiatives as luxury that can easily be put aside” is not that much correct. As underlined in this work, many countries suffering internal conflicts, having geographical barriers and so on could establish their systems so that citizens can register births even when the conditions are complicated.

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