Roadmap for Digital Birth Registration:

Insights on Scale and Sustainability from Pakistan

A DIGITAL ROADMAP FOR DIGITAL BIRTH REGISTRATION

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Executive Summary

As an official and permanent recording of a child's identity, birth registration can help bestow access to a number of vital services, including healthcare and immunisations, education and social protections. As a child grows, registration acts a vital safeguard against child labour, early marriage or recruitment into the military, and later in life it can enable them to acquire national identity documents, vote in elections, gain formal employment, own property, or access formal financial services. For national governments, birth registration is an essential tool for effectively planning and monitoring the delivery of public services, development policies and infrastructure programmes. For these reasons, the United Nations Convention on the Rights of the Child, as well as a number of international treaties, guarantees every child the right to be registered at birth, and the right to both a name and nationality.

However, it is estimated that 230 million children worldwide – nearly one-third of the global under-five population - have not had their births officially registered, and every year more than 50 million additional children are born into this state of invisibility. The World Health Organisation estimates that nearly 80% of unregistered children live in either South Asia or sub-Saharan Africa[1], and data from UNICEF shows that in most countries, children who are poor or live in rural areas are significantly less likely to have their births registered or to possess a birth certificate[2].

It is increasingly evident that in the world's hardest to reach areas, mobile technology is well placed to provide national governments and other ecosystem players with the opportunity to leapfrog outdated, paper-based birth registration systems and offer more inclusive methods of providing unique identities to the underserved, giving more children a foundation for full participation in society.

The GSMA has tracked and reported on a number of innovative digital birth registration (DBR) initiatives supported by mobile network operators (MNOs) – including those in Pakistan, Tanzania[3], Ghana, Belize[4], Senegal and Uganda[5] – to learn how these projects successfully delivered measurable and significant improvements in birth registration. More recently, the GSMA Digital Identity programme has been working alongside Telenor Group and Telenor Pakistan to investigate how mobile operators can support DBR projects in a way that is commercially sustainable; for instance, by developing additional revenue streams through data, disbursements and links with other value-added services, such as maternal and child health advisory services.

We have produced the **Roadmap for Digital Birth Registration** as a guide for MNOs and their partners who are seeking opportunities to achieve greater impact, efficiency and efficacy in digital birth registration. Drawing on lessons from, and our recommendations for, the Telenor-supported DBR project in Pakistan, this Roadmap provides a number of insights, examples of good practice, and recommendations for MNOs and their partners at all stages of a DBR project. These include: Designing for Impact, Processes and Technology, Raising Awareness and Achieving Sustainability. While many of the insights and recommendations found in the Roadmap are specific to Pakistan, these should be highly relevant and applicable to birth registration stakeholders across other developing markets.

1. Philip Setel et al (2007). 'A Scandal of Invisibility: Making Everyone Count by Counting Everyone'. The Lancet. Available at: http://www.who.int/healthinfo/statistics/WhoCounts1.pdf [Accessed 5 February 2017].
2. See: https://data.unicef.org/topic/child-protection/birth-registration/
3. GSMA (2017). 'Innovations in Mobile Birth Registration: Insights from Tigo Tanzania and Telenor Pakistan'. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/01/Innovations-in-Mobile-Birth-Registration_Insights-from-Tigo-Tanzania-and-Telenor-Pakistan.pdf
4. GSMA (2016). 'Birth Registration in Tanzania: Tigo's support of the new mobile birth registration system'. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/07/Birth-Registration-in-Tanzania_Tigos-support-of-the-new-mobile-birth-registration-system.pdf
5. GSMA (2013). 'Mobile Birth Registration in Sub-Saharan Africa: A case study of Orange Senegal and Uganda Telecom solutions'. Available at: https://www.gsma.com/identity/wp-content/uploads/2013/05/Mobile-Birth-Registration-in-Sub-Saharan-Africa.pdf

TABLE 1

Roadmap for digital birth registration

Project stages	Critical components	Key insights or recommendations	Useful resources
DESIGNING FOR IMPACT	1. DEVELOPING A SHARED-VALUE PARTNERSHIP	• Ensure each partner's strategic objectives are aligned • Set specific and clearly-defined roles for each organisation • Leverage MNO's technical expertise and other unique assets (e.g. agent networks and infrastructure) • Establish local project oversight committees to facilitate project coordination and monitor progress	• Telenor Sustainability Report 2016 • UNICEF: Every Child's Birth Right
	2. MAPPING THE BARRIERS TO REGISTRATION	• Research the key barriers to birth registration at the household, community and institutional levels • Consider how other contextual factors might affect attitudes towards digital identity • Build the project objectives around key barriers to registration	• UNICEF Birth Registration Database • GSMA: Digital Identity End-User Report • GSMA: Innovations in Birth Registration
PROCESSES AND TECHNOLOGY	3. DEVELOPING MOBILE REGISTRATION SOLUTIONS	• Give extensive attention to the specific human and technical limitations of the market • Plan ongoing capacity-building activities to ensure registrars have the necessary skills and knowledge to facilitate digital registrations • Design the mobile applications to be both easy-to-use and interoperable • Keeping product design in-house allows MNOs to deliver value for the project and their organisation - but only if the necessary resources have been allocated and go-to-market delays are prevented • Incorporating other value-added services (VAS) will benefit both the beneficiary and the MNO	• GSMA: Birth Registration in Tanzania • Telenor Pakistan: About Easypaisa • GSMA: Telenor mHealth Case Study
	4. ESTABLISHING A NETWORK OF REGISTRARS	• Mobile (non-stationary) DBR registrars are particularly advantageous in hard to reach, rural areas • Upfront and ongoing support is required to ensure registrars will be able to use mobile applications successfully • Ensuring that registrars are able to adequately promote this service is crucial to their success	• GSMA: Building, Incentivising and Managing a Network of Mobile Money Agents
RAISING AWARENESS	5. BELOW-THE-LINE COMMUNICATIONS CAMPAIGNS	• Ensure that your audience's information needs and preferences are understood and met • Leverage MNO's experience delivering action-oriented, on-the-ground marketing campaigns • Focus on reaching parents through sustained below-the-line (BTL) communications activity • Consider all potential dependencies or bottlenecks, such as the need for government to sign-off any communication messages	• UNICEF: Writing a Communications Strategy for Development Programmes • GSMA: Understanding the Identity Gender Gap
ACHIEVING SUSTAINABILITY	6. OPPORTUNITIES FOR MNO COMMERCIAL SUSTAINABILITY	• Mobile money services provide a transparent, convenient and cost-effective means for delivering incentive payments to registrars • mHealth services are highly relevant to DBR beneficiaries and could be employed by MNOs to better engage both new and existing customers • DBR can help MNOs enhance their reputation in the community and differentiate themselves from competitors • Incorporating VAS into the project should help MNOs offset a significant portion of the project's costs and ensure sustainability at scale.	• Telenor: The Socio-Economic Impact of Mobile Health • GSMA: G2P Payments via Mobile Money
	7. ACHIEVING SCALE: COSTS AND BENEFITS FOR GOVERNMENT	• Provide high-level advocacy and technical support to government to ensure they have planned appropriately to assume responsibility for scale-up • DBR can bring significant cost savings to government, help address key social issues, and add value to the local and national economy in the long-term	• Plan: Birth Registration – the Right of Every Child • Plan: Birth Registration and Children's Rights: A Complex Story

Telenor Pakistan and Sustainability

With a subscriber base of over 42 million people, Telenor Pakistan, a subsidiary of Telenor Group, is the country's second largest mobile operator. As a relative newcomer to the Pakistani market, having launched operations in 2005, Telenor has focused on growing their customer base outside of saturated cities and has built a large rural presence. They have invested over USD $3.5 billion in the local economy since 2005 and have a network of over 220,000 retailers, franchises and sales and service centres. In 2009 Telenor launched Pakistan's first and (to date) largest mobile financial services brand, 'Easypaisa'. Today, there are over 90,000 Easypaisa shops serving over twenty-two million customers per month, and the platform moves nearly 4% of Pakistan's GDP through its system on annual basis.

Telenor considers sustainability to be part of the foundation on which they conduct business, not just a standalone risk management tool, or a mix of unrelated philanthropic activities. Their sustainability strategy is built around their core competencies – leveraging the power of digital technology to promote sustainable development, addressing societal challenges, and creating shared value that is scalable and mutually beneficial. Telenor works in close partnership with local authorities and organisations, as well as through a global partnership with UNICEF, to help ensure that mobile technology can play a role in transforming people's everyday lives. Their vision to 'empower societies' is regarded as a call to action: to provide the power of digital communication, vital infrastructure, and new services and products to stimulate societal progress, change and improvement.

Telenor's approach to sustainability and their purpose to empower societies is reflected in their commitment to help achieve the United Nations' Sustainable Development Goals (SDGs), particularly SDG #10: Reduce Inequalities. In 2017, they set a global target to provide equal access to digital birth registration to seven million children by 2020, viewing this as the first step in keeping children safe, enabling equal access to basic social services, and ultimately allowing them to participate and thrive in a modern digital society. Building on the success of their DBR project in Pakistan, this effort to register the births of millions of 'invisible' children will soon commence in other markets across Asia.

For more information, see:
www.telenor.com/sustainability

Pakistan: Identity and Mobile in Context

Pakistan represents a market in which formal identity solutions are robust, widely accepted, and valued. The country has a formal identity ecosystem that is dominated by the government-issued Computerised National Identity Card, or CNIC. Although carrying a CNIC is not mandatory, since its launch in 2000 it has become a 'normal' part of daily life, providing access to a wide range of private and public-sector services (such as mobile SIM registration, banking, healthcare, education and voting) and acting as an enabler of daily movement across military or police checkpoints. Current take-up of the CNIC is extremely high, with approximately 98% of Pakistani citizens covered by the national identity programme[6].

