



Aadhaar: Inclusive by Design

A Look at India's National Identity Programme and its Role in the JAM Trinity



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1 Introduction

In September 2010, the Unique Identification Authority of India (UIDAI) delivered the country's first unique identification number, called an Aadhaar number, to Ranjana Sonawane, a 30-year old mother of three from a remote village in rural Maharashtra. UIDAI's decision to launch the world's most ambitious identity scheme by first enrolling one of its most disconnected and disadvantaged citizens (as an agricultural labourer, Ranjana earns less than \$1 a day) was symbolic. From its inception, Aadhaar—a Sanskrit word meaning 'foundation' or 'base'—was designed to reach even the most excluded residents and those least likely to possess an official identity: women, migrants, children and those living in hard-to-reach areas. Underpinning this ambition was the Indian government's recognition that proof of identity is a key driver of socio-economic development, enabling individuals to access vital services such as healthcare, education, mobile and financial products, and a myriad of government subsidies.

Officially, the vision of UIDAI is to empower residents of India with a unique identity number and a digital platform through which identities can be authenticated anytime, anywhere¹. By mid-2016 the number of residents registered in the national identity system had surpassed one billion, easily making Aadhaar the world's largest biometric database and the first online biometric-based identity system in the world². But despite the success of enrolment, considerable debate continues to take place between government and civil liberty groups around issues related to privacy, identity-related legal frameworks, and data security. There are also

ongoing concerns around the use of biometrics in distributing entitlements, and the increasing pressure beneficiaries face to enrol in Aadhaar to secure payments, despite insistence that Aadhaar is voluntary.

In Section One of this report, we provide some context to the evolution and design of Aadhaar by exploring the identity landscape in India pre-2009, and by highlighting two other Indian identity programmes that provided important lessons for UIDAI despite not reaching scale. The report then looks at Aadhaar through the lens of the World

Bank's principles for identification – a set of common principles that are considered to be fundamental to maximising the benefits of identification systems for sustainable development. In doing so, the report is able to highlight how particular elements of Aadhaar have been designed and implemented to ensure that it is inclusive, secure and trustworthy.

Crucially, mobile network operators (MNOs) and other private sector organisations are now able to leverage Aadhaar's digital platform to provide a range of value-adding services in a highly cost-effective way. A recent report by GSMA has found that for mobile providers, the Aadhaar-enabled e-KYC platform reduces the cost of the Know-Your-Customer (KYC) process from Rs 40 (\$0.60) per customer to Rs 5 (\$0.07)³, significantly lowering the overall cost of customer acquisition.

One emerging opportunity for operators is captured in the JAM Trinity initiative, the name given to the intersection between Aadhaar, mobile and formal financial services. The Aadhaar platform can now be used to biometrically identify and authenticate residents that are deemed to be eligible for government subsidies, and mobile technology is ensuring that these benefits are able to reach individuals' bank accounts quickly and efficiently. More recently, mobile providers have been given license to operate their own banking services by acting as 'payment banks'. In Section Two, we look at the government's JAM Trinity initiative in more detail, highlighting how Aadhaar is enabling banks and mobile operators to offer digital financial services to millions of previously underserved residents.



1 www.uidai.gov.in

2 P. Peshwani and B. Joshi, 'Aadhaar - Identification Simplified, Myths Busted', The Wire, 14 March 2016, <https://thewire.in/24713/aadhaar-identification-simplified-myths-busted/>, (accessed 15 March 2017).

3 GSMA, 'The business case for payments banks in India', 2016.

2 Part One: Designing India's National Identity

2.1 Indian identity in context

India's Aadhaar programme is considered to be the most ambitious digital identity programme in the world, not only because of its scale, but because it has required the Indian government to navigate a multitude of contextual factors that make establishing a unique, universal national identity particularly challenging. With an estimated 1.3 billion inhabitants, India is currently the world's second-most populated country and is expected to overtake China as the most-populated nation within the next five years⁴. Despite occupying less than 3 per cent of the world's land, India is home to nearly 20 per cent of the world's people, and the United Nations projects that its population will continue to grow until 2060, peaking at about 1.75 billion.

India is a nation characterised by extreme diversity, where a person can easily identify themselves on the basis of their nationality, region, religion,

language, caste, creed, sex, sect, occupation, political involvement, social activities, academic and cultural achievements, or economic status⁵. The country is home to over 2,000 ethnic groups and more than 1,600 'mother tongues', twenty-nine of which have over one million speakers. Following independence in 1947, India was divided into twenty-eight states and six union territories, but it could also be split into seven natural geographic regions, or sixty 'socio-cultural sub-regions'. In addition to being the birthplace of four major religions - Hinduism, Buddhism, Jainism and Sikhism - the country is home to hundreds of millions of residents that adhere to Islam, Christianity, Judaism or various indigenous faiths. While the influence of globalisation and India's rapid urbanisation has caused the relevance of the caste system to decline in recent decades, in some areas it remains an enduring part of one's identity.

4 R. Gladstone, 'India Will Be Most Populous Country Sooner Than Thought, U.N. Says', New York Times, 29 July 2015 https://www.nytimes.com/2015/07/30/world/asia/india-will-be-most-populous-country-sooner-than-thought-un-says.html?_r=0, (accessed 15 March 2017).

5 Bioethics in India: Proceedings of the International Bioethics Workshop in Madras: Biomanagement of Biogeoresources, 16-19 Jan. 1997, <http://eubios.info/index.html>.

6 USAID, 'Gender Assessment USAID/INDIA', February 2010. http://pdf.usaid.gov/pdf_docs/Pdacr975.pdf

7 GSMA, 'Bridging the gender gap: Mobile access and usage in low- and middle-income countries', 2015.

8 Department of Economic and Social Affairs of the United Nations Secretariat, 'International Migration Report 2015 Highlights', 2015, <http://www.un.org>, (accessed 15 March 2017).

9 A. Kazmin, 'India's impermanent residents', Financial Times, 28 December 2015, <https://www.ft.com/content/a0d2a69a-a96f-11e5-955c-1e1d6de94879>, (accessed 15 March 2017).



Despite decades of strong economic growth, India faces significant inequalities that have resulted in persistent low human development (life expectancy, education, and per capita income) among the country's most marginalised groups, particularly those in lower castes, tribal and rural populations, women, those who identify as transgender, people living with HIV/AIDS, migrants and displaced populations. A USAID study⁶ has shown that 'the evidence of gender inequality in India is overwhelming', pointing to the fact that women contribute substantially to the workforce but remain relatively 'invisible', as 90 per cent of their work is confined to the informal sector. Only 10 per cent of women own land, less than half are literate, and an estimated 42 per cent have experienced physical violence. Research by GSMA has found that women are 36 per cent less likely than men to own a mobile phone⁷, and 60 per cent of women have had to seek permission in order to access a phone and SIM.

According to a 2008 national survey, nearly one third of Indians, or some 325 million people, are internal migrants. An estimated 35 per cent of people in urban areas and 26 per cent in rural locations have moved from their original place of birth due to marriage or to find new opportunities for employment. In 2015, population data from the UN⁸ also showed that India had the largest international diaspora in the world, with sixteen million citizens choosing to immigrate abroad. Interestingly, the same 2015 data shows that India is home to only five million foreign-born residents, representing only 0.5 per cent of the population. Most immigrants are likely to be from the neighbouring countries of Bangladesh, Pakistan, Nepal, Sri Lanka and Myanmar, and for decades India has also received a constant inflow of unauthorized migrants from Bangladesh. Long-term foreign residents may face visa conditions that make it difficult to stay in India permanently, for instance, there is no path to citizenship for foreign nationals who are not of Indian ancestry, outside of marriage or by relinquishing their original citizenship to become naturalised.

The Identity Landscape in 2008

A paper from the India Institute of Management¹⁰ has noted that by 2008, despite piloting multiple national identity projects over the previous ten years, the government of India had not only been unable to firmly establish a foundational national ID, but the average Indian resident now held several functional forms of identity, each of which served a different purpose, followed a different application

process, and generally reached different segments of society. In fact, a report prepared in the initial stages of the Aadhaar project showed that the four major identification programmes – passports, voter IDs, PAN cards and ration cards – only covered about half of the population¹¹, and fraudulent versions of these documents were widespread.

Top Four Functional Identity Documents Available to Indian residents in 2008¹²

TYPE OF ID	EST. COVERAGE IN 2008	NOTES
Passport	40 million	<p>A robust verification and application process means that passports are less susceptible to fraud than most other forms of ID. However, the authenticity of a passport is not a given, considering it is possible to obtain one by bribing an official or by applying with other fraudulent identity documents.</p> <p>This passport is also one of the least accessible documents, due to there being only 28 application centres across the country (applications can also be made online), an application fee of Rs 1,500 (USD \$22), and numerous documents required to complete the application.</p>
PAN Card	70 million	<p>The Income Tax Department provides Permanent Account Numbers (PANs) to Indian nationals to facilitate tax payments, but the cards can also be used when obtaining formal services such as a mobile connection or bank account.</p> <p>The cards are known to be highly susceptible to fraud, due in part to the fact that there is no physical verification of the documents that are submitted as part of the application, and no deletion of IDs takes place. Despite a less onerous application process and a fee of only Rs 60 (\$0.90), coverage among low-income individuals is low.</p>
Ration Card	220 million	<p>Issued by state governments, the ration card allows individuals to purchase essential commodities (e.g. wheat, rice, LPG¹³ and kerosene) at a fair price through the Public Distribution System. The card is issued in three categories: extreme poverty (Antyodaya), below poverty line (BPL), and above poverty line (APL). The card costs Rs 50 (\$0.07) and coverage of the ID card is heavily skewed towards the poor by design.</p>

		To enrol, an individual must produce basic supporting documents and an 'Introducer' who can confirm your identity, and must be joined by any other family members. Because there is no centralised database for ration cards it is the least technologically-advanced form of ID, making them the easiest to duplicate fraudulently. In 2012, it was estimated that at least 5.4 million fake ration cards were still in circulation.
Voter ID	500 million	The Electoral Commission issues voter cards free of charge to citizens age eighteen and above, accepting fifteen forms of ID including PAN and ration cards. Because voter IDs are only issued every five years, changes to individual information (such as a name or address) are not often reflected. Duplication of data occurs when voters apply for a new ID after migrating to a new district or state - which is estimated to happen with 20-30 per cent of voters - rather than applying to have their information updated in the system. Even so, the electoral list has been observed to be 90-95 per cent accurate.

