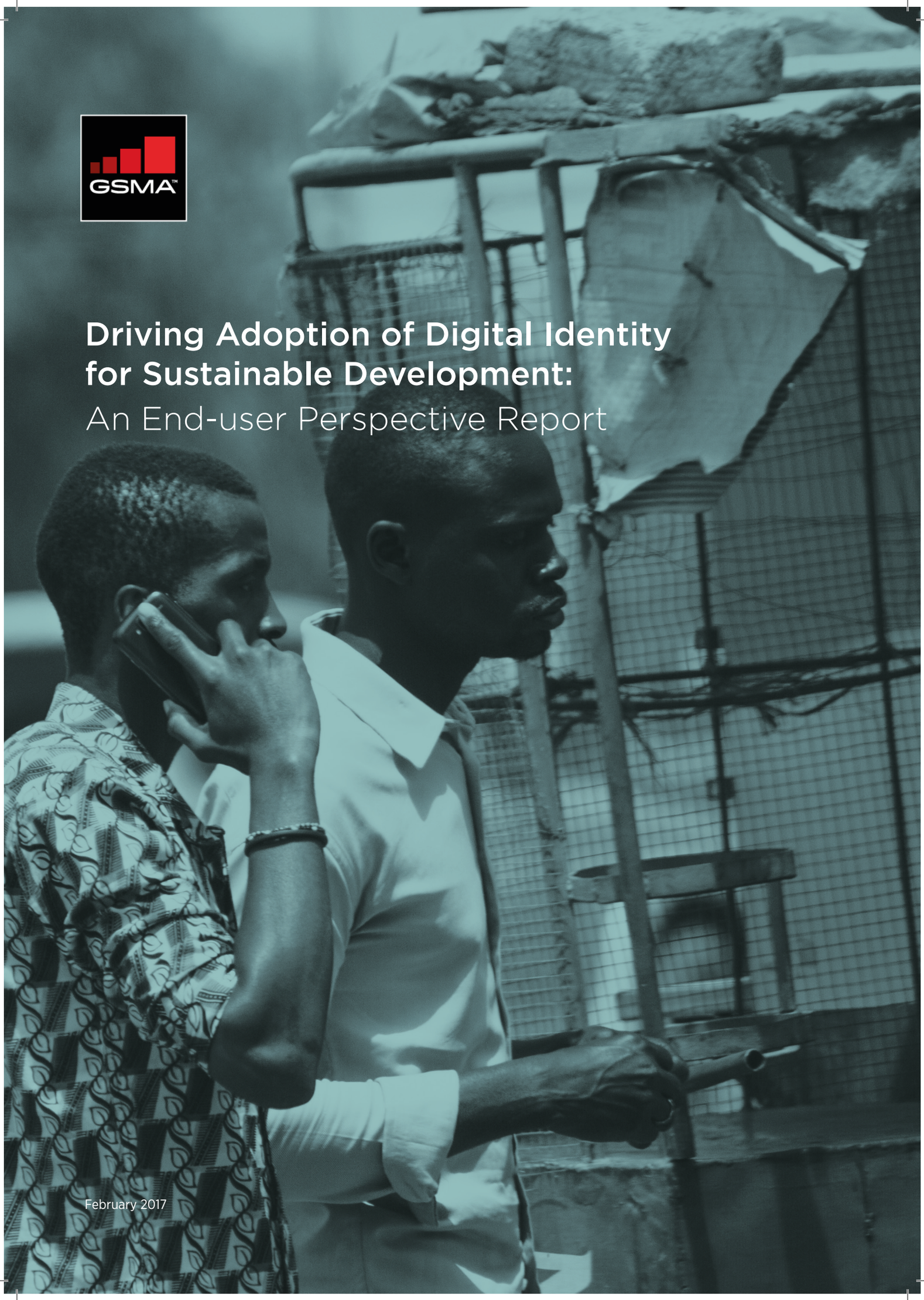


Driving Adoption of Digital Identity for Sustainable Development:

An End-user Perspective Report

February 2017

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with almost 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, Mobile World Congress Americas and the Mobile 360 Series of conferences.

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The GSMA Digital Identity Programme is uniquely positioned to play a key role in advocating and raising awareness of the opportunity of mobile-enabled digital identity and life-enhancing services. Our programme works with mobile operators, governments and the development community to demonstrate the opportunities, address the barriers and highlight the value of mobile as an enabler of digital identification.

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1 Introduction

The ability to prove one's identity (ID) is essential to securing a number of life-enhancing services such as healthcare, education, financial services, connectivity and social protections. However, at least 1.5 billion people lack any form of officially-recognised identity, and this problem can disproportionally impact rural residents, poor people, women, children, and other vulnerable groups, particularly in Africa and Asia. Governments and the international development community increasingly recognise the risk the 'identification gap' presents to inclusive development, as reflected by the Sustainable Development Goals target to provide every person with a legal identity, including birth registration, by 2030.

Many countries are beginning to 'leap-frog' paper-based identity systems by implementing robust digital identities[1], and the transformative potential of mobile technology has been identified as a key opportunity for accelerating the scale and reach of an inclusive digital identity that empowers citizens, protects privacy and stimulates economic and social development. In order to enable the effective, efficient and far-reaching take-up of digital identity solutions, it is vital for mobile network operators (MNOs) and other key stakeholders to take a bottom-up approach to design and implementation, where the requirements, needs and desires of consumers (or 'end-users') are understood and met. However, a critical knowledge gap still exists around end-user perspectives on identity and identity-linked services, particularly among end-users that are poor and underserved.

This report highlights key findings from the GSMA Digital Identity programme's qualitative research in three countries: Tanzania, Pakistan and Côte d'Ivoire. These countries are at three distinct stages on their journey towards achieving full national identity coverage. As of 2016, Tanzania had 24 per cent coverage of its national identity card (NIC), Côte d'Ivoire had 59 per cent coverage, and Pakistan had one of the highest coverage rates, with 98 per cent of the country registered and holding the Computerised National Identity Card (CNIC)[2]. Pakistan has also launched extensive registration campaigns to target traditionally under-registered populations such as rural and tribal groups, women, and undocumented children.

In each country, researchers utilised a multi-method approach to capture a wide breadth of end-user perspectives, and to ensure that identity 'ecosystems' were explored through a variety of lenses. End-users participating in this research were chosen on the basis that they had access to a mobile device and were old enough to access identity documents and maintain mobile phone subscriptions. All end-users were in the lower socio-economic groups, but included a mix of ages, genders, life stages, education and literacy levels[3].

Although end-user attitudes and perceptions were highly contextualised and varied by country, the report begins by identifying a number of common themes that are shaping digital identity opportunities across these markets, and likely other developing countries. The report then looks at each of the research markets in more detail, exploring these common themes through three lenses: contextual factors, the mobile landscape and the identity ecosystem. Finally, we present key opportunities and implications for mobile network operators (MNOs) seeking to develop and implement mobile-enabled digital identity solutions. We hope that this research will form part of an important and evolving body of evidence on the opportunities – and challenges – faced in developing inclusive digital identity solutions for the underserved.

1.1. Key themes shaping digital identity opportunities in developing markets

Every market will present its own context and challenges for MNOs and other stakeholders seeking to develop and implement digital identity solutions. However, our research has highlighted a number of important cross-cutting themes that were shaping the opportunity for solutions that target low-income consumers in emerging markets:

1) End-users need digital identity solutions that optimise service delivery: Existing identity solutions were often challenging for end-users to obtain and do not always enable them to access the value-adding services they want, in the way that they want. End-users welcomed digital identity solutions that were more accessible, easy-to-use and enabled them to better meet their daily needs.

2) Relationships and trust are major influencers: The relationship that end-users have with government, service providers, and their community had a strong influence on their behaviour and attitudes towards identity. In instances where national security was a concern and trust among citizens was low, having access to official proof of identity was a priority. Conversely, where community relations were strong and trust among citizens was high, these personal relationships often provided the most important proof of identity.

3) MNOs and mobile are highly valued: In all three markets MNOs were generally valued and trusted, as they are often the service provider that has the closest day-to-day relationship with end-users. Equally, mobile phones were highly valued and are increasingly viewed as something that everyone should be able to access or own. This puts MNOs in a strong position as a trustworthy and reliable provider of digital identity solutions, particularly in markets where SIM registration is mandatory.

4) End-users are willing to pay for mobile services: Across locations, end-users recognised that MNOs offer unique and highly-beneficial services; mobile money was the clearest and highest priority example, particularly in Tanzania and Côte d'Ivoire. People said that they would be willing to pay for new services offered by MNOs, so long as there was a clear payment structure, an incentive for them to access, and the fees were reasonable (i.e. in line with charges for similar services).

1 Digital identities are defined as a collection of electronically-captured and stored attributes and credentials that can uniquely identify a person

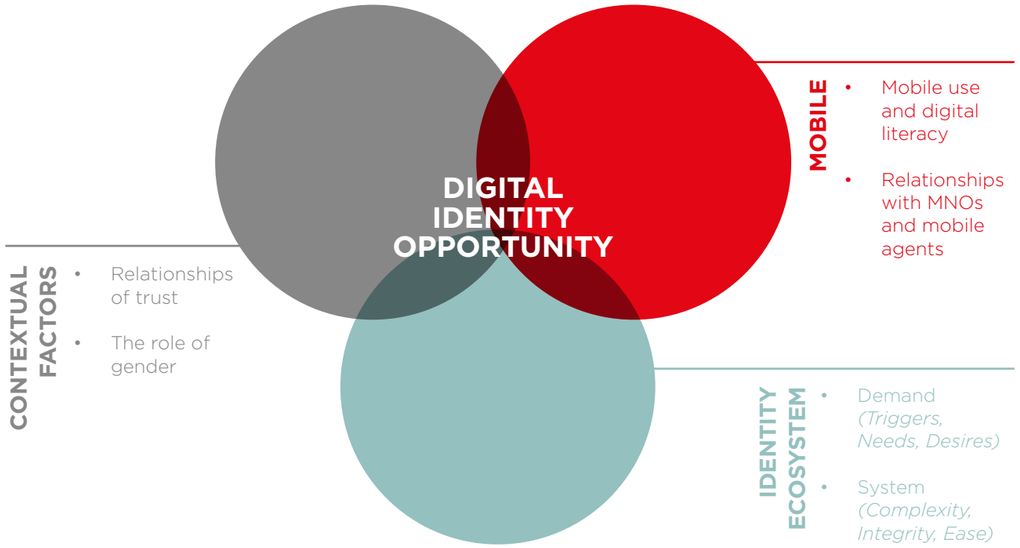
2 Statistics courtesy of ITU and only reference national ID schemes and do not include passports, voter ID cards, etc.

3 See the appendix for more details on the sample and research approach

5) Digital literacy and confidence remain low: Across locations, our end-users had very low digital literacy levels and confidence when using a mobile device. They were also not generally digital 'explorers' as they were using very few mobile services and rarely tried out new features on their phone. Digital literacy and confidence tended to be even lower among women, older people, and those living in rural areas. This will need to be considered in the design and implementation of digital identity solutions if they are to be inclusive and accessible.

6) There is an identity gender gap: For those living in communities with strong patriarchal gender norms in effect, gender has an important influence over attitudes towards identity and mobile services. In these instances, women's access to identity products and mobile services tended be more restricted, they frequently depended on male relatives' identity documents to access services, and they had lower levels of digital literacy. People in these communities saw less immediate need for digital identity solutions for women as they felt they had fewer instances where they needed to prove who they are.