The GSMA's end-user research in Pakistan[7] has found that a person's geographic location (urban versus rural) and gender have a critical influence on their attitudes towards identity and their day-to-day identity-related needs. We observed that those in rural areas are less likely to feel a need for formal identity on a daily basis, as they tend to have less interaction with government and private sector services, they rely more heavily on their local and personal networks for information and support, and compared to those in urban areas they are less willing to access new services. Similarly, in patriarchal communities, women tend to have highly restricted movement and visibility outside of the home, as well as limited interface with government or other formal service providers. Women are also less likely to be literate, with 43% of women able to read and write compared to 70% of Pakistani males – further increasing barriers to empowered, independent access to identity, services and opportunity.

Even so, many low-income consumers remain open-minded and welcoming to the concept of mobile-enabled digital identity, including digital birth registration – particularly due to its convenience and cost-saving potential. This, coupled with high levels of trust in MNOs, means that operators like Telenor are well placed to build upon the current identity system and benefit users with mobile-enabled identity solutions.

The mobile ecosystem

With approximately ninety million unique subscribers (accounting for 47% the population) and one of the lowest ARPU[8] levels in the world, Pakistan is still considered to have an emerging mobile industry. By 2020, GSMA estimates[9] that mobile subscriber penetration will grow to just over half of the population, but during that time the country will also see rapid smartphone growth as devices and data services become more affordable, digital literacy improves and more locally-relevant content is made available. Approximately 85% of Pakistan's territory is covered by mobile networks.

As with identity, the mobile landscape in Pakistan is fragmented: male consumers, particularly urbanites, represent a very different market than their female and rural counterparts. Urban men tend to be more advanced phone users, are more likely to own low-cost smartphones, and are more aware of the different applications available and potential benefits of their use. Conversely, rural consumers and women typically displayed low digital literacy and confidence. In rural areas, feature phones predominate, with mobile devices used primarily for social connection purposes such as calling or texting friends and family members. Furthermore, in more conservative areas women's ownership or use of mobile services can be highly stigmatised, and women therefore tend to share the phone with a male family member or a female elder in the home. These 'gatekeepers' monitor female users' history regularly – discouraging use beyond contact within a defined social set. In rural areas, consumers were rarely trialling new mobile services, and people relied heavily on others in their social network with higher levels of digital literacy to support and introduce them to unfamiliar features and services on their phone. This 'gatekeeping' influence is also likely to extend to women's awareness and use of other digital services, including birth registration.

6. International Telecommunications Union (ITU) (2016).'Review of National Identity Programs'. Available at: https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/09_2016/Review%20of%20National%20Identity%20Programs.pdf
7. GSMA (2017). 'Driving Adoption of Digital Identity for Sustainable Development: An End-user Perspective Report'. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/02/Driving-Adoption-of-Digital-Identity-for-Sustainable-Development_An-End-user-Perspective-Report.pdf
8. ARPU = Average Revenue Per User
9. GSMA (2016), 'Country overview: Pakistan. A Digital Future'. Available at: https://www.gsmaintelligence.com/research/?file=f33c20f8cb4ed3f9834c2fe038c8c204&download

Introducing the Digital Birth Registration Project

Despite the government of Pakistan passing national-level legislation that makes it obligatory for every child to be registered within thirty days of their birth, as of 2013 only one in three births is actually registered – a rate that is less than half of the average for South Asia. Approximately 60 million children in the country remain unregistered, with registration rates lowest among girls, children from rural areas (23% vs 59% in urban locations) and among households in the poorest quintile of the population (5%).

In 2014 UNICEF, in collaboration with Telenor Pakistan and the provincial governments in Sindh and Punjab, commissioned a new pilot project to test how mobile technology could effectively augment the traditional, paper-based birth registration process. Punjab and Sindh were identified as the priority locations for the project, as they are the largest and most populous provinces of Pakistan and contribute the maximum caseload of unregistered births. Following the success of an initial four-month pilot – during which the targeted districts saw registration rates increase by an average of 200% – the project was renewed in 2016 with an aim to register 700,000 additional births across nine districts in Punjab and Sindh by the end of 2018.

High-Level Project Description

Expected Outcomes:

- Increase demand for Birth Registration
- Improve service delivery through mobile technology
- Build capacity of government to plan and manage birth registration data
- Improve health awareness through uptake of m-health services

Target:
700,000 children to be registered in Punjab and Sindh by 2018

Project Budget:
USD $4 million

Geographic Coverage:
Priority districts in Punjab and Sindh

Since birth registration activities commenced in autumn 2017, the project has successfully reported 77,000 new births through the new DBR system. Of these, 51,000 have been reviewed and approved by local government officials at Union Council offices, and 34,000 have been logged and validated by the National Database and Registration Authority (NADRA). Impressively, less than 1% of the applications submitted by the project's registrars have been rejected by government authorities due to inaccurate or incomplete information, and approximately 48% of the children registered on the new system are girls.

A qualitative survey exercise led by UNICEF has also shown that parents using the DBR service are more satisfied with the facilitation and quality of DBR than those who had experienced the traditional, paper-based process. The survey also showed a marked improvement in satisfaction with savings in perceived high-opportunity costs, such as taking days off work and the cost of travelling to Union Council (UC) offices. DBR beneficiaries are happy with the simplicity of the process and largely appreciate the ease in obtaining information through the registrars and the reduced inconvenience in electronical submission. Other benefits highlighted by the survey included increased government ownership of the birth registration processes, improvement in performance management, and increased accessibility of women to birth registration services.

TABLE 2

DBR pilot survey results (2015)

Survey Results: Quality of Birth Registration Service / User Experience	Sindh		Punjab	
	Traditional Birth Registration	Digital Birth Registration	Traditional Birth Registration	Digital Birth Registration
Cost of registering a birth	PKR 297	0	PKR 736	0
No. of trips to the UC Office	3	0	3	0
Time to complete birth registration requirements	2 days	10 minutes	2 days	5 minutes

A Roadmap for Digital Birth Registration

In the following sections, key insights and examples of best practice from the DBR initiative in Pakistan, as well as a number of other markets, have been used to develop our **Roadmap for Digital Birth Registration** – a guide for mobile operators and their partners who are seeking opportunities to improve the means and efficiency through which birth data is collected, accessed, verified and stored. The Roadmap outlines lessons and recommendations for each of the project's stages and critical components, with the aim of helping operators design and support DBR initiatives that have the potential to be taken to scale nationally and deliver both social and commercial return.

Designing for Impact

Component 1: Developing a Shared-Value Partnership

The multi-sector partnerships required to deliver DBR services are most effective when each partner's strategic objectives are aligned. In this case, the partnership contributes to the government's national development strategy, the development partner's wider goal to strengthen and protect the rights of children, and the mobile operator's ambitions to use mobile technology to reduce inequalities and improve living standards in local communities. Additionally, each organisation should have a specific and clearly-defined role to fill which builds on their core competencies. Mobile operators may choose to support birth registration projects through the donation of funds and other in-kind goods (such as handsets, SIM cards, data, etc.), but their most vital contribution will likely be the provision of technical expertise for the development of mobile registration solutions, as well as leveraging their unique assets (e.g. agent networks and infrastructure) to help increase reach and take mobile applications to scale. UNICEF and government departments (at the provincial and district levels), meanwhile, are well suited to provide strategic leadership and on-the-ground support, conduct awareness-raising campaigns, build the capacity of local registrars, and oversee monitoring and evaluation activities.

Role of Stakeholders

Telenor (Digital Enabler)	**Government** (Owners and Facilitators)	**UNICEF** (Implementer)
• Provide a cross-functional team to support technology development, maintenance and training; • Leverage Telenor distribution channels as a parallel gatekeeper model; • Provide handsets and devices to support registration; • Provide digital connectivity for data collection, consolidation and financial disbursements; • Leverage Easypaisa to provide timely and transparent disbursements of incentive stipends to facilitators • Support communications and awareness-raising activity; • Work with relevant authorities to develop and support mHealth services; • Provide financial assistance	• Ensure the smooth integration of DBR through policy and administrative reforms; • Provide necessary human resources and infrastructure to support the project; • Mainstream DBR in future development planning and budgeting; • Utilise private sector outreach and footprint to extend access of basic services	• Provide oversight to project implementation; • Oversee project funding and accountability; • Act as the primary interface with government authorities; • Lead on institutional capacity building (technology and human resources); • Help develop and deliver communications and awareness-raising campaign; • Lead on measurement and evaluation activities

Project Coordination and Communication

The success of any shared-value, multi-sector partnership hinges on the ability of all groups to effectively and consistently communicate with one another. To achieve this in Pakistan, district-level Steering Committees, under the chairmanship of the District Coordination Officer, have been formed in each target district. Here, progress is reviewed and monitored on a monthly basis, and the government is able to seek guidance on policy and legislative reform. As members of the Provincial Oversight Committees, UNICEF and Telenor also contribute substantively to review and monitoring activities, and UNICEF-supported staff report to the departments of local government at provincial and district levels. This structure did not prevent delays and miscommunications between stakeholders from occurring, but it did ensure that the partners had an agreed and efficient way to work through challenges together, and provide each other with continuous feedback. Furthermore, UNICEF and Telenor formed a bilateral National Coordination Committee (NCC) to oversee progress, resolve any field-level issues relating to the DBR application, coordinate and monitor activities in the field and share reports. Engagement and support at the highest levels of provincial governments in Pakistan was seen as vital to expediting project implementation and overcoming administrative bottlenecks.

Motivating Factors for Telenor

Telenor's involvement in the DBR project in Pakistan aligns perfectly with their commitment to SDG #10, their wider business strategy, and their ambition to empower societies. Their vision to play a leading role in Pakistan's digital revolution and reduce inequalities made them the perfect partner for the project, as did the fact that they have the best level of mobile penetration and greater access to customers in rural areas where birth registration rates are particularly low.

In addition to enabling Telenor Pakistan to grow, attract the best minds, and 'create their future together with the people they serve', supporting the DBR project provided a unique opportunity to strengthen their relationship with existing and new customers and introduce new value-added services, potentially leading to reduced customer churn in Pakistan's increasingly competitive market. Furthermore, because birth registration falls under the mandate of local government bodies and the social sector, involvement in these activities provides an opportunity for Telenor to collaborate with public-sector institutions in a meaningful and positive way.