In the absence of a national identity with universal coverage, service organisations in India (e.g. mobile network operators (MNOs), financial institutions, health care centres, and government) would typically set and follow their own processes for establishing the identity and entitlement status of Indian residents in order to provide them with services. This would often require individuals to furnish at least one form of identity, at which point the provider might then create their own, unique 'identity token' (e.g. bank card, patient ID, student ID) to make future authentication more efficient.

Within this identity landscape, a number of challenges had inevitably emerged:

- **Exclusion:** People without access to any form of official identity were not able to access formal services such as a bank account or mobile phone subscription; in many cases, poor individuals were also excluded from accessing the government social payments or subsidies to which they were entitled.
- **No interoperability:** Most identity documents were functional, meaning they were not linked to other identity databases, and were only used for a specific purpose and at a specific location.
- **Inefficiencies:** Creating identity tokens in silos resulted in a duplication of effort and increased the overall cost of authentication; this also made authentication costly and inconvenient for individual customers or beneficiaries.
- **Lack of robustness:** Individuals were likely to have identity documents that contained out of date or inaccurate information. People could 'game' the system by creating multiple identities, and the creation of duplicate and fraudulent identity documents became common, leading to leakage in welfare benefits, a high risk of identity theft, and low confidence that identity documents were robust.

10 R. Dass and R. Bajaj, 'Creation of a Single National ID: Challenges & Opportunities for India', India Institute of Management, W.P. No.2008-08-04, August 2008.

11 Digital Government: Leveraging Innovation to Improve Public Sector Performance and Outcomes for Citizens; S. Falk, A. Römmele and M. Silverman, Springer, 2016.

12 Frances Zelazny. 2012. "The Evolution of India's UID Program: Lessons Learned and Implications for Other Developing Countries." CGD Policy Paper 008. Washington, D.C.: Center for Global Development.

13 Liquefied Petroleum Gas

2.2 Lessons from two identity projects before Aadhaar

Establishing a unique identity for all citizens and residents in India has long been a national priority. In the lead-up to Aadhaar several identity schemes were launched at the national and state levels, two of which are worth exploring in more detail: the Multipurpose National Identity Card (MNIC) scheme and the Smartcard Programme in Andhra Pradesh.

Multipurpose National Identity Card (MNIC)

Although India's Electoral Commission began issuing photo identity cards as early as 1993, the launch of India's Multipurpose National Identity Card (MNIC) is often viewed as the government's first national identity initiative. In 2001, calls to tighten India's borders and improve national security led the Ministry of External Affairs to accept a recommendation to issue identity cards to citizens in border areas on a priority basis. The Ministry further proposed that following these measures, a mandatory national identity card – the MNIC – should be issued to all residents. Alongside of this, a computerised database of Indian citizens and residents, known as the National Population Register (NPR), would be developed.

Even though the key objectives of the MNIC were to provide official proof-of-identity to all residents and increase the efficiency through which government services were delivered, the motivation behind the population register was more explicitly linked to the government's desire to establish the citizenship status of every resident. According to some reports, the NPR was once even touted as 'a way to prevent Bangladeshi migrants from settling' in India¹⁴. To that end, pilot locations for the roll-out of the MNIC were prioritised based on factors such as their proximity to India's borders and the availability of local civil registration data (such as birth and death registration). During enrolment, individuals were required to register their biometrics (photograph and fingerprint scans) and provide extensive personal

details such as their marital status, permanent address, visible identification marks, education and a history of family migration. Each MNIC application was physically reviewed and verified by a registration officer before a sixteen-digit National Identity Number (NIN) and an MNIC card could be issued.

By 2007, the MNIC project was still struggling to reach scale, and was only being piloted in twelve of India's twenty-nine states. The enrolment and verification process had proven to be inefficient and costly, but more importantly there were concerns that the process was (unintentionally) discriminatory; for a significant portion of the population – especially low-income families and those living in rural areas – providing documents that could prove their identity and citizenship was difficult, if not impossible. In one documented case, four hundred Iranian immigrants that had been settled in West Bengal for at least eighty years (well before the formation of the independent Indian nation-state) were denied citizenship on the basis that they could not provide acceptable documentation that would, in the view of the verification team, sufficiently validate the personal details they provided¹⁵. Although registration for the NPR continues to this day – in some locations alongside of, or in collaboration with Aadhaar - registration rates remain low and concerns around privacy, exclusion (rightful citizens being denied citizenship status) and wrongful inclusion (non-genuine citizens being granted citizenship status) persist.

Smartcard Programme in Andhra Pradesh

In 2006, the Department of Rural Development from the state government of Andhra Pradesh launched a pilot project that aimed to provide Smartcards to rural residents receiving social security pensions (SSP) and NREG¹⁶ payments. The project is considered to be India's first large-scale attempt to implement a biometric payments system, and is seen as a 'functional precursor to the integration of Aadhaar into the NREGS and SSP'¹⁷. There were two key objectives for the Smartcard: first, to help reduce 'leakage' in the social payment process by ensuring that funds were securely transferred to the intended recipient; second, to increase levels of financial inclusion by automatically linking each card to an entry-level bank account.

A crucial feature of the Smartcard initiative was that rather than managing the processes and vendors through which social payments were delivered, the state government of Andhra Pradesh subcontracted this responsibility to participating banks. The banks, in turn, contracted technology service providers (TSPs) and customer service providers (CSPs) at the local level to enrol beneficiaries, disburse funds and manage the individual accounts. The government also established progressive guidelines for CSP recruitment, stipulating that wherever possible the CSPs should be: women, residents of the community they serve, educated at the secondary level, members of self-help groups, not related to village officials, and members of historically disadvantaged groups/castes. It was envisioned that these criteria would increase participation, accessibility, efficacy and transparency.

CSPs conducted local enrolment camps on behalf of the banks, collecting fingerprint scans, photos and personal details from each beneficiary. To identify which residents were eligible for the Smartcard, CSPs were guided by a beneficiary list provided by the state government and, often, the assistance of local community leaders. When beneficiaries wanted to collect a payment, a CSP would use a point-of-service device to read the individual's card, scan their fingerprints, authenticate their identity and release funds.

Even though beneficiaries had the option of not withdrawing the full payment, in practice it was uncommon for individuals to actually utilise their entry-level account by leaving behind some savings. Largely for this reason, despite the existence of nearly four million eligible beneficiaries, half of which had been successfully enrolled by 2007, the pilot failed to gain momentum or significant support from any of the stakeholders. For participating banks, the costs associated with opening and maintaining a low or zero-balance account for a geographically dispersed customer base outweighed the incentives received from government. Performance also varied across banks, each of which was contracted to implement the project in a particular district; by 2009, approximately one quarter of the banks had made very little progress.

Even so, the programme in Andhra Pradesh was successful on a number of fronts. A 2016 evaluation¹⁸ found that although the programme was not fully implemented, the system was successful in delivering a faster, more predictable, and more transparent payment process. In addition to reducing associated travel costs for beneficiaries, the digitised system helped individuals collect their payments up to ten days sooner after completing their work and spend 20 per cent less time waiting for their payment to be authorised and processed. It is also estimated that leakage in the NREGS and SSP payment processes was reduced by 41 per cent and 47 per cent, respectively. Not surprisingly, 90 per cent of enrolled beneficiaries preferred the Smartcards to the previous system despite concerns about losing the Smartcard or having problems with the card reader (either situation would prevent the beneficiary from receiving their payment). Overall, the results showed that an investment in a secure payments infrastructure could significantly enhance the state's capacity to implement welfare programmes¹⁹.

14 A. Tikku, 'National Population Register project now a Rs 4,800-crore sinkhole', Hindustan Times, 8 August 2016.

<http://www.hindustantimes.com/india-news/national-population-register-project-now-a-rs-4-800-crore-sinkhole/story-xwmSEA3NwjjFoOpxYe3dN.html>, (accessed 15 March 2017).

15 C. Bennet, 'Playing the Identity Card: Surveillance, Security and Identity in Global Perspective', Routledge, 2008. Page 124.

16 The National Rural Employment Guarantee (NREG), later renamed 'Mahatma Gandhi National Rural Employment Guarantee' aims to enhance livelihoods in rural areas by providing households with at least 100 days of paid employment for doing unskilled manual work.

17 K. Muralidharan, 'Building State Capacity: Evidence from Biometric Smartcards in India', American Economic Review, 2016, 106(10): 2895-2929.

18 ibid

19 ibid

Lessons Learned

Even though the MNIC and Smartcard projects failed to reach scale as originally envisioned²⁰, each programme was successful in that it provided government ministries, academics and the private sector with key lessons that would go on to shape the design and roll-out of Aadhaar. This includes:

- In order to be inclusive, identity programmes must account for the fact that low-income and vulnerable populations will have little or no access to documents that can prove their identity, address or citizenship;
- Identity programmes that seek to confer one's citizenship or eligibility status are inherently less inclusive, and may therefore face additional challenges reaching universal enrolment;
- There is a strong need to incentivise public and private sector organisations to lead on identity enrolment, while also allowing both sectors to leverage the ID once established;
- Digital identity systems can drastically improve the distribution of social benefits, while also increasing customer satisfaction;
- The registration process can and should be designed to improve transparency and overcome resistance from parties that benefit from weak identification systems;
- It is important to make sure women and other vulnerable groups have a safe, accessible place to enrol;
- Identity programmes should be designed in a way that protects the privacy of individuals, and should ultimately aim to make their lives more convenient and facilitate access to value-adding services



2.3 Aadhaar: inclusive by design

In 2008 the Indian government established, through executive order, the Unique Identification Authority of India (UIDAI) and gave it the mandate to provide a unique identity number to each of India's 1.2 billion residents. Not interested in simply delivering another pilot, the government gave UIDAI cabinet status to ensure that the project had the resources and political capital needed to deliver the project at scale. Officially, the vision of UIDAI is to 'empower residents of India with a unique identity and a digital platform through which identities can be authenticated anytime, anywhere'²¹. From its inception, Aadhaar was designed to reach even the most excluded residents and those least likely to possess an official identity: women, migrants, children and those living in the hardest to reach areas.

By most measures, Aadhaar has been a huge success. In May 2016 Aadhaar reached one billion enrolments, and nearly one year later this figure had grown to 1.12 billion, roughly 94 per cent of the population. The Indian government is also ramping up the use of Aadhaar for the delivery of subsidies and other social welfare benefits, sending funds directly to beneficiaries' Aadhaar-linked bank accounts (see Section Two of this report for more detail). There is also evidence that Aadhaar is playing a key role in India's migration to a cashless economy. Aadhaar has nonetheless received some criticism, particularly over concerns that for many people registration for Aadhaar has become compulsory, and the personal data collected by UIDAI has the potential to be misused or abused.

