

# A STUDY ON THE ELECTRONIC SYSTEM PAYMENTS IN INDIA

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**Abstract :** Technology has inarguably made our lives easier. As the nation of 1.25 billion people attempts to move to a less cash economy, the role of regulating authorities has become more intense in framing the laws relating to protect the data privacy and financial details of individuals in the country. RBI and banking institutions are building more secure future with less digital theft and online fraud by adding a layer of protection to our online accounts. The study has been conducted to answer the question how technological advancements in e- payment modes is shaping the future of e-payment in India? Paper includes and explains recent technological up-gradations by RBI and banking institution, like EVM chip and pin technology, data localization, rupay, and tokenization aimed at preventing the data breach and protecting customers from online predators. Further on the basis of above advancements, the future growth of electronic payments has been analyzed.

**IndexTerms - Technology, Data localization, Tokenization, Rupay, EVM chip & PIN technology.**

## I. INTRODUCTION

The digital India is the new phase of the economy. It depicts "cashless economy". In order to increase the usage of e-payments in India, government, RBI and Banking institutions introduced some advancement in order to protect these e-payments and thus increasing the usage of e-payments and stepping towards a Digital India.

Some of the major advancements as of security purpose are Data Localization in which various companies related to payment sector were asked to store their data in India whereas the Srikrishna committee asked the for all personal data on which the law can apply must at least save one copy of data within the country. Tokenization payments are one of the most secure technologies used to prevent credit card frauds. Thus, making it impossible for anybody to misuse sensitive information.

They have also introduced advancements related to technologies such as RuPay: The government of India has launched India's first domestic payment card network RuPay to compete with MasterCard and visa card schemes. It is set up by National Payments Corporation Of India(NPCI) at the behest of banks in India it has the approval of Reserve Bank Of India(RBI). EMV chip technology, is emerging as a new technological solution for payment terminals in India.

## II. OBJECTIVE

The objective of our study is:

- To show the technological advancement in recent years.
- To show the growth of securities measures in e-banking.
- To show the future growth aspects of e-payment modes.

## III. RESEARCH METHODOLOGY

The main objective is to know the Impact of technological advancement in e-payment. The research design is descriptive research design. The secondary data was mainly collected from websites, published sources like reports, magazines, journals and newspapers. This study covers a period of 4years data. Data were also collected through personal interview method from the public people, small business traders and retailers. Proper references have been given wherever necessary.

## IV. DISCUSSION

### 4.1 Data localization

"Future richness of India will depend on data. With a population of around 1.3 billion people, India has started to get digital information of each resident. Since the population of the country is large, India has a competitive advantage based on the huge data availability. India offers opportunity," said Klaus Schwab, founder and executive chairman, the World Economic Forum

Data localization is the process of storing data on any device that is within the boundaries of the specified country where the data is generated; by this the government wants all the companies related to payment sector store their data within the boundaries of India.

The present data localization policies are under the guidance:

- Cloud committee that recommends that countries should setup their data centers in India.
- RBI says to all payment related firms from MasterCard to WhatsApp pay to store their data in India.
- Srikrishna committee asks for all personal data on which the law can apply must at least save one copy of data within the country.

### What's At Stake?

The benefits of data localization to India are as follows:

- It will help in better crime investigation as current law agencies fail to access data in foreign countries.
- It will help in user privacy in digital space and helps in protecting fundamental right of its user.

- Data is now an economic resource and presently global data is contributing 2.8\$ billion to the global economy so India can also benefit by the same.
- It can also curb the monetizing of the data by selling them in the market.
- India will become digital hub when global data centers will be established in India thus promoting startups.
- Data can be used for policymaking.

## 4.2 Tokenization

'Tokenization will soon replace card details with a code name as atoken', which will be specifically for the card, the token requester and the device to pay, instead of card detail the token will act as the card at point of sales terminals and quick response code payment system. The concept of Tokenization isn't exactly new, it's been around centuries. In 2001, Trust Commerce used the concept of Tokenization to protect sensitive payment data for one of their clients. Shift4 Corporation was the first to apply Tokenization which was realized to the public during an industry security summit in last Las Vegas 2005, to comply with industry standard and government regulation, it protects sensitive cardholder.

'Apple pay, Visa token service, American express, token Service and the master pass digital wallet have all made a great contribution to accelerate growth of Tokenization.

### Benefit:

- 1) With Tokenization in place, Digital payments are likely to grow by 20-25% it is considered as a global best practice.
- 2) The goal of the process is to improve the safety and security of payment.
- 3) Since there is no need on part of merchant to store confidential information of their customer it relieves them from investing in resources to make their payment infrastructure secure.

