
Social Financial benefit assessment of the Mobile Birth Registration

Thanh van Do

Telenor Research
Snarøyveien 30, N-1331 Fornebu, Norway
Department of Telematics,
Faculty of Information Technology, Mathematics and Electrical
Engineering,
Norwegian University of Science and Technology (NTNU)
O.S Bragstads plass 2B, N-7491 Trondheim, Norway
E-mail: thanh-van.do@telenor.com

Clark Swafford

DeVry University
Keller Graduate School of Management
Irving, Texas 75063 USA
E-mail: cswafford@devry.edu

Loc H. Khuong

DeVry University
Keller Graduate School of Management
Irving, Texas 75063 USA
E-mail: Lkhuong@devry.edu

Van Thuan Do

Linus AS
Martin Lnges vei 15
N-1364 Fornebu, Norway
E-mail: t.do@linus.no

Abstract: In this paper, the usability and the usefulness of mobile technologies far beyond personal communication has been demonstrated by the Mobile Birth Registration (MBR) concept. To remove the hindrances like long distances, time consuming travels, high costs MBR makes use of 'gatekeepers' i.e. trusted, reliable and community based individuals that carry out birth registration using a mobile phones. Mobile technologies have been proven as a technological efficient and scalable supplement to the current fixed infrastructure. It is also shown that MBR brings lots of advantages and conveniences to all parties from the children, parents, government, gatekeepers and NGOs. A simple Social Benefit assessment re-affirms the social value of

XX

MBR. Its financial feasibility is proven by a brief financial feasibility study.

Keywords: mobile identity, mIdentity, birth registration, mobile birth registration, identity establishment, identity management, citizen identity

Biographical notes: Thanh van Do obtained his MSc in Electronic and Computer Sciences from the Norwegian University of Science and Technology and PhD in Informatics from the University of Oslo. In 2000, after seven years R&D at Norsk Data and ten years at Ericsson, he joined Telenor Research. He holds also a Professorship at the Department of Telematics at the Norwegian University of Science and Technology in Trondheim. He is the author of over 150 publications at international conferences and journals. He is also an inventor of 22 patents.

Clark Elliott Swafford has over 20 years' experience in video coding theory, simulation, and broadcast design. He is a senior member of the Society of Broadcast Engineers (SBE) and member of the Institute of Electrical and Electronics Engineers (IEEE). He holds a Master of Science Degree in Engineering from Southern Methodist University (SMU) in Dallas, Texas and is currently finishing Doctoral Studies at Northeastern University in Boston, MA. He is an Academic Dean/Sr. Academic Affairs Specialist for the Fort Worth and Mesquite, Texas Centers in the DeVry-Dallas Metro.

Loc H. Khuong was a graduate in Accounting of Loyola University of Chicago. He subsequently obtained a dual Doctorate from Nova Southeastern University in Accounting and Business Administration. Prof. Dr. Khuong currently teaches MBA programs at DeVry University and Keller Graduate School of Management. His background includes over 20 years of senior executive financial management positions at the CFO, Vice-Presidents and Director levels for mineral, financial services and consulting industries for multinational global companies.

Van Thuan Do, lead scientist at Linus, has been engaged in software development since graduation from the Institute of Informatics at the University of Bergen in 1984. He has developed various applications from compilers to process control systems for the largest of blue chip companies and the smallest of start-ups. Mr. Do has several patents in access, authentication, distributed systems and web services. His research interests include programming languages, component technology, distributed computing and software design methods.

1. Introduction

Today, mobile communication is undoubtedly the most popular and successful ICT system in the history and its popularity is reflected by the huge number of mobile phones in circulation, which surpasses by far the number of personal computers. Its extraordinary success is due to the people's appreciation of mobility, i.e. the ability of communicating while moving and changing locations and independently of the location of the telephone (Do, v Thanh & Audestad, Jan A, 1997), Dekleva et al., 2007; Kryvinska et al., 2003). However, the value brought by mobile communication networks is much beyond personal communication. Indeed, the mobile network is nowadays more ubiquitous than