As a result of this progressive attitude towards sustainability, the DBR project has benefitted from a high level of support from senior management in Pakistan, as well as the full support of Telenor Group. Telenor provided significant human resources to develop and modify the mobile technology in-house, seeing this as a key opportunity to contribute to the project in a more tangible way and create value for both the partnership and their organisation. Telenor also contributed a wide range of other in-kind resources to the project, including:

- Mobile devices for registrars (or 'gatekeepers') and government staff at Union Council offices;
- SIM cards, subsidised data connectivity and Wi-Fi access;
- The facilitation of mobile money payments to gatekeepers through the 'Easypaisa' platform; and
- The timely repair/replacement of all devices through its local official touch points.

Taken together, it is estimated that Telenor has contributed over $600,000 worth of in-kind support the project.

TABLE 3

Telenor's in-kind contributions 2016-17

Input Required	Quantity	Cost (USD)
Man hours: development/modification of technological components		$10,000
Smart phones for gatekeepers	8,200	439,205
Tablets for UC offices	800	99,985
Internet connectivity cost (Bundle)	9,000 facilitators/UC staff	40,745
Cross-functional project team: technical back stopping		35,000
Total in-kind contribution from Telenor		$624,935

Component 2: Mapping the Barriers to Registration

The barriers to birth registration – in Pakistan and elsewhere – can be varied and complex, and are likely to be influenced by a range of factors including the state of a country's civil registration and national identification systems, national policies and legal frameworks, and a number of other supply and demand-side barriers.

As a starting point for any DBR project, partners must conduct research to identify key barriers to birth registration at the household, community and institutional levels, including literature reviews, consultations with key stakeholders and DBR experts, and field research. This landscaping work should also consider how other contextual factors – such as the local mobile economy, end-user relationships with service providers, gender disparities and cultural norms – might affect attitudes towards, and perceptions of, digital identity solutions.

Best practice from Pakistan

UNICEF Pakistan established a Technical Advisory Group at the national level to oversee the implementation of their 2013 Feasibility Study for DBR, incorporating key stakeholders from the public and private sectors to ensure that their expertise and experience informed the study's methodology, analysis and recommendations. This included:

- Mobile operators (Telenor, Mobilink, Warid and Zong)
- Technological innovators (Google and Intel)
- Government counterparts (Pakistan Telecommunication Authority, NADRA, Capital Development Authority)
- UN agencies (WHO and UNFPA).

Fieldwork was conducted in all four of the country's provinces, using both primary and secondary research to collect qualitative and quantitative data related to registration. Additionally, in 2016 the GSMA Digital Identity programme conducted qualitative research in Pakistan to explore end-user attitudes and perceptions towards identity, and to determine which factors are likely to influence the uptake and use of digital identity services. The results of this research, which was also conducted in Tanzania and Côte D'Ivoire, can be found in our report, 'Driving Adoption of Digital Identity for Sustainable Development: An End-user Perspective Report'

Supply-side barriers

In many countries, the Civil Registration and Vital Statistics (CRVS) process is fragmented or decentralised, making it difficult to standardise birth registration forms and procedures, or to foster coordination among registrar offices and other government ministries. In Pakistan, birth registration is the responsibility of each Union Council (UC), the smallest administrative unit in local government, which creates and maintains civil registration records for residents and reports these statistics to the National Database and Registration Authority (NADRA) for authentication purposes. There is a general lack of transparency in the registration process, and it is common for UC offices to be constrained by a lack of resources, low capacity levels among staff, an absence of incentives for facilitating registration, frequent power cuts, intermittent network connectivity and unreliable technology.

The required documentation for registering births may also be unclear to parents, or even differ across locations. In many circumstances, applicable legal frameworks governing birth registration are out of date and/or not fully aligned with international minimum standards. Parents may not be able or willing to meet some of the process requirements for registration, such as submitting a marriage certificate or national ID documents. Within Pakistan, each of the country's provinces/regions creates their own application forms, and UNICEF has reported anecdotal evidence which suggests that fees are not always charged as per the stated rates, with bureaucratic hurdles and lengthy processing times sometimes used as a means to obtain bribes from citizens to expedite the registration process.

Demand-side barriers

Parents often face barriers to registration that stem from a lack of financial resources, illiteracy and confusion over how to complete the registration process. The traditional registration process in Pakistan often requires a child's father to make multiple trips to the nearest UC office, with each trip costing a household PKR 297 (USD $3.00) in Sindh and PKR 736 ($7.40) in Punjab; in remote areas, this is roughly equivalent to a parent's daily wage. Parents must also consider the hidden costs associated with birth registration, such as the income lost from taking time off of work. Furthermore, if a child is not registered within a stipulated timeframe in the UC where the birth occurred, the family may be penalised financially and subjected to additional and complex administrative procedures.

Incentivising parents to engage in the birth registration process can be particularly difficult in areas where an adult's own experience tells them that, in practice, this is not necessary for accessing basic services, especially health care or education. For instance, GSMA has noted previously[10] that there are no 'written rules' in Pakistan that require evidence of birth registration when enrolling children in school, accessing health services, registering for Pakistani citizenship, or obtaining a national identity card. Furthermore, due to certain social, cultural and economic factors, some groups simply do not perceive any benefit from the registration of their children at birth. For example, due to the existence of a number of gender biases, some parents may not be inclined to register their female children, as they do not anticipate that their daughters will engage in the future in any form of public life.

Once the key barriers to registration in Pakistan were understood and documented, the project partners were able to agree on the core objectives of the DBR project:

1. Mobile technology would be introduced to make the registration process more efficient, while ensuring that the design of the applications was flexible (to account for the varying processes used across the provinces/regions) and user-friendly;
2. To reduce the travel and financial burden on families, the project would increase the number of registration touchpoints available to community members by establishing a network of mobile and stationary registrars (or 'gatekeepers') that can register births quickly and free of charge;
3. A communications campaign would be developed to increase awareness of, and demand for, DBR services across the targeted communities;
4. A scalable district model for mobile birth registration would be developed to inform the future scale-up and implementation of the DBR system, led by the government.

10. GSMA (2017). 'Innovations in Mobile Birth Registration: Insights from Tigo Tanzania and Telenor Pakistan'. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/01/Innovations-in-Mobile-Birth-Registration_Insights-from-Tigo-Tanzania-and-Telenor-Pakistan.pdf

Process and Technology

Reinventing the Birth Registration Process

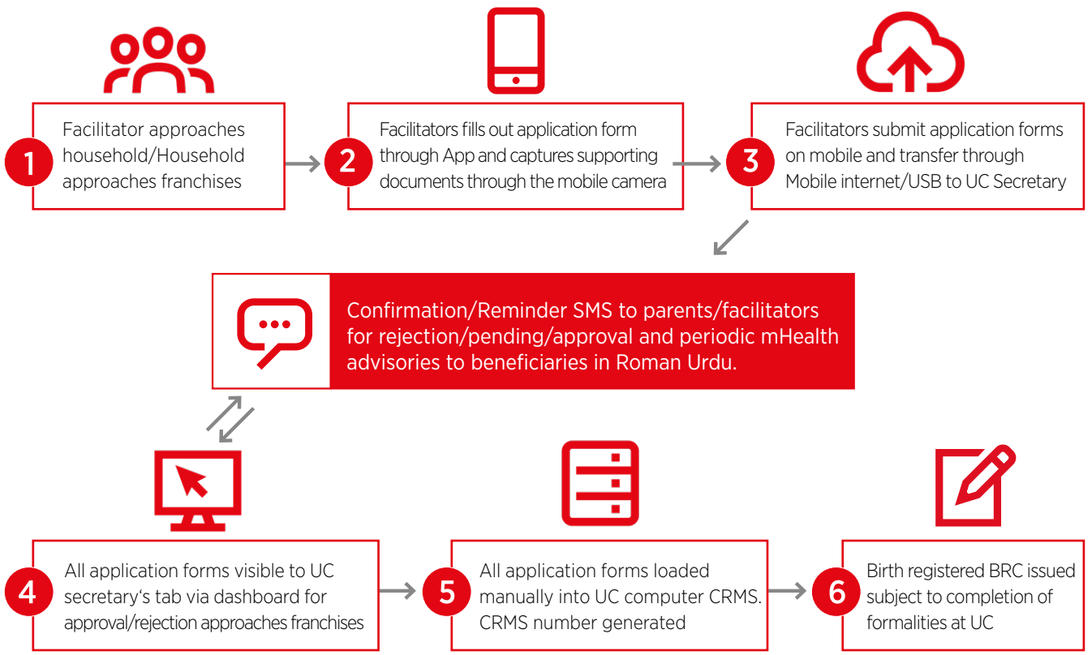
The traditional birth registration process in Pakistan

Birth registration typically begins with an applicant verbally reporting a birth at the nearest Union Council (UC) office, at which point a birth registration application form is issued. The completed form, along with any applicable fees and documents (including the parents' proof of identity card/ other documents) is then returned to the UC office to be processed. When births occur at home, proof of identification documentation of two witnesses is also required.

If the application is approved, relevant data is entered into a paper-based register maintained in the UC office, as well as in NADRA's Civil Registration Management System (CRMS). Once the data is authenticated, NADRA can then create a unique CRMS number for the child, which is linked to the family tree and used for other official purposes.

For an additional fee of PKR 100 (USD $1.00), parents may apply to the Union Council to issue a "Child Registration Certificate" ("CRC") through the NADRA system, which is printed on NADRA security paper in both English and Urdu and signed and stamped by the UC authority. The certificate contains important family details, including the name of the child's parents, the name of his/her grandfather, religion, place of birth and the child's address. On average, parents must make three trips to UC offices in order to complete the registration process and collect a birth certificate.

