

## Analysis of failures in Aadhaar enabled Payment System

Ashwini Chhatre and Deepanshi Bhardwaj

January 2019

### Key Facts

- 40% of all first-time transactions fail.
- Orissa had the least failure rate (32%) and Haryana had the maximum failure rate (49%)
- 69% of the failures are due to customer-specific reasons-Aadhaar not seeded to bank account and mobile number.
- Proportion of failures due to customer -specific reasons ranges from 56% in Maharashtra to 75% in UP and Bihar

### Study Methods and Data Sources

We obtain the transaction level data used in this study from one of the largest banking correspondent aggregators in the country. The BC aggregator acts as an intermediary between the bank and the BCs. We have data relating to all transactions done by all BCs working with the data provider. The data spans a period between December 2014 to June 2017 for 11 states.

### Summary

Aadhaar Enabled Payment System (AePS) allows a bank customer to use Aadhaar as an identity to access his/ her respective Aadhaar enabled bank account and perform basic banking transactions like balance enquiry, cash deposit, cash withdrawal and non-financial services like balance enquiry, e-KYC and Aadhaar Seeding. It plays a major role in last-mile connectivity by facilitating disbursement of Government entitlements.

In this data brief, we categorize failure reasons of Aadhaar Enabled Payment System to understand the major deterrent to financial inclusion via Aadhaar Enabled Payment System using daily transaction level data for around 6 lakh customers for 31 months, from December 2014 to June 2017 for 11 states. We also analyze geographical patterns in failure.

We observe inter-state disparity in first-time transaction failure rates where Orissa had the least failure rate (32%) and Haryana had the maximum failure rate (49%). After categorizing the failure reasons, we find that the major reason for failures of first-time AePS transactions is 'Aadhaar and Mobile number not seeded to Bank account', 'Insufficient funds' etc.

This implies that the success of a technological driven intervention such as AePS hinges not only on technology, but also on the preparedness of the required ecosystem (Bank Account, Aadhaar and Mobile) and readiness, awareness of consumers (financial literacy).

**Keywords:** Aadhaar Enabled Payment System, Seeding, Failure

## 1. Background:

Aadhaar Enabled Payment System (AePS) allows a bank customer to use Aadhaar as an identity to access his/ her respective Aadhaar enabled bank account and perform basic banking transactions like balance enquiry, cash deposit, cash withdrawal and non-financial services like balance enquiry, e-KYC and Aadhaar Seeding. It plays a major role in last-mile connectivity by facilitating disbursement of Government entitlements.

Since a key requirement for accessing payments via Aadhaar Enabled Payment System (AEPS) is the linking of Bank Account to Aadhaar (12-digit unique ID) and Mobile numbers, most of the first-time failures take place due to this non-linking. There could be two possible reasons for the same- (a) The customer does not have an Aadhaar Card/ Mobile Phone or (b) The customer is unaware of linking these things together. Either of these scenarios suggest that the market participants are either not ready or unaware of the pre-requisites of using the payment platform which could result in involuntary exclusion from the financial services sector.

In this data brief, we categorize failure reasons of Aadhaar Enabled Payment System to understand the major deterrent to financial inclusion via Aadhaar Enabled Payment System using daily transaction level data for around 6 lakh customers for 31 months, from December 2014 to June 2017 for 11 states. We also analyze inter-state disparity in failure rates

### Defining failures:

The problem that we are trying to address here is whether a beneficiary who visited a BC to carry out a transaction was able to do that successfully or not. Failure would imply the inability to do so. Therefore, a failed transaction is defined as either a single or series of transactions that failed and were not followed by a successful transaction on a given day. This helps us assess the true measure of failure of Aadhaar Enabled Payment Systems