The success of Aadhaar has received global recognition, with countries such as Russia, Morocco, Algeria and Tunisia taking a keen interest in the

programme²². When properly designed, digital identity systems can empower individuals to access life-enhancing healthcare and education services, assert their rights, participate in elections and fully engage with either the analogue or digital world. It can also strengthen the capacity of governments, the private sector, NGOs, and development partners to administer programmes and deliver services transparently, efficiently, and effectively. In 2017 the World Bank, in partnership with the GSMA and a number of other public and private sector stakeholders, agreed to a set of common principles that are considered fundamental to maximising the benefits of identification systems for sustainable development in the digital age²³. The following sections explore how Aadhaar measures up against these principles, highlighting how particular elements of the project and identity system have been designed and implemented to ensure that it is inclusive, secure and trustworthy.

20 It is worth noting, however, that the MNC programme and the NPR are still in operation and are currently being linked to Aadhaar; whereas the MNC can be used to prove citizenship.

21 About UIDAI, <https://uidai.gov.in/beta/about-uidai/about-uidai/vision-mission.html>, (accessed 15 March 2017).

22 <https://yourstory.com/2016/07/aadhaar-global/>

23 'Aadhaar's success inspires Russia, African countries to give their citizens digital identity', [YourStory.com], <http://documents.worldbank.org/curated/en/213581486378184357/pdf/112614-REVISED-PUBLIC-web-final-ID4D-IdentificationPrinciples.pdf>, (accessed 15 March 2017).

A Inclusion: Universal Coverage and Accessibility

Identification systems should strive for continuous universal coverage from birth to death, free from discrimination and accessible to all individuals.

In contrast to the MNIC and other identity projects, the aim of Aadhaar is not to establish citizenship status, rights, benefits or entitlements, rather it only seeks to provide a permanent identity number to every resident of India, including migrants of foreign nationality and Indian citizens living abroad. The application process is the same for every individual regardless of their nationality or citizenship status, and registration is both voluntary and free of charge. UIDAI uses a demand-driven model: by effectively communicating the various benefits, services and efficiencies linked to Aadhaar, they help to ensure that there is a high, universal demand for the ID.

Crucially, Aadhaar registrars are instructed and empowered to make any necessary provisions that will ensure that all residents are able to enrol, even those that have little or no access to official identity documents. Officially, UIDAI accepts eighteen documents that can act as a proof of identity, and up to thirty-five documents that serve as a proof of address.

Supporting Documents accepted for Aadhaar Enrolment

PROOF OF IDENTITY

- | | |
|---|--|
| 1. Passport | 11. Photo Credit Card |
| 2. PAN Card | 12. Pensioner Photo Card |
| 3. Ration/ PDS Photo Card | 13. Freedom Fighter Photo Card |
| 4. Voter ID | 14. Kissan Photo Passbook |
| 5. Driving License | 15. CGHS / ECHS Photo Card |
| 6. Government Photo ID Cards/ service photo identity card issued by PSU | 16. Address Card having Name and Photo issued by Department of Posts |
| 7. NREGS Job Card | 17. Certificate of Identify having photo issued by Gazetted Officer or Tehsildar on letterhead |
| 8. Photo ID issued by Recognized Educational Institution | 18. Disability ID Card/handicapped medical certificate issued by the respective State/UT Governments/Administrations |
| 9. Arms License | |
| 10. Photo Bank ATM Card | |

DATE OF BIRTH

- | | |
|--|---|
| 1. Birth Certificate | 7. Government Photo Id Card / Photo identity card issued by PSU containing DoB |
| 2. SSLC Book/Certificate | 8. Central/State Pension Payment Order |
| 3. Passport | 9. Central Government Health Service Scheme Photo Card or Ex-Servicemen Contributory Health Scheme Photo card |
| 4. Certificate of Date of Birth issued by Group A Gazetted Officer on letterhead | |
| 5. PAN Card | |
| 6. Marksheet issued by any Government Board or University | |

PROOF OF RELATIONSHIP (TO HEAD OF FAMILY)

- | | |
|---|---|
| 1. PDS Card | 6. Passport |
| 2. MNREGA Job Card | 7. Birth Certificate issued by Registrar of Birth, Municipal Corporation and other notified local government bodies like Taluk, Tehsil etc. |
| 3. CGHS/State Government/ECHS/ESIC Medical card | 8. Any other Central/State government issued family entitlement document |
| 4. Pension Card | 9. Marriage Certificate Issued by the Government |
| 5. Army Canteen Card | |

PROOF OF ADDRESS

1. Passport
2. Bank Statement/ Passbook
3. Post Office Account Statement/Passbook
4. Ration Card
5. Voter ID
6. Driving License
7. Government Photo ID cards/ service photo identity card issued by PSU
8. Electricity Bill (not older than 3 months)
9. Water bill (not older than 3 months)
10. Telephone Landline Bill (not older than 3 months)
11. Property Tax Receipt (not older than 1 year)
12. Credit Card Statement (not older than 3 months)
13. Insurance Policy
14. Signed Letter having Photo from Bank on letterhead
15. Signed Letter having Photo issued by registered Company on letterhead
16. NREGS Job Card
17. Signed Letter having Photo issued by Recognized Educational Institutions on letterhead
18. Arms License
19. Pensioner Card
20. Freedom Fighter Card
21. Kissan Passbook
22. CGHS / ECHS Card
23. Certificate of Address having photo issued by MP or MLA or Gazetted Officer or Tehsildar on letterhead
24. Certificate of Address issued by Village Panchayat head or its equivalent authority (for rural areas)
25. Income Tax Assessment Order
26. Vehicle Registration Certificate
27. Registered Sale / Lease / Rent Agreement
28. Address Card having Photo issued by Department of Posts
29. Caste and Domicile Certificate having Photo issued by State Govt.
30. Disability ID card/handicapped medical certificate issued by respective State/UT Governments/Administrations
31. Gas Connection Bill (not older than 3 months)
32. Passport of Spouse
33. Passport of Parents (in case of Minor)
34. Allotment letter of accommodation issued by Central/State government of not more than 3 years old
35. Marriage Certificate Issued by the Government containing address

Source: www.uidai.gov.in

Considering the four most common identity documents (voter ID card, ration card, passport and PAN card) have limited coverage, particularly in rural areas, UIDAI also allows enrolment registrars to accept less-formal proofs of identity, such as certificates issued by a local government officer, village leader or tax inspector. Recognising that women and children are the least likely to hold proof of identity, UIDAI allows a head of family with identity documents to introduce other members

of their family during enrolment, with UIDAI accepting a wide range of documents as Proof of Relationship, including marriage and birth certificates or entitlement documents. Going one step further, in cases where there are simply no documents available to an enrollee, UIDAI allows registrars to appoint 'Introducers' who already possess an Aadhaar number to personally vouch for the individual's identity.



Three approaches for Aadhaar enrolment:

DOCUMENT BASED	HEAD OF FAMILY (HOF) BASED	INTRODUCER BASED
Submission of one valid Proof of Identity (PoI) document and one valid Proof of Address (PoA) document.	Head of family may introduce family members by means of documents, which establish the Proof of Relationship (PoR).	In the absence of valid Proof of Identity document and valid Proof of Address document, an introducer's service can be leveraged. An introducer is a person appointed by the Registrar and should have a valid Aadhaar number.

Source: www.uidai.gov.in

Registrars are required to take other special measures to make sure they are able to enrol the most marginalised residents, such as senior citizens, people with disabilities, women, children, unskilled and unorganized workers, and nomadic tribes. For instance, as another measure to ensure that women are not excluded, UIDAI often uses women enrolment officers who are located at women-friendly locations. UIDAI has also stressed that residents are free to wear any kind of dress that they are comfortable with at the time of enrolment: women in Muslim-majority areas in particular have been informed that they are not required to wear any religious or traditional articles of clothing, nor are they required to remove them when being photographed.

Aadhaar is also available to India's youngest residents; starting in 2016, government hospitals and community health centres across the country began to provide Aadhaar numbers to new-borns and children under the age of five, registering the child's photograph along with the biometric details of one parent. Enrolling children after birth is expected to improve the delivery of social benefits and early childhood health services, and it will also have a significant impact on national birth registration rates, which currently stands at 84 per cent.

Similar to the Smartcard programme in Andhra Pradesh, UIDAI aimed to reduce the indirect costs associated with enrolment by ensuring that registration touchpoints were widely accessible to individuals. UIDAI, like the state government of Andhra Pradesh, sits at the very centre of the Aadhaar programme and maintains responsibility for establishing data collection processes and standards, monitoring the performance of the system, and ensuring that the programme meets its objectives.

The responsibility for enrolment is sub-contracted to independent registrars who are typically from government departments or agencies at the state level, or from other organisations that are already in regular contact with residents through their programmes or services; this could include rural development departments, insurance companies, banks, IT companies and even advertising firms. Registrars, in turn, employ enrolment agencies that oversee the day-to-day registration activities.

To ensure that Aadhaar delivers a uniform, high-quality enrolment service, UIDAI has created comprehensive training materials for registrars and enrolment officers, developed mechanisms to assess each enrolment officers' skill and proficiency in the enrolment process, and prescribes mandatory testing and certification for enrolment officers to ensure that they are strictly adhering to the official methodology. UIDAI pays registrars Rs 50 (\$0.77) for every successful enrolment, approximately half of which is passed on to the enrolment agencies²⁴.

Aadhaar's Enrolment Ecosystem

UIDAI

- Responsible for the definition of these relationships
- Responsible for measuring and monitoring the performance of the system, and driving it towards delivering on its goals
- Developed a comprehensive 'Training Delivery Methodology' and training content for all stakeholders
- Prescribes mandatory testing & certification for enrolment personnel to ensure adherence to quality aspects

REGISTRARS

- Engage enrolment agencies for enrolment of residents, conduct training of the agencies and perform regular monitoring
- Ensure that the enrolment standard defined by UIDAI is followed in terms of technology, devices and processes, including in training, awareness building, enrolment, and authentication
- Ensure data collected during enrolment is protected; retain safe copies of supporting documents and provide access to UIDAI as and when required
- Partner with civil society organisations and other outreach groups to maximise enrolment of marginalised residents
- Setup process for grievance resolution, monitoring performance etc. as defined by the UIDAI
- Provide assistance to UIDAI in resolving matters of dispute

AGENCIES

- Provide operators and supervisors for the enrolment stations on the field, and create the necessary conditions for the optimal enrolment of residents
- Notify residents and UIDAI of the enrolment schedule in advance
- Set up the enrolment centres for the enrolment of resident as well as the correction or updating of resident data
- Collect the physical/electronic copy of supporting document or convert it into electronic format as per the process defined by UIDAI

By 2010, UIDAI had commissioned over two hundred small and medium-sized organisations to serve as registrars across the country, and six years later this number had doubled to over four hundred. Taken together, these registrars are responsible for overseeing the activities of more than 376,000 certified enrolment officers stationed at over 37,000

enrolment centres. With this footprint, UIDAI is capable of reaching residents in the hardest-to-reach areas and generating more than 1.5 million Aadhaar numbers every day²⁵. Aadhaar achieved a peak enrolment rate of one million people per day²⁶ in 2010, and today it still maintains an average daily rate of 700,000 individual enrolments.