The research has also highlighted that the broad themes outlined above can be understood in more depth when they are explored in each country through three lenses: contextual factors, the mobile landscape, and the identity ecosystem:



The following case studies outline how these factors played out in Tanzania, Côte D'Ivoire and Pakistan, and how they uniquely interacted in each location to act as barriers or enablers for end-users.

DRIVING ADOPTION OF DIGITAL IDENTITY FOR SUSTAINABLE DEVELOPMENT: AN END-USER PERSPECTIVE REPORT

2 Case Study 1: Tanzania

In Tanzania, formal identity products and identity-linked services have yet to become a part of day-to-day life, as low-income consumers typically rely more on informal social networks for their identification needs. As such, triggers for formal identity verification are few and far between, and 'ward letters' serve as sufficient proof-of-identity in most situations. Although this meant that access to services seemed simple and easy from a user perspective, not using formal ID appeared to impact negatively on service delivery, therefore creating a latent need. People also took pride in 'being Tanzanian', and appreciated identity solutions that demonstrated this. There is an opportunity for MNOs to deliver digital identity solutions that can meet the latent need for better service delivery and the user desire for identity solutions that demonstrate 'being Tanzanian'. MNOs are well placed to do this due to the combination of high levels of trust placed in MNOs and how highly end-users value their mobile phones.

2.1. Contextual factors

A lack of tribalism in Tanzanian culture and politics has obviated much of the political instability that has affected many other African economies. There is a deep, sustaining national pride and people consider themselves to be first and foremost Tanzanian. Tanzania also boasts a stable multi-party democratic system that achieved high voter engagement and avoided any violent unrest in the 2010 and 2015 national elections, and this political stability has provided a peace dividend that continues to lay a foundation for strong economic performance.[4]

The informal economy is dominant, with many people running small informal businesses such as small-scale agriculture and vegetable stalls, and strongly valuing entrepreneurial, aspirational outlooks. Most end-users say that they rely on informal services to meet their daily needs, outside of healthcare, education and

4 Source: World Bank Country Profile of Tanzania - http://www.worldbank.org/en/country/tanzania

mobile services. Although there is a low take-up of traditional banking products, the use of mobile money services is widespread and growing, and participation in community saving groups, such as Savings and Credit Cooperative Organisations (SACCOs), is also common.

Day-to-day, end-users tend to operate in a small, localised world and are embedded within strong community networks that act as financial and social safety nets. Even amidst difficult economic circumstances, it is assumed that your duty as a member of the community is to lend your support to those in need, for instance by offering others a micro-loan or by contributing towards community expenses. End-users also typically relied on contact with local ward chiefs as their in-community link with Government, and most are much more likely to contact a local ward chief when experiencing problems than to interface with Government services directly. This deep belief in community self-reliance is a source of pride, as is having a positive social reputation; being someone that people in the community are willing to vouch for is critical.

"The ward letter is important as it is from someone who knows you, this is better than ID from someone who doesn't know you."

Male, 52, Mkurunga

"When someone asks for my ID it is like they want to know me – I feel proud."

Female, 46, Mlandizi

There is a strong belief that the people and organisations you encounter on a daily basis will act in your best interest, and this trust extends beyond friends, family and neighbours within the community to service providers such as MNOs, the Government, and even 'outsiders'. As a result, there is a broad openness to share personal information and problems publicly, with limited consideration of the potential security risks or negative consequences associated with doing this. With regard to how mobile phones and identity documents were used, women included in the research appeared to lead similar day-to-day lives as men, accessing services and mobile phones with similar levels of ease and difficulty. Therefore, gender did not appear to influence people's behaviour or attitudes towards identity or mobile-enabled digital identity.

Urban User: *Joseph*



"Technology is making our lives better, it makes sense to use them for more and more things.

Joseph recently moved to Dar Es Salaam. He aspires to have his own business and his own home but currently rents. He feels that people in his area are very cooperative and social, and he is mainly friends with the local motor-bike taxi drivers, who help each other by lending each other money. When he moved to the area he first went to the local government ward leader to introduce himself and find out about the local area – the leader also put him in touch with a potential landlord. He approached the landlord who then asked him to give the phone-numbers of friends and family to check what he was like. This kind of referencing is very common and Joseph was happy to oblige. He does not have a formal contract or deposit in place with his landlord, so this process is important for making both parties feel secure.

Accessing value added mobile services was a big driver for Joseph to get formal ID. In 2010, he lied about his age at the voter registration centre, saying he was 18 rather than 17 years old. He doesn't see any problem with this; "I'd lost my student ID and it would be really difficult to replace so I thought this would be easiest, you don't need to prove your age for voter cards - they just trust you".

His phone is used for personal and business use and is highly valued – he sends pictures of his welding work on his phone to potential clients. Joseph recently got his first smartphone as he wanted to post pictures on Facebook to help promote his welding. "I now use Facebook, I want to use other apps too like WhatsApp but I am still learning". He juggles between two SIMs using whichever gives the best promo deal for what he wants to do: "My friends use Tigo so I mainly use Tigo to phone them"

He feels that mobile-enabled digital identity solutions could work well for him as he really values his phone and carries it everywhere, whereas his ID is kept at home. "My phone is always with me – if I could show it, this would be very easy" It also feels innovative and the way the future is going: "Technology is making our lives better, it makes sense to use them for more and more things."

2.2. The mobile landscape

Mobile penetration is rapidly growing in Tanzania, with around 46 per cent of the population now subscribed to a mobile network and over 38.6 million mobile connections, amongst a population of 54.3 million people[5]. Basic and feature phones continue to dominate the market, although there are signs of a shift towards more smart phone ownership[6]. According to industry experts, smart phone penetration is growing year on year, and as there is a growing trend in Tanzania for individuals to use social media for business purposes, mobile will become more important than ever in people's lives.

The MNO marketplace is also highly competitive, with four established MNOs contending for market share.[7] In this environment, deal hunting is a common and embedded feature of the landscape; consumers are experts at choosing airtime offers that meet their needs, and often have multiple SIM cards to use for different purposes. Despite the importance of mobiles to daily living, most end-users' depth of use remains shallow: phones are predominately used for calling and texting, but many end-users also use basic mobile money services to save, send and receive money, or to pay bills. Phones are also valued as both social and business tools, particularly for those with small businesses. Digital literacy and confidence was low across genders, ages and income levels: most people do not feel ready or know how to access mobile internet, and tended not to 'explore' services on their phone unless explicitly recommended or modelled by someone else.

Awareness of privacy and security considerations is also low; for example, most end-users have a minimal understanding of the role of the mobile money PIN and why it is important to keep it private. This, combined with high levels of trust, means that it is common practice for people to share their PIN codes with others, including the mobile agents who facilitate transactions on their behalf. As most people felt they 'had nothing to hide', lock codes were also an uncommon protection and not considered to be worth the hassle.

Attitudes towards MNO's are broadly very positive, and MNOs and agents are trusted influencers of mobile service uptake and digital skill development. End-users reported that they generally received good service from MNOs and they particularly valued promotional offer notifications sent via SMS, and the support they received from mobile agents to use mobile money. Despite 'SIM juggling' being common in Tanzania, end-users also display some brand loyalty; for example, many people have a 'main' SIM attached to an MNO they had been using for a long time, which they would consider their 'main' phone number. End-users tend to see mobile agents as facilitators and teachers as much as service providers – visiting agents for support whenever they needed to use their phone for more than calling or texting. For example, agents were often providing advice and support for people to set up mobile money, or to transfer or withdraw money.

2.3. The identity ecosystem

The identity ecosystem in Tanzania is relatively simple and straightforward, with end-users primarily depending on informal social 'vouching' to access local informal services rather than formal identity documents. Low and infrequent uptake of formal services also means that many end-users are not clamouring for alternative identity solutions– although they were highly receptive to them when proposed. The most common identity documents found among end-users include:

FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
WARD LETTER	• Tends to be the 'default' ID for many as usable in almost all scenarios requiring ID (apart from college enrolment / banking) • Highly valued as 'more than ID' – it is an 'introduction' from a trusted person in the community	• Easy to get: ward chiefs are embedded in local communities • Free • New letter produced as needed on case by case basis • No formal ID needed to obtain; authentication is a matter of your local chief knowing you personally	• Ward letters rely on personal connections with ward chiefs and other local community networks • As no records are kept around birth rates etc, there is no guarantee of ward letters' accuracy
VOTER ID	• Widely used identity document with high penetration *(96% of 18+ adults)*[8] • Usable in all scenarios requiring ID for over 18 year olds; 'old' ID cards *(e.g., from 2010 elections)* equally allowed as 'current' *(e.g., from 2015 elections)* • Highly valued and a source of pride - card with picture, signature and biometric valued for robustness and link to Tanzanian identity	• Easy to get but only during defined windows: voting registration opens every 5 years • Can be obtained in same-day visit at local ward office • No other ID documents needed to obtain voter ID	• Although ID cards look and 'feel' robust (picture, signature, biometrics) information is unreliable • Registrants often 'game play' to be able to vote; there is no way to ensure registrants are not lying about their age in order to vote
NATIONAL ID	• Usable in all scenarios requiring ID • Valued as proof of citizenship – which allows potential for travel • Source of pride / aspirational • Lack of signature on card reduces perceived robustness	• Perception that roll-out has been paused • Perceived as quite difficult to get – multi-step process	• TBC – as will depend on new process government instigates when NIN are rolled out

5 Based on GSMA Intelligence data. Penetration levels are actually higher when people under the age of 15 (and therefore unable to subscribe) are discounted. See here for explanations of connections and mobile subscription data: https://www.gsmaintelligence.com/research/2014/05/measuring-mobile-penetration/430/

6 From discussions with industry experts

7 Vodacom, Tigo, Airtel & Halotel

8 http://www.iri.org/sites/default/files/wysiwyg/tanzania_gender_report.pdf

"When someone asks for my ID it is like they want to know me – I feel proud."

Female, 46, Mlandizi



FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
BIRTH CERTIFICATE	• Few triggers for registration or use; main use is college admission • Also required for school admission though people regularly use ward letter and/or birth clinic card instead	• Perceived difficult to access – multi-step process and expensive • Only valued for college so many go through certificate process at the time of college admission • Cost and difficulty to obtain increase over time	• When based on birth clinic card, displaying high level of integrity

When proof-of-identity is required, voter ID cards and ward letters are the most common documents used, as they are widely accepted and are relatively easy to obtain (although voter registration only occurs every five years). Ward letters are widely considered to be the most robust form of ID in the eyes of end-users – these are letters of introduction from someone who knows you personally, and are therefore reinforced by one's reputation and link to the community. Voter cards and the National ID (NID) card, on the other hand, are open to manipulation and many people discount the value of having 'correct' information on these documents.

Birth certificates tend to be more difficult and expensive for many people to access, and there is a low awareness among end-users of why these are important. While some of the end-users participating in our research had a new NID, this appeared to be limited to areas where the NID scheme had been actively promoted by government officials.

SIM registration was the key trigger for needing identity documents for most of our participants; otherwise, the use of formal identity documents tended to be driven by one-off events (e.g. school or college admissions, which require a birth certificate) or infrequent situations (e.g. voting or providing bail to police). Even in the absence of frequent and pressing 'triggers' for use, many end-users expressed an emotional connection to the idea of having some kind of formal identity: having a tangible document with a photo and signature that linked them to Tanzania was exciting. They also imagined ways in which ID documents such as a ward letter from a local government official might act as a vehicle not just for accessing services, but as a point of introduction or 'reference' within social networks. For other end-users, eagerness to possess formal identity (particularly a National ID) stemmed from the enjoyment of imagining a prosperous future that would require them to travel and engage beyond their local communities and social networks.