The Digital Birth Registration Process



Component 3: Developing mobile registration solutions

As the technology implementation partner, Telenor led the development and modification of all technological components that were required to digitise the registration process, including:

1. An Android-based **mobile application** that digitised each Union Council's standard birth registration form, allowing designated registrars (or 'gatekeepers') to remotely collect and submit birth registration data to local Union Councils;
2. An **information management dashboard** and Linux-based data centres at the provincial headquarters that provided Union Councils with access to real-time data on reported and registered births, giving them the ability to quickly review and approve registrations submitted by gatekeepers;
3. Timely **mHealth messages** designed to improve parents' neo-natal and maternal health awareness;
4. **Digital payments**, leveraging Telenor's Easypaisa platform, to facilitate the monthly distribution of incentives to the project's gatekeepers.

Best practice recommendation

When designing DBR solutions, partners should give extensive attention to the specific human and technical limitations of the market. Projects should include a capacity-building component to ensure new registrars have the skills and knowledge they need to carry out their roles, and applications should be designed to be both easy-to-use and interoperable. This will ensure that the application works across multiple platforms, allowing governments to explore partnerships with other mobile providers and expand coverage to other regions throughout the country. It is vital that partners remain open and responsive to learning and are prepared to adjust the process or applications as often as required. Continuous learning systems, including call centres and face-to-face visits, should be part of the programme's design so that partners can collect feedback from end-users on a regular basis and ensure they are aware of any challenges.

Telenor's cross-functional team

Over the course of the project, Telenor dedicated a significant amount of time and resources to the internal development of the technology, while also contributing to technology-related policy work and capacity building activities. Due to the project's potential impact and alignment with Telenor's vision around technological empowerment, it was given the support of a dedicated, cross-functional project team. This project team had previously worked together to design similar applications for other NGO partners, and included representatives from the Sustainability, Technical, Commercial, MFS, B2B, Sourcing, Devices and Communications teams. When needed, the team also engaged a number of other relevant functions across Telenor, including Systems, Operations, and Information Security. This brought in a range of expertise into the project, as well as new and interesting ideas about how the technology could bring value to the DBR process. Team members also spent time together in the field to better understand the situation on the ground.

POTENTIAL CHALLENGE: Delays in the development of technology can quickly impact a project's budget and work-plan, delaying project launches and other key activities, such as capacity building, and potentially reducing the length of the pilot.

SOLUTION: Telenor's cross-functional team followed a complete design methodology, starting with a 'waterfall' phase; here, the team worked in sprints to ensure that a new version of the application was released every quarter. This reduced the application's go-to-market time, and ensured that the design included a substantial amount of iterative learning. The developers also ensured they collected feedback from end-users, government stakeholders and UNICEF on a consistent basis so that they could make changes quickly and in the right away – that is, having an attitude of, 'let's not build for them, let's build with them'.

Keeping product design in-house (rather than contracting a third party) allowed the Telenor team to continuously update the application and positioned them well to take the lead in providing training to UNICEF and other partners on how to use the applications. The cross-functional team took responsibility for training the project's 'master trainers' on how to use the mobile devices, and UC staff on how to use the dashboard and mobile application (in case a gatekeeper had questions or issues). To deliver a high-quality service, the partners also developed a capacity building programme for both gatekeepers and UC staff, covering all areas of the birth registration process such as administrative procedures, technology and field support. Scheduled and on-demand training sessions were held regularly to help address day-to-day issues.

The Mobile Application

LESSONS FROM TANZANIA: Designing DBR applications on basic phones vs smartphones

Tigo Tanzania has partnered with UNICEF and local government to design an Android-based mobile birth registration platform which has now registered the births of more than 1.7 million children. The earliest version of the application was designed to work on the most basic mobile phones, allowing the registrar to input the required information by following a series of prompts, which was then compiled into two SMS messages and sent to the relevant authority. Although the first application worked well in most respects, over time the partners found that it would be difficult to take to scale due to the fact that the application was built directly onto the SIM card; this is a time-consuming, labour-intensive process and requires providers to recall devices from the field whenever changes to the application are needed. Furthermore, they recognised that the simplicity of the device and SIM card limited the number of features that could be added to the application and the amount of data it could store.

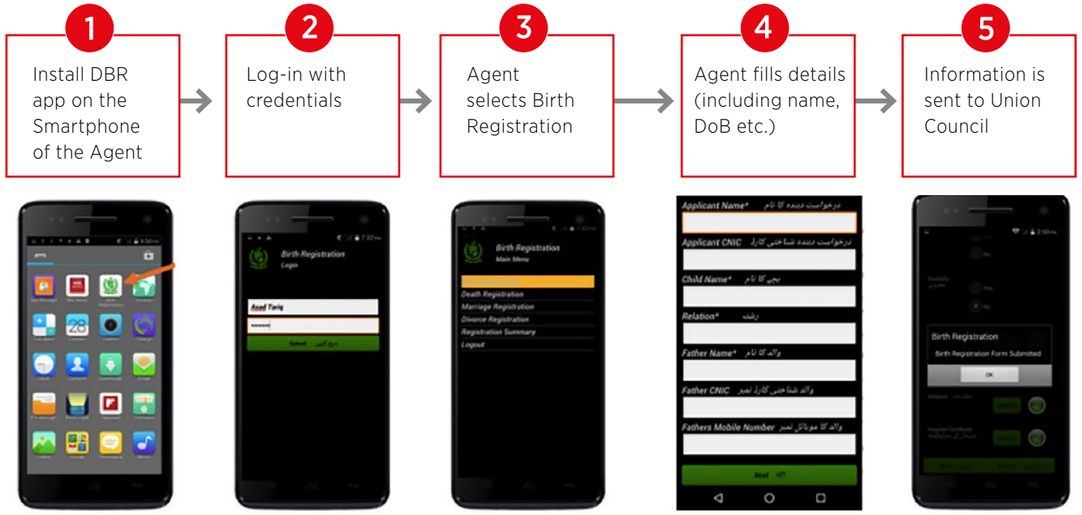
In Pakistan, the project partners decided to use an Android-based platform for the mobile application due to the economies of scale, its open-source nature and cost effectiveness, and the fact that the country's expanding 3G footprint warrants devices that are 3G-enabled. It was evident from the beginning that the application had to be stable, easy to use, and simply designed. Unlike applications designed for basic phones, the Android devices can be customised easily to create more user-friendly interfaces, reducing the learning curve for gatekeepers and helping them adopt the technology quickly. From the start of the project, Telenor realised that they would be somewhat restricted in the design of the app due to the fact that it was owned by government; therefore, up-front efforts were made to educate government stakeholders on the best platform to use, and how to ensure a positive, secure user experience.

Each of the application form's fields are presented in both English and Urdu for ease of understanding, and drop-down menus and radio buttons are used, where applicable, in order to standardise responses and minimise data-entry errors. The phone's camera can be used to take pictures of additional requisite documents if necessary, which can be attached when submitting the application. To ensure data privacy, gatekeepers are required to authenticate themselves using credentials tagged to the devices, and the server-side data transmission is encrypted.

Currently, the mobile devices are dual SIM and have full functionality, which means that in addition to running the application, personal SIMs can also be used in the devices to make/receive calls or texts, or to access data-driven services such as the internet, WhatsApp or Facebook. Gatekeepers can use some of the subsidised data for networking purposes (to help them connect with parents in need of DBR services), but data usage has been restricted for the DBR application to curtail abuse.

Figure 2

DBR Mobile Application Steps



POTENTIAL CHALLENGE: Despite the expanding footprint of wireless connectivity in most countries, in remote areas connectivity can pose a significant challenge to the project, making it difficult for registrars to submit forms or impeding the use of online services at UC offices.

SOLUTION: The application has been developed to work both online and offline, allowing forms to be saved on the phone and synced once connectivity becomes available. In some pilot areas, temporary solutions have been developed to reduce the impact on registration activities, such as establishing Wi-Fi hotspots at central locations, or providing internet dongles to connect the UC Office desktop computers to the internet. As the project scales to new, even more disconnected areas of Pakistan, the issue of connectivity needs to be considered carefully to ensure that implementation is not delayed.

11. GSMA (2017). 'Mapping Access to Birth Registration and Updates from Tanzania'. GSMA. Available at: https://www.gsma.com/mobilefordevelopment/programme/digital-identity/mapping-access-birth-registration-updates-tanzania [Accessed 5 February 2018].

The Registration Dashboard

When the digital application forms are received by a UC Secretary, the details are automatically uploaded to a dashboard where they can be checked for accuracy. The web-based application also provides staff with real-time statistics on reported and registered births and up-to-date information on the status of each application. This feature of the dashboard enables government ministries to better manage the allocation of their resources (to provide services in previously underserved geographic areas), perform various analyses, generate reports or monitor the performance of each gatekeeper. According to Telenor, the time it takes to develop a registration dashboard – if you get good commitment and resources – can be anywhere from three to six months, but the platform will need to be tested and tweaked continuously.

Figure 3

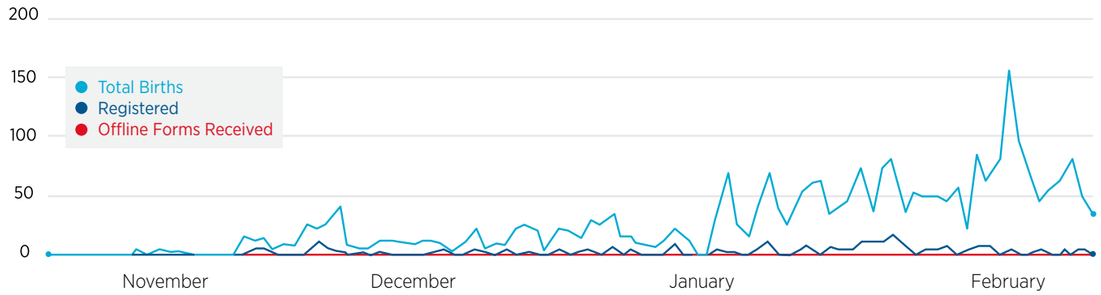
Web-based Dashboard

Forms Status		
77762 Total births reported		
51154 Accepted	865 Rejected	25743 Awaiting Action

Registration		
51154 Total births accepted		
51154 Accepted	41226 Registered	9928 Pending

CRMS No. issuance		
41226 Total births registered		
41226 Registered	24312 CRMS issued	16914 Pending

Total births reported



Once the application is approved by the UC, a unique birth record is created in the UC register and the information is manually logged in NADRA's online Civil Registration Management System (CRMS). In fact, a birth is not considered to be officially registered until the application form is validated by NADRA and a CRMS number is issued for the child. An unintended consequence of the DBR platform's success is long processing queues at the UC offices, which are caused by the sudden and exponential increase in the number of birth registration applications, and the limited capacity of UC staff to use the CRMS system proficiently. This bottleneck has proved to be one of the major challenges to completing the entire registration process in a timely manner, and addressing this capacity gap is a key priority of the partners and seen as vital to ensuring that the end-to-end registration process remains streamlined and efficient.