25 C. Mallapur, 'Primed For Change, But Only 3.2% Assamese Have Aadhaar', India Spend, April 21, 2016, <http://www.indiaspend.com/cover-story/primed-for-change-but-only-3-2-assamese-have-aadhaar-92024>, (accessed 15 March 2017).
26 'Role of Biometric Technology in Aadhaar Enrollment', Unique Identity Authority of India, 21 January 2012, https://uidai.gov.in/images/FrontPageUpdates/role_of_biometric_technology_in_aadhaar_jan21_2012.pdf.



B Design: Robust, Secure, Responsive, And Sustainable

Identification systems should be robust, context-appropriate, and interoperable. While they should respond to user demand and long-term needs, they should collect and use only the information necessary for the system's explicit purpose. Open standards and vendor neutrality help to ensure financial and operational efficiency and sustainability.

In order to fulfil its mandate to provide every resident with a unique ID, including those who are most marginalised, UIDAI recognised that it was imperative to ask enrollees to submit the minimal level of demographic data. The Aadhaar system only collects information related to an individual's name, gender, date of birth, and address. The individual also has the option of registering their mobile number and email address in the system, as these can be used to send customer notifications or to authenticate the user when accessing online services. Learning, perhaps, from the MNIC programme, UIDAI does not require individuals to register any information that could be considered discriminatory or invasive, such as religion, caste, education, income, bank details, health status, or a history of migration. Furthermore, the Aadhaar number itself is completely random and has no link to any of the individual's demographic information.

Because Aadhaar is used to provide access to various government and non-government services, UIDAI recognised that it is essential to ensure that the information stored on each resident is accurate and up-to-date - an area where many of India's other identity documents (i.e. ration cards, voter IDs and PAN cards) fall short. UIDAI has developed a process of demographic and biometric de-duplication, through which existing records held in the central database can be used to verify whether an enrollee has already been entered into the system. UIDAI firmly believes the usage of biometrics is critical for carrying out accurate de-duplication²⁷, particularly for a database of this size.

Even so, concerns have been raised around the dangers of Aadhaar-based biometric authentication and the risk of biometric failure. This issue is especially pertinent to the elderly and those who are manual labourers, whose fingerprints are most likely to be difficult to read. According to some reports²⁸, at times elderly citizens have had to make repeated attempts to enrol, and are sometimes requested to re-enrol at Aadhaar centres further from home. There is some concern that these inconveniences could discourage or prevent residents from accessing vital, Aadhaar-linked government services.

The robustness of the UIDAI system can be gauged by using three key parameters: biometric failure to enrol, false rejection rate, and false acceptance rate. According to UIDAI²⁹, in 2012 the total biometric failure rate to enrol was 0.14 per cent, which implies that 99.86 per cent of the population can be uniquely identified by the biometric system. For the 1.8 million residents who are an exception to this, manual enrolment and de-duplication will take place. Aadhaar's false rejection rate stood at 0.057 per cent; in practical terms, it means that in order to ensure that no resident is wrongfully denied an Aadhaar number, less than 400 cases need to be manually reviewed per day (assuming a daily enrolment of 700,000 people). Lastly, a false acceptance rate 0.035 per cent implies that once the entire population is covered by Aadhaar, just under 450,000 duplicate Aadhaar numbers will have been issued.

When a national identity landscape is marked by multiple, unconnected and functional (i.e. not foundational) identity databases, as was the case in India pre-Aadhaar, individuals are typically able (and in some cases incentivised) to provide inconsistent personal information to a multitude of agencies. Because Aadhaar's de-duplication processes ensures that every individual is tied to one, unique identity, residents are now personally incentivised to ensure that their information is consistent, accurate and up-to-date. This incentive becomes particularly powerful as more and more services and entitlements become linked to their Aadhaar number. The need for an individual to update their personal information could be caused by a life event (marriage, death or moving to a new address), a change to their mobile number or email address, or by human errors made during the registration process (e.g. a misspelled name). It is easy for residents to make changes to their personal details, which can be done by completing an application online, sending a form through the post, or by visiting any official Aadhaar enrolment centre. UIDAI also recommends that residents update their biometric data when they turn fifteen, and every ten years thereafter. All data update requests are processed and verified at the back-end by UIDAI, and once this is completed an SMS notification is sent to the applicant.

27 'Aadhaar Technology Strategy: Ecosystem, Technology and Governance', UIDAI Technology Center, 2014.

28 R. Khera, 'Aadhaar-enabled exclusion and corruption', Deccan Herald, 27 November 2016, <http://www.deccanherald.com/content/583315/aadhaar-enabled-exclusion-corruption.html>, (accessed 15 March 2017).

29 'Role of Biometric Technology in Aadhaar Enrollment', Unique Identity Authority of India, 21 January 2012, https://uidai.gov.in/images/FrontPageUpdates/role_of_biometric_technology_in_aadhaar_jan21_2012.pdf.

R.S. Sharma, who served as the Director General and Mission Director of UIDAI between 2009 and 2013, estimated in 2016 that the overall cost of Aadhaar's roll-out was USD \$1.5 billion. This means that the cost of registration, verification, authentication, execution and maintenance is less than \$1.50 per person; in comparison, the identity authentication programme in the UK is estimated to cost \$165 per individual³⁰. Furthermore, Sharma has projected that the cost savings related to Aadhaar during the first seven years of its roll-out has been in the range of USD \$8 billion³¹, making the return on investment significant.

Similarly, the National Institute for Public Finance and Policy evaluation of the Aadhaar project (2012) found that, between 2010 and 2020, it would yield an internal rate of return in real terms of 52 per cent to the government. The report projects that the cost-benefit would continue to improve over time, with substantial benefits accruing to government by further integrating Aadhaar with social benefit schemes and subsidies, as well as housing, education and health programmes. Starting in 2017, Aadhaar is projected to create annual benefits for government that are five times the programme's total operating costs.

To ensure the scalability of the system, the technology architecture behind Aadhaar has been built on the principles of openness and vendor neutrality. Open source architecture ensures greater interoperability and removes any dependence on a specific device, operating system, database vendor, or network to take to scale. Furthermore, by publishing open APIs (Application Programming Interfaces) and related services, UIDAI has also created an ecosystem that allows a plethora of identity applications to be built on top of the Aadhaar platform, allowing service providers to transform service delivery in a number of innovative ways (see Box 1). The prodigious nature of the project also requires UIDAI to work alongside an expansive range of partners and stakeholders, each of which needs to be supported in their day-to-day activities and seamlessly integrated into Aadhaar systems to ensure consistent service delivery³². To ensure interoperability, all of the enrolment 'elements' (i.e. biometric devices, enrolment, etc.) were standardised and defined very carefully, but in a vendor-neutral way. Technology and vendor neutrality facilitates competition and innovation, and it also prevents possible technology or vendor "lock-in," which can increase costs and reduce flexibility over time.

30 M. Srivastava and R. Nair, 'Aadhaar to have key role in cutting costs: Trai chairman R.S. Sharma', Live Mint, 16 March 2017, <http://www.livemint.com/Politics/5cWdKr6NR5yH2qgN5m2zrL/Aadhaar-to-have-key-role-in-cutting-costs-Trai-chairman-RS.html>, (accessed 15 March 2017).

31 N. Nilekani and V. Shah, *Rebooting India: Realizing a Billion Aspirations*, Penguin Books Limited, 2015.

32 'Aadhaar Technology Strategy: Ecosystem, Technology and Governance', UIDAI Technology Center, 2014.

Box 1:

The India Stack

On its own, an identity document's value is limited; real value is generated when the ID is used by individuals to assert their rights or gain access to life-enhancing services such as healthcare, education, financial services and social payments. Because Aadhaar is built on an open platform, external organisations are able to re-engineer its application programming interface, or API, to create new, connected services. These 'layers' of services, known as the 'India Stack', have helped create a digital infrastructure that can provide presence-less (no need for physical authentication), paperless and cashless service delivery from anywhere in India.

Through the India stack, organisations can now leverage Aadhaar to digitally authenticate new customers (e-KYC); send payments directly to a users' bank account (Aadhaar Payments Bridge); sign documents online (eSign); allow users to transfer money via mobile (Unified Payment Interface); or share documents such as bank statements, utility bills, etc. with other service providers who need to authenticate a users' identity (Digital Locker).

As each individual's identity, documentation, signature and transaction history moves online, the India Stack will help turn India into the world's most data-rich nation and create an endless number of Aadhaar-linked use cases. For instance, many of India's poor spend a large portion of their income on food, fuel, education and healthcare. If they permit it to, the India Stack can help individuals pay for these necessities using digital payment systems, while also keeping a digital record of their spending activity. This financial audit trail, once attached to their digital identity, can be used when applying for other government subsidies, small loans or insurance products. Importantly, every person has complete control over who accesses their information, and for what purpose.

For service providers, these digital layers will significantly reduce the cost of directly servicing and on-boarding customers, allowing them to reach massive segments of the population that are currently underserved. It is estimated that Aadhaar-enabled e-KYC processes will save banks and mobile operators in India around Rs 10,000 crore (USD \$1.6 billion) over the next five years by replacing the traditional paper-based KYC process. Permitting e-KYC processes to be facilitated through Aadhaar authentication also means freedom from having to submit hard-copy ID documents, reducing the threat of identity theft due to paper trails.

For the India Stack to work for everyone, it will be important for service providers to work outside of their individual silos and help make a clear case for the India stack among customers. Poorer residents, in particular, will need help overcoming digital literacy barriers and seeing the value of the Stack, for instance, how it might help them access relevant services or earn extra income for their family. MNOs can play a key role in the on-boarding process, for instance, by bringing their authentication API's like GSMA's Mobile Connect to the India Stack, by encouraging customers to use the payment bridge for airtime top-ups, or by helping to endorse their customers through the Digital Locker when they wish to access other service verticals such as agricultural, health or education.

