

Aadhaar as a payment infrastructure: current implementation and challenges

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For the fourth time in the last month and a half, Rahul Mehta, a Pradhan Mantri Jan Dhan Yojana (PMJDY) customer from Ghazipur district in Uttar Pradesh, visited his nearest Bank Mitra (BM).^{1,2} Rahul has been trying to withdraw ₹5,000 that he received from his brother in Delhi, but each time he has been unsuccessful. Yet again, Rahul returned empty-handed as his Aadhaar authentication was denied, even after an Aadhaar-enabled microATM registered his fingerprint multiple times. The BM, Deepak Gupta, informed *MicroSave* that a number of customers who opened their bank accounts using e-KYC have not been able to transact and withdraw money.³ Deepak has raised the issue with the bank and the technology service provider, but it has not yet been resolved. Deepak has also tried to get Rahul a RuPay debit card that may solve the problem in the future, but it is unclear how long that may take. In the meantime, as a makeshift arrangement, the bank has asked Deepak to authenticate such troubled customers on a customised application form and to then direct them to the bank branch for manual withdrawal.

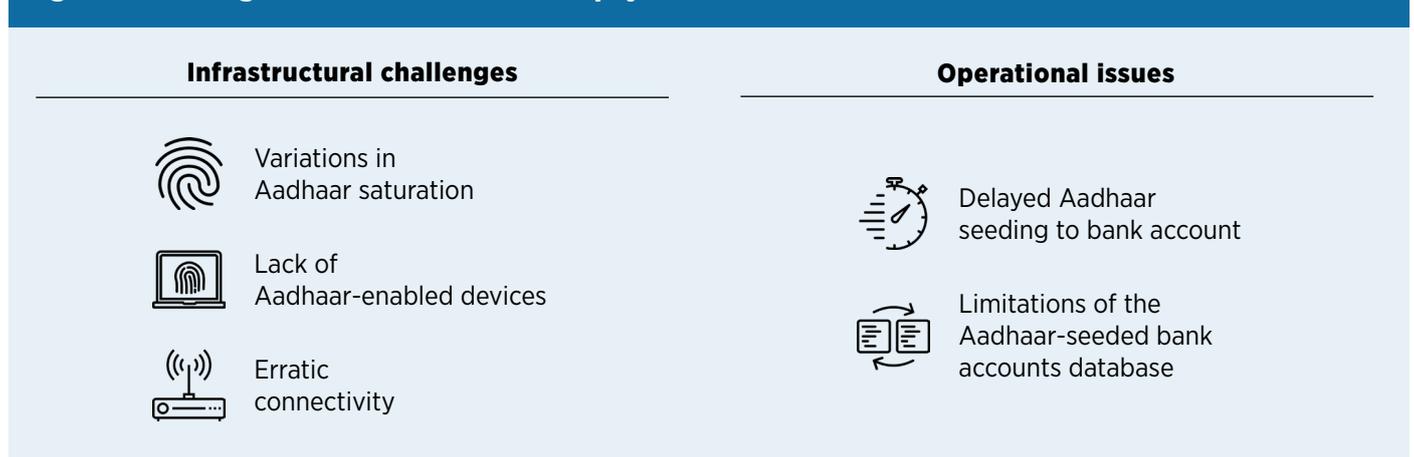


A PMJDY customer conducts financial transactions at a Bank Mitra outlet.

Rahul represents a segment of disadvantaged customers who experience difficulties engaging with the payment infrastructure - an infrastructure where Aadhaar is increasingly becoming a foundational element. These customers, spread across India, face a range of issues related to access. In Rahul's case, the reasons for the failed transactions stemmed from how the system is currently implemented: opening a bank account using e-KYC does not ensure that the account is seeded with the account owner's Aadhaar number. The bank has to complete an additional step of seeding the account with the customer's Aadhaar number to allow customers like Rahul to use microATMs for transactions.