As the last step, once the application has been validated in NADRA's CRMS system an SMS message is sent to the gatekeeper and parent to notify each that the registration has been completed. If the parent wishes, they can come to the UC office on their own time and pay for a birth certificate.

Linking to other Value-Added Services: mHealth Messaging and Digital Payments

The project aims to improve neo-natal and maternal health awareness by incentivising parents to register for mobile health (mHealth) services developed by Telenor. The information provided through the SMS-based service was developed in collaboration with, and approved by, each of the provincial governments and the sequencing of messages was agreed by the national health department. The service offers parents and guardians with proactive 'push tips' for expectant mothers with information related to ante-natal check-ups, helpful advice on nutrition and dietary intake, immunisation tracking services, and general health care information. Parents have the option to register for these services, free of charge, when completing birth registration. Capturing the child's birth date through the DBR application allows the service to provide customised information to households, such as reminders for when their child is due to be vaccinated, or advice that is relevant for their child's age and stage of development.

Additionally, Telenor has leveraged their 'Easypaisa' platform to facilitate the monthly distribution of incentives to the project's gatekeepers. Mobile money services are a well-established way to send and receive payments in Pakistan, and Easypaisa is considered a smooth and robust payment platform. It is also convenient for the gatekeepers, as it is the largest mobile banking service in Pakistan, in rural areas the Telenor franchise network largely outnumbers any other financial institution's touchpoints (such as ATMs or physical branches). Digital payments are also preferred by UNICEF and government partners, as they are more transparent than cash, timely and require minimal documentation.

Capacity Building

There can be significant learning curves as gatekeepers familiarise themselves with the mobile technology and government processes. Therefore, in the initial months of the project, significant attention and resources must be allocated to building the capacity of the gatekeepers to use the registration devices, to follow official registration procedures, and to identify any challenges with the new digital components and processes. Telenor worked closely with 'master trainers' to show them how to use the registration device and dashboard; following this, the trainers instructed the gatekeepers and UC staff. As part of their role, master trainers also help to monitor the gatekeepers' progress and verify that devices are only being used by the authorised gatekeepers.

POTENTIAL CHALLENGE: Trainers in Pakistan underestimated the degree to which literacy barriers and a lack of digital skills would act as a stumbling block for gatekeepers, as few had experience with smartphones and many could not write in English or Urdu.

SOLUTION: As the first step in training, gatekeepers were often asked to practice collecting information following the old process, on a piece of paper. Once they became comfortable with this, they were taught how to collect and submit the same information on the application's digital form. Telenor and UNICEF also worked together to develop a training manual for gatekeepers in English, which the trainers were able to convert into local languages – this acted as the first step in the trainers taking ownership of the training and capacity building process. To make the data collection process easier, Telenor is investigating whether digital forms can also be converted into local languages for future versions of the application.

Component 4: Establishing a network of registrars

Recognising the importance of making the birth registration processes less costly and more accessible for parents, the new DBR model has mobilised just over 10,200 community-based 'gatekeepers' to provide registration services outside of UC offices. Mobile gatekeepers – which include Nikah (marriage) registrars and Lady Health Workers - provide registration services by visiting individual households in-person. In other locations, Telenor Pakistan franchises act as stationary gatekeepers, promoting and facilitating the registration of children's births with their clientele.

Mobile gatekeepers, with greater access to and knowledge of the local community, are particularly advantageous in rural areas. In Pakistan, Nikah registrars have been chosen as mobile gatekeepers in many locations due to their existing status as government-authorized marriage contractors.

By allowing parents to register the child's birth at either a UC office or through one of the mobile/stationary gatekeepers, the DBR model has increased the number of registration touchpoints across the nine targeted districts twelve-fold: from 800 to over 11,000. Rather than travelling for hours to the nearest local government office, parents in these locations can now access birth registration services without leaving their community, and in many cases without leaving their home.

Gatekeeper Models in Other Markets

In Nicaragua, the Ministry of the Family, in coordination with the Cabinet for Family, Community and Life, runs a campaign whereby representatives make house-to-house visits to locate children under one year of age who are not registered, and then facilitate registration.

In Brunei Darussalam, "Flying Doctor Teams" use helicopters to reach remote communities to ensure registration of births of children as well as providing medical services.

In Cambodia, more than 13,000 mobile civil registration officers were trained to facilitate registration in 2004, helping 90% of the population (some 11.7 million people) register their birth in 2006.

By allowing health facilities to act as official birth registration points in Tanzania, children across seven project regions were given access to registration services at more than 2,500 locations, compared to the 42 official registration points that existed before the project was implemented.

As part of their regular duties, Nikah registrars complete forms, collect and deposit fees, and regularly visit UC offices to register marriage records, giving them useful knowledge of how to conduct official business. The fact that many also serve as imams at their village mosques means they enjoy a strong social standing. The unique combination of operational experience and social influence has a positive impact on their performance.

Lady Health Workers (LHWs), who provide maternal and child health advisory services, especially in rural areas, were also chosen to serve as mobile gatekeepers. LHWs enjoy an excellent reputation and relationship with households due to their role organising women's groups and acting as liaison between the formal health system and their community, and their regular visits provided an excellent platform to facilitate birth registrations. However, many LHWs do not have prior experience using smartphone devices, and often take some time familiarising themselves with this technology. For some, limited knowledge of written English also poses challenges when using the mobile application, especially when entering data. Furthermore, in many places LHWs have low coverage and can find themselves overworked, leading to the project facing resistance from Health Administrators in the district. In these cases, incentivising LHWs to prioritise DBR services can be tricky, and providing additional allowances for travel, or modifying the LHWs role may be necessary.

And finally, Telenor franchises were introduced as stationary gatekeepers. These were chosen due to the fact that they were already proficient with relevant administrative procedures, such as issuing mobile phone SIM cards, handling cash transactions and verifying NADRA's National Identity Card information. Due to the nature of their business, Telenor's franchises excel at using mobile technology and are located at locations convenient to the general public - however, ensuring that franchises are able to adequately promote this service is crucial to the success of this model. Additionally, because owners lack prior experience interacting with UC offices, they tend to require more upfront support than the mobile gatekeepers to become well-versed in the operational aspects of the exercise.

Naturally, amongst all types of registrars there will be variances and capacity gaps in the use of smartphones and knowledge of birth registration processes. In addition to providing gatekeepers with introductory training on phone usage and birth registration processes, project partners should plan to provide refresher courses, recurring capacity-building activities, as well as on-the-ground troubleshooting and assistance.

Key Considerations for choosing DBR gatekeepers

What to look for in a gate keeper...	• Established and respected members of the community • Existing face-to-face relationship with parents • Prior experience conducting official (government) processes • Comfortable using digital technology • Familiarity with English/Roman alphabet • Incentivised to deliver registration services efficiently and accurately • Ability to mobilise the general public and increase awareness of DBR • Mobility
What to watch out for...	• Cultural sensitivities: Ensure that gatekeeper models are sensitive to cultural norms, particularly those related to gender • Issues of trust: In Tanzania, linking birth registration and immunisation services has been highly successful; in Pakistan, sensitivities around immunisation campaigns would make this model less effective • Power relations: Ensure that the new DBR process does not erode the traditional role gatekeepers play in their community or be seen as a loss of authority or privilege, but rather as a complimentary and enabling way for gatekeepers to fulfil their official duties • Lack of diversity in approaches: Ideally, communities should have access to multiple types of registrars to prevent one model or individual gatekeeper from becoming dominant, and to ensure that no parent is excluded (e.g. mothers not feeling comfortable approaching a Telenor franchise). • Lack of incentive: Gatekeepers must feel that they have the time and financial incentives necessary to fulfil their DBR duties

Recommendations for a More Sustainable Gatekeeper Incentive Model in Pakistan

A vital consideration for any DBR project is how to incentivise and encourage gatekeepers to participate in the education of parents and communities on the importance of birth registration; to proactively identify the households that are in need of birth registration services; and to facilitate this service - often in remote places - in a manner that both parents and local government finds efficient, timely, cost-effective and accurate. The GSMA has identified three important considerations that DBR partners should consider when designing their incentive model:

1. Gatekeepers must feel that they will be fairly remunerated for the number of registrations they complete, i.e. they will not be unreasonably penalised for not reaching a target, and will be duly rewarded when their targets are surpassed;

2. Compensation should be performance-based: gatekeepers completing twenty or thirty registrations per month might be demotivated if they are compensated at the same level as those completing two or three registrations;

3. Gatekeepers must be compensated for the additional expenses they incur as a result of carrying out their duties, especially in areas that require significant travel.