For more information, visit the India Stack website at: www.indiastack.org



Protecting Privacy and User Rights

Identification systems must be built on a legal and operational foundation of trust and accountability between government agencies, international organizations, private sector actors and individuals. People must be assured of the privacy and protection of their data, the ability to exercise control and oversight over its use, and processes for independent oversight and the redress of grievances.

From its inception, Aadhaar was built on a foundation of public and private sector collaboration. The Planning Commission of India appointed Shri Nandan Nilekani as the first Chairperson of the UIDAI, giving him the rank and status of a Cabinet Minister. Prior to this appointment, Nilekani had co-founded one of India's largest IT services companies, Infosys, and launched the eGovernments Foundation, a non-profit organisation that aims to help municipalities deliver better services to citizens using IT. The Planning Commission also appointed Ram Sevak Sharma as the Director General of UIDAI, following his success digitising the treasury department in Purnia district, the public grievance system in Bihar and the National Rural Employment Program³³. Together Nilekani and Sharma assembled a remarkably diverse team to deliver the Aadhaar project, representing the brightest minds from both the public and private sector. In the project's first sixteen months, the UIDAI reportedly received 1,000 applications from people across the world who wanted to play a role in Aadhaar's design and delivery; the lure of participating in the project was so strong, in fact, that many applicants joined the team as volunteers, some took professional sabbaticals, and others accepted pay cuts³⁴.

Although the Aadhaar programme, at its core, is managed by government employees and civil servants, experts from the private sector and academia have contributed their own expertise and talents. For instance, investors and entrepreneurs from Silicon Valley helped navigate the system's technical complexities; bankers and economists ensured the system was financially sustainable and

helped build Aadhaar's digital payment infrastructure; lawyers helped the team navigate privacy laws and establish internal standards; and journalists managed the programme's communications strategy. A well-known designer of lifestyle products was even brought into the project to develop the portable registration kit that housed the UIDAI laptop, camera and iris- and fingerprint-scanners. As said in Forbes India in 2010, this new and untested organisational model was, in hindsight, 'the only way that the project stood a chance of working'³⁵.

In the absence of data privacy laws in India, UIDAI has worked to establish its own stringent security and data privacy policies to ensure that the information collected from residents is secure. In an effort to balance 'privacy and purpose', residents must give their explicit consent before any service provider can query the UIDAI database to authenticate their identity details. In less than one second, the service provider simply receives a 'Yes' or 'No' response from UIDAI - no personal information is included in the response. A customer who is using Aadhaar for e-KYC (e.g. registering a SIM card or opening a bank account) may also authorise UIDAI to send the service provider a digital, encrypted record of their demographic and photo information. UIDAI emphasises that this process is legally equivalent to paper-based KYC processes, but eliminates the risk of fraud and ensures that unauthorized parties aren't able to tamper with or steal the data. Every individual's data is stored in UIDAI's central repository, which is operated by three private sector companies; none of which has access to the entire set of an individual's data³⁶.

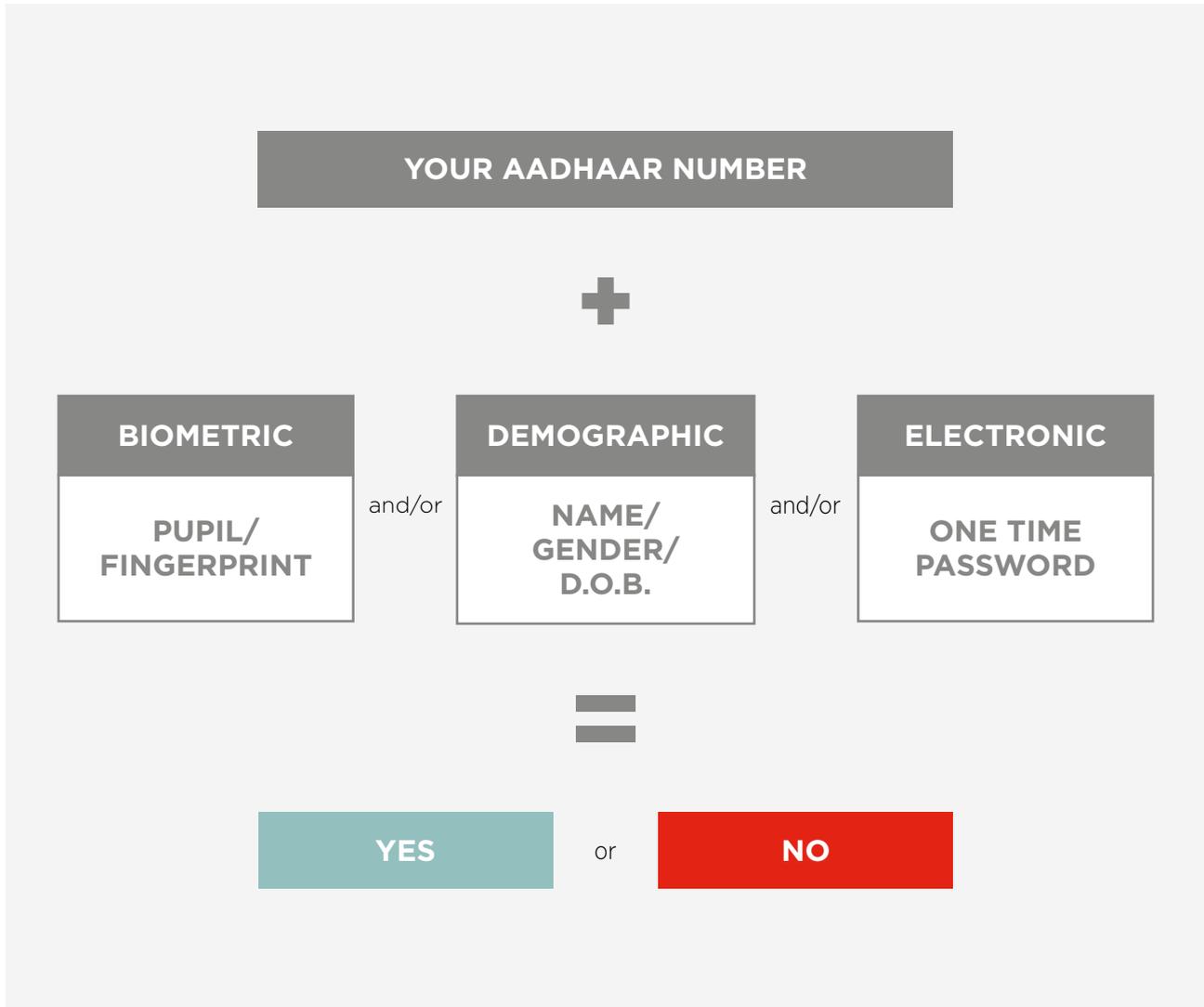
33 M. Jayashankar and N. Ramnath, 'UIDAI: Inside the World's Largest Data Management Project', Forbes India, 29 November 2010, <http://www.forbesindia.com/article/big-bet/uidai-inside-the-worlds-largest-data-management-project/19632/0>, (accessed 15 March 2017).

34 ibid

35 ibid

36 S. Banerjee, 'Digital Dividends. Aadhaar: Digital Inclusion and Public Services in India', World Bank Group Background Paper, 2016.

Aadhaar Authentication



Strictly enforced memorandums of Understandings (MOUs) between UIDAI and registrars also ensure that all enrolment agencies follow UIDAI's prescribed processes for the enrolment of residents, maintenance of records and transmission of data; only use UIDAI-developed software and approved devices and IT systems; and follow the confidentiality, privacy and security protocols prescribed by UIDAI. In situations where these processes and standards are not followed or are violated, UIDAI has the option to de-register the registrar or demand that an enrolment agency be replaced.

Despite these protocols, there are still relevant and enduring concerns around the legality of UIDAI's activities and their ability to ensure that personal data – collected and transmitted by private companies, and stored in one central database – is kept private and secure. Critics of UIDAI's programme rightly point to the fact that Aadhaar enrolment began before appropriate privacy legislation was in place, before parliament had an opportunity to debate concerns around the collection of biometrics, and before existing legislation around citizen registration (the 1955 Citizenship Act) had been amended to permit biometric collection.

There are no regulations in India that 'establish safeguards over the collection, processing, storage, retention, access, disclosure, destruction, and anonymisation of sensitive personal information by any service provider'³⁷. This means that there is no legal provision that would ensure Aadhaar numbers and personal details are used by service providers in a way that is cryptographically secure, and if the enrolment technology fails, or the database is compromised - resulting in identity theft, the misuse of data, erroneous identification, or any breach of privacy - there is little that an affected person could do to rectify the situation or be properly compensated. It is also not very clear who, if anyone, would be held accountable by government in these circumstances.

In 2012, the Supreme Court of India issued an interim order that put two important checks on Aadhaar. First, they established that no service provider (including the government) could make Aadhaar mandatory in order to access services. Second, they clarified that UIDAI could not share an individual's data with private organisations or any government entity unless the individual gave their consent. In other words, any service provider could authenticate a users' identity by querying the UIDAI system on a real-time basis, so long as the user was present and had explicitly given them permission - but they were strictly barred from accessing the database at any other time.

However, in the last year the government has established new and highly controversial legal backing to the project by passing the Aadhaar Act, 2016. By claiming that the intended purpose of Aadhaar was to facilitate the delivery of government subsidy payments, the government was able to categorise the Aadhaar Act as a 'Money Bill'. This allowed the Lower House of Indian Parliament to pass the Act without having to accept any of the proposed

amendments or recommendations outlined by the (more critical) upper house of Parliament. Among other things, the bill established that:

- The central or state government may require an individual to possess an Aadhaar number if they are receiving a government subsidy;
- UIDAI must ensure the security of identity information and authentication records (these records include details on the times of each authentication, the requesting entity, and the response provided);
- An individual (the Aadhaar number holder) may access their authentication records, subject to regulation;
- A District Judge or higher court may force the UIDAI to reveal a person's Aadhaar number, photograph, demographic information, and authentication records (but not the core biometrics);
- An official with the rank of Joint Secretary or higher may access all of a person's identity information, including core biometric information, in the interest of national security.

In March 2017, the Supreme Court in India will determine whether the enactment of the Aadhaar Act, through the Money Bill route, was unconstitutional. In the meantime, the government will continue to face calls to strengthen regulations that ensure data security and protect every residents' right to privacy. This becomes increasingly important as the government pushes for universal enrolment, mandates the use of Aadhaar for government services, and continues to advocate for the uptake of Aadhaar-linked services. Ensuring that all residents - especially those from the most vulnerable segments of society - fully understanding their rights, as well as the potential risks of biometric enrolment, is paramount.