the fixed network (Kryvinska, N., Strauss C., P. Zinterhof, P., 2009) and in developing countries it constitutes in a great extent a superior and more reliable infrastructure enabling access to numerous services (Nor Shahniza Kamal Bashah, N. Kryvinska, Thanh Van Do, 2010 & 2012) useful for the social and economic development of the country. To unveil this new potential of mobile networks, the GSMA (GSM Association) with the cooperation of global operators like Telenor (Telenor, 2015), Orange (Orange, 2015, Telefonica (Telefonica, 2015) etc. has initiated a Personal Data programme (GSMA, 2014) aiming at delivering digital identity solutions to market with scale and low entry barriers (ENISA, 2010). In developing countries, where a large portion of the population does still not have an official citizen identity the GSMA working with international organizations like UNICEF (UNICEF, 2015), Plan International (Plan, 2015), etc. in the goal of improving the birth registration by making use of mobile technologies (Do, v Thanh et al., 2012). Telenor as a major operator in Asia has carried out a few projects in Thailand and Pakistan. This paper presents a recent application of the mobile communication carried out by Telenor called *Mobile Birth Registration (MBR)* in Pakistan, which uses mobile technologies to improve birth registration in Pakistan. The paper will attempt to prove the social value of the MBR application by assessing its social impacts and financial feasibility. The paper starts with a study of the current birth registration in Pakistan, which is based on fixed ICT infrastructure. All the problems both on the citizen's side and on the government's side are identified and explained. Next, the proposed Mobile Birth Registration is introduced and described thoroughly. The value propositions for all the parties namely, children, parents, government, gatekeepers and NGOs are presented. Further, a social benefit assessment is carried out to show the usefulness of the Mobile Birth Registration. A financial feasibility study is provided to justify the introduction of MBR in addition the current fixed birth registration.

2. Current birth registration in Pakistan

A. Overview

Pakistan has today a population of over 180 million inhabitants with around 86 million children wherein 60 million and an increase of 3 million every year, simply cannot prove their legal existence due to the lack of birth registration. National Pakistani statistics show that just over a quarter of births (27%) are registered, with 32% and 24% birth registration in urban and rural areas respectively.

This is mostly unfortunate because these children are hence denied one of the first and fundamental rights – the right to be registered at birth - to have an official identity, a recognised name and a citizenship (Do, v Thanh & Jørstad, I., 2008). Children whose births go unregistered are prone to adverse socio-economic conditions and often illegal and criminal activities (UNICEF, 2005). At a more macro level, children who remain uncounted are less likely to be included in state development policies and planning for the provision of social services. Universalisation of birth registration is, therefore, absolutely vital for the future wellbeing of children in Pakistan and the country's sustainable development.

B. The current birth registration process

In Pakistan, the national authority for civil registration and identification is the *National Data base and Registration Authority (NADRA, 2015)*. However, registration itself is decentralized in Pakistan and under the purview of the respective provincial governments which are further administratively divided into 6550 *union councils (UCs)*. Each municipality is responsible for creating civil registration records for its residents, and the records are then supposed to be eventually stored with NADRA.

At present, the *Civil Registration Management System (CRMS)* managed by NADRA allows births to be registered through local government's basic unit i.e. *union council (UCs)* offices. While all UCs have been imparted training on the issuance of computerized certificates and the plan was to connect these UCs with the central system of NADRA, however, only 2,233 UCs have been made operational with varying degrees of effectiveness. Special certificate issuing paper has been provided to UCs that issue computerized birth certificates in their area of jurisdiction.

A fee of Pakistani Rupee Rs.100,- is payable for all printed certificates while late fee charges and penalties range between lump sum payment of Rs.500,- to Rs.200,- per year that the registration was not made. Unfortunately, the fee is not always charged as per rules or deposited fully with the exchequer. Bureaucratic hurdles and long processing time are also used as tools to force citizens into paying for personal favours in order to expedite the process.