Currently, each gatekeeper in the DBR project in Pakistan receives a monthly stipend, or 'mobility allowance', equal to USD $10 if they meet their agreed targets. Such a model will be familiar to LHWs, who are typically responsible for catchments of up to a thousand households and have their performance appraised on a monthly basis against a list of key indicators. The primary advantage of a flat incentive model is that it allows each gatekeeper to establish personal monthly targets that will not cause them to neglect their other official duties, such as providing community health services or coordinating the registration of marriages. From a project cost-perspective, capping the monthly incentive might also be advantageous when gatekeepers are submitting a high volume of applications every month; for instance, in the early stages of the project launch when demand for DBR is particularly high. However, in interviews with the GSMA, mobile gatekeepers in particular have pointed out that the current incentive model did not seem to compensate them for the effort and expense that DBR activities required. For those having to travel long distances, the $10 stipend did not always cover the costs related to vehicle maintenance (due to poor infrastructure and roads being in disrepair), fuel and other transportation costs (such as food and drink), and the cost of working additional hours while on assignment.

In light of this, the GSMA would advise that the project partners consider the benefits of shifting to a performance-based incentive model, which would ensure a base payment of USD $5.00 (to guarantee that all minimum travel expenses are covered), but thereafter reward each registrar PKR 50 (approximately USD $0.50) for every successful application submitted to, and approved by, the UC. Based on our interviews with gatekeepers, we believe that monthly disbursements based on actual registrations will be more motivating and will also allow gatekeepers to better manage any associated travel or administrative costs. The performance-based model will also be more sustainable long-term, as it lowers the cost-per-registration as the initial surge in demand for DBR services subsides (i.e. the number of unregistered children decreases) and the volume of monthly registrations facilitated by each gatekeeper falls below twenty.

12. Carroll, J. (2014). 'Mistrust and Polio in Pakistan'. Boston Globe.
Available at: https://www.bostonglobe.com/opinion/2014/10/26/mistrust-and-polio-pakistan/xxBRaW1A6JnbkoKCeRdSSK/story.html [Accessed 5 February 2018].

Figure 4

Incentive model comparison: cost-per-registration over time
Cost per Registration (USD)

Registrations per Month	50	40	30	20	15	10	5
FLAT RATE MODEL	$0.20	$0.25	$0.33	$0.50	$0.67	$1.00	$2.00
PERFORMANCE MODEL	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50

Importantly, this model also provides each gatekeeper with an incentive that is in line with their existing salary – a crucial factor in motivating the registrars to prioritise the DBR service. Nikah registrars and LHWs, for example, earn an average income of $170 per month, or $0.77 per hour, while Telenor franchises receive approximately $0.50 for each of their successful transactions (such as selling or registering a new mobile SIM). When introduced to the new performance-based model, all of the gatekeepers seemed more content and viewed the model as fair; they felt that it reflected their hard work and efforts, and also rewarded them for submitting accurate applications. Telenor might also consider working with Regional Directors to set DBR-specific KPIs for their franchises, further ensuring that these gatekeepers are incentivised and motivated to prioritise the service.

An additional benefit to the proposed model is that performance against monthly targets will be easier to track, enhancing the partners' ability correct inefficiencies. For instance, where a particular gatekeeper's compensation is regularly decreasing or below their monthly target, he or she could be provided with additional support, such as further training. As an underperformance might be caused by factors outside of a gatekeepers' control, such as unwillingness of the parents in general in one district or hostility against registrations, this could be addressed by other methods such as increasing communication activity at the local level.

Raising Awareness

Component 5: Developing a below-the-line communications strategy

One of the fundamental demand-side barriers to birth registration is parents' lack of understanding as to why registration is important and how they can navigate the registration process. To address this, DBR partners should develop a comprehensive communications and awareness-raising campaign at the national and local levels, with the aim of creating and sustaining a demand for birth registration services among parents in each targeted district. As trusted service providers, MNOs are strongly positioned to contribute to any DBR project's communications activity.

Communications messaging and material should be designed to encourage behavioural change by helping parents understand why birth registration is important, the benefits of using the new digital service, and the practicalities of registering through a local gatekeeper. As a secondary objective, the communications strategy should consider how to inform and influence a wide range of actors who might play a role in scaling the service nation-wide; this might include local government authorities and other potential partners, as well as the 'informed elite' - online communities, students, entrepreneurs, and other key influencers.

In the following sections, we provide four key recommendations for designing a below-the-line (BTL) communications strategy for DBR in Pakistan, and also propose a cost-effective BTL communications plan for the project.

Recommendation #1: Understand your audience's information needs, preferences and constraints

GSMA's end-user research in Pakistan, Tanzania and Côte D'Ivoire found that the concept of mobile birth registration appealed to both men and women, due to the clear cost and time-saving potential. Both parents could see the importance of birth registration and had confidence in using digital solutions to do this, although they emphasised that services needed to be simple and easy to follow, to insure the process was inclusive of, and understood by, everyone.

However, in many areas across Pakistan (especially rural communities), prevailing gender norms mean that men act as intermediaries between the women in their family and formal service providers due to the cultural inappropriateness of women speaking with men they do not know. Women, for instance, are generally less likely to engage with mobile phone agents, preferring to rely on male relatives to replace a SIM or recharge airtime or data. Higher access to mobile devices means that men are more likely than women to be reached by SMS services, and higher literacy rates and mobility outside of the home means they are also more likely to be influenced by written communications materials, such as outdoor posters or leaflets.

In rural areas, community members tend to prefer accessing information about new services by word of mouth, often depending on local elders or influencers in their community to share information and recommend services. Trusted gatekeepers such as Nikah registrars, Telenor franchises and UC clerks should be effective at engaging men and driving demand for DBR, as are prominent figures such as Nazims (city administrators), maulvis (religious scholars), local politicians or 'jirgas' (a court of influential and elder figures in a community who resolve local matters such as inheritance issues and wealth disputes). Mothers, meanwhile, are most likely to be reached face-to-face through the lady health workers, as well as other influential females in their family or community.

Recommendation #2: Leverage operator experience delivering action-oriented messaging

Telenor and other MNOs in Pakistan are well-positioned to lead on the development and delivery of DBR campaign messaging. Over the course of three months in 2014[13] , Telenor alone mobilised 35 million of their customers to re-register their SIM cards against their CNIC, using straight-to-the point communications messages related to identity, such as, 'Your SIM is your ID'; 'You are from Pakistan – be proud of your identity'; and 'Your thumb and your SIM are your identity'. Telenor also appreciated the importance of using consistent messaging, regardless of their customer's location or gender. Messaging around DBR should follow the same pattern, possibly adopting campaign narratives that are centred around the themes of civil rights (identity is an essential first step in providing rights to citizens), human rights (identity is a basic human right) or sustainable development (identity contributes to reducing inequalities and promoting peace).

Recommendation #3: Focus on reaching parents through sustained BTL communications activity

Above-the-line (ATL) and digital communications can be used by project partners to showcase their commitment to the project and its impact to key influencers and a mass audience. ATL activities can be most effective if they are carried out as part of the project launch, or to highlight the impact at the end of the initiative. In Pakistan, cable television is one of the most popular means to receive information, especially for stay at home women/mothers. However, television campaigns can be expensive when showcased at peak times, and must be carefully planned to avoid getting lost in the 'clutter' of an increasing number of entertainment and news channels. There is also a chance that these approaches will have less impact on parents in rural areas due to multiple factors, including literacy rates, lower TV viewership, access to electricity and digital exclusion. Here, localised radio channels, delivered in local languages, can be more effective.

To achieve universal birth registration in each targeted district, the project will need to create and sustain a demand for birth registration among local stakeholders and parents. Below-the-line (BTL) communications activity is the ideal way to raise awareness among parents and create a positive 'buzz' around services that are new and generally unheard of in the market. It is also more accessible by nature, and better aligns with parents' preference to receive information from trusted sources, or by word of mouth. Mobile providers such as Telenor are invaluable resources for this kind of marketing, as operators are already very active with ground-level marketing activities, or 'ground-activations', including those that take local cultural and gender norms into consideration.

Other Examples of BTL Best Practice

In Mali, a citizen's guide to birth registration has been issued in five languages (French, Bamanankan, Fulfulde, Sonrai and Tamasheq). In order to ensure that those who were illiterate could benefit from the guide, more than 1,000 audio copies and 600 video copies have also been distributed.

In Iraq, an information campaign has been launched, and 20,000 copies of a brochure on birth registration have been distributed to refugees. An information video is currently being shown in all camps, UNHCR implementing partners offices, and registration of offices.

In Lesotho, World Vision met with local leaders and community members to discuss child protection issues. As a result, church leaders agreed to give awareness-raising sermons on birth registration at least once a month for three months, to facilitate the registration of names of children in need of birth certificates on dedicated days, and to submit the list of names for forwarding to the Department of Home Affairs.

The Minimbah Project, established by a group of university students at the University of New England (Australia), involves a volunteer team that holds birth registration days in local primary schools in order to raise community awareness of the importance of birth registration. Children whose births have not been registered are given the opportunity to register for a birth certificate.

13. For more information, see: GSMA (2017): 'Understanding the Identity Gender Gap: Insights and opportunities for mobile operators to help close the divide'. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/08/Understanding-the-Identity-Gender-Gap.pdf

Telenor's successful approach to registering women's SIM cards in 2014 has been well-documented by the GSMA, including their efforts to ensure that female customers had access to women agents and female-friendly spaces at franchise locations, taking registration information and services to the places where women tended to congregate (such as female universities, malls, gazebos, and markets), arranging 'verification celebration days' where whole families could come out together and register, and calling customers directly to arrange door-to-door visits.

Gatekeepers can deliver communications messages to parents through face-to-face discussions, or by positioning attention-grabbing posters or charts in places where parents naturally congregate, such as UC offices or Telenor franchises. Because posters can be easily displayed for the life of the project, they are also key to ensuring that demand for registration services is sustained long-term. Telenor might also consider how to embed DBR messaging into existing billboard advertisements, leveraging their position as an existing client of marketing agencies to get favourable rates. Incorporating DBR messaging into Telenor's mHealth service could also be helpful, as bulk messaging is already common practice for marketing BTL offers that are targeted to specific customer segments.