Rural End-User: *Zahra*



"I feel good that Tigo knows me, as they can help me with my problems.

Zahra, who is recently divorced, has two grown children and cares for her two nieces. She sometimes worries about money, as her income is unstable. Her main source of income is the vegetable stall she runs but it is very competitive to get customers. She has a daily budget for her and her nieces' needs of approx. USD $2. She is part of a local women's SACCO which is where most of her savings go, otherwise for any emergency expenses she goes to a neighbour for help. Zahra lives in a close-knit community where supporting each other - both financially and practically - is the norm. She feels pride in this fact and thinks it is her duty as a Tanzanian to be cooperative and help others with their problems. "We all help each other here with problems – when my neighbour was sick I gave money for the doctor."

Formal ID is rarely required in her life, so Zahra keeps hers in a safe place place at home and rarely brings it out. Despite this, she feels ID is highly important. When government officials came to her town and asked people to register for the National ID, she went and obtained this. She has not used it to date but feels that it might be useful in the future if she wanted to travel: "Maybe if I want to go abroad one day this will help me". Zahra has used her voter ID for taking out a bank loan, but to access the bank loan she also had to provide a ward letter. She feels the ward letter is the most important form of ID, as it shows her character and, in the case of the loan, means that if she ran off with the money they would have someone to go to: "The letter is vital as it is someone vouching for you – it is from someone that actually knows you."

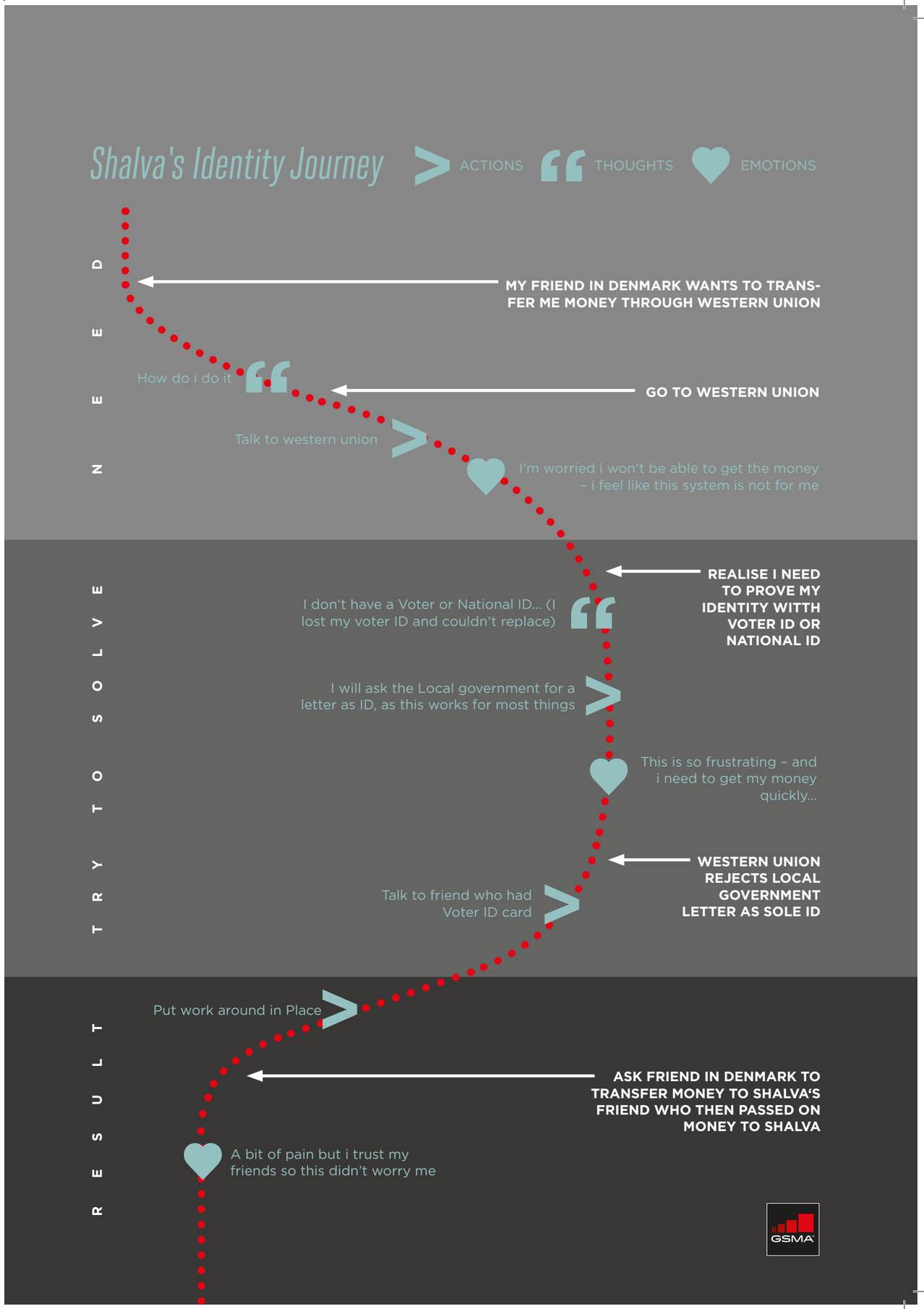
Zahra only uses her phone for basic tasks but these are highly important to her life, and mobile money is her main financial hub for her business. Despite this, she struggles to use Mobile Money on her own, putting a lot of trust in mobile agents to help her access her account and provide her with support. "I don't know how to withdraw money so I have to give the agent my PIN and the phone and ask them to do the process for me" Her trust in her mobile operator Tigo extends beyond not only agents but also to sharing data with Tigo "I feel good that Tigo know me as they can help me with my problems."

In general, widespread access to ward letters and voter ID cards means that end-users feel able to access the services they need with the forms of identity they already possess; there is not currently a strong desire for new ID products (such as the NID) to fill 'gaps' in the market or make service access easier. This attitude is reinforced by the fact that end-users are adept at 'working around' identity requirements to get the services they want, ultimately perceiving these processes as flexible and negotiable *(see Shalva's Identity Journey, right)*. For instance, using an identity document belonging to someone in your social network is not seen as dishonest or problematic.

When asked about the concept of a mobile-enabled digital identity solution, the response from end-users was widely positive – albeit with no clear use case driving that positivity. Most participants could also see clear benefits to being able to use their phones to prove who they were when needed. They tended to carry their phones with them, as opposed to existing identity documents - which tended to get left in drawers at home - and felt a mobile solution could be convenient. There was also general positivity around being part of trends in technology and around being part of something 'new' and innovative.

"I use my phone to pay my solar energy bill, so why not use it as my ID – this is the way of globalisation."

Male, 52, Mlandizi



3 Case Study 2: Côte D'Ivoire

Proving who you are with formal ID is an expected and accepted part of daily life in Côte d'Ivoire. However, the identity system is highly fragmented and lacks robustness - to gain access to most services, it didn't particularly matter 'what' our participants showed to prove who they were, as long as it was some kind of formal ID. As a result, people were used to manipulating the identity system to their advantage and found it relatively easy to access the services they wanted. Conversely, registering for the most 'legitimate' forms of ID could be challenging for our participants, due to financial and time-related barriers. Mobile-enabled digital identity solutions were broadly welcomed and expected as 'the future' in this environment. However, the benefits would need to be carefully communicated during rollout to mitigate potential resistance once people become aware that they can no longer manipulate the system for their own gain.

3.1. Contextual factors

Identity and identification have long been important issues in Côte d'Ivoire, reflecting the country's heterogeneous demographics and political history. Côte d'Ivoire faced prolonged periods of crisis following a military coup d'état in 1999 and additional periods of instability between 2002-2007. Issues related to identification also played a key role in post-election conflicts in 2010, as over 25 per cent of people lacked proof of nationality, fuelling disagreement over legitimacy of voting rights for considerable swathes of the population[9]. Increasing national security is a high priority in the country, and people generally accept that routine identity checks are a necessary part of this endeavour, particularly when travelling outside of their immediate community. There are frequent police checkpoints on the roads and identity checks on entering office buildings and hotels.

9 World Bank ID4D Identification Systems Analysis: Country Assessment: Côte d'Ivoire (2015)

As with Tanzania, end-users tend to use few formal services outside of health, education and mobile, relying on informal social and financial support systems within their community to meet their day-to-day needs. In fact, many end-users suggest that they even avoid formal healthcare services whenever possible, tending to only visit hospitals if they are very ill and traditional healers were unable to help.

Trust among community members can be low. There are more than sixty ethnic groups recognised in Côte d'Ivoire and more than 20 per cent of the population consists of people from neighbouring countries. The diversity of the population and high levels of movement across regions mean that people often didn't know those living in neighbouring communities – this, combined with the current political sensitivity, means that people are often suspicious of each other's actions and motives, especially in large cities such as Abidjan. Even though people tend to operate within their own ethnic groups, within communities people of different ethnicities often share common values, trade goods between groups and support community solidarity by attending shared community ceremonies (e.g. marriage).

Gender norms in Côte d'Ivoire can also impact end-user behaviour and attitudes towards mobile access and identity. The role of gender varies widely in Côte d'Ivoire depending on location (urban or rural), ethnicity, culture and religion. Amongst some social groups, patriarchal gender norms limiting women's access to and uset of value added services and mobile phones is evident, and in these instances women often depend more heavily on the men in their families: for instance, men might accompany the women on trips to access healthcare services, show their own identity documents at police check points, or register a woman's SIM card in their name.

"I know who you are today, but I don't know who you will be tomorrow. Humans have two sides, you could be one today and another tomorrow."

RURAL POFILE: *Kouka*



I would like to be able to make transactions, like sending and receiving money without having to go to my brother every time.

Kouka is an immigrant from Burkina Faso who lives in a small, rural community with his pregnant wife and 4-year-old son. In the village, men tend to be farmers and women small stall owners. As Kouka is part of the Mossi ethnic group from Burkina Faso, he farms manioc, cocoa, rice and African chicken. The community is a 'melting pot' and each ethnicity has its own community group (divided into men and women). Kouka aspires to be a great trader and business man as farming is very hard work for little money. "To be a big trader you have to have land. I want to use the land to save money to get a stall at the market".

Kouka has a Consulate card from the Burkina Faso Embassy which he uses day-to-day when he travels through police checkpoints and to access services. He lost his birth certificate in Burkina Faso and was rejected when he applied for Burkina Faso citizenship, but also has not got Ivorian citizenship. He wants to apply for National ID and a Driver's Licence once he has saved enough money (he thinks he can do this with his Consulate card and an 'expedition' document), but both are very expensive. His Consulate card has now expired, but is still being accepted in most day-to-day situations so there is no urgent need to renew it.

Kouka has a basic handset with two SIM cards. He gets SMS messages from both MNOs with new offers – so he always makes sure to read them. Kouka uses his phone to call members of his family in Abidjan, his wife and occasionally his friends. He really wants to use his phone for more and access services like Orange Money. He set up an Orange Money account with a mobile agent, which was the easiest service registration he has experienced. He wanted to save his cocoa money on there, but he doesn't know how to use it on his phone and doesn't feel comfortable exploring. Instead he has to rely on using his brother's phone and Orange Money account. "I would like to be able to make transactions, like sending and receiving money without having to go to my brother every time".