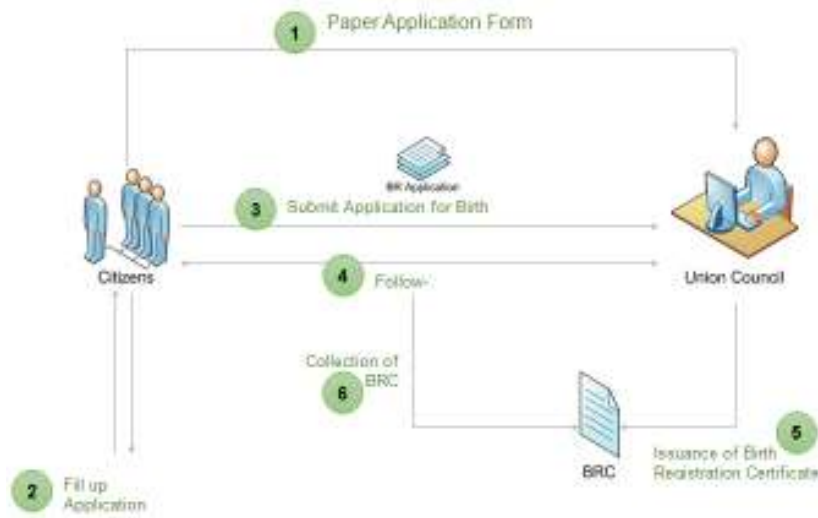


Figure 1 Current birth registration process in Pakistan (source: Telenor/UNICEF)

As shown in Figure 1 the normal process of the registration is as follows:

1. The aspirant goes to the UC office for getting the child birth registered.
2. At the request of concerned a form is issued to the aspirant
3. The form along with the requisite fees and required documents, which normally include CNIC (Computerized National Identity Card) of the parents, CNIC of

the applicant if different than the parents, certificate of birth issued by the hospital and/or vaccination card of the child, is then submitted back to the UC office.

4. The UC office after performing due diligence enters the data in its records and also to off line CRMS software provided by NADRA
5. The UC issues birth certificate using CRMS in cases where UCs are computerized, otherwise, the UC issues a birth certificate using its own format.
6. The aspirant goes back to the UC office to collect the birth certificate

C. Issues and problems

There are several problems both on the citizen's and government' side, which keep the birth registration low as follows:

On the citizen's side:

- *Lack of Information about the procedure:* There is no central information repository from where the general public could get the information of the birth registration process.
- *Unawareness of birth registration importance:* The general public is not aware of the importance of the birth registration. Most of the persons have some anticipations of its usage in the future but when asked about the importance of birth registration none of them could highlight any.
- *High Travelling cost:* One needs to take several trips to the UC office before obtaining the birth registration certificate and each round trip is quite expensive.
- *Time consuming process:* Getting a child birth registered and then obtaining a birth registration certificate is a time consuming process involving number of trips to and from the office of Union council. Using working hours for these trips is a considerable loss of income for the parents.
- *Tedious process for attestations:* Getting the birth certificate is a tedious process that calls for extra effort and cost on the top of the cost of birth registration.
- *Illiteracy of the parents:* Filling the application forms may be a difficulty that prevents parents from getting their children registered. The alternative is to use consultants that charge extra fee.

On the government's side:

- *Capacity shortage:* The offices of Union Council are understaffed and quite often the staff does not receive adequate training to make use of computers. Furthermore, they may be busy with other more prioritized functions. The equipment is insufficient e.g. shortage of papers for certificates.
- *Electricity shortage:* Long hours of load shedding and un- scheduled shut downs of electrical supply seriously hampers productivity of the UC office. Data can only be entered in the time intervals when electricity is available. Similarly taking the print out of the birth registration certificate is again dependent upon the availability of electricity.

- *No standardized fee for birth registration:* Fee is variable not only between provinces but also within a province. Even in a district different Union councils have been found charging different amounts of fee from the aspirants.
- *No defined time limit for the procedure:* Absence of such a limit does increase the vulnerability of the aspirants, resulting in a lower birth registration rate.
- *Difficult late Registration process:* The process becomes extreme tedious, in case someone gets late in getting ones child registered. It needs not only a number of trips to office of the Union council but also requires completion of legal documentation including presentation in front of magistrate to get the birth registered.
- *No defined procedure for orphans & IDPs:* there is no process defined for the orphans or internally displaced persons, making it extremely difficult to get a child birth in such a category registered.

3. Mobile Birth Registration

The fundamental change proposed to driving up birth registration is the introduction of trusted, reliable and community based ‘gatekeepers’ who make use of mobile phones to carry out birth registration.