MicroSave field interactions with BMs from Haryana and Uttar Pradesh highlighted the challenges that hinder the promise of Aadhaar serving as a key enabler of the payment infrastructure (see Figure 1).⁴ **Infrastructural challenges** make up the first set of challenges. There are still wide variations in Aadhaar saturation, the reach of Aadhaar-enabled devices, and the level of connectivity in different parts of the country. **Operational issues** make up a second set of challenges. Any delays or errors in the multi-step process to open or seed one's bank account with Aadhaar can cause unexpected transactional issues. Additionally, there are limitations of the Aadhaar-seeded bank accounts database which can cause confusion for customers. These operational issues are also exacerbated by a lack of knowledge and awareness of how the system operates. These two sets of challenges are covered further below.

Figure 1: Challenges of an Aadhaar-enabled payment infrastructure



Requirements for a customer

For a bank account holder to participate in the Aadhaar-based payments infrastructure, one needs to fulfil the following basic requirements:

1. One should have an Aadhaar number
2. One should have linked (or “seeded”) their Aadhaar number with one’s bank account, preferably with the bank account one wishes to withdraw from. For this step to be successful, the bank branch also needs to map Aadhaar data against the bank account number on the National Payment Corporation of India (NPCI) database for successful seeding
3. Infrastructure at the withdrawal point (i.e., POS or bank branch) should be Aadhaar-enabled
4. Withdrawal point should have internet connectivity to access the Central Identities Data Repository (CIDR) database for biometric authentication⁵
5. Customer’s biometric should be captured effectively so that match failure with CIDR database does not occur

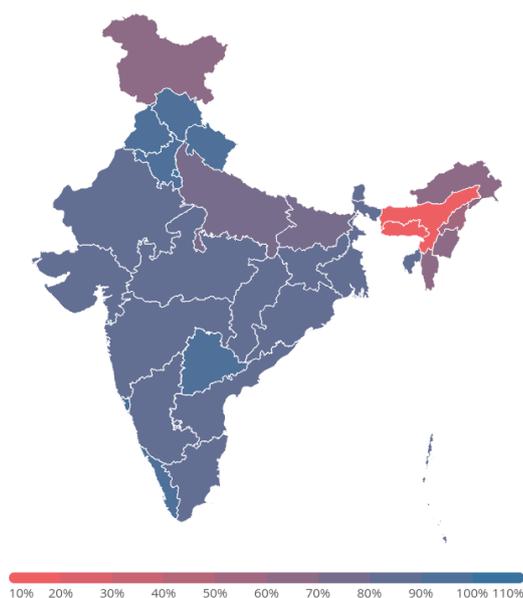
A beneficiary will encounter difficulty accessing their bank account with Aadhaar if even one of the above requirements is not met.

Infrastructural challenges

Variations in Aadhaar saturation

According to UIDAI, Aadhaar saturation across India stood at 86 percent as of July 2017.⁶ However, there is a large variation in enrolment rates between states. While Aadhaar saturation in Assam is 7 percent, in Delhi it is 115 percent (see Figure 2).^{7,8} While the overall national saturation rate is high, this variation indicates that there is still a significant number of people across India who have not yet enrolled in Aadhaar.⁹

Figure 2: Aadhaar enrolment by state and union territory



Notes: National saturation of the total population was 86% as of July 2017. UIDAI calculates saturation rate based on projected population, which is why some states have a rate that exceeds 100%

Figure prepared by State of Aadhaar (www.stateofaadhaar.in)

Data source: UIDAI Public Data Portal, July 2017

Figure 3: Pradhan Mantri Jan Dhan Yojana Bank accounts by Aadhaar-seeded and non-Aadhaar-seeded

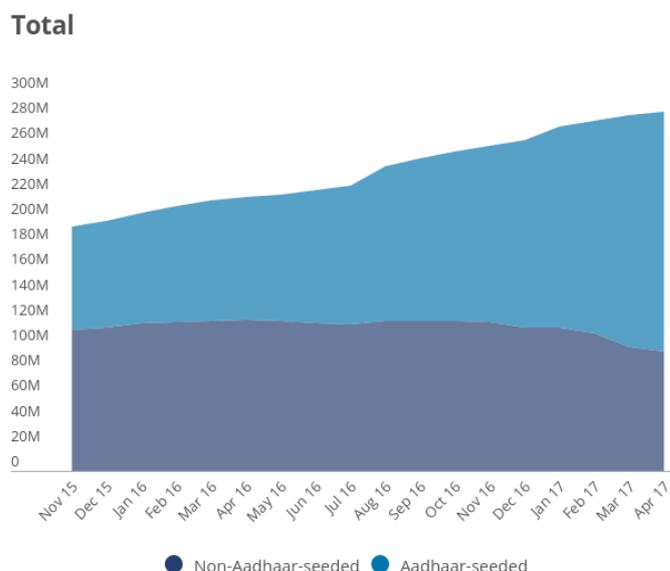


Figure prepared by State of Aadhaar (www.stateofaadhaar.in)