3.2. The mobile landscape

Mobile penetration in Côte d'Ivoire is relatively high and growing; around 53 per cent of the population are now subscribed to a mobile network and there are over 25.4 million connections, amongst a population of 23 million people[10]. The MNO marketplace is also highly competitive, with three major MNOs contending for market share and offering highly competitive airtime and data packages. In this environment, mobile users are experts at choosing the cheapest airtime and data offers that meet their needs, and often have multiple SIM cards with different MNOs to make the most of the various deals.

End-users tend to have access to either a basic or feature phone which they used for very few activities, including calling, texting and occasionally mobile money. Digital literacy and confidence levels are generally very low, with most end-users lacking an understanding of how to use their phone for more than these functions. As in Tanzania, many people simply do not feel ready to access new value-adding services and tended not to 'explore' these on their phone unless explicitly recommended and supported by someone else. This was particularly true among women in areas where patriarchal gender norms influenced their use of and access to mobile services. In general, mobile devices are something that most people want and feel is 'good' to own, regardless of whether they actually needed one. As one male participant explained,

"The phone is difficult for me to handle. Sometimes it gets blocked when I do something, and I have to get it unblocked with a mobile agent."

Male, 36, Abengourou

Awareness of privacy and security considerations can also be quite low. Many end-users seem to have a minimal understanding of the role of the mobile money PIN and why it was important to keep it private. PIN codes are often shared with mobile agents, friends, and family and are often viewed as unnecessary if you have nothing to hide.

10 Based on GSMA Intelligence data. Penetration levels are actually higher when people under the age of 15 (and therefore unable to subscribe) are discounted. See here for explanations of connections and mobile subscription data: https://www.gsmaintelligence.com/research/2014/05/measuring-mobile-penetration/430/

"There's a PIN code on my mobile money account but I don't know why, I don't use it, see?"

Female, 45, Ayame

In stark contrast to attitudes around PINs, younger people, and particularly women, are frequently concerned about whether service providers can share their personal data with third parties, and therefore preferred to only share their name and age with MNOs. Younger women in Abidjan, for instance, feared their personal details could be accessed and traced back to them by jealous women or even 'the rebels'. In contrast, older people, and particularly men, are far less concerned about sharing personal information with MNO's and often trust them more than other service providers, including healthcare and government. They feel they have a close relationship with their MNOs, where they can see a regular benefit and the MNO delivers on their promises - unlike many other public and private service providers. Equally, end-users observed that if MNOs explained what they were going to use their personal data for and ensured it was only used for this purpose, they would generally be happy to share with them.

Mobile agents are also very important in people's mobile relationship. Agents tend to be relatively trusted members of the community and are highly influential drivers of mobile take-up. Our participants often saw mobile agents as facilitators, and would visit them for support whenever they needed to use their phone for more than basic calling or texting.

"I had a pass code on my phone but I removed it because it's boring."

Male, 36, Abengourou

3.3. The identity ecosystem

Proving who you are with formal identity is a routine and accepted part of daily life in Côte d'Ivoire. Although the identity ecosystem is highly fragmented, from an end-user perspective it is still relatively straightforward to navigate as it doesn't particularly matter 'what' you show to prove who you are, as long as you show something. End-users tend to have at least one form of identity that they regularly use, but precisely which type of documentation this is, and its legitimacy, varied hugely from person to person. The following types of identity are commonly in use:

FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
NATIONAL ID	• Most 'important' and desirable form of ID • Perceived as the main form of ID and accepted as the most 'official' form of ID, offering the user most • protection from police, military and bribery • Usable in all scenarios requiring ID	• Very few people had one • Perceived difficult to access – multi-step process and expensive • Complex range of ID documents needed to register and expensive registration process • People were often trying to save for one or were midway through the application process • Very few people had one	
CERTIFICATE OF NATIONALITY / PASSPORT / DRIVER'S LICENCE	• Desirable because it is perceived as one of the more 'official' forms of ID and presumed to be accepted in most scenarios requiring ID e.g. travel, SIM registration • However, less valued than national ID and few expected to get one	• Perceived difficult to access – multi-step process and expensive • Complex range of ID documents needed to register for one, and expensive registration process	• Perceived as 'official' by users. Robustness dependent on the breeder documents used, particularly the birth certificate

FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
BIRTH CERTIFICATE	• Highly valued and desirable as a breeder document to apply for most other forms of ID • Also frequently used and accepted in scenarios requiring formal ID e.g. travel, SIM registration	• Most people had one • Perceived as easy to access before the child is 3 months of age, and to change fraudulently later • However, after 3 months of age, it becomes much more difficult to get legal birth certification, particularly for older people – those who don't know their exact date of birth • Birth certificate must be renewed (and paid for) each time a person wants to use it as a breeder document for other ID	• Paper based system with no national database. This system was being frequently manipulated by people to their own advantage. • People sometimes have multiple birth certificates with different names and ages, enabling them to access and register for different services. • As this is the main breeder document, other forms of identity registered using fraudulent birth certificates will also not be robust.
STUDENT ID	• Valued for school registration, fees and exams • Also being used by some for other ID scenarios such as SIM registration, police patrols and check points when they don't have other forms of ID • However, this is less perceived as less 'official' for scenarios other than education, and offers less protection from bribery in other ID scenarios	• Most people had one, or used to have one • Perceived as easy to access using birth certificate as breeder document and/or paying money	• Perceived as less 'official' than other ID such as national ID. • Frequent use of incorrect birth certificates as breeder document and ability to pay money to get a new student ID means this is open to manipulation by users
CONSULATE CARD	• Highly valued by people who don't have Ivorian citizenship • Used in all scenarios requiring formal ID, although doesn't offer protection from bribery that the national ID does • Often the only formal ID owned for participants who are neither Ivorian nor citizens of another country	• Most people who didn't have Ivorian citizenship had one • Relatively easy to access as the local Embassy office often support application process	• Perceived as 'official' ID by users

FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
ATTESTATION OF IDENTITY DOCUMENT	• Provided to citizens in place of the national ID during the crisis years 2010-2014 • Valued as an alternative to national ID, but not as robust and expires yearly. Can be used in most of the same scenarios, for example SIM registration and travel	• Most people had one • Perceived as easy to access before the child is 3 months of age, and to change fraudulently later • However, after 3 months of age, it becomes much more difficult to get legal birth certification, particularly for older people – those who don't know their exact date of birth • Birth certificate must be renewed (and paid for) each time a person wants to use it as a breeder document for other ID	• Paper based system with no national database. This system was being frequently manipulated by people to their own advantage. • People sometimes have multiple birth certificates with different names and ages, enabling them to access and register for different services. • As this is the main breeder document, other forms of identity registered using fraudulent birth certificates will also not be robust.
VOTER ID	• Valued for school registration, fees and exams • Also being used by some for other ID scenarios such as SIM registration, police patrols and check points when they don't have other forms of ID • However, this is less perceived as less 'official' for scenarios other than education, and offers less protection from bribery in other ID scenarios	• No longer being issued, unless a person already has one. • Expires and needs to be renewed yearly	• Perceived as less 'official' than other ID such as national ID • Users often still using expired copies.

Demand for formal identity is high in Côte d'Ivoire, and end-users cite routine travel as the most common use case for showing ID. Legitimate, up-to-date identity documents provide a form of protection at police and military checkpoints, enabling quick and easy movement for individuals and ensuring that they aren't questioned, forced to pay bribes or prevented from passing. This seems to be less of an issue for women, as they tend to have slightly different gender roles to men and typically are not required to travel long distances or pass through police checkpoints (these gender roles are more apparent among some of the Muslim or more rural communities).

Urban profile: *Hawa*



I would like to get national ID. It's necessary especially for travellers. If you have an accident people will recognise you and you can pass through checkpoints.

Hawa has four children and lives in her husband's family home. Most of her time is spent at home caring for the children (as is expected of Dyula women), going to the Mosque and frequenting the market to get items for her food stall. She earns a little money from the stall which she spends on items for herself and her children, such as clothes and shoes. Her husband is the most important thing in her life; he makes most of the decisions for her and he earns the majority of the family income as a shop owner.

Hawa had a birth certificate which would allow her to apply for new IDs, but her brother accidently burned it in 2009. She has another one at her mother's house a few hours away but she hasn't been able to pick it up. It's not that urgent for her because now that she is married, her husband helps her to access the services she needs and uses his ID documents to do so. Even so, she explained, "I would like to get national ID. It's necessary especially for travellers. If you have an accident people will recognise you and you can pass through checkpoints."

Hawa has a basic handset with a Moov SIM card. She had wanted a mobile for some time; when her husband upset her once, she got him to buy her a phone as an apology. She uses it for calling her mother and family who live further away, and sometimes her husband, when he's not home. She doesn't know about the SIM registration process because her husband did it for her using his national ID. "I would like to use the internet on my phone if I knew how."

Because service providers typically permit end-users to show a wide range of identity documents, people tend to find it relatively easy to gain access to the services they want. The key exception to this is when end-users want to register for other identity documents that are perceived as more 'official', such as the national ID, passport, driver's licence or Certificate of Nationality. Interestingly, end-users described the need to apply for new, functional identity documents such as these – either for themselves, or for another family member - as the most important reason they needed to have access to at least one proof-of-identity. Parents, for instance, must use an identity document to apply for their child's birth certificate which, in turn, will be vital for the child to acquire a student identity card. Other, more accessible documents such as the Attestation of Identity Document, student ID and voter ID were not perceived by many end-users as being equally 'official' but are still widely accepted, even in cases where the identity had expired.

Gaining access to mobile services was also cited as an important reason to have an identity document, which is required when registering a new mobile SIM card or signing up for mobile money services. New legislation in 2017 could make this process much more challenging for low-income consumers, as operators will only be able to accept national IDs, passports, driver's licences or a National Certificate of Identity for SIM registration. Formal identification must also be provided the first time a patient is treated at a hospital, and student identity cards are required for school enrolment and daily attendance, to pay school fees, and to register for exams. Although many people do not have access to formal banking services (largely due to financial barriers) formal identity is required to sign up for an account and to complete regular transactions.

End-users are engaging in a wide range of behaviours to navigate – or circumnavigate – the identity ecosystem. For those individuals with a national ID card, accessing services and showing their ID during travel is a simple and straightforward process with very few challenges. However, those using less 'official' or expired documents are aware that they could encounter challenges when they are asked to prove their identity. When problems arise, end-users say that they can generally work around these situations by paying a bribe, making excuses or saying they were in the process of applying for a national ID. In many instances, people are also able provide an ID belonging to a friend or family member in order to access a service, and feel there were no issues in doing this. Young people might use a parent's ID card when they need to access an identity-linked service, such as registering at a hospital and obtaining a health leaflet.

End-users might also provide another person's identity document in situations where they are not comfortable sharing their own details; for example, some younger people and women admit to using a family member, friend or a classmate's ID to register their SIM card because they didn't want to provide their own personal information.

"I got stopped by a police patrol when I didn't have my student ID with me, so I said I was still at primary school"

Female, 20, Abidjan

"The first time I went to the hospital and got the health leaflet I had to take my mother so she could show her national ID, because I don't have one."

Female, 19, Abidjan

Many end-users will also explicitly manipulate the identity ecosystem to their own advantage, for example when age restrictions prevent them from being eligible for a service. There are clear age restrictions on school attendance and some professions such as semi-professional football and the civil service. In these instances, it is relatively easy for end-users to pay for a fraudulent birth certificate that contains an eligible age and new name; this is a relatively common process that is referred to as 'Rene Caille' (Caille sounds like 'couper' in French which means 'to cut'). In practice, this means that many people own multiple birth certificates that they can use in different situations, according to what age they need to be *(see Akissi'a Identity Journey, right)*.