### Difference between Tokenization and encryption:

- 1) Under Tokenization, a token no. is provided in place of the original card detail whereas encryption the data is transformed in coded form, which is unreadable by anyone without a secret decryption key.
- 2) Its purpose is to ensure privacy by keeping the information hidden from anyone for whom it is not intended.
- 3) It is to be noted that tokenization doesn't rely on encryption to protect data, since tokenization system entirely sensitive data rather than transforming it into a coded form.

## 4.3 Rupay

RuPay was launched on 26<sup>th</sup> March 2012. It is conceived as an alternate to the MasterCard and Visa card as it is also a domestic card scheme. The name Rupay was derived from the words 'Rupee' and 'Payment'. The tri colors from our flag is taken to design the logo of Rupay.

A line said by Dilip Asbe, chief executive officer, NPCI. "We are trying to push up adoption of RuPay cards among users for merchant transactions directly rather than for ATM withdrawals only. We had run a promotional scheme with Big Bazaar very recently and we have plans to run such cashback and promotional schemes with major retailers in the future as well," It is a powerful secured network that protects in opposition to anti-phishing. The transactions and customer data related to Rupay card transactions will reside in India.

Table 1 Number of Transactions done in past using Rupay

Year	No. of Transactions
2015-16	25,400,000
2016-17	195,000,000
2017-18	459,000,000
2018-19	1160,000,000

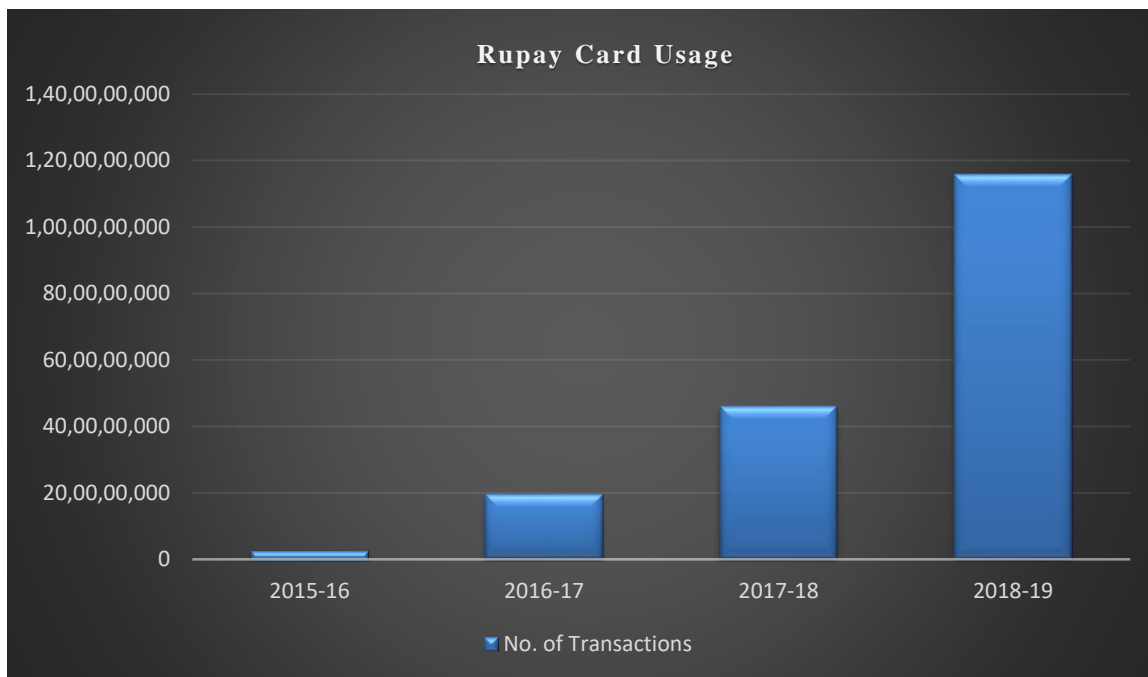


Fig: 1

Further the number of RuPay cards in circulation is also increasing tremendously and have reached 494 million in financial year 2018 up 35% against 365 million in the previous year. Out of total point-of-sales terminals in India around 97% accepts RuPay Cards RuPay has partnered 39 point-of-sales Acquiring Banks in India to accept their cards at point-of-sales terminals located at different merchant locations.

According to the data published by [National Payments Corporation of India](https://www.npci.org.in/), there are over two hundred thousand ATMs and more than 2,614,584 point-of-sales terminals in India under the RuPay platform. In addition to the ATMs and point-of-sales terminals, RuPay cards are accepted online on most domestic payment gateways and some international payment gateways.

