

## ANALYZING VARIATION AMONG PAYMENT SYSTEM INDICATORS IN TERMS OF THEIR PERFORMANCE FOR THE INDIA

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### ABSTRACT

*The means of cash payments aim to facilitate communication between individuals and the smooth movement of cash between the merchant and the consumer. it also aims to establish transparent control over government payments. The purpose of this research is to analyses the variation between digital payment methods in terms of their performance in India. The study relied on secondary data. The quality of the various payment tools was the result, finding easy access to all individuals at all times and financial education was a recommendation.*

**KEYWORDS:** *Payment Methods, ANOVA, Performance, Digitalization, Internet.*

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### INTRODUCTION

The payment system is the way the payer and the payee both use to send and receive money. (A. Martina, 2017) (Horyah, 2019) Variations of Payment system indicators in India have different advantages from one to others. Banks introduce expending efficiency by utilizing workmanship innovation and changing to new methods of payment according to the policy of the Indian government. (Singhal, 2021) Different payment networks are constantly evolving and becoming more diversified. As a result, emerging payment networks depend on high-speed technologies and modern standards. (Patel, 2021) MasterCard and MS Dhoni have launched "Team Cashless India" as an initiative aimed at empowering Indians into embracing digital payments and ushering them on a progressive path - one that offers safety, security, greater business success, and progress for everyone. (cashless, 2022) The Government of India has launched a flagship program "cashless India" to convert India into a nation with digital capabilities. (cashless C. i., 2022) The situation in India is not very different from that of the outside world, but the situation in India is characterized by a serious willingness on the part of the government to pursue transformation for the better. India depends on a strong technical capability that is characterized by Indian citizens. India is the country that brought out the world's geniuses in programming and technology. There is no question that the government is working hard to take advantage of these intelligent people and minds to produce the best possible product in a variety of fields. Starting with credit card and debit card payments, the state has also established many different channels to promote digital payments as an alternative to paper payments, for example. UPI, NPCI, and BHIM. These platforms and organizations cover various specializations and aspects of payments. In an effort by the government to make financial payments under more than one umbrella for several goals, perhaps the most important of which is enhancing technological capacity and cybersecurity.

## REVIEW OF LITERATURE

- 1) **Rashi Singhal- 2021:** Impact and Importance of Digital Payment in IDIA, published by International journal of multidisciplinary Educational Research. The paper started with definition of Digital Payment- what we mean by digital payment? So the main idea circling to the digital methods. Rashi talked about the most innovative types of digital payment methods, Ex NFC, MST and QR code of payment system. The research paper aimed to find out whether India going cashless helping the people. Using secondary data from different reports and government data. Check as method of installment has lost its pertinence and will stay in any event in the medium term, was main result.
- 2) **K. Suma Vally and K.Hema.2018:** A Study in Digital Payments in India with Perspective of Consumer's Adoption. Published on international journal of pure and applied mathematics. In his paper he noted that there is no significant impact of customer's age on usage of digital payments. The paper examines the effect of adopting digital payments impact on consumers of the banking sector. The result of the research gives the country's political orientation towards increasing digital payments. The extension of technology for digital payments has led to the improvement of the banking sector, as the most important result. Banks should take effective measures in awareness and dissemination of financial culture and financial education, was a recommendation.
- 3) **A. Martina Franciska, S. Sahayaselvi. 2017:** An overview on digital payments. Published on international journal of research. Started by defining electronic payment, that conducted via digital windows, in order to send and receive money without the need for cash. Secondary data was adopted from books, magazines, and websites related to the subject of the study. The researchers mentioned that electronic payment will be necessary and people will usually switch to digital payments. Digital payment is not just a financial transfer but it saves time and speeds up the completion of financial transactions between individuals. The government provides educational materials on television, radio, and social networks that talk about the benefits of digital payments to society and individuals were a recommendation.
- 4) **Malusare Lalita Babulal, 2019:** Digital Payments Methods in India: A Study of Problems and Prospects. Published on International Journal of Scientific Research In Engineering and Managements. Secondary data used by the paper. The researcher defined electronic payment methods and compared them. Electronic payment is suitable for customers in terms of ease of use and at any time available was noted. Time, availability, ease of use, and transaction list are considered by the researcher as the most important features of electronic payment. The researcher believes that people still depend on a large percentage of cash payments. Technical illiteracy, training and education were among the most important obstacles to the success of the digital payments experience. The necessity of spreading financial culture was a recommendation.
- 5) **D.S. Borkar. Avinash galande. 2020:** Digital Payment: The Canvas of Indian Banking Financial System. Published On European Journal of Molecular and Clinical Medicine aimed to identify the different payment methods in India. In conducting the research, secondary data was used, collected from books and official reports. The researcher provided an overview of the status of digital payments in India, and the definition the digital wallets, mobile banking and point of sale services. The necessity of financial education and customer care was a result.

### Objectives of the Study:

- 1) To analysis the performance of payment system indicators in India
- 2) To find Is there any variation among the value of payment system indicators during 2016 to 2021
- 3) To know payment system indicators in India

## Hypothesis:

- 4) There is significant difference among the value of various payment system indicators in India.
- 5) There is significant difference among year wise the value of payment system indicators in India

## Payment System Indicators in India:

Due to technological advancements, there were various types and methods of digital payments in India. The Government of India has been taking different measures and payment tools. It aims to create a digitally, Paperless, and Cashless economy. Including the uses of debit and credit cards, Internet banking, mobile wallets, digital payment applications, and so forth, as explained below:

### Payment Methods:

**Mobile BANKING(Pre-login)** The method for viewing the current account balance even without logging into the app. no need to enter a PIN. This option does not turn on by default it should be enabled for each unit separately. The pre-login balance remains active on all devices, even in the case of application updates. (Mobibanka, 2022) Mobile payments may be more reliable than card transactions in certain domains.