These gatekeepers can help leapfrog the natural adoption and acceptance of birth registration as a must practice. While the citizens and households will take a long time to reach the literacy and awareness levels to proactively get births registered among the various societal issues and bias, gatekeepers can help increase birth registration rates.

Two types of gatekeepers are proposed:

- *Mobile gatekeepers:* will comprise of government officials/field staff that have regular interaction with households in the communities and are well aware of any births happening. The potential primary gatekeepers in this category are:
 - *Lady Health Workers/Supervisors/Visitors* who are the agents of maternal and child health advisory especially in rural areas.
 - *Teachers* who are aware of community dynamics by virtue of their respected role in the social settings and interactions with children in school.
 - *Nikah Registrars* (Marriage Licensing Registrars) who are the only agents registering marriages in a community and are connected to the Union Council as part of their legal authority.
- *Stationary gatekeepers:* will serve as an intermediary facilitation improving access of households to get births registered. Instead of interacting with only one UC office, presence of multiple stationary gatekeepers will not only help reduce the travel time and cost but also streamline the process stages by gatekeepers serving as process facilitators. Typically, private sector partners who have a ready distribution network equipped with technology systems can serve as the ideal fit. Telenor Pakistan, being a partner for this pilot, has offered to use their ‘Sahoolat Ghar’ distribution network of retailers as stationary gatekeepers.

Gatekeepers will be equipped with handheld devices and a custom application to digitize the standard birth registration application form. As shown in Figure 2 all inputs necessary for birth registration will now be entered into this mobile application and saved as unique applications. All necessary documents (CNIC, hospital certificate etc.) will be scanned and/or pictured through the device to serve as an electronic copy. The CNIC details will be verified through NADRA's online/SMS services to ensure the data entered is credible. Once the form has been duly filled, gatekeepers will also collect the stipulated fee and issue a receipt through a pre-printed book.

The digital forms along with supporting digital documents will then be transferred to the respective UC along with the fee collected for onwards birth registration through the NADRA CRMS. The mobile application will be designed to shake hands with the NADRA CRMS and enable import of data. The UC Secretary, can then review applications address any queries and process the registration. Once registered, the gatekeepers will be issued Birth Registration Certificate (BRC) for their respective households for onward delivery.

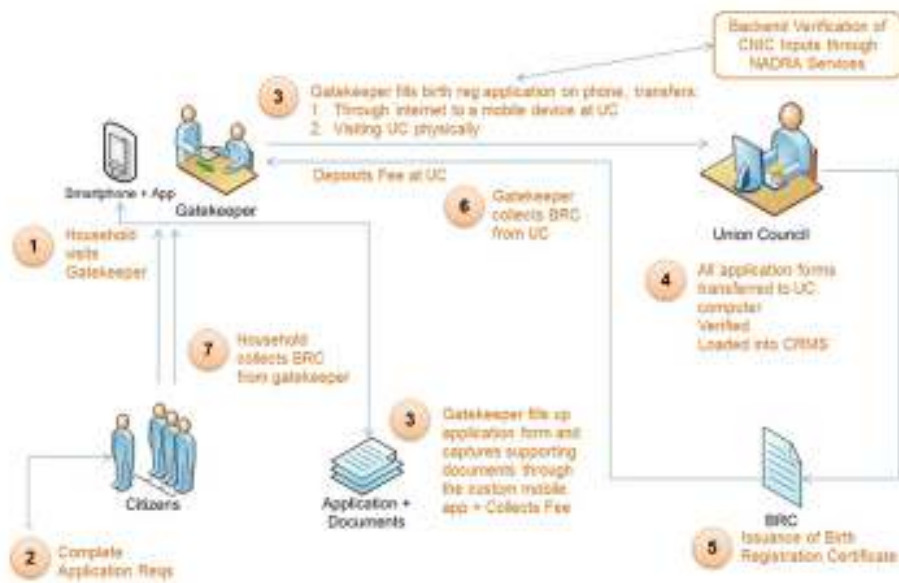


Figure 2 Mobile Birth Registration (source: Telenor/UNICEF)

In the case of mobile gatekeepers, gatekeepers will be roving agents who will reach out to households and complete the mobile augmented process and deliver the BRC at their doorstep. However, in case of stationary gatekeepers, households will have to visit these kiosks on their own once for application and later for collecting the certificate which can be intimated through a confirmation SMS by the stationary gatekeeper.