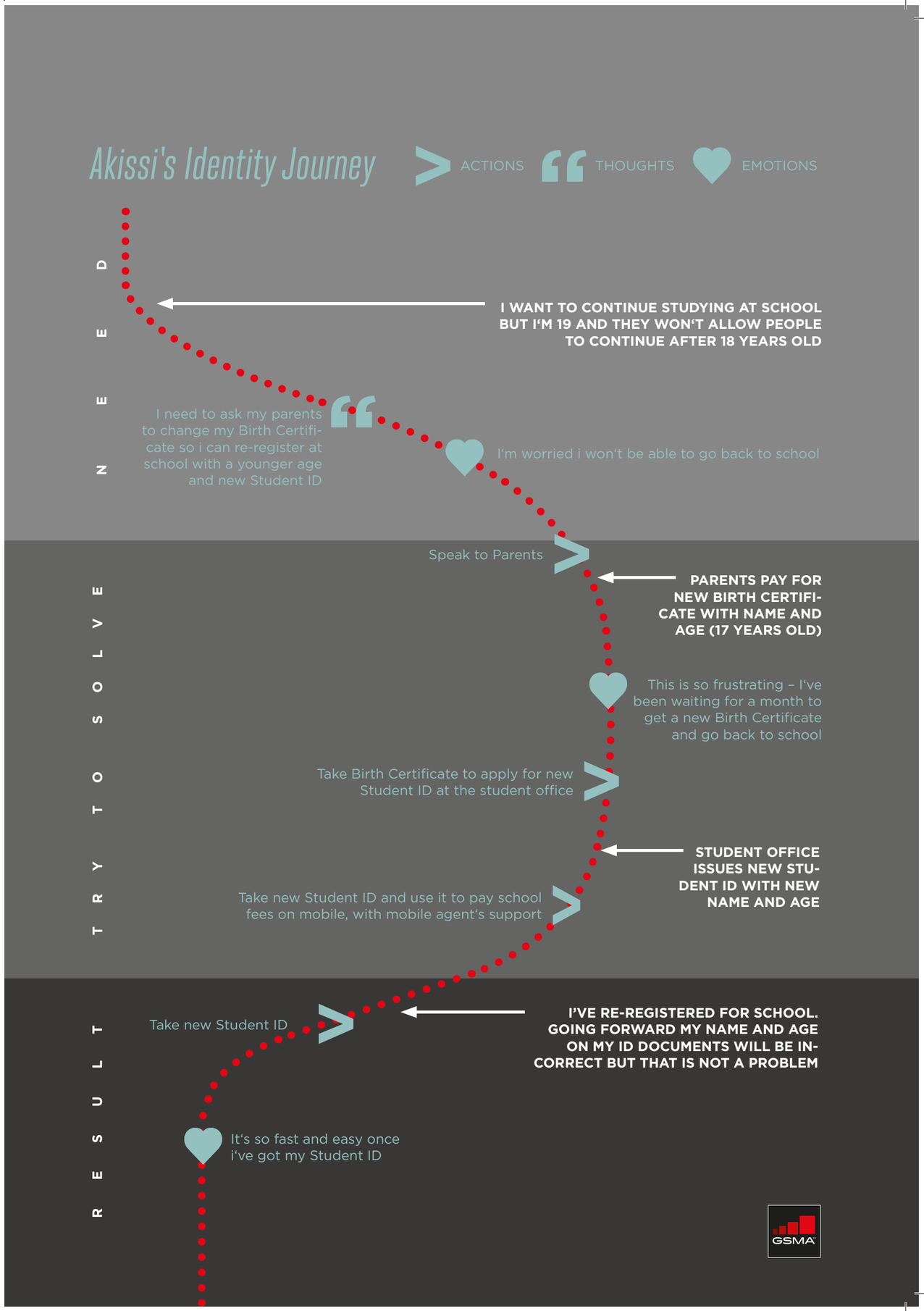
"[A mobile identity] sounds straightforward, even a vending machine can serve you coffee these days, so this is the same trend."

Female, 53, Ayame

At this point in time, none of the end-users participating in the research were using services on their phones that require proof-of-identity other than mobile money, and none were using their phone to provide a digital proof-of-identity. However, most people could see a clear benefit to being able to use their phone in this way, particularly those who have been caught without ID whilst travelling, as they almost always had their phone on them and felt that it was easy to show the screen or provide a phone number. Equally, the Government has been very supportive of digitisation initiatives and e-governance service provision more generally in Côte d'Ivoire, and has been working with technology companies to develop various e-Governance initiatives. Many people also feel that that mobile-enabled digital identity solutions were a positive and inevitable aspect of the technological future:

"I would love to give, show or just tell them my mobile number! You always have your mobile and you can remember the number."

Male, 26, Ayame



4 Case Study 3: Pakistan

Pakistan represents a market in which formal identity solutions are robust, widely accepted, and valued by users. The Computerised National ID Card (CNIC) has become the critical identity document – established as part of daily life, it enables individuals to access services and is easing movement. However, there appears to be a lack of awareness around the value-added services that users could access with the CNIC and there is a latent need for improved service provision, for example around birth registration and healthcare. This coupled with high levels of trust in MNOs, means that MNOs are well placed to build upon the current system and benefit users with mobile-enabled digital identity solutions. However, patriarchal gender norms limiting women's access and use of mobile services will need to be addressed in order to create a truly inclusive solution.

4.1. Contextual factors

Although identity in Pakistan has historically been rooted in religion, in recent years the rise in violent extremism both within Pakistan and in neighbouring countries has led to a more national identity – albeit a complex one. In a bid to take a strong stance against terrorist activity, the Pakistan government has conceded substantial constitutional and decision-making authority to the armed forces[11]. To be Pakistani in 2017 is, therefore, to live within a context of conflict and to have a real and present need to be able to prove who you are to maintain personal safety.

Geography (urban versus rural) is a critical driver of user attitudes, contexts and needs. In rural areas people tend to live 'hand to mouth', tending to rely upon personal contacts for information and support. End-users in urban areas, meanwhile, tend to be more aspirational and driven towards financial stability, and are also more open to accessing new services. Participants in both rural and urban areas are cost-conscious.

11 The military is responsible for coordinating local counter-terrorism efforts, national security and law enforcement – particularly in more densely populated urban areas.

DRIVING ADOPTION OF DIGITAL IDENTITY FOR SUSTAINABLE DEVELOPMENT: AN END-USER PERSPECTIVE REPORT

"I don't feel like going outside because if I will go out problems will be there for me. Policeman will stop us and ask so many different questions like from where are you? You are from some other country and not from Pakistan. There are so many terrorist issues."

Male, 28, Lahore

In striking contrast to the high levels of social inter-dependence observed in Tanzania, urban Pakistani participants say that their trust was often limited to closer family members and friends - wider community members and particularly strangers were treated with caution. Conversely, participants from more rural areas described local social systems in which trust was extended more widely. Within social structures defined by long-resident families, it was easier for residents to place individuals within a 'known' matrix and thus to establish relationships of trust.

"You do not have to provide identification for daily tasks. You only have to tell who you are and whose son are you."

Male, 23, Kasur

Our participants generally trusted that the Government was operating in the best interests of its people, particularly in the steps taken to control threat of violence and extremist activity. Daily life involved frequent Government interaction at checkpoints, particularly in 'cantonment areas' (historically military stations) and when travelling. Participants generally accepted these protectionist measures, which were viewed as promoting safety and reducing risk of violent activity. In rural environments, local headsman or chiefs (Numberdars or Lambardars), who typically hail from powerful families within local villages or towns, acted as a more immediate link between people and the Government.

The political unrest in Pakistan appears to contribute to low levels of social trust in urban areas, where people were more likely to be stopped and checked.

Gender norms in Pakistan strongly influence the daily behaviours and attitudes of men and women. Women's participation in decision-making is low at a familial, local and national level, and women's identities are typically tied to male family members' identity. For example, new acquaintances often ask women for the names of their fathers or husbands rather than their own. Female sexuality, often tied into family 'honour', is highly stigmatised and restricted, particularly but not only in rural areas. This results in highly restricted movement and visibility outside the home, leaving women dependent on male members of their families to access value-added services such as health and education. Female literacy also lags behind at 43 per cent for Pakistani females compared to 70 per cent of Pakistani males[12] – further increasing barriers to empowered, independent access to services and opportunity.

12 http://reports.weforum.org/global-gender-gap-report-2016/economies/#economy=PAK

Urban Profile: *Fahreen*



“

At the hospital I didn’t have ID so it became very difficult for me - I gave my aunt’s ID card.

Unmarried and living with her family, Fahreen aspires to develop sewing skills to be able to improve the living conditions of her family. Farheen is concerned about health issues of her family members, but has limited freedom of movement as a female or access to information to try and address these issues.

Whilst Farheen doesn’t have her own formal ID and feels it isn’t necessary until she gets married, she is aware that it is important. She has seen her father stopped and knows it was needed for them to rent a house. Borrowing a CNIC for healthcare or taking out small loans between close females, is common for her. She is open minded towards mobile-enabled digital identity and feels it will save people time i.e. from standing in queues. ‘At the hospital I didn’t have ID so it became very difficult for me - I gave my aunt’s ID card.’

Fahreen has a feature phone that was given to her by her father, which he also uses from time to time. She mainly uses it to make calls and finds sending SMS difficult due to low literacy.

4.2. The mobile landscape

Mobile penetration in Pakistan is on the rise, with 46 per cent of the population now subscribed to a mobile network and over 127.9 million connections, amongst a population of 122.8 million people over the age of 15[13]. Pakistan has also seen an increase in the availability of affordable Chinese and Pakistani manufactured mobiles. For example, the average retail price of a premium smartphone fell from PKR 61,000 to nearly PKR 30,000 in two years since 2014[14]. Pakistani participants were well versed in ‘shopping around’ for deals, and often had multiple SIMs to take advantage of various airtime and data packages on offer.

The mobile landscape in Pakistan is fragmented; low-income male consumers, particularly urbanites, represent a very different market than their female, and particularly rural counterparts. Urban males tend to be more advanced phone users, often owning low-cost smartphones, and are more aware of the different applications available and potential benefits of use. However, their mobile use is often still limited to using Facebook, listening to music, playing games and following sports news, with some awareness and use of mobile money services such as Easy Paisa.

Conversely, rural end-users and women typically displayed low digital literacy and confidence. In rural areas, feature phones predominated, with mobiles used primarily for social connection purposes such as calling or texting friends and family members. Although rural participants did value their phones, mobiles played a much less central role in daily life and tended not to be kept ‘to hand’ as often as in urban areas.

In both rural and urban locations, women’s use of mobile phones was more limited and less sophisticated than men’s use. Women’s ownership or use of the mobile was highly stigmatised; unrestricted mobile use was perceived to be a sign of immorality and to contribute to socially unacceptable behaviours. Women therefore tend to share the phone with a male family member or a female elder in the home (mother or mother-in-law). These ‘gatekeepers’ monitor female users’ history regularly – discouraging use beyond contact within a defined social set. Women typically registered SIMs in male family members’ names rather than their own, and would not display their mobile in public spaces. For female users with low traditional literacy levels, reading text on the phone is an additional barrier to mobile use.

"I have a cell phone but I only receive the call from numbers saved in my mobile. I never attend unknown numbers and when there is any unknown number I give it to my husband for him to listen first."