**Internet BANKING:** Online bank, electronic bank. Internet is virtual banking services that enable customers to complete transactions using the bank's website. (Lalita, Malusare, 2019)

**Automated Teller Machine (ATM)** An Automated Teller Machine (ATM) is an electronic bank that allows customers to make deposits and withdrawals without a branch representative. With a credit card or debit card, people can access cash at most ATMs. Some of the banks may cost fees for withdrawal or deposits by using their own ATM. ATMs are known in different parts of the world as automated bank machines (ABM) or cash machines. (KAGAN, 2021) As of August 2020, there are over 2, 09,000 bank-owned ATMs and around 24,000 white label ATMs in India. Resolves customer service issues arising from failed ATM transactions where the customer's account is debited without actual disbursement of cash. Besides, National Financial Switch managed by NPCI, some banks and a private company have been authorized to operate ATM Networks. (RBI, 2022)

### Payment Channels:

**National Payments Corporation of India (NPCI)** It is an initiative of the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA) in 2008. It is an umbrella organization for the operation of retail payments and settlement systems in India. It's an umbrella organization for operating retail payments and settlement systems in India, authorized by the Reserve Bank of India (RBI). Under the provisions of the Payment and Settlement Systems Act, 2007, for the creation of a strong payment and settlement infrastructure in India. (RBI, 2022)

**Unified Payments Interface (UPI):** The Unified Payments Interface (UPI) of the National Payments Corporation of India (NPCI) is a non-profit company that operates retail payment and settlement systems in India. India took the first big step toward achieving a cashless economy. It's a payment mechanism that lets consumers link multiple bank accounts to a single app. Transfers can be made without providing an IFSC code or account number using this method. This payment system was created to give a mobile platform for transferring money between two bank accounts in real time. UPI, or Unified Payments Interface, was launched on April 11, 2016, as an instant inter-bank payment system. By bringing together physical and electronic payment and settlement systems, UPI intends to give infrastructure to India's entire banking system. (BHIM, 2022) (Bazaar, 2022)

**Credit Card:** Typically, cards are embossed plastic cards with a card number that are

electronically connected to the card holder's account or accounts. (A.Martina, 2017)

**Debit Card:** When a cardholder uses a debit card, money is taken immediately from his or her account. (A.Martina, 2017)

**Bank Prepaid Cards:** A bank prepaid card is a bank-issued, pre-loaded debit card that is either single-use or reloadable for many usages. It differs from a traditional debit card in that the latter is permanently linked to your bank account and can be used several times. A prepaid bank card may or may not be influenced.

**Prepaid Payment Instruments (PPIs)** are payment instruments that make it easier to buy products and services by allowing you to pay for them using the value stored on the instrument. Cash, debit to a bank account, credit and debit cards, and other PPIs can all be used to load or reload PPIs. These payment instruments issued only by regulated organizations in India in INR will be used for electronic loading and reloading of PPIs. PPIs are distributed in the form of cards, wallets, or other digital formats. The most popular uses of these cards are for corporate gifts, reward cards, or single-use cards for giving. (RBI, 2022)

**Immediate Payment Service (IMPS):** IMPS is a technique for transmitting funds that is done instantly. This approach allows for money transfers to be made 24 hours a day, seven days a week. Internet banking or a mobile banking app can be used to complete IMPS. Depending on the bank, transaction fees may vary. Daily transaction limit is 2 lakh RS, and depending on the transaction amount, it costs 5-15 RS. (K Suma Vally, 2018)

**National Electronic Fund Transfer (NEFT):** The National Electronic Funds Transfer (NEFT) is a digital payment system that allows individuals to make direct payments across the country utilizing digital channels such as internet banking and mobile banking. Using the NEFT program to transfer payments from any bank branch in the country to any individual who has an account with any other bank branch in the country. (K Suma Vally, 2018) It's a money transfer service that's available 24 hours a day, seven days a week, with transactions handled in half-hour batches. NEFT is a system that allows you to send money from one bank branch to another that is part of the scheme. When compared to IMPS, NEFT transactions take longer. Suitable for high-value transactions ranging from Rs 2 lakh to Rs 10 lakh. (ICIC, 2022)

**E-Wallet:** A mobile wallet is a device that allows you to make digital cash. To load money into a digital wallet, an individual's account must be linked to it. This can be done by linking credit card or debit card information on a mobile device to a mobile wallet application or sending money online to the mobile wallet. Payment can be made via smartphones, tablets, or smart watches. E-wallets are available from all banks, as well as certain private businesses. Paytm, Freecharge, Mobikwik, Oxigen, mRuppee, and Airtel Money are just a few examples. 20,000 Rs per month in transaction limitations, which are used to transfer money from your wallet to your bank account. (K Suma Vally, 2018). (Lalita, Malusare, 2019)

**Aadhaar Enabled Payment Service (AEPS).** It is a bank-led concept that permits online interoperable financial transactions utilizing Aadhaar authentication at any bank's PoS (Point of Sale / Micro ATM). Controlled by the National Payments Corporation of India (NPCI) it's a method of withdrawing funds from your bank account that doesn't necessitate your signature or the use of a debit card. It is not necessary to visit a bank branch to obtain funds through the Aadhaar Enabled Payment System. (A.Martina, 2017)