4. Value proposition

The Mobile Birth registration delivers values to the stakeholders as follows:

- Children:
 - Birth Registration means inclusion in the general population and enables identification
 - Is a pre-requisite for future entitlements such as establishment of bonafide citizenship, school registration, national identity card, etc.
- Parents:
 - Birth registration ensures provision of basic services to their children such as access to education, health and citizenship
 - By registering ensures mitigation of adverse risks for their children from illegal and criminal activities.
- Gatekeepers / Intermediaries Government: Lady Health Workers (LHW), Teachers etc.
 - LHWs and Teachers can earn additional compensation to augment their existing salaries by acting as intermediaries.
 - By ensuring increased birth registration in their respective areas, they would earn additional recognition.
- NGOs / INGOs:
 - NGOs /INGOs work can be facilitated through identification of areas for targeted interventions
 - By helping improving the status of birth registration, various other m-health initiatives which will ultimately benefit the citizens and also enable INGOs /NGOs to better target their efforts.
 - Build confidence and establish clientele.
- Gatekeepers / Intermediaries Private: Telco franchises etc.
 - Additional revenue stream by acting as intermediaries.
 - By ensuring increased birth registration in their respective areas, they would earn additional recognition.
- Government Agencies /officials (federal, provincial and local governments)
 - Birth registration is the right of every child and enshrined in international conventions to which Pakistan is a signatory.
 - As custodians of state interests they have the responsibility to aim for universalization of birth registration.
 - As public officials responsible for facilitating ordinary citizens they can earn respect and trust among people.
 - Increased birth registration will enable better planning and allocation of resources and provision of basic services.

5. Social benefit assessment

To show the social benefits brought by the Mobile Birth Registration, a comparison between mobile birth registration and the traditional fixed registration was carried out. The obvious value of Mobile Birth Registration is to increase the registration rate from around 27% to 100%. The project is obviously beneficial since it will bring a better

future to a lot of children but the challenge here is how to monetize the outcomes of mobile birth registration and how to prove that it is better than the fixed birth registration (Scholten, P, et al, 2006). In fact it is very difficult or morally impossible to put a value on a child's life. To avoid this, a Cost-Effectiveness Analysis (CEA) (Cellini, S. R., Kee, James E., 2010, Tuan, Melinda T., 2008) is proposed.

The Cost-Effectiveness is defined as the ratio of Cost to Outcome. Lower CE will yield high effectiveness.

$$CE_o = \frac{C_o}{27} = \frac{100C_o}{27 \times 100}$$

According to the Pakistani national statistic, 60 million of children .i.e. around 73% are not registered.

Let the current birth registration cost be C_o and the outcome be the birth registration percentage

The current Cost-Effectiveness is:

$$CE_M = \frac{C_o + C_M}{100} = \frac{27C_o + 27C_M}{27 \times 100}$$

Let C_M the cost of introducing Mobile Birth Registration and if the goal is to achieve 100% birth registration the outcome will be 100.

The Mobile Birth Registration Cost-Effectiveness is:

$$CE_M = \frac{C_o + C_M}{100} = \frac{27C_o + 27C_M}{27 \times 100}$$

If Mobile Birth Registration is more beneficial than the current fixed birth registration we have:

$$\begin{aligned} \underline{CE_M} \leq CE_o &\leftrightarrow 27C_o + 27 C_M \leq 100C_o \\ &\leftrightarrow 27 C_M \leq 73C_o \\ &\leftrightarrow C_M \leq \frac{73}{27} C_o \\ &\leftrightarrow C_M \leq \underline{2,7} C_o \end{aligned}$$

In general it is difficult to find statistics and we propose to concentrate on the costs for one Union Council instead of the whole country.

XX

According to the figures from The Telenor Mobile Birth Registration pilot project in Pakistan the total implementation cost of Mobile Birth Registration in two Union Councils in Sindh and two other in Punjab is 30 592 800 Rs.