Female, 22, Kasur

13 Based on GSMA Intelligence data.
See here for explanations of connections and mobile subscription data: https://www.gsmaintelligence.com/research/2014/05/measuring-mobile-penetration/430/

14 https://www.techjuice.pk/pakistan-is-6th-on-the-list-of-top-smartphone-markets-for-growth-by-value/

"Married girls can keep it but very few are allowed to have it. Very few. People do not think of it as good. 100% they think that she is having an affair." *Male, 23, Kasur*

There was low awareness or understanding of mobile privacy or security issues in Pakistan, and little concern around sharing information such as mobile PIN codes. Phones were rarely 'private' so people saw no need for a PIN code; this was particularly the case for women, as they were sharing the phone with other family members. Equally, rural participants tended to not be concerned about privacy, as they were using the phone for few activities and largely felt that they had 'nothing to hide'. Those people who were using PINs noted they mostly found these useful to keep children off their phones, rather than as a privacy safeguard.

Some end-users showed low levels of understanding around data packages and confusion about what they were paying for. This will be an important consideration for MNOs that want to combine payment plans with digital identity products and services - MNOs will need to provide clear payment structures and incentives to access these services.

Overall, the trust that participants granted their Government extended to mobile operators – in part, because MNOs were strongly associated with Government-led efforts to build a national identity database (explored in more detail below). Participants across genders and geography were comfortable sharing their personal information with MNOs and felt that it was important to provide this, particularly during SIM registration, as a counter-terrorism measure

Interacting with mobile agents was generally limited to male members of a family, for example when they need to replace a SIM or recharge airtime or data. Women were less likely to engage with mobile agents – mostly due to the cultural inappropriateness of speaking with 'strange' men. However, women also tended to have low levels of understanding around airtime and data packages, meaning they often preferred to rely on male relatives for this.

"There are chances of terrorism so they need our information. We have seen it on television that terrorists use unregistered SIM cards. That is why they need to register all sim cards."

Male, 25, Kasur

4.3. The identity ecosystem

Overall, the identity ecosystem in Pakistan is straightforward from a user perspective, as all residents are predominantly reliant on the Computerised National Identity Card (CNIC). Since its recent launch, the CNIC is required for all citizens aged eighteen and above.

As the CNIC is seen as robust and established, end-users are not actively seeking alternative identity solutions, though they are positive about concepts that offer them convenience or transparency. There were only two forms of identity used among participants:

FORM OF ID	USER VALUE & USE CASES	EASE OF ACCESS	INTEGRITY
CNIC	• Authentic and widely used in all scenarios requiring ID (98% 18+ adults) • Valued as proof of citizenship – enables movement in daily lives • Source of protection and highly valued	• Fee to gain CNIC is perceived to be consistently changing/increasing and can cost more if done with help of 'agents'	• Robustness is high with biometric data
'NUMBERDAR' REFERENCE	• Co-exists alongside CNIC and especially relevant in villages and towns where people know one another. • Highly valued - seen as a demonstration of trust and respect for the role of village 'chief'	• Easy to gain; Each village/town has a chief responsible for some of the administration of that village. • Free	• Limited use and does not replace the CNIC – relies upon personal connections

User demand for formal ID was generally high in Pakistan, as it was important during daily life for travel and access to services. In contrast to Tanzania, participants in Pakistan found it very easy to identify situations that required them to produce some kind of verified proof of who they were and where they came from. In Pakistan, formal ID was not just an accepted route to accessing value-added services, but an essential and 'normal' part of daily life.

Particularly in urban areas, access to formal 'proof' of who you are was a critical protectionist measure and an enabler of daily mobility – and an important part of the Government's plan to tackle extremism within the country. This was a strong and frequent driver for using formal ID for men – who were more likely to travel and thus experience identity checkpoints as a matter of routine.

Urban profile: *Shoab*



> The first thing the traffic police officer asks us is to show our ID cards. If we don't have them then we have to give up to 100 rupees to bribe the officer.

Married with four young children, Shoab is a factory worker. He wants his children to be educated, but lacks local education facilities and finds costs unaffordable. With a young family and seasonal health illnesses, he also feels a need for better access to health information. His friends act as an informal support system, loaning him money when he needs it.

Shoab has not been able to get a CNIC as he does not have a birth slip and his parents died when he was young. He thinks the application process is complicated and costly, but recognises that he will need to get a CNIC soon as he is often stopped by the police and sometimes has to pay a bribe. "The first thing the traffic police officer asks us is to show our ID cards. If we don't have them then we have to give up to 100 rupees to bribe the officer. They won't let you go otherwise."

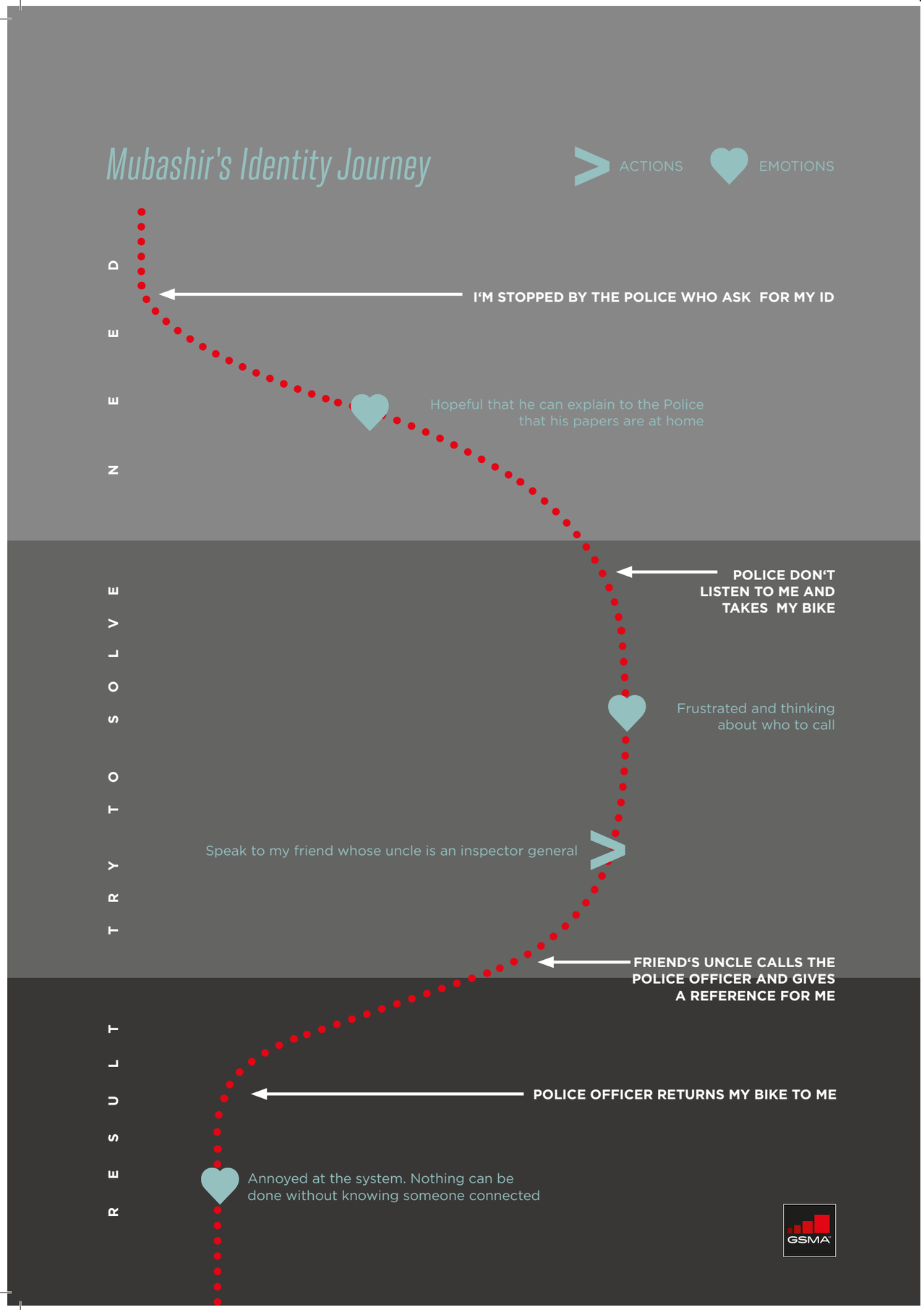
Shoab has a feature phone and one SIM, for which he borrowed a CNIC from his friend. His digital literacy is low and mobile use is limited to making and receiving calls. He questions whether females should have their own phones to avoid them engaging in 'inappropriate' behaviours with males. 'People don't have a good image of a girl with a phone. They consider it wrong – they think that she might be using it to communicate with guys.'

Current take-up of the CNIC is extremely high with approximately 98 per cent of Pakistani citizens covered by the national identity programme[15]. The CNIC is a legitimate and universally accepted form of ID in Pakistan; most people rely solely on their CNIC day-to-day and see this as convenient and easy. Those that do not have a CNIC tend to rely on informal 'vouching' documents or a phone call from the *Numberdar* – which serves a similar function to the ward letters in Tanzania. During the research we encountered very few forms of ID in use:

As part of the 'fight against terrorism,' in 2015 the Pakistani Government required mobile phone users to register their SIM cards in a national database and demonstrate that their phone connections were registered in their own names. SIM card owners needed to register their SIM using the CNIC, along with a thumbprint, which was subsequently matched against the National Database & Registration Authority (NADRA) biometric database. Outside of SIM registration, other key 'triggers' for needing a CNIC in Pakistan include: access to healthcare (patients are expected to provide this when they attend a hospital in order to receive treatment), education (required as part of college enrolment, exam application and completion, and to pay college fees), marriage (needed to gain a marriage certificate), banking (required in order to open a bank account, to enter a branch, and to withdraw money) and registering to vote.

Rural residents were less likely overall to feel a need for formal ID on a day-to-day basis. This was because very often, introductions via the Numberdar or chief, in their village or town were sufficient, in lieu of the CNIC. Women also had far less need for formal ID, given reduced mobility and limited interface with government or value-added services. For most female participants, the only need for their own formal ID was college enrolment and marriage. Even where women wanted access to healthcare services and small-value loans, this was typically arranged by a male family member, using his CNIC.

15 See the ITU Review of National Identity Programs 2016



Participants are largely compliant with the established identity system in Pakistan. With only one accepted identity product in use and high pressure to ensure one is able to verify one's identity for safety reasons, there is little desire or ability to 'play the system' – and little perceived need for any new forms of identification. However, tangible identity documents can of course be lost, stolen or left at home, and participants passed on stories of the difficulties people can find themselves in when lacking a CNIC to prove whom they were. For example, one participant noted that if men are stopped at a checkpoint and unable to prove their ID, they would look to establish their identity by 1) contacting their social network and seeking an established, high-ranking individual who would vouch for them, or 2) paying a bribe. End-users felt that both of these cases were inconvenient and potentially dangerous.

End-users also reported that some women delayed the process of registering for a CNIC until they needed to use it, for example to get married. Until then, a woman can rely on her father's ID and therefore the 'need' for her own formal ID was less evident in her daily life. Some women also felt that the application process could be difficult to grasp and saw it as a hassle. This resulted in female 'borrowing' behaviours around CNICs – with women borrowing cards from friends or family members when seeking to register a SIM, access healthcare, take a sewing course or take out loans.