## 2. Key Findings

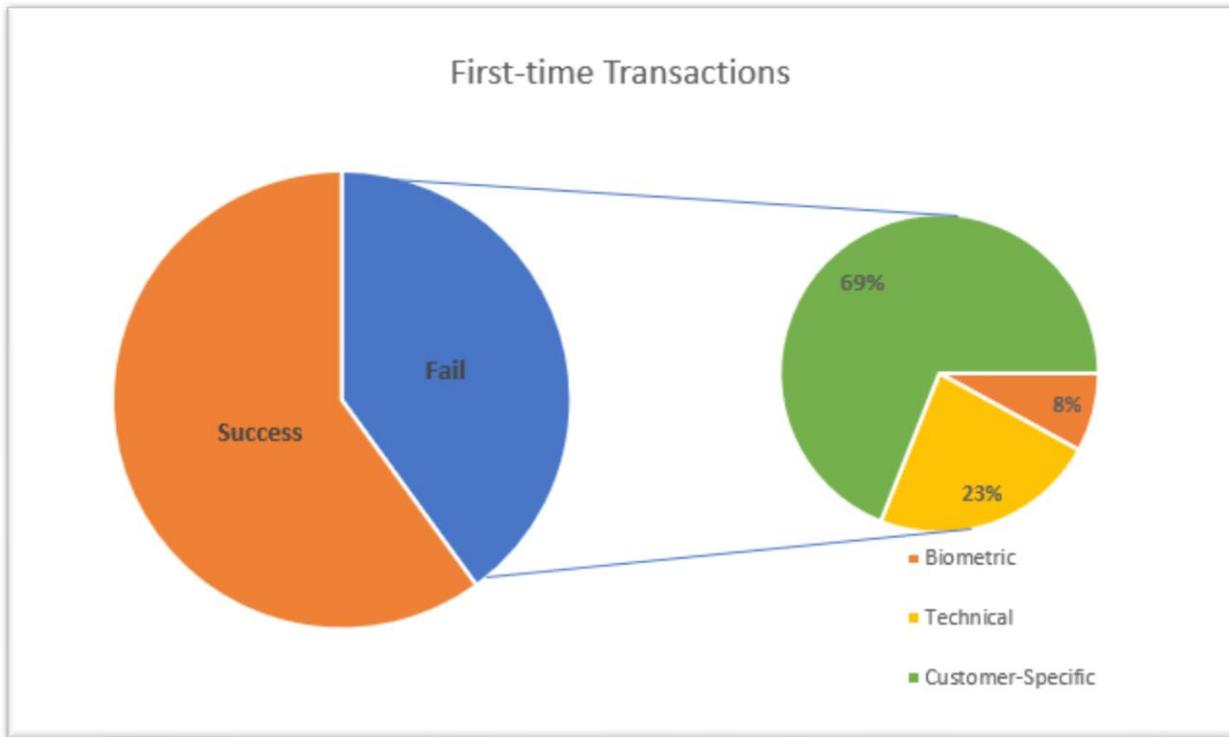
### 2.1 Failure rate of first-time transactions is 40%

As a first step to perform a financial transaction via AEPS, a pre-requisite for customers is to link their bank account with Aadhaar card and mobile number (JAM trinity). This seeding can be done by either visiting a bank branch or via POS machines at the BC location. Out of the 5,87,505 customers in our data set, 80% (4,73,332) customers perform Financial Transactions such as Cash Deposit, Cash withdrawal and Balance Enquiry as their first transaction, 12% customers did Aadhaar Seeding and the remaining did e-KYC.

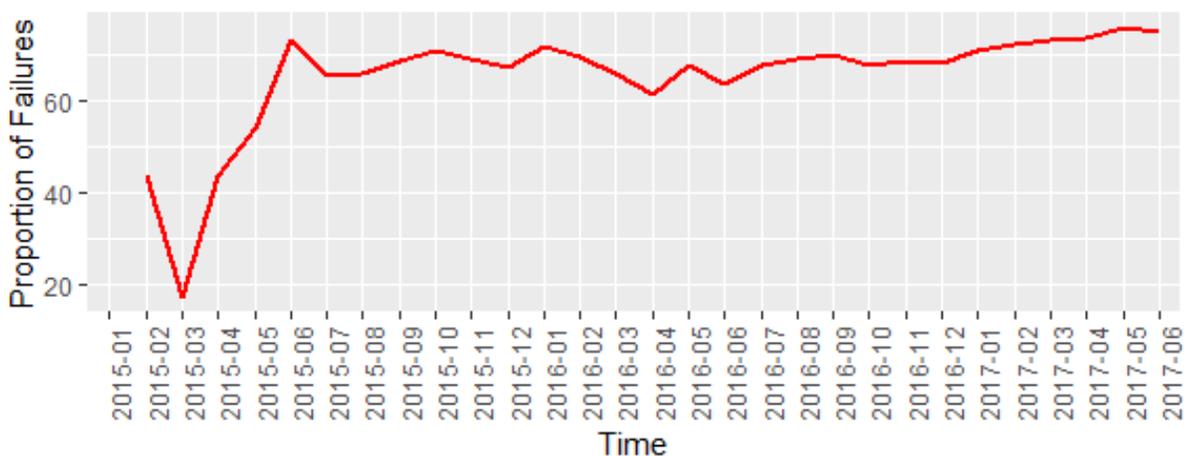
We categorized failure reasons into three broad categories-

- **Biometric**: Biometric mismatch, missing biometric data etc.
- **Technical**: Failures due to socket connection error, switch not available, database error etc.
- **Customer Specific**: Failures due to Aadhaar not being seeded to bank account and mobile number, insufficient funds etc.