3 Part Two: Leveraging Identity The Jam Trinity

3.1 Social benefits in India

India is the fourth-largest economy in the world and is growing fast. In the seven decades since independence, this exponential growth has translated into significant socio-economic development: life expectancy has more than doubled, literacy rates have quadrupled, health conditions have drastically improved, and a sizeable middle class has emerged. Although India has made significant progress at reducing extreme poverty, 22 per cent of Indians (roughly 270 million people) still live below the poverty line, with poverty rates in India's poorest states remaining three to four times higher than those in more developed states. World Bank data shows that 80 per cent of India's poor live in urban areas, and low-income families are significantly less likely to have access to clean water, electricity or latrines³⁸.

The poor in India spend the majority of their income on food (56 per cent), fuel and light, education, and health³⁹. For this reason, poverty reduction in India has long been supported through government

subsidies aimed at helping the poor access these basic necessities. It is estimated that India's subsidy programmes have historically accounted for 14 per cent of the country's GDP⁴⁰, and overall government expenditure on major subsidies grew nearly 850 per cent between 2001 and 2016⁴¹.

Despite this deluge of funding, there is ample evidence that the impact of subsidies on poverty has been negatively affected by 'leakage', with 70 to 85 per cent of total spending not actually reaching the intended beneficiaries⁴². A 2008 report found, for instance, that more than a third (36.7 per cent) of subsidised grain was sold to the non-poor, and 58 per cent was not reaching the intended beneficiaries⁴³. Other studies have described how the lack of a robust national identity has had a 'double whammy' on India's ration card system, with an estimated twenty-three million 'ghost' public distribution cards pushing more than twelve million deserving poor out of the food security umbrella⁴⁴.

38 World Bank, India Country Overview, www.worldbank.org/en/country/india/overview, (accessed 15 March 2017).

39 *ibid*

40 Frances Zelazny. 2012. "The Evolution of India's UID Program: Lessons Learned and Implications for Other Developing Countries." CGD Policy Paper 008. Washington, D.C.: Center for Global Development.

41 Open Government Data Platform India, 'Interest, Subsidies and Defence Expenditure of Indian Government from 2000-01 to 2015-16', 2 March 2016, <https://community.data.gov.in/interest-subsidies-and-defence-expenditure-of-indian-government-from-2000-01-to-2015-16/>, (accessed 15 March 2017).

42 K. Muralidharan, P. Niehaus, and S. Sukhtankar, 'Building State Capacity: Evidence from Biometric Smartcards in India', *American Economic Review* 2016, 106(10): 2895-2929.

43 Frances Zelazny. 2012. "The Evolution of India's UID Program: Lessons Learned and Implications for Other Developing Countries." CGD Policy Paper 008. Washington, D.C.: Center for Global Development.

44 R. Dass and R. Bajaj, 'Creation of a Single National ID: Challenges & Opportunities for India', India Institute of Management, W.P. No.2008-08-04, August 2008.

Social Sector Spending in crore INR, billion USD 2014-2015

	2013-14		2014-15		2015-16 (RE)		2016-17 (BE)	
	INR	USD	INR	USD	INR	USD	INR	USD
Food Security	92,000	13.48	117,671	17.24	139,419	20.43	134,834	19.76
Fertilizer	67,339	9.86	71,076	10.41	72,438	10.61	70,000	10.26
Petroleum	85,378	12.51	60,169	8.82	30,000	4.40	26,947	3.95
Interest	8,137	1.19	7,632	1.12	13,808	2.02	15,523	2.27
Other	1,778	0.26	1,610	0.24	2,136	0.31	3,128	0.46
Total	254,632	37.31	258,258	37.84	257,801	37.78	250,432	36.69

Notes: Exchange rate at 10 Jan 2017 (68.25 INR = 1 USD); RE: Revised Estimates; BE: Budgeted Estimates

Source: Indian Express⁴⁵

In January 2013, the Indian Government proposed a new mechanism for transferring subsidies in an effort to cut costs, reduce leakage, and bring higher levels of transparency to the disbursement process. Like the Smartcard programme in Andhra Pradesh, this mechanism, called the Direct Benefit Transfer (DBT) scheme, would allow government benefits or subsidies to be transferred directly to an individual's bank account.

In order to deliver these funds successfully, the government must be able to ensure that: a) the recipient is able to access the benefit; b) the benefit is going to the intended person; and c) the benefit can be transferred quickly and efficiently. To this end, the government's 'JAM Trinity' scheme was proposed in the Economic Survey of 2014-15, bringing together three critical elements of DBTs: Jan Dhan, Aadhaar and Mobile (JAM). Aadhaar numbers are used to biometrically identify and authenticate disadvantaged citizens (but not to

determine eligibility), while mobile devices can be used to access funds transferred into Jan Dhan and other bank accounts linked to an Aadhaar number. More recently, mobile providers have also been given license to operate their own banking services through 'payment bank licensing'; this is explored in more detail in the following sections. As Finance Minister Arun Jaitley explained when announcing the new initiative, the JAM Trinity was expected to allow government to 'transfer benefits in a leakage-proof, well-targeted and cashless manner'⁴⁶.

45 'For oil subsidies, India will rely on 2014-15 Budget', Business Standard, 19 November 2013, <http://indianexpress.com/article/india/india-news-india/union-budget-2016-subsidy-reforms-remain-on-paper-in-rural-sector/>

46 A. Mishra, 'India has started linking Jan Dhan scheme, Aadhaar and mobile numbers: Arun Jaitley', Live Mint, 2 April 2016, <http://www.livemint.com/Politics/PRmaciHkzL6fGJEUIVLo3H/India-has-started-linking-Jan-Dhan-scheme-Aadhaar-and-mobil.html>, (accessed 15 March 2017).

Financial Inclusion before JAM

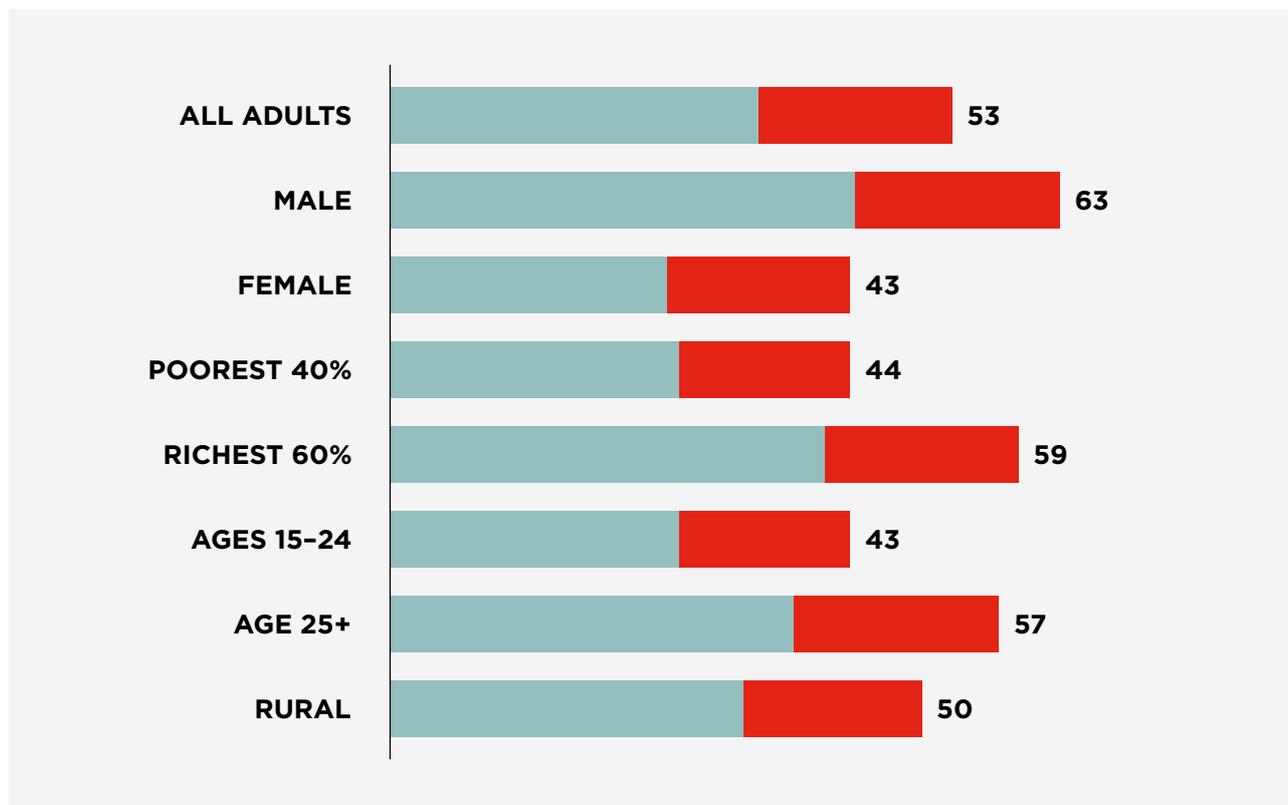
Even though the Government of India has long-viewed universal financial inclusion as one of the country's most important development objectives, since 2006 the Reserve Bank of India (RBI) has prioritised strictly bank-led financial inclusion strategies that are focused on opening entry-level (or 'no-frills') accounts for as many people as possible. This approach prioritised quantity of accounts over quality of service, and access over usage. As a result, between 2011 and 2014 the percentage of adults with access to an account increased from 35 to 53 per cent; in real numbers, this means that 175 million Indians had been brought into the fold of the formal financial system.

Data from the World Bank's Global Findex Report⁴⁷ also provides evidence that, in contrast to most other developing or emerging economies, the growth in account penetration was being evenly reflected across all groups of individuals measured by the World Bank, including women, the poorest 40 per cent of individuals and young adults. However, despite increased access to financial services, India— to a much greater extent than any other economy —had a significant problem with account dormancy. The Findex Report found that 43 per cent of accounts in India had not been used in the last twelve months—a dormancy rate that is three times higher than the global average.