Recommendation #4: Identify communications dependencies

There are natural dependencies attached to multi-stakeholder communications campaigns, particularly the need for government ministries to approve all official messages, including the language, content and imagery. The best way to ensure quick execution is to have standard messages approved as early in the project as possible, and only change these in cases where the information provided is no longer up-to-date or accurate (i.e. a change in the DBR process).

14. GSMA (2015). 'G2P payments & Mobile Money: Opportunity or Red Herring?'. Available at: https://www.gsma.com/mobilefordevelopment/programme/mobile-money/g2p-payments-mobile-money-opportunity-or-red-herring [Accessed 5 February 2018].

Table 4

Proposed Communications Plan for Pakistan

Channel	Concept	Timelines	Cost Rationale	Cost (PKR)
TV	Effective means for showcasing the partnership's role in supporting digital inclusion and innovation, reaching key influencers and mass market.	Tied to project launch, but aired periodically over 6 months	TVC production cost: 30 days airing budget (spread over six months) on PTV, Sindh-specific channels	2,000,000 5,000,000
SMS	A targeted and cost-effective approach to sharing specific and timely information on DBR and its benefits. Messages are most likely to reach men due to higher rates of literacy and mobile access. Long-term, the messages could be tied into Telenor's mHealth service to sustain the demand for DBR.	Messaging can be commenced immediately after district launches. Follow-up messages can be sent with high frequency, 1-2 messages per month for at least six months.	Practically free	
Billboard	Provides an action-oriented 'shout out' to the DBR process (why and how) and its benefits, and can feature the logos of all partners.	Tied to project launch, and sustained for three months	90 Day display (spread over six months) on 8 hoardings across 8 districts.	2,500,000
Radio	Effective means for influencing parents and other important social personalities, highlighting the DBR process and its benefits. A PR programme (interview or discussion) can be run covering all stakeholders.	Tied to project launch, and sustained for four months	Programme on national radio airing over 4 months (including PR programmes)	1,000,000
Street Banners	One of the best BTL mediums, covering complete districts/UCs to create awareness of DBR. Although banners have a limited life, they are the best medium to create awareness in any town/city.	Tied to project launch, and sustained for three months	Covering 500 banners per month per district	2,880,000
Posters	Covering DBR process, benefits and gatekeeper's information, to be made available at TP franchise, UC offices, grocery stores, and other places where parents congregate.	Tied to project launch, and made available for life of the project	10,000 posters	600,000
Activations	A team of activation agents perform a brief drama in local villages; the drama covers DBR topics well-mixed with local stories, and 'giveaways' handed out to remind people of DBR services.	Tied to project launch, and sustained for three months in each district	A team of van and 2 DBR registrars to be utilized for 60 days per district; approx. cost pr set up will be 4k per day	1,920,000
Total Cost				PKR 15,900,000 USD $145,000

Achieving Sustainability

Component 6: Opportunities for MNO commercial sustainability

Through their involvement with DBR projects, operators such as Telenor have been able to positively engage with key stakeholders and demonstrate the value of mobile in delivering digital identity services to the underserved. Although MNOs will be driven to support digital birth registration initiatives for reasons other than commercial gain, it is vital that partners work together from the outset to help ensure that these services can be provided in a way that is commercially sustainable - as they have already done with many financial, agricultural, health and utilities services. Projects that remain stuck in the 'CSR space' risk being constrained by limited engagement or short-term funding cycles. Sustainable business models for delivering DBR, on the other hand, will allow MNOs to generate revenue that can be re-invested into the service, ensuring that DBR services remain free to the end user and cost-effective for government.

Telenor's experience has shown that commercial sustainability for MNOs could be achieved through the incorporation of the following services or strategies:

1) Mobile Payments:
Mobile money services (such as Telenor's Easypaisa) provide DBR partners with a transparent, convenient and cost-effective means for delivering incentive payments to gatekeepers. GSMA has also advocated that these opportunities can represent significant payments volumes, prospective new customers, and an additional source of revenue. We estimate that distributing payments to the project's 10,200 gatekeepers could provide Telenor with a minimum of PKR 306,000 in additional revenue per month, or PKR 3,672,000 (USD $33,000) per annum.

2) Data:
The wireless data used by gatekeepers to submit applications, and by UC staff to manage the registration dashboard, could provide operators with another vital revenue stream, even when offered at a subsidised rate. By offering data plans to each of the 11,000 gatekeepers and UC staff at a rate of PKR 120 per month, MNOs will be able to generate PKR 15,840,000 (USD $142,000) in revenue per annum.

3) mHealth Messaging:
Mobile Health (mHealth) is a value-added service that is highly relevant to DBR beneficiaries, suggesting that it could be employed by MNOs to better engage their current customers or on-board new ones. Although Telenor provides health messaging free of charge to DBR beneficiaries who have opted into the service, the value they gain from working in partnership with public-sector partners (such as the Ministry of Health) and from engaging with parents in a new way greatly outweighs the relatively minor cost of providing this service. Examples of information MNOs might consider offering through mHealth messaging include:

- Vaccination alerts: Advice on how, where and when children will need to be immunised, based on the reported age and location of the child.
- mHealth services could help increase the flow of vital post-natal information to new mothers,

15. GSMA (2015). 'G2P payments & Mobile Money: Opportunity or Red Herring?', Available at: https://www.gsma.com/mobilefordevelopment/programme/mobile-money/g2p-payments-mobile-money-opportunity-or-red-herring [Accessed 5 February 2018].
16. BCG and Telenor (2013). 'The Socio-Economic Impact of Mobile Health'. Available at: https://www.telenor.com/wp-content/uploads/2012/05/BCG-Telenor-Mobile-Health-Report-May-20121.pdf.

including information on how to stay healthy after pregnancy, how to care for newborns, how to recognise post-natal symptoms that can lead to more severe ailments, and what to do in emergency situations.

- Nutritional guidance: Alerts on child and mother nutrition could include tips on how to improve life style and diets, including how to get the maximum nutritional value out of the family's available food and budget.

4) **New acquisition and churn reduction:** By showcasing their commitment to improving the lives of their customers, MNOs can enhance their reputation in the community and differentiate themselves from competitors, allowing them to on-board new customers and retain existing ones (also known as reducing "churn"). This benefit is particularly valuable in Pakistan, where there is an estimated customer churn rate of 7.5%. A customer's positive experience with DBR might also encourage them to investigate other service provided by the MNO, potentially improving the operator's ARPU. Assuming that 40% of the households reached through the DBR service are existing Telenor customers (based on their high market share in rural areas), and that each household contains at least two mobile subscribers, we estimate that through the project Telenor can expect to have a direct, positive engagement with at least 1.4 million mobile phone subscribers: 560,000 of which will be existing Telenor subscribers, and 840,000 of which will belong to their competitors. If 7.5% of these subscribers were either safeguarded or on-boarded by Telenor, the project would deliver an additional PKR 21 million (USD $189,630) in value to Telenor per year.

Figure 5

Revenue-generating activities for MNOs

Figure 5: Revenue-generating activities for MNOs

	PKR	USD
1) Mobile Money potential rev for MNO		
Gatekeepers count for 2018	10,200	
Mobile money earnings per <Rs. 1000 transfer	60	
Monthly revene for MNO (50%)	306,000	
Monthly revene for MNO Franshises (50%)	306,000	
Annual revene for MNO	**3,672,000**	**33,048**
2) Data		
Internet bundles for gatekeepers and UC staff	11,000	
Average cost per bundle	120	
Monthly revenue from data	1,320,000	
Annual revenue from data	**15,840,000**	**142,560**
3) mHealth Services (provided free of charge)	**-**	-
4) Existing Base - Revenue Safeguard		
Mobile subscribers reached (700,000 x2)	1,400,000	
Estimated Telenor Customers reached (40%)	560,000	
Estimated non-Telenor Customers reached (60%)	840,000	
Total customers safeguarded or onboarded (7.5%)	105,000	
ARPU (per month)	200	
Annual revenue to Telenor	**252,000,000**	**2,268,000**
Total value to Telenor (per annum)	**271,512,000**	**2,443,608**

Taken together, the VAS opportunities listed above could help Telenor generate just over USD $175,000 per annum in revenue at the project's current scale, enough to offset a significant portion of the operational costs they incur through their support. Furthermore, these revenue-generating activities will grow as the project is scaled to new districts and provinces, suggesting that they will allow Telenor (and other operators following their model) to support the DBR project for the long-term. The significant reputational benefits this brings to Telenor, and its potential to safeguard or on-board customers, should also make continued involvement in the project enticing. Despite the project's potential to be sustainable from a commercial perspective, Telenor does not see a conflict in providing the platform as they believe this will only have developed to other MNOs, as they believe this will only contribute to their efforts to 'empower societies' and showcase the industry's role in transforming people's lives.

Component 7: Achieving Scale: Costs and Benefits for Government

For national governments, birth registration is a vital first step in establishing a robust Civil Registration and Vital Statistics (CRVS) system – an essential tool for effectively planning and monitoring the delivery of public services, development policies and infrastructure programmes. Accurate demographic data can also protect a government against fraud, lead to more efficient and cost-effective delivery of public services and social protection programmes (especially in areas related to health and education), and can facilitate fairer elections. For many governments looking to reap these benefits, digital identity has emerged as the preferred method of providing citizens with access to officially-recognised identification.

BEST PRACTICE FROM PAKISTAN: Engaging Government from the Start

The Governments of Punjab and Sindh, within the wider national commitment of achieving universal civil registration by 2024, are fully committed to ensuring the successful delivery of the DBR project in the targeted districts. To help build this commitment, key government stakeholders were consulted and updated at each stage of the project, and a Project Steering Committee – which included representatives from local government, NADRA, UNICEF and Telenor Pakistan – received formal government authorisation at the provincial level to oversee the project and provide policy and administrative guidance. Furthermore, a Task Coordination Committee was established in each district which addressed operational aspects of the project, outlining clear roles and responsibilities and creating an accountability structure for the achievement of project objectives.