**Figure 1: Proportion of first-time transaction failures**



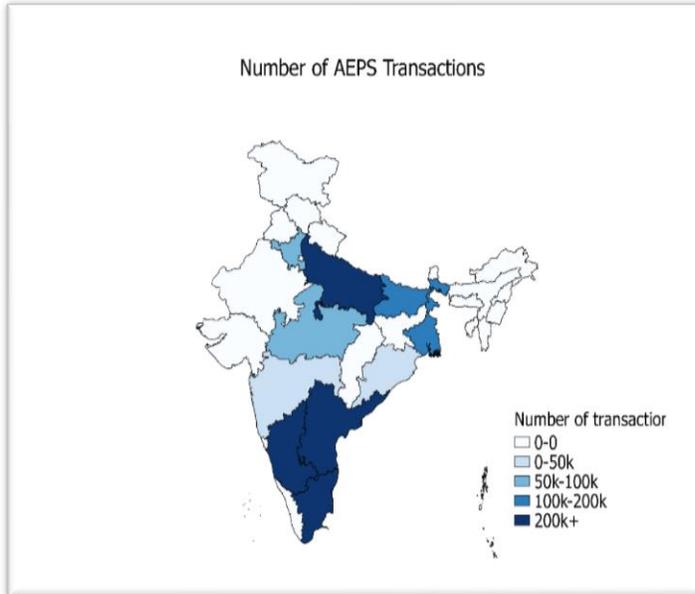
Out of the 4,73,332 customers, **39.77%** first-time transactions failed, **69.5%** of which failed due to reasons like non-seeding of Aadhaar with Bank account and Mobile number, Insufficient funds in account, exceeding transaction limit etc. While **69% of all first-time transaction failures are due to reasons endogenous to customers**, 23% transactions failed due to biometric data not matching and only 9% failures happened due to technical and connectivity issues.



**Figure 2: Time trend of proportion of first-time transactions due to Customer-specific reasons**

The above graph shows the proportion of first-time transactions failed due to Customer-specific reasons. It is surprising to note that the proportion remains, more or less, constant from June 2015-17 at around 71% and is the major reason for first-time transaction failures.

## 2.2 Inter-state Comparison



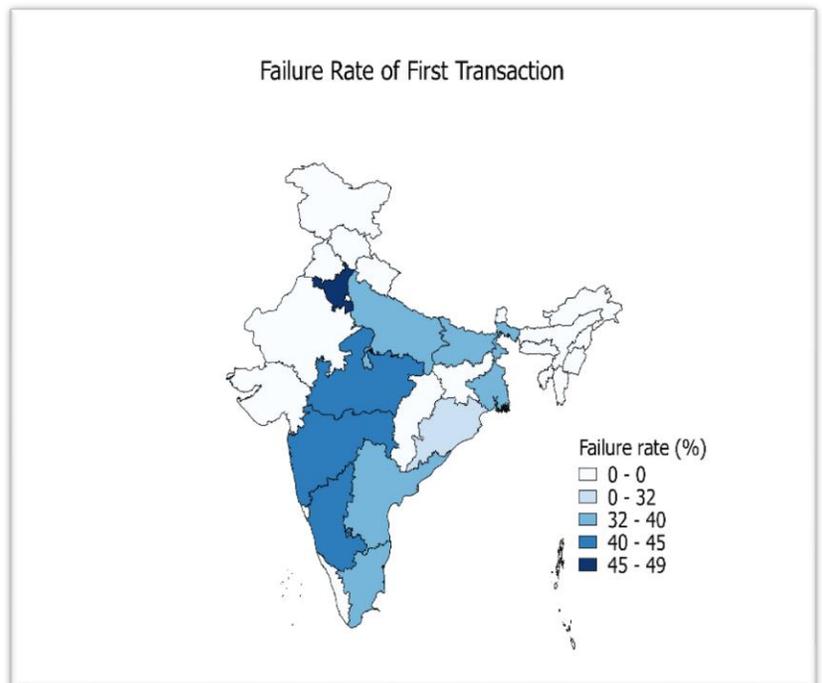
The adjacent map shows the data distribution with respect to the number of AEPS transactions in each state in our dataset- total 2.9 million transactions.