- 47 A. Demircuc-Kunt, L. Klapper, D. Singer, and P. Van Oudheusden, 'The Global Findex Database 2014: Measuring Financial Inclusion around the World', 2015, Policy Research Working Paper 7255, World Bank, Washington, DC.
- 48 K. Kumar and D. Radcliffe, 'What Will It Take for Payments Banks to Succeed in India?', CGAP, 27 January 2015, <http://www.cgap.org/blog/what-will-it-take-payments-banks-succeed-india>, (accessed 15 March 2017).
- 49 Financial Inclusion Insights: India wave report. March 2016, <http://finclusion.org/uploads/file/reports/FII-India-2014-Wave-2-Wave-Report.pdf>
- 50 ibid
- 51 T. Jaleel, 'Why cash is still king for Indian consumers', Live Miint, 20 April, 2016, <http://www.livemint.com/Money/JCjgd136iBHWt30hN3gOSP/Why-cash-is-still-king-for-Indian-consumers.html>, (accessed 17 March 2017).
- 52 V. Puhazhendhi, 'Microfinance India: State of the Sector Report 2012', SAGE Publications, 2013.

Account penetration in India by individual characteristics: 2011 and 2014 Adults with an account (%)



Source: 2014 Findex Database, page 25

Furthermore, in many areas progress with account opening faced two key challenges:

- 1. A preference for cash:** To a large extent, India remains a cash-based society where 'there is an overwhelming preference for physical cash, even in urban centres where alternatives exist'⁴⁸. In fact, a 2014 Financial Inclusion Insights survey found that 82 per cent of adults consider cash to be the 'best tool' for small- to medium- sized transactions, with cash being used 99 per cent of the time an individual makes an every-day purchase (groceries and other goods), pays bills or buys airtime⁴⁹. India's digital payment ecosystem remains in a state of infancy, and mobile money usage is extremely low: even today, only 10 per cent of Indians are aware that mobile money services exist, and only 0.5 per cent have actually used these services⁵⁰. RBI has reported that 94 per cent of the total value of debit card transactions comes from cash withdraws at ATMs, with only 6 per cent coming from transactions at the point of sale⁵¹.
- 2. Lack of identity:** For many years, a lack of identity documents prevented many low-income customers from opening an account, especially women. Studies had shown, for instance, that when women from Self-Help Groups attempted to open an account with a bank, in 60 per cent of these cases they were unable to do so because of challenges complying with Know-Your-Customer (KYC) regulations⁵². Prior to 2011, only five documents were accepted as proof of identity by banks: a passport, driving licence, voter card, PAN Card or MNREGA Job Card. Although RBI eventually agreed to relax the proof of identity requirements for customers opening low-balance accounts (not exceeding Rs 50,000 per year, or \$760 USD), KYC remained a significant barrier until the roll-out of Aadhaar.

3.2 Jan Dhan Yojana and Aadhaar

On 15 August 2014 (India's Independence Day), Prime Minister Narendra Modi announced the launch of the Pradhan Mantri Jan Dhan Yojana scheme (PMJDY), outlining his goal to open an account for 75 million unbanked Indians while also providing a full range of other services, including debit cards, credit, accident insurance and pensions. In a memo to banks, Modi described the task as 'gigantic', but also declared that it was a 'national priority' to provide every household with a bank account⁵³.

A vital step in driving account opening was linking PMJDY with Aadhaar. In the years leading up to the launch of the scheme, RBI updated its KYC requirements to allow Aadhaar to be used as both a proof of identity and address, and in 2013 banks were permitted to use Aadhaar for e-KYC. As a biometric-verified identity that is digital and verifiable online, Aadhaar offered banks and regulators a highly accurate and secure form of ID. Crucially, online authentication makes customer on-boarding faster, easier and more efficient, significantly reducing the cost to banks and allowing them achieve higher scale in areas where other identity documents are scarce⁵⁴. As mentioned previously, studies suggest that banks and mobile operators could collectively save 10,000 crore Rs (\$1.6 billion) over the next five years through Aadhaar-enabled e-KYC process.

For customers, Aadhaar provided a portable and paperless identity that could be verified anywhere in India, including by 'business correspondents' (BCs) that banks increasingly use in rural areas to facilitate low-value transactions on their behalf. Biometric authentication is also more inclusive, as it eliminates the need for customers to maintain hard copies of their identity documents or remember account details, personal PINs or passwords.

The major account-opening phase under PMJDY was due to be completed by 26 January, 2015; four days after this deadline, figures release by the scheme revealed that over 125 million accounts had been opened: 75 million in rural areas, and over 50 million in urban areas.

53 Press Information Bureau, Government of India, 'PM's email to all bank officers', 25 August 2014, <http://pib.nic.in/newsite/erelease.aspx?relid=109051>, (accessed 15 March 2017).

54 Unique Identification Authority of India, Planning Commission, Government of India, 'Aadhaar Enabled. Service Delivery'. February, 2012.

55 The Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) aims to enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.

56 A. Singh, L. Sing, M. Sadana, 'PMJDY: Improved Financial Inclusion, But Roadblocks Remain', CGAP, 26 March 2015, <http://www.cgap.org/blog/pmjd-y-improved-financial-inclusion-roadblocks-remain>, (accessed 15 March 2017).

Number of accounts opened under PMJDY by 31 January 2015.

	Rural	Urban	No. of Accounts	Acc. Bal. (in Lacs INR)	No. of Acc. with 0 Bal.
Public Sector	53,300,249	45,147,276	98,447,225	817,463	65,541,407
Rural Regional Bank	18,489,448	3,297,83	21,787,281	159,948	15,935,405
Private Bank	3,226,397	2,012,086	5,238,483	72,551	2,996,917
Grand Total	75,016,094	50,457,195	125,473,289	1,049,962	84,473,729

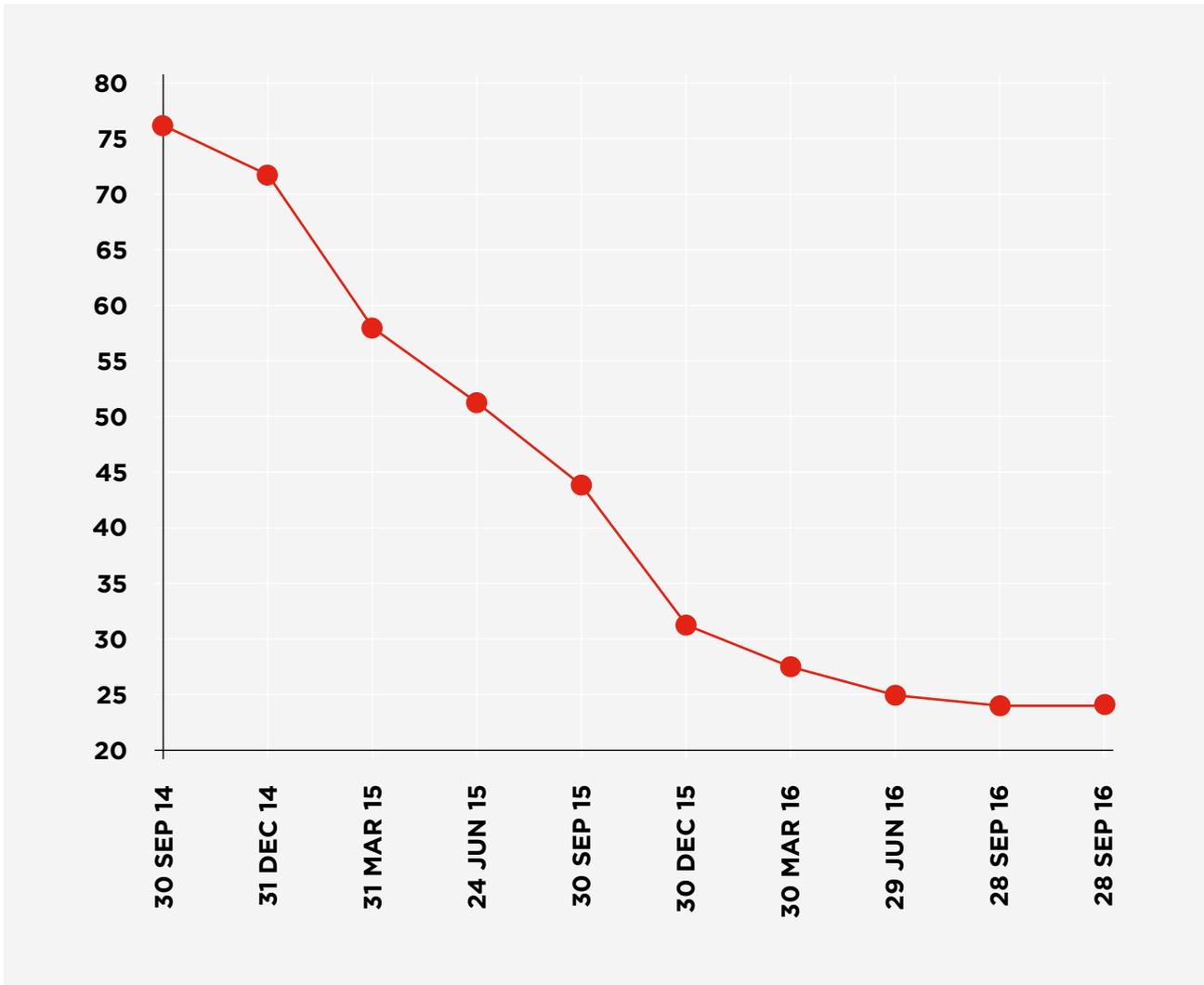
Source: www.pmjdy.gov.in

At the time, close to 70 per cent of the new accounts opened through PMJDY had a zero balance, and only 4 per cent of accounts were held by private banks. To counter this trend, the government’s five largest social benefit schemes (MNREGA⁵⁵, the NSAP social safety net, scholarships for the poor, the PDS food security programme and the fertiliser subsidy), which together represented nearly USD \$50 billion in funding, began to be routed to the accounts, most of which had already been linked to the beneficiaries’

Aadhaar number. It was believed that this would drive basic account activity among low-income residents, whilst growing trust in the banks and banking agents that serve them⁵⁶. There is some evidence this may be true: there are now thirty-six government schemes linked under DBT, and the percentage of PMJDY accounts maintaining a zero-balance has fallen from 76 per cent in September 2013 to 24 per cent in December 2016.



Zero balance accounts under PMJDY



Source: www.pmjdy.gov.in/trend-zero

In addition to this, early evidence suggests that by linking PMJDY accounts to Aadhaar, liquefied petroleum gas (LPG) subsidies sent via DBT has seen a 24 per cent reduction in leakage while ensuring that the scheme excluded very few genuine beneficiaries⁵⁷. As the DBT scheme is expanded, it is expected that Aadhaar-linked accounts⁵⁸ will help other government schemes further improve service delivery, lower corruption and improve collaboration between banks and government ministries.