End-users in Pakistan are open-minded and welcoming of the concept of mobile-enabled digital identity. Although the CNIC provides them with a robust and established form of identity when needed, the processes involved in accessing services could be confusing, and could cost them time and money that they didn't feel they could afford. There appeared to be a general lack of awareness around the value-added services that users could access with the CNIC and a latent need for improved service provision, for example around birth registration and healthcare.

The majority of our participants could also see the benefit in using their phones to prove who they were instead of carrying their CNIC. As they tended to carry their mobile with them much of the time, they felt a mobile-enabled identity solution could be convenient at times when they didn't have their CNIC with them. This, coupled with high levels of trust in MNOs, means that MNOs are well placed to build upon the current CNIC system and benefit users with mobile-enabled digital identity solutions. However, patriarchal gender norms limiting women's access and use of mobile services and very basic mobile use and access in rural locations will need to be addressed in order to create a truly inclusive solution.



5 Opportunities for mobile-enabled digital identities

Although each of the research markets was at a distinct stage in their 'identity journey', our research shows that across these locations the following themes are driving the opportunity for digital identity solutions:

- **End-users welcome and see the benefit of using digital identity solutions**
- **Digital identity is viewed as 'the future' - a natural evolution of current identity solutions**
- **The value of digital identity was particularly clear to people when it had the potential to improve their daily lives and increase their access to value-adding services**
- **Mobile phones are highly valued and there appears to be a natural progression towards increasing mobile integration in people's everyday lives**
- **End-users recognise that mobile phones provide greater access to value-adding services, such as mobile money**
- **MNOs were generally viewed as trusted and reliable service providers that were integral to people's everyday lives**
- **The demand for identity-linked mobile services (such as mobile money) helps to increase demand for formal identity documents**
- **People understood that MNOs hold personal data and were generally accepting of this, particularly if MNOs could explain why personal data was needed**
- **Formal identity products are often aspirational; beyond everyday practical needs, there was often an emotional desire driving user interest**
- **End-users are willing to pay to access the unique services offered by MNOs when there was a clear payment structure and incentive to access; however, these fees must be in line with those charged to access similar services, and be a small denomination.**

To understand the opportunity for mobile-enabled digital identities, MNOs must consider how solutions will impact the end-user: What end-user need does it meet? What benefit or value-add does it provide? What problem does it solve? Our research suggests that the two major areas where mobile-enabled digital identity solutions could support end-user needs include:

a) Enabling greater mobility and convenience: this could be valuable to end-users in places where national security is a concern and there are frequent police checks, especially if physical identity documents are difficult to access or can be easily misplaced or forgotten

b) Improving access and delivery of value added services: this could be valuable to end-users who face challenges accessing services that they desire or or in places where service delivery is poor

The research explored end-users' response to several potential digital identity solutions that supported access to value-adding services – as 'test' cases to explore initial interest.[16] We found the popularity of the solution depended on people's familiarity and desire for the service, and the challenges they faced in accessing it currently.

Healthcare

In all three locations, there was a clear opportunity for mobile-enabled digital identity solutions to support access to healthcare for low-income consumers. In Côte d'Ivoire, the existing offline health records ('health leaflets') were largely working well from a user perspective, and therefore the idea of establishing digital patient records – linked to a mobile number and SMS health messages - was easy for end-users to understand and highly appealing. Digital identity solutions were particularly appealing

16 We explored responses to a number of digital identity value propositions, particularly around healthcare, birth registration and life insurance. We didn't explore solutions for mobile agriculture services so cannot provide data on this

to potential users if they thought it could make the healthcare experience faster, easier and more supportive, or provide access to a healthcare provider via mobile, thereby reducing the need to attend hospital. However, participants raised concerns about ensuring personal health data was kept secure from both MNOs and healthcare workers, as they worried that others might share their details publically.
Similarly, discussions with participants in Pakistan revealed user concerns around access; the low-income consumers we spoke to tended to distrust doctors, reject fees for treatment, and often had to travel a long way to access healthcare. Our participants particularly welcomed the idea of accessing healthcare services and information through the phone using their digital identity, perceiving clear cost and time-saving benefits. However, there were some concerns about access to health topics such as pregnancy, which was not openly discussed within families, so the approach and language used in communicating this kind of information would need to be carefully framed.

In Tanzania, the low-income consumers we spoke to faced multiple challenges with healthcare including poor diagnosis and low availability of medicine. Here digital identity solutions that could improve health outcomes were very much welcomed. Our participants felt that medical errors were often caused by lack of information about patients' prior health history. Health records were kept solely by the patient and regularly misplaced, leading doctors to repeatedly prescribe medicines that didn't work or send patients for repeated testing for the same disease, which had cost and time implications. Our participants felt a national database with electronic records linked to a digital identity could address these issues and was, therefore, highly appealing.

Birth Registration

Birth registration presented another opportunity for mobile-enabled digital identity in Côte d'Ivoire and Pakistan[17]. In Côte d'Ivoire for example, introducing a digital identity solution was appealing because it represented the digital evolution of what people were already doing, and could solve some of the challenges associated with having to travel long distances to register the birth. Mobile registration solutions that could reduce the number of trips, or speed up the process involved in getting a birth certificate, were popular. This could also be highly beneficial for government, as permanent digital records of citizens would make it much harder for individuals to commit fraud by changing their birth certificates.

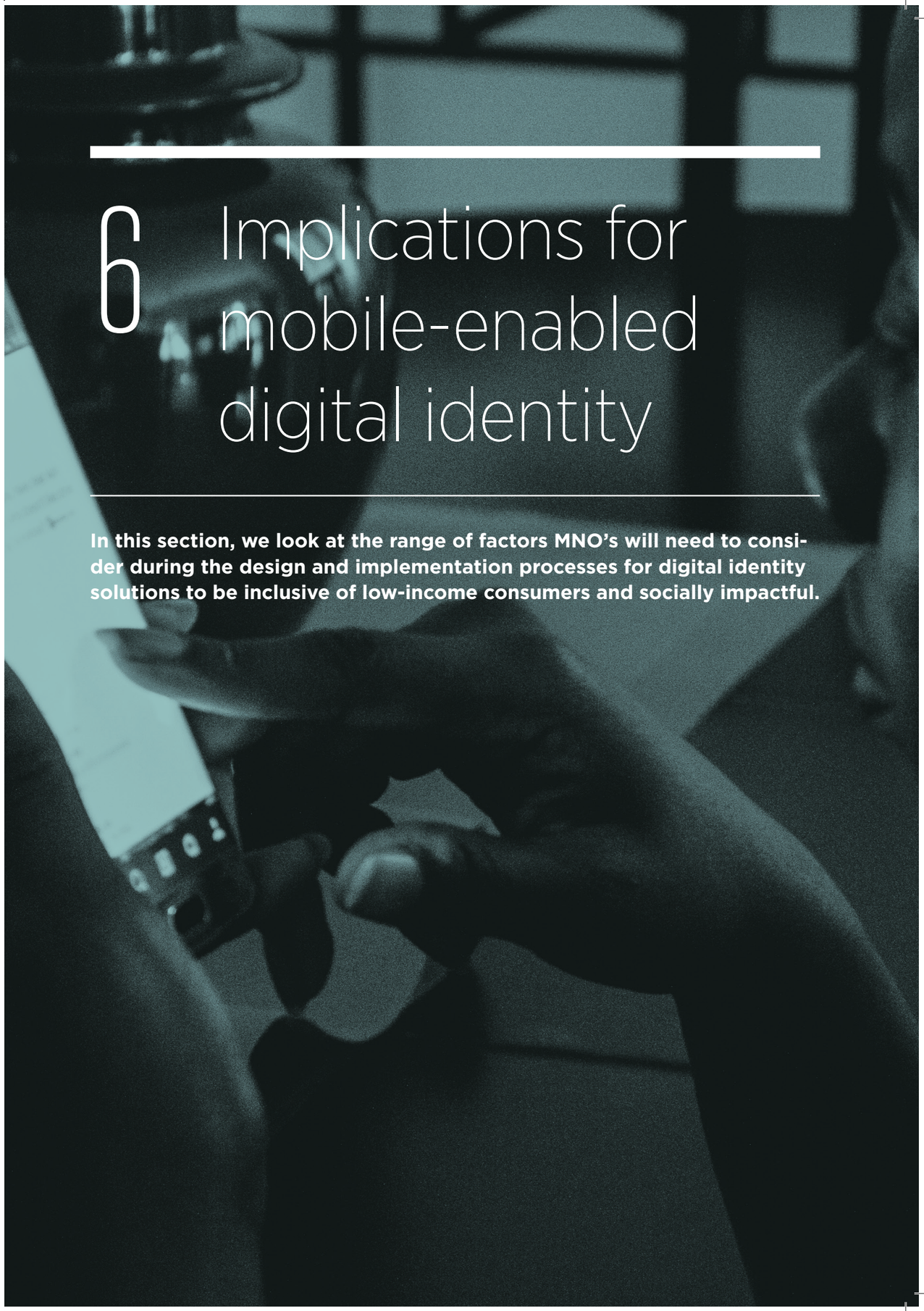
Similarly, in Pakistan parents were already required to register the birth of their children, however, the current birth registration process was perceived as challenging and often drawn out. Registration costs varied across locations and parents often had to travel a long way to registration centres, which was particularly challenging for low-income consumers such as those we spoke to. Mobile birth registration therefore appealed to our participants, because of the clear cost and time-saving potential.
Participants even indicated that they would be willing to pay a small fee to access this service. Both men and women saw the importance of birth registration and had confidence in using digital identity solutions to do it, although they emphasised that the language and design would need to be kept very simple and easy to follow, to insure the process was inclusive of everyone.

Life Insurance

Digital identity solutions for MNO-provided life insurance were unpopular in Côte d'Ivoire and Pakistan.[18] In both locations the concept of life insurance was unfamiliar and unappealing regardless of whether this was a digital or offline offer.
For example, in Pakistan life insurance was 'haram' (against Islamic beliefs) and for low-income consumers in Côte d'Ivoire, the priority was to save the money they had for their daily needs. In practice, this meant we heard statements such as "What if I die the day after my cover runs out – do my family get no money?" and "this is not the African way, we spend our money while we're alive."

17 Digital identity solutions for birth registration were not tested in Tanzania so we cannot provide data for this market

18 Response to digital identity solutions for life insurance were not explored in Tanzania so we cannot provide data for this market



6 Implications for mobile-enabled digital identity

In this section, we look at the range of factors MNO's will need to consider during the design and implementation processes for digital identity solutions to be inclusive of low-income consumers and socially impactful.

6.1. Education and Awareness

Digital identity solutions are relatively easy for people to understand and see the benefit of using when they want the identity-related service. However, there are often underlying user knowledge gaps that need to be addressed if these digital identity solutions are to reach their full potential.

Mobile phones: Privacy and security. Low levels of digital literacy mean that low-income consumers often don't see the importance of keeping their mobile secured and private. When users share their phone or mobile money PIN code publically, they are often unaware of the potential consequences, for example, that sharing PINs may make it more likely that money is stolen from their account. Should such negative consequences occur, users may blame MNOs or mobile agents rather than recognise the influence of their own behaviour, which can be damaging to an MNO's reputation. Education campaigns around mobile privacy and the risks associated with user behaviour can address this knowledge gap – whilst also helping ensure that mobile users' privacy and data security rights are respected.

Identity solutions: Correct personal details. Although low-income consumers value identity solutions, for example to register for services, they often don't recognise the importance and benefit of using correct personal details. Consequently, they register for services using identity documents with incorrect personal details, for a variety of reasons. For example, this is often the case for women in locations where patriarchal gender norms mean it is common for their husband or father's identity to be used for SIM registration. Education campaigns that communicate the benefits of using identity solutions with the correct personal details can address this knowledge gap.