Most of the AEPS transactions in the data take place in 4 states - Andhra Pradesh, Tamil Nadu, Uttar Pradesh and Karnataka.

Maharashtra has the least number of transactions, followed by Orissa and Haryana.

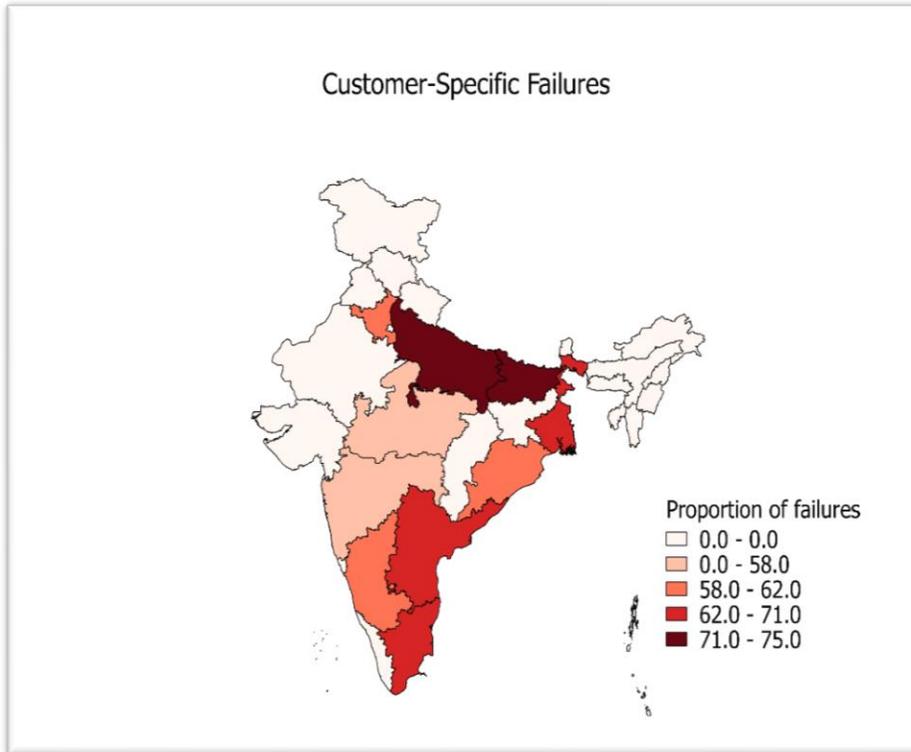
There is a lot of inter-state variation in the failure rates of first-time transactions. **Orissa has the least failure rate** of 32% whereas **Haryana has the maximum failure rate** where 49% of all first-time transactions fail.

Other states with high failure rates are Maharashtra, Madhya Pradesh and Karnataka with 45% and 44% of first-time transactions failed.



### 2.3 Customer-Specific failures

Customer specific failures are the major failure reasons in all states ranging from 56% of total failures in Maharashtra to **75% of total failures in Bihar and Uttar Pradesh**. Not surprisingly, Bihar has the least literacy rate in India as per the 2011 Census and this could be attributed as a major reason for 75% transactions failing due to lack of financial literacy amongst the customers.



### Conclusion and Future Scope

The analysis suggests that the success of AEPS hinges not only on technology, but also on the interaction between technology and society i.e preparedness of the required ecosystem (Bank Account, Aadhaar and Mobile) and readiness, awareness of consumers (financial literacy). The focus of a policy interventions like AePS has been on the supply side of the financial inclusion drive. Inadequate attention has been paid to understand the determinants of demand for financial services. These demand side constraints and individual characteristics could potentially act as barriers and hamper user experience. Further research will focus on understanding the learning curve of customers as well as Business Correspondents as they spend more time in the system and make subsequent transactions.

### **About DIRI**

This data brief was prepared by the Digital Identity Research Initiative (DIRI), which was launched in July 2017 with funding from Omidyar Network. DIRI is aimed at producing high-quality and timely research on digital identity, engaging relevant stakeholders, and building a global research ecosystem for digital identity. In addition to such briefs, DIRI's activities include [Research Fellowships](#), [Summer Fellowships](#), and the International Conference on Digital Identity (11-13 July 2018). For more information, visit <http://www.isb.edu/digital-identity-research-initiative>

**Digital Identity Research Initiative (DIRI)**  
Indian School of Business, Gachibowli,  
Hyderabad – 500111; Phone: 040-23187264  
E-mail: [diri@isb.edu](mailto:diri@isb.edu)