The 2016 'Household Survey on India's Citizen Environment & Consumer Economy' (ICE 360° survey) shows that 99 per cent of households in both rural and urban India now have at least one member

with access to a bank account, and nine in ten households have linked their account to an Aadhaar number⁵⁹. However, despite the obvious success of the PMJDY scheme, significant challenges to banking last-mile consumers remain.

Many households still have family members with no access to an account, and 20 per cent of account owners do not actually use their account to save. Furthermore, the use of mobile banking services in rural areas remains low, and the banking infrastructure, which largely relies on the use of banking correspondents to facilitate transactions, still struggles to profitably serve geographically dispersed, low-income consumers.

3.3 Mobile and Aadhaar

Data from the GSMA shows that at the end of June 2016 India was the second-largest mobile market in the world, with over 900 million mobile users and 616 million unique subscribers nationwide. Even though 90 per cent of the population has access to a mobile phone, less than half actually own their own SIM card⁶⁰. By 2020, falling device prices, better network coverage, and greater efficiencies in customer on-boarding will help at least 330 million more people access a mobile subscription. India also has more smartphone users than the US; this, along with reductions in data tariffs, is gradually helping the country shift to mobile broadband services and by 2020, almost half of the total internet connections will run over mobile broadband networks⁶¹.

Mobile also has a key role to play in the Indian government's Digital India strategy, which aims to use digital technologies to address a wide range of socio-economic challenges, including financial inclusion. When announcing the launch of the JAM Trinity initiative, the government pointed to the potential of mobile to act as a 'complimentary' delivery mechanism for delivering DBTs to a large proportion of the population.

In early 2014, RBI introduced a progressive recommendation that a new category of bank, called a 'Payment Bank', be established to help increase access to basic payment and deposit services, especially in areas where traditional banks were

proving ineffective. These new, 'stripped-down' banks aim to reach low-income customers through technology, including mobile phones, business correspondents (BCs) or other distribution networks, and are therefore envisioned to be a more scalable, lower-cost platform for providing basic financial services. Outside of offering loans, payment banks are authorised to provide the same basic services one would expect from a retail bank, including taking deposits (up to approximately \$1,650), paying interest on balances, offering a mobile wallet, enabling mobile remittances and transfers, facilitating mobile bill payments, and issuing debit and ATM cards.

57 'Spreading JAM to other areas will reduce leakages: Survey', The Hindu, 26 February 2016, <http://www.thehindubusinessline.com/economy/spreading-jam-to-other-areas-will-reduce-leakages-survey/article8285291.ece>, (accessed 15 March 2017)

58 Any bank account can be linked to a customer's Aadhaar number, not just those opened through PMJDY.

59 P. Bhattacharya, '99% Indian households are covered by a bank account', Live Mint, 15 December 2016, <http://www.livemint.com/Specials/vvKbQ0cMmInBdwOlfD0Z4N/99-Indian-households-are-covered-by-a-bank-account.html>, (accessed 15 March 2017).

60 Financial Inclusion Insights, 'India Quicksights Report', 2015, <http://finclusion.org/uploads/file/reports/2015%20InterMedia%20FII%20INDIA%20QuickSights%20Summary%20Report.pdf>, (accessed 15 March 2017).

61 GSMA, 'The Mobile Economy India 2016', available at: gsmaintelligence.com

Forty-one organisations applied for a payment bank license in February 2015, eleven of which were granted an in-principle license. This included e-commerce and IT companies, the postal service, and four MNOs⁶²: Bharti Airtel, Vodafone, Idea and Reliance Jio. At a time when many MNOs are looking for opportunities to build long-term viability in the midst of an extremely competitive environment and low average revenue per user (ARPU), payment banks represent an exciting new opportunity to drive growth, promote digital payments and reduce customer churn. Furthermore, there is wide consensus that MNOs have a number of distinct advantages as payment banks that should help them reach scale and achieve profitability at a quicker pace than their competitors:

- Payments banks will need to create a widespread network of customer access points, particularly in remote areas. With millions of retailers already selling airtime and other mobile services across urban and rural locations, MNOs are in a strong position to leverage well-established, multi-layer distribution networks.
- The viability of the payment bank business model depends on reaching high volumes of customers; MNO-led payments banks should be able to migrate their existing mobile money customers and possibly large swathes of their remaining customer base who might have a latent need for mobile financial services.
- MNOs also enjoy high levels of trust and brand awareness among the low-income consumers that payment banks will target, as well as a compatible business model that is based on

driving revenue through high volumes of low-value transactions. MNOs management of high volumes of low-value electronic recharges have equipped them to handle digital financial services and offer a rich understanding of their customer base to design and offer highly-customised and relevant products⁶³.

- The telecommunications sector, like banking, is a well-regulated service industry and is therefore likely to be more adept at meeting RBI's regulatory and compliance requirements, including KYC norms⁶⁴. Payment banks will be expected to use e-KYC extensively for customer on-boarding, and MNOs have already invested in the technology and network infrastructure needed to connect to the UIDAI database. A recent report by GSMA has found that for mobile providers, the Aadhaar-enabled e-KYC platform⁶⁵ reduces the cost of Know-Your-Customer (KYC) processes from Rs 40 (\$0.60) per customer to Rs 5 (\$0.07), significantly lowering the overall cost of customer acquisition. In addition, the recent Operating Guidelines for payments banks indicate that with appropriate customer consent, MNO led payments banks can leverage KYC performed for SIM registration.

GSMA predicts that in order to convince customers to migrate to the payment banks and compete, these new institutions will focus on providing customers with the ability to transact seamlessly with their accounts and offer additional financial services, including credit services, through partnerships⁶⁶. Because payments banks cannot offer credit on their own, this will require partnerships with credit-issuing banks.

62 Telenor India also received an in-principle license, but has since withdrawn their interest

63 C. Wright, 'Will Mobile Network Operators Make It As Payments Banks?', MicroSave, August 2010, <http://blog.microsave.net/will-mobile-network-operators-make-it-as-payments-banks/>. (accessed 15 March 2017).

64 ibid

65 GSMA, 'The business case for payments banks in India', 2016.

66 ibid

Box 2: Spotlight on Airtel Payment Bank

In November 2016, Airtel Payments Bank (APB) became the first payment bank in India to go live after launching services in the state of Rajasthan. It now operates across all states, and plans to scale the number of banking touch points from 250,000 to 600,000 by the end of 2017. APB is a fully digital and paperless bank, providing a quick and paperless account opening process using Aadhaar-based e-KYC. This means that as long as a customer has an Aadhaar number, they can open an account in less than three minutes, with the scan of a finger. Conveniently, a customer's Airtel mobile number will also be used as their bank account number, and currently Airtel customers receive equivalent talk time for every rupee they deposit in their account.

APB's extensive network of agents can provide customers with cash deposit and withdrawal facilities, with deposits earning interest at a rate of 7.25 per cent p.a. APB can also facilitate money transfers to any bank account in India (including free money transfers from Airtel to Airtel numbers within APB) and provides personal accident insurance of Rs 1 Lakh (\$1,650) with every account. The payment bank's services can be accessed by Airtel customers on their mobile phones through an Airtel Money app, through USSD, or through interactive voice response (IVR). Both the USSD and IVR channels are available in both Hindi and English and work on simple feature phones. Non-Airtel customers can also access APB's services by dialling a dedicated number.

In addition to making the payment bank model commercially viable, the account features (interest on deposits, free deposits, charges on withdrawals) should encourage customers to build and maintain account balances. APB is also encouraging consumers to transition to digital payments; they have designed a mobile app for local merchants that allows them to take payments directly from APB customers and transfer it to their own account, free of charge. Whereas merchants currently pay up to 2 per cent charges on debit and credit card transactions, the APB application allows them to accept payments without any fee. To date over one million merchants have downloaded the app, and APB aims to have five million on board by the end of the year.

At the launch of APB, Shashi Arora, MD & CEO, Airtel Payments Bank, remarked, 'Airtel Payments Bank is fully committed to the Government's vision of financial inclusion and banking for all. Airtel Payments Bank will play an important role in taking banking services to the last mile in a quick and efficient manner and benefit millions of unbanked citizens of this country.'

Source: www.airtel.in

3.4 Looking forward

A remaining hurdle for JAM and the DBT scheme is ensuring that last-mile beneficiaries are actually able to get their hands on the funds sent to their accounts. The government has admitted that despite huge improvements in financial access due to PMJDY, more progress must be made before bank-beneficiary linkages are strong enough to pursue DBT without committing exclusion errors⁶⁷. The roll-out of payment bank services, the adoption of mobile money, and improvements to business correspondent models should facilitate this.

Improvements in mobile connectivity will also be vital to the success of JAM, as more and more beneficiaries will rely on their mobile phone to access their account and make digital payments. In its 2016 report on the state of the mobile economy in India⁶⁸, GSMA states that in addition to the work operators are doing to expand and improve networks, significant efforts from government and regulators are needed in order to create the right conditions for continued investment. It will be important for government and MNOs to work together to remove or reduce the costs, barriers and administrative processes that hinder network deployment.

India's recent demonetisation efforts, through which Rs 1,000 and 500 notes were removed from circulation, will likely push poorer residents to move towards digital banking and payments, to the benefit of PMJDY and payment bank accounts. However, it will take a concerted effort from government and service providers to promote a long-term transition away from cash. To address the country's 'digital

divide', the government has recently launched the National Digital Literacy Mission (NDLM) as an integral part of the Digital India campaign. The NDLM aims to provide critical digital skills training to at least one person in each household by 2020. Alongside of this, the GSMA's Mobile Internet Skills Training Toolkit⁶⁹ provides a visually rich training resource designed for MNOs, development organisations and government to improve peoples' basic knowledge and understanding of the mobile internet and how it can positively impact their lives.

Aadhaar will continue to play a crucial role in providing citizens with greater and more efficient access to financial services. The sustainability and scalability of PMJDY and payment bank accounts will depend on service providers' ability to establish and maintain a deep level of trust with their customers. It is crucial that government establishes and enforces legal frameworks that ensure an individual's right to privacy is protected, especially if services are to reach the individuals who feel most at risk of exploitation.

67 A. Mishra, 'India has started linking Jan Dhan scheme, Aadhaar and mobile numbers: Arun Jaitley', Live Mint, 2 April 2016, <http://www.livemint.com/Politics/PRmaclHkzL6fGJEUIVLo3H/India-has-started-linking-Jan-Dhan-scheme-Aadhaar-and-mobil.html>, (accessed 15 March 2017).

68 GSMA, 'The Mobile Economy India 2016', available at: gsmaintelligence.com

69 The MISTT toolkit can be accessed at: www.gsma.com/mobilefordevelopment/programmes/connected-society/mistt





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