Data source: Pradhan Mantri Jan Dhan Yojana

Further, there is room to improve on seeding Aadhaar numbers to bank accounts. As of April 2017, the latest month for which detailed Aadhaar-seeding data is available, only two-thirds of the PMJDY customers have seeded their bank accounts with Aadhaar (see Figure 3). Hence, for the remaining third of PMJDY customers, Aadhaar cannot be used to facilitate withdrawals from their bank accounts at all.¹⁰



Lack of Aadhaar-enabled devices

Customers with Aadhaar and an Aadhaar-seeded bank account could still encounter problems with withdrawals from their accounts if the banking infrastructure is not Aadhaar-enabled to facilitate such withdrawals. As part of the PMJDY Wave III assessment, infrastructure available at Bank Mitra (BM) outlets was assessed on parameters that are essential for a BM to carry out agency operations, such as the type of device and whether the devices are Aadhaar-enabled. To add to customers' plight, we found that only 73 percent of BM's devices were Aadhaar-enabled, i.e. able to facilitate Aadhaar-based transactions.

“Jo angootha tek hain, unko RuPay card nahi milte”

(Illiterate customers are not given RuPay card) - Bank Mitra, Jind, Haryana

RuPay cards could serve as a viable alternative to Aadhaar-based authentication; however, at the time of our assessment we found that only 47 percent of PMJDY customers have received their RuPay card. The absence of RuPay cards, as well as poor customer support from link branches, inhibit customers' ability to access money in their own accounts.



Erratic connectivity

Connectivity issues also compound a customer's access challenges. Bank Mitras are not able to serve their customers when there is no or slow internet connection between the Aadhaar-enabled device and the databases. Though the “transaction readiness” of Bank Mitras has increased substantially in recent years, the overall average transaction readiness still stands at 81 percent, meaning one in five BMs are not able to serve customers on the Aadhaar-enabled system.¹¹

Operational Issues



Delayed Aadhaar seeding to bank account

Account opening protocols through e-KYC¹² require that BMs submit the Account Opening Forms (AoFs) signed by customers at link branches. Link branches then need to seed the Aadhaar number to the bank—through NPCI—to facilitate the use of the Aadhaar Enabled Payment System (AEPS). In regions where link branches have not seeded the Aadhaar number with NPCI after opening the account through e-KYC, customers face denied transactions.

Delays in seeding the bank account with the customer's Aadhaar number can have unintended consequences. One of the promises of Aadhaar as a payment infrastructure enabler is to simplify direct benefit transfers (DBT) from the government to the beneficiaries. Of all DBT payments in the financial year 2016-17, approximately one-third of the payments were made using the Aadhaar Payment Bridge System (APBS). For a beneficiary to receive DBT payments through APBS, one has to seed their Aadhaar number to both their bank account and the service delivery databases. Even if welfare schemes' databases are seeded with the beneficiaries' Aadhaar, banks have to correctly seed Aadhaar with beneficiaries' bank account in their Core Banking System (CBS) and with NPCI in order for the DBT payments to reach the account.