#### Reasons behind RuPay's rise-

1. The main reason behind the rise is the lower processing fee. The transactions carried attract 23 percent lower processing fee, in comparison to MasterCard and Visa.
2. The information of the payment and the payer will remain within the country.
3. [BJP](https://twitter.com/BJP)'s twitter handle on November 9 said: "Indigenous card payment network, RuPay now captures 50% of market share in India, up from a meager 0.6% in 2013. This has been possible due to Modi governments unwavering push to financial inclusion schemes, focusing on making financial services accessible to the less privileged."

#### Rupay Contactless



Symbol of Rupay Contactless

This technology feature allows cardholders to wave their card in front of contactless payment terminals without the need to physically swipe or insert the card into a point-of-sale device. This is an [EMV](https://www.emv.com/)-compatible, contactless payment feature.

The biggest weapon that helped RuPay to overcome from a big chunk of the market was its flat fee. According to an ET Prime report that cited sources in the banking industry, for every RuPay-based transaction, NPCI charges a flat 60 paise for acquiring and 30 paise for issuing. For example, if a customer with a RuPay card issued by Bank A pays through Bank B's point-of-sales terminal, as the acquirer, Bank B will pay 60 paise to NPCI and, as the issuer, bank A will pay 30 paise.

#### Features of Rupay Contactless-

- It offers the unique proposition of One Card for all payments.
- It supports online and offline transactions.
- Same card to be used at ATMs, toll, bus, metro, cab, parking charges as well as normal day to day retail payments.

For offline transactions the approved transaction amount should be less than Rs. 2,000.

#### 4.4 EMV chip & pin technology:

EMV chip technology, is a current global standard for card payments. EMV stands for Europay, MasterCard, Visa. EMV was created in 1986, in response to drastically increasing credit cards fraud in France. The France banks then began issuing chip-embedded cards to their customers and by the early 90s the majority of France was using cards and saw a drastic drop in credit cards frauds.

In 1995 payment networks Europa, MasterCard and Visa, issued the first EMV specifications and formed EMVco. expanding into other countries. In 1993, the card payment networks Europa, MasterCard, and Visa, came forth with this technological solution, to make accepting e-payments more secure.

The EMV cards, are chip-embedded cards that store their data on a small micro computer chip, that interacts with the merchant's point-of-sale device to make sure the card is valid. These cards are used to do EMV contact or contactless based transactions. While Contact transaction, requires physical insertion of cards into the reading machines. Contactless transaction, is accomplished using near-field communication. To complete a transaction, a person simply needs to tap their card near a POS terminal. On the basis of use of authentication methods by the card issuers EMV card includes, Chip & PIN and Chip & signature cards. The technology, adds layer of security against card frauds and is virtually impossible to duplicate. Also stolen card no. can't be used at an EMV enabled terminal, without the chip to generate this code.

In the year 2005, Malaysia was the first country in Asia to complete the migration. Europe has already moved to EMV. And the migration in the U.S. happened in October 2015. EMV has significantly reduced card-present frauds in the U.S., which was the largest source of fraud in the U.S.

#### India's migration to EMV chip and Pin cards:

EMV chip card technology, is the latest security standard for card payments in the India. As part of its Security and Risk mitigation measures for Card Present and E-Payment transactions, RBI has asked all banks to switch to chip-based and PIN-enabled debit and credit cards. Each transaction is dynamic with its own authentication data, which makes it more secure way of card processing.

##### Reasons behind this migration:

- To make the CP and e-payment transactions more secure. The chip generates a dynamic code each time to validate the transaction, making it almost impossible to create a counterfeit card.
- To reduce Card-present frauds resulting from counterfeit, stolen cards.
- To prevent the acceptance of counterfeit/stolen cards at POS terminals.
- To reduce card skimming at ATM machines.

Most, developed countries have now switched to EMV chip-based cards. And this shift is caused globally due to increased risks of card skimming and cloning, by the use of Magstripe cards. Though it didn't have cent percent impact in reducing the no. of card frauds worldwide, but it did have a significant impact in reducing them, Example UK, US. EMV chip-and-PIN technology has added a layer of security in making the world a safer place for using and accepting card payments. Now with the advent of EMV chip technology in India, environment of trust will exist in the Card-present transactions, among the customers. Which may further lead to growth in retail and electronic transactions in the country.

#### V. FINDINGS AND CONCLUSION

From the above it is very much clear that the technological advancement in e-payment in any form is growing year wise and the need for it is more. Data localization will help in user's privacy in digital space. It will secure data from foreign surveillance. As digital transaction continues to grow, cyber security of cardholders' data is an issue that will affect more users. Tokenization is one of the most cost-effective methods out there to balance the security needed of consumers, banks, etc.

Benefits of using RuPay are low transaction cost and affordability, conservation of home data and integration platform. RuPay plays a very important role in reducing the overall cost of banking and financial institutions of India and will also help to protect data in our country. As data is stored in microchip, which generates dynamic code for each transaction in EMV chip cards. It will make card processing more secure than ever before in the country.

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