The average cost for one Mobile Birth Registration is hence:

$$30\ 592\ 800\ \text{Rs} : 4 = 7\ 648\ 200\ \text{Rs}$$

Regarding the cost of the current birth registration we are not able to find any documentation. Since the current birth registration is executed by the Union Councils (UC) we propose to use part of UC's total expenditure, for instance a quarter of the expenditures as the birth registration cost.

According to Tehsil Municipal Administration Kasur (Tehsil Municipal Administration, Kasur 2015) the total expenditure of Tehsil Kasur in 2012-13 is 729 546 800 Rs.

The average expenditure of a UC is:

$$729\ 546\ 800\ \text{Rs} : 55\ \text{UC in Kasur} = 13\ 263\ 487\ \text{Rs}$$

The estimated birth registration cost is:

$$13\ 263\ 487\ \text{Rs} : 4 = 3\ 315\ 872\ \text{Rs}$$

Consequently:

$$C_M = 7\ 648\ 200\ \text{Rs} < 2,7\ C_o = 2,7 \times 3\ 315\ 872\ \text{Rs} = 8\ 952\ 854\ \text{Rs}$$

This shows that:

$$C_E_M < C_E_o$$

This proves hence at Mobile Birth Registration is more beneficial for the society than the current birth registration.

5. Financial feasibility study

According to the figures from The Telenor Mobile Birth Registration pilot project in Pakistan the total implementation cost of Mobile Birth Registration in two Union Councils in Sindh and two other in Punjab is 30 592 800 Rs.

Studies from other countries such as Kenya and other third world countries have shown the cost of birth registration for each child to cost an average \$13 USD (labor, fringes benefits and overhead costs). If we apply this rate to Pakistan, and using an Exchange rate of \$1 USD = 61.7 Rs, the cost of each birth registration would equal anywhere from 802 Rs.

At a population of 60 million children and 73% unregistered birth 44.5 million children, the manual cost for 100% manual registration would require a government budget of 2.747 billion Rs (or \$578.5 million USD). This explains the dilemma and budgetary constraint or difficulty for Pakistan to register all of its newborn children with 3 million added each year. The current fixed birth registration is not scalable while Mobile Birth Registration offers the economy of scale.

An investment of initial \$100 million USD for an infrastructure (state of the art IT system for a major global company) for a national Mobile Birth Registration system, and using an average \$1 to \$3 variable cost (using Western Union or MoneyGram companies

cost to process their digital financial transactions as a benchmark) to register each child birth using Mobile technology, it would cost (\$1 X 44.5 million = \$44.5 million USD to \$3 X 44.5 million = \$133.5 million USD), one can derive the cost benefit of such investment as follow:

\$100 million (initial one time investment) plus \$44.5 million USD in variable costs = \$144.5 million USD (best case)

\$100 million (initial one time investment) plus \$133.5 million USD in variable costs = \$233.5 million USD (worst case).

The total cost of a Mobile Birth Registration system (best case \$144.5 million USD) or (worst case \$233.5 million USD) is clearly more scalable and economical when compared to manual system costing \$578.5 million USD. This benefit, when combined with other societal benefits of a registered and educated child who could contribute more to the productivity of a country GDP, clearly can add to the justification of a Mobile Birth Registration system for childbirth registration in Pakistan. Funds can be raised by partnering with telecom companies, donation from countries and revenue sharing concepts. This should be the topics for future feasibility researches.

6. Conclusion

In this paper, the usability and the usefulness of mobile technologies far beyond personal communication has been demonstrated by the Mobile Birth Registration (MBR) concept. Mobile technologies have been proven as a technological efficient and scalable supplement to the current fixed infrastructure. It is shown that MBR brings lots of advantages and conveniences to all parties from the children, parents, government, gatekeepers and NGOs. A simple Social Benefit assessment re-affirms the social value of MBR. Its financial feasibility is proven by a brief financial feasibility study. A pilot project is now currently executed in two Union councils in Sindh province and two other in Punjab. So far, the situation looks good and the results of the project will decide the further deployment of MBR in Pakistan. However, independently of the outcome, experiences and findings will be collected and used in other initiatives in other countries such as Thailand, Myanmar, Bangladesh, etc. where Telenor has mobile network operations.

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