As per guidelines published by UIDAI in November 2014, the following steps are required from banks to facilitate a DBT:¹³

1. Ask beneficiaries to submit their Aadhaar number to banks
2. Seed Aadhaar number in Core Banking System (CBS) along with the account number
3. Open a new Aadhaar-linked bank account if there is no exiting account
4. Run validation checks every time a bank account is being updated with Aadhaar number
5. Update NPCI Mapper Database
6. Modify system to read and accept Aadhaar based payment advice

Source: Unique Identification Authority of India

Limitations of the Aadhaar-seeded bank accounts database

NPCI's Aadhaar Mapper database, which maintains a log of bank accounts and Aadhaar numbers, allows for an Aadhaar number to be associated with only one bank account. As Aadhaar Mapper handles transaction requests on Aadhaar-enabled devices such as microATMs, this has a number of unintended consequences. If a customer who already has an Aadhaar-seeded bank account opens a new bank account and seeds it to Aadhaar, Aadhaar Mapper will now carry the information associated with this new account, overwriting that of the old one. As a result, the customer will no longer be able to transact with the older account using the Aadhaar-enabled devices. This can generate a great deal of distress and confusion for customers.

The way forward

For residents to realise the true potential of Aadhaar, not just as a unique identifier but also as transaction facilitator, more focused efforts are needed to work towards addressing implementation-related challenges associated with infrastructure and operational processes.

If Aadhaar is to be a platform to deliver multiple services to people around the country, it is crucial to focus on mitigating the current set of challenges. The challenges include ensuring relevant stakeholders understand all the requirements for a successful Aadhaar-based transaction. The process itself should also be streamlined and automated in order to reduce delays and errors, and all actors within the system must be helped to better understand all the steps needed for a successful transaction.

*This case study was prepared for State of Aadhaar by members of **MicroSave**, an international financial inclusion consulting firm.*

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- Names have been changed to protect the identity of the people interviewed.
- Pradhan Mantri Jan Dhan Yojana defines Bank Mitras to be “retail agents engaged by banks for providing banking services at locations where opening of a brick and mortar branch/ATM is not viable.”
“PRADHAN MANTRI JAN-DHAN YOJANA (PMJDY) Frequently Asked Questions (FAQs).” Frequenty Asked Question (FAQ) document. Department of Financial Services, Government of India. Accessed August 29, 2017. <https://www.pmjdy.gov.in/files/E-Documents/faq.pdf>.
- Names have been changed to protect the identity of the people interviewed.
- The MicroSave team conducted in-depth structured interviews with BMs during Assessment of Bank Mitra (BMs) Under Pradhan Mantri Jan Dhan Yojana (PMJDY) - Wave III
“Assessment of Bank Mitrs (BMs) Under Pradhan Mantri Jan Dhan Yojana (PMJDY) - Wave III.” Presentation. MicroSave, January 2016. http://microsave.net/files/pdf/Assessment_of_Bank_Mitrs_under_PMJDY_Wave_III.pdf.
- Central Identities Data Repository (CIDR) is regulated by Unique Identification Authority of India (UIDAI) and stores and manages data for the country's Aadhaar project.
- Government Of India, Unique Identification Authority of India. “State/UT Wise Aadhaar Saturation.” Dataset, July 15, 2017. https://uidai.gov.in/images/state_wise_aadhaar_saturation_as_on_24072017.pdf.
- Ibid.
- UIDAI calculates saturation rate based on projected population, which is why some states have a rate that exceeds 100%
- National saturation of the total population was 86 percent as of July 2017. National saturation of the total adult population (>18 years) is estimated to be 99 percent.
- Sharma, Manoj, Anurodh Giri, and Sakshi Chadha. “Pradhan Mantri Jan Dhan Yojana (PMJDY) Wave III Assessment.” MicroSave, March 14, 2016. http://www.microsave.net/files/pdf/PMJDY_Wave_III_Assessment_MicroSave.pdf.
- We define a BM as “transaction ready” when a customer walking into a BM outlet can conduct transactions, such as account openings, withdrawals and/or deposits.
- “Process Flow Document for E-KYC and Account Opening at BC Locations & Branches.” Punjab National Bank. Accessed August 21, 2017. https://www.pnbindia.in/document/fi_e-kyc_facility.pdf. Process flow document for e-KYC: https://www.pnbindia.in/new/Upload/En/fi_e-kyc_facility.pdf
- “Standard Protocol Covering the Approach & Process for Seeding Aadhaar Numbers in Service Delivery Databases.” Government report. Unique Identification Authority of India, Government of India, November 2014. http://www.statusin.in/uploads/3340-aadhaar_seeding_october_2014_v098_14112014%281%29.pdf.