The Cost of Taking DBR to Scale

It is anticipated that the ongoing pilot in Pakistan will build the case for provincial and district governments to further their commitment and assume full responsibility for the management of the DBR intervention, and that respective governmental agencies will institutionalise their roles and functions in official planning documents, legislative frameworks and budgets to ensure its sustainability and to cement the platform into government systems. High-level advocacy and technical support is being provided by Telenor and UNICEF to the departments of local government in each province to assist in these efforts, and to ensure that they have planned appropriately to assume responsibility for all

applicable human resource costs, as well as costs related to mobility, connectivity and maintenance of the DBR system.

Estimating the cost of using the DBR platform to achieve universal birth registration across Sindh and Punjab is a difficult task; and even more difficult in Pakistan's other two other provinces, Khyber Pakhtunkhwa Province (KPK) and Balochistan. Here, new parents will be harder and more expensive for mobile gatekeepers to reach due to lower population density and the remoteness of many communities, and the fact that mobile connectivity is less ubiquitous. However, a starting point for estimating the cost of taking the system to scale in the project's priority districts could be to use the current project's budget, its impact target (700,000 registries), and the assumption that the performance-based incentive model will be adapted going forward, to roughly estimate the system's cost-per-registration.

GSMA's analysis shows that, excluding the expenses associated with ongoing maintenance of the DBR system, this per-registration cost would amount to just over USD $3.00 .

To put this figure into perspective, the World Bank estimates that the resources required to deliver routine immunisations in poorer countries is between $6 and $18 per infant[17]. It is also equivalent to the cost of travel incurred by the average family completing the traditional registration process in Sindh, and less than half of the cost incurred by the average family in Punjab.

Figure 6

DBR cost-per-beneficiary

	Total Project Cost	Cost per Beneficiary
Human Resources		
Government Staff and Project Coordinators	US$421,000	US$0.60
Capacity Building Activities for Govt staff	175,000	0.25
Partner Coordination Meetings	40,000	0.06
Gatekeeper 'Mobility' Costs		
Gatekeeper Payment Per Registration		0.50
Gatekeeper Data/Connectivity	256,738	0.37
Stipend Disbursements via Mobile Money	71,560	0.10
Mobile Devices and Tablets	557,648	0.80
Field monitoring visits	**135,000**	**0.19**
Communications Activity	**145,000**	**0.21**
Total Cost per Registration (USD)		**US$3.07**

17. Brenzel, L. et al (2011). 'Cost-effectiveness and Financial Consequences of New Vaccine Introduction in Pakistan'. World Bank. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/13585/658300WP0Vacci00box365730B00PUBLIC0.pdf?sequence=1&isAllowed=y

At $3.00 per registration, we can estimate that the cost of reaching the backlog of unregistered births in the project's seven newest districts will be approximately $19 million:

Figure 7

Cost (USD) of achieving universal birth registration in each of the project's target districts

Province	District	Unregistered Births	Total Cost of DBR (USD)	Human Resources	Gatekeeper Costs	Field Monitoring	Comms Activity
Sindh	Badin	673,000	2,068,942	611,469	1,188,274	129,793	139,407
	Naushero Feroze	626,000	1,924,455	568,766	1,105,289	120,729	129,671
Punjab	Rahim Yar Khan	1,065,000	3,274,032	967,629	1,880,404	205,393	220,607
	Muzafarghar	1,057,000	3,249,438	960,360	1,866,278	203,850	218,950
	Bahawalpur	761,000	2,339,473	691,423	1,343,650	146,764	157,636
	Rajanpur	1,335,000	4,104,068	1,212,943	2,357,126	257,464	276,536
	Dera Ghazi Khan	649,000	1,995,161	589,663	1,145,899	125,164	134,436
	Total	6,166,000	US$18,955,570	US$5,602,251	US$10,886,919	US$1,189,157	US$1,277,243

Going forward, the DBR system would require these districts to budget a collective $2 million per year to ensure that all new births were captured by the system. This assumes that the cost of the project's ongoing communications activity is 50% of the costs associated with the project launch campaign.

Figure 8

Annual cost (USD) of maintaining universal birth registration in each of the project's target districts

Province	District	New Births Per Year	Total Cost of DBR (USD)	Human Resources	Gatekeeper Costs	Field Monitoring	Comms Activity
Sindh	Badin	50,370	149,811	45,765	88,935	9,714	5,397
	Naushero Feroze	54,750	162,838	49,744	96,669	10,559	5,866
Punjab	Rahim Yar Khan	152,205	452,689	138,289	268,739	29,354	16,308
	Muzafarghar	121,545	361,500	110,432	214,604	23,441	13,023
	Bahawalpur	119,355	354,987	108,443	210,738	23,018	12,788
	Rajanpur	75,555	224,716	68,647	133,403	14,571	8,095
	Dera Ghazi Khan	125,925	374,527	114,412	222,338	24,286	13,492
	Total	**699,705**	**US$2,081,069**	**US$635,732**	**US$1,235,425**	**US$134,943**	**US$74,968**

The Benefits of Taking DBR to Scale

It is estimated that, on average, the traditional birth registration process requires UC offices to meet with each parent two times in order to complete the registration process (with an additional trip required to pick up a birth certificate). GSMA estimates that by reducing the application processing time to only ten minutes, the DBR process will free up an additional 10% of UC staff time, allowing them to complete a backlog of other vital public duties.

The government might also consider the additional source of revenue that could be gained by making it more convenient for parents to acquire a birth certificate. For a fee of USD $1.00, parents may apply for a 'Child Registration Certificate' through the NADRA system, but this still requires them to make at least one trip to the nearest UC office. In Tanzania, DBR partners agreed to make the registration process 'one step, one visit' so that the registration and certification could take place concurrently at the newly designated registration points. This made it possible for a parent to travel to their local health clinic to register their child's birth, have their child vaccinated, and have a handwritten birth certificate produced all in a single trip. This decision has helped increase the certification rate in mainland Tanzania from 12.7% to 28%.

DBR partners should also consider how to extend the benefits of the mobile application to the registration of other vital statistics, such as marriage, divorce and death. In Tanzania, organisations are even exploring the possibility of expanding a similar application's use to allow for more comprehensive identification of people with HIV in order to support a greater continuum of care, provide better links to information on treatment, and track patients all the way to death.

It is also clear that supporting the scale-up of the DBR platform will help the national and provincial governments of Pakistan to deliver **Pakistan's 2025 Vision** and realise the **Sustainable Development Goals (SDGs).** GSMA has estimated the additional SDG-related benefits brought to the government through the digitisation of birth registration could include:

SDG 3: Ensure healthy lives and promote well-being for all
Vision 2025 Pillar 1: Developing human and social capital

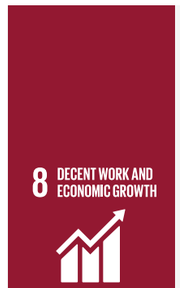
According to the World Health Organization, of the 6.6 million children who died before their fifth birthday in 2012, almost half died of infectious causes that were preventable. In many cases, these children were overlooked in public health planning and were therefore harder for healthcare workers to reach, or were excluded from immunisation programmes . It is estimated that 3.2 million Pakistani children – roughly one in twenty – do not receive their required vaccinations, resulting in the health systems bearing an additional PKR 320 million per month in avoidable health expenses. By helping to close the gap in immunisations, DBR services could reduce health care spending by an estimated USD $35 million per annum.

SDG 4: Ensure inclusive and equitable quality education
Vision 2025 Pillar 1: Developing human and social capital

Enhancing the quality of education has been recognised as a national priority in Pakistan, where literacy rates actually declined between 2016 and 2017, from 60% to 58%. When used properly, the data provided by DBR could help government increase access and enrollment in schools, which in turn would lead to the improvement in the quality of the educational services provided and move more students from 'unskilled' to 'skilled' labour. If DBR services led to better access and improved education outcomes for only 1% of the 22.6 million children between the ages of five and sixteen who are currently out of school, GSMA estimates that the long-term uplift in wages would add USD $54 million per annum to the national economy, while also improving the overall living conditions of its citizens.

SDG 5: Achieve gender equality and empower all women and girls.
Vision 2025 Pillar 2: Achieving sustained, indigenous and inclusive growth

Birth registration can contribute to the elimination and prevention of the practice of early and forced marriage, and support the government's implementation and enforcement of laws on the minimum age of marriage. In Pakistan, nearly 1 in 4 women are married before the age of eighteen. Girls who are married before their eighteenth birthday are more likely to leave education, experience physical and mental traumas, and experience a lower quality of life.



SDG 8: Promote productive employment and decent work for all.
Vision 2025 Pillar 2: Achieving sustained, indigenous and inclusive growth

The International Labour Organization estimates that more than 168 million children are in child labour, of which 85 million are in hazardous work or work that is likely to harm their health, safety or morals. It has been estimated that one quarter of the country's workforce is made up of child labourers, and in Pakistan's city Hyderabad, wide-spread poverty often results in children entering the workforce at the age of 8 or 10 years. While legislation setting legal minimum age for employment is important, it will have little effect if the means to prove the age of the child are not available. As such, birth registration and the accessibility of a birth certificate are prerequisite conditions for the effective prevention and elimination of child labour.

SDG 10: Build effective, accountable and inclusive institutions at all levels
Vision 2025 Pillar 2: Achieving sustained, indigenous and inclusive growth
Vision 2025 Pillar 5: Private sector & entrepreneurship led growth

Widespread and affordable access to digital services, including birth registration, provides countless avenues through which people can empower themselves and their societies. Commercially viable and sustainable solutions delivered in a responsible manner will be best positioned to support the development of societies and reduce inequalities.

SDG 16: Build effective, accountable and inclusive institutions at all levels
Vision 2025 Pillar 3: Governance, institutional reform and modernisation of the public sector
Vision 2025 Pillar 5: Private sector & entrepreneurship led growth

Mobile technology has the potential to be leveraged as a trusted and robust digital identity solution for the underserved, leading to greater social, political and economic inclusion, and making individuals more visible to their governments.

For further information please visit
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