Digital identity: Using only one SIM for identity. The low-income consumers we spoke to often used multiple SIM cards to get the best airtime and data offers across mobile networks. They were often not aware of the importance of using only one of their SIM cards for identity registration, meaning that currently they may link different identities to different SIM cards. Yet people expressed willingness to link their identity to only one SIM card if this was important for accessing services. Education campaigns that communicate the benefits of using one SIM for identity can address this knowledge gap.

6.2. Positioning and Messaging

Digital identity solutions require a certain amount of trust from the user and there were a number of trust-related concerns expressed by participants. High priority questions included: Who will the MNO share my personal information with? Who else will have access to it? Why and when will they have access to it?
MNOs need to communicate how secure users' personal data will be when it is given to them, who this data will be shared with, why and when it will be shared, and when it will not be shared. Additionally, it will be important for MNOs to consider the levels of trust that end-users have for other service providers and position themselves in relation to this. For example, in Tanzania and Pakistan, where trust in government is relatively high, it would benefit MNOs to leverage this trust and position themselves in close alignment with government. However, in Côte d'Ivoire it may benefit MNOs to leverage their own equity and those of other trusted service providers.

6.3. Design Principles

Consideration of the following principles when developing digital identity products and services may help encourage uptake and ensure that solutions are inclusive and user-friendly.

Designing for basic handsets and low digital literacy. Low-income consumers are often using very basic handsets with limited functionality, and tend to have very low levels of digital literacy. To make digital identity solutions truly inclusive, MNOs must design for the lowest common denominator: the most basic handset and the person with the lowest level of digital literacy.

Encouraging behaviour change. People develop entrenched behaviours and habits around how they use their identity documents; even difficult journeys towards identity document use can seem safer and easier than new solutions. The design of digital identity solutions must, therefore, encourage the formation of new habits. This can be achieved through supporting frequent, simple, repetitive behaviours, so that users can develop new habits around using digital identity solutions. Building in small rewards such as financial incentives/savings – or even non-financial 'rewards' in the form of praise or recognition - for repeated use can also encourage behaviour change.

Leveraging current identity systems. Where there are already robust identity systems in place that people are familiar with and using, MNOs could have a higher chance of success if they build on this. For example, in Pakistan the CNIC is robust, has high levels of penetration and is already associated with MNOs through the previous SIM registration initiative that required users to re-register their SIM cards, with the national identification card (CNIC). MNOs in Pakistan that link their digital identity solutions to the CNIC can build on this strong foundation.

Incorporating clear 'identity' cues. To demonstrate the authority of the digital identity solution as a form of identity for users, it should incorporate some of the cues that people already associate with identity documents. For example, in Côte d'Ivoire, fingerprints particularly demonstrate official authority; in Pakistan, biometric cues are important; and across all locations photos and signatures were authoritative cues. In markets such as Tanzania, where local endorsement is particularly important, cues that can demonstrate this should be considered.

Implementing strong data management. Due to some user concerns around sharing personal information with service providers, it will be important to develop strong data management systems for storing and securing sensitive personal data, and be able to demonstrate this security. This is particularly important in markets such as Côte d'Ivoire, where people are particularly suspicious and reluctant about sharing their personal details.

6.4. Implementation

An important challenge for MNOs will be how to introduce new identity-linked services and support low-income consumers with low digital literacy. People were using their phone often and saw it as vital to their social and economic lives. However, they were rarely trialling new mobile services. In fact, people were relying heavily on others in their social network with higher levels of digital literacy to support and introduce them to unfamiliar features and services on the phone. This 'gate-keeping' influence also extended to women's access of key value-add services such as healthcare, and impacted their use of them.

Leveraging social networks: It will be important for MNOs to leverage existing social support networks when introducing new identity-linked services. Mobile agents in the community were often people's key point of contact with MNO's and their first port of call when they needed support in using the phone, particularly in Tanzania and Côte d'Ivoire. These mobile agents were often going beyond their job role and provided wide-ranging digital support. Mobile agents could play a key role in the introduction and set up of identity-linked services for customers. Although it will be important to ensure that official mobile agents are clearly distinguishable for customers from people who are attempting to fraudulently scam them. Lack of clarity between the two can lead customers to share their personal details with scammers, which can in the longer term, impact negatively on the reputation of MNOs.

Addressing gender constraints: In some markets, low-income consumers' agent networks are also key in limiting access to identity-linked services. This was particularly the case for women operating in patriarchal systems in Pakistan and in some rural and Muslim communities in Côte d'Ivoire. In these instances, prevailing gender norms meant that men often acted as 'gatekeepers' to the services these women could access and their access to mobile. In cases such as this, it will be important for MNO's to design solutions that are sensitive to gender norms and target the gatekeepers, as well as women, when communicating the benefits of mobile-enabled identity-linked services for women.



7 Opportunities for future research

This research has helped to develop a more detailed picture of the needs, opportunities and use-cases for mobile-enabled digital identity solutions amongst low-income consumers. In this final section, we highlight areas where additional research could further improve our understanding of the opportunities – and challenges – MNOs might face in developing inclusive digital identity solutions and identity-linked services.

Across markets it would be valuable to go further in triangulating end-user perspectives with those held by MNOs and mobile agents, specifically their perspectives on the drivers of, and barriers to, uptake of new value-added services. It would be useful to work closely with MNO partners in each market to provide more detailed and targeted value propositions to end-users, or to work with agents to better understand which services are most likely to appeal to, and be used by, their customers. Additionally, as mobile agents have proven to be a key point of contact for low-income consumers, it would be valuable to explore their perspective on how to introduce new services and best provide ongoing support.

It would be valuable to dig deeper into issues related to gender and geography (urban vs. rural), as these are interwoven in a myriad of ways and appear to be the key differentiators that influence end-user perspectives on mobile-enabled digital identity. It could also be useful to explore the issue of digital literacy in more detail, in particular how a lack of digital literacy influences end-user attitudes around privacy and security.

There are also some specific opportunities for additional research within our current three markets. For example, in Tanzania, where there is a clear need for digital identity solutions to improve service delivery, it would be valuable to explore how value-added services are currently working from a system point of view, and to dig deeper into specific opportunities to provide identity-linked services to rural end-users (e.g. agricultural services).

In Pakistan, it would be particularly valuable to explore gender-related factors in more detail, as women tend to be limited in their access and use of a mobile phone by gatekeepers, i.e. fathers, husbands, or mothers-in-law. Exploring these relationships further will help operators understand how services can be communicated in a way that is culturally suitable and can effectively cut through these channels.

In Côte d'Ivoire, it would be valuable to explore the potential impact of impending legislation around ID requirements on both MNOs and end-users. For example, investigating how MNOs can turn SIM registration requirements into commercial opportunities, and whether/how agents will be re-trained for the new ID processes. Equally, from the end-user perspective, understanding awareness and response to the new ID processes for SIM registration would be valuable, such as the likelihood of an increase in attempts to use fake or borrowed ID documents-

Importantly, the research approach used in this project proved to be effective and flexible enough to yield insights from three countries with very different identity landscapes, and should therefore work well if replicated in new markets. Expanding the reach of this research would help GSMA develop a broad, global knowledge base on digital identity, with the prospect of creating a comparative framework across themes and/or regions.

DRIVING ADOPTION OF DIGITAL IDENTITY FOR SUSTAINABLE DEVELOPMENT: AN END-USER PERSPECTIVE REPORT

8 Appendix – Method and sample detail

GSMA would like to thank 2CV for their collaboration on this project and for their invaluable contributions to the design, implementation, and analysis of the research.

Research locations and timing

In each country included in this research, 2CV conducted sessions in both rural and urban locations – in order to ensure we explored a mix of user views, contexts and needs. All research was conducted in December 2016 and January 2017.

Specific locations for research in each country were as follows:

PAKISTAN
Lahore (urban) and Dolarlakha, Dolan (rural)

TANZANIA
Dar es Salaam (urban), Mkuranga and Mlandizi (rural).

CÔTE D'IVOIRE
Abidjan (urban), Ayame and Abengourou (rural)

Methods

Prior to conducting primary research, 2CV conducted a kick-off workshop with a range of GSMA team members to prioritise research questions; identify existing insight of relevance to research materials design; and identified experts whose views could usefully guide research materials, analysis and reporting. Over the course of the research, a range of experts were consulted – including individuals with expertise in the three countries in question; digital technology specialists; identity and privacy experts; and in-country MNO representatives.
In each country, primary research consisted of mixed-method, triangulated qualitative research. Using a range of methods in each country helped 2CV ensure that we were able to gather a variety of perspectives as efficiently as possible. The approach consisted of:

Focused in-depth interviews with six 'seed' respondent per country – including a mix of men and women, and a mix of geographies and income levels – in order to ground our exploration of user behaviour and attitudes in a familiar in-home context. In-home interviewing allowed for the comfortable and honest exploration of sometimes sensitive and personal discussions around identity, relationships with community members, Government and MNOs, and user behaviour within local identity ecosystems.

6 group discussions - including the original 'seed' respondent plus 4-6 additional respondents – typically the 'seed' respondent's friends, family members,

and/or neighbours. Building focus group discussions around 'seed' respondents' natural social connections enabled 2CV to explore social dynamics and varying perspectives on the issues which would have been impossible in a standard focus group approach – for example, allowing 2CV to discuss identity issues with multiple family members, amongst connections of different genders and social statuses, etc.

Community visits and intercepts - researchers also conducted brief, informal interviews with community members in our respondents' immediate environments. This element of the research was not conducted to a specific research sample – rather, 2CV asked respondents to point out individuals that would be useful for researchers to speak to, or that were in some way a part of their service use and identity journeys. For example, researchers had useful discussions with friends and family members; local mobile agents; gatekeepers; etc.

Recruitment and sample

All recruitment and fieldwork logistics were conducted by 2CV's local partners in each of the three countries. All six seed respondents were free-found by these partners; respondents for the group sessions were 'snowballed' from these six seed individuals. Potential seed respondents were screened to understand suitability against the below sample criteria:

- All seed respondents to be mobile users – majority mobile owners, some borrowers
- All participants from lower socio-economic groups, with a particular focus on lowest-income participants in groups D and E.[19]
- Mix of education and literacy levels
- Mix of ages and life-stages – i.e., a mix of 18-30 year olds and 30+ year olds.
- Mix of respondents participating in the formal and informal economy
- 3 female and 3 male seed respondents
- 2 urban and 4 rural respondents

2CV did not restrict sample criteria for 'snowballed' respondents participating in the focus groups beyond requesting that the majority be mobile users and of an age that meant they were eligible for mobile phone subscriptions– which allowed researchers to access more naturalistic social groups than would have been achievable in a more typical focus group arrangement. Likewise, intercept interviews (averaging 2-4 per location) were highly varied, driven by the expertise of respondents about who was most valuable to speak to.

The total resultant sample was approximately 30 participants per location – for a total of c.90 participants overall.

19 Socio-economic group, or SEG, is a common market research sample characteristic – taking into consideration total household income levels and head of household occupation. E.G., see: https://www.ucl.ac.uk/celsius/online-training/socio/se050000 There are 5 'SEG' groups overall – A, B, C, D and E – with more well-off individuals represented at the A-B categories, middle-income individuals represented by the C category, and the poorest individuals represented by the D and E categories. Cut-off points for each category were adapted to fit in-country economic profiles and demographic variation by our in-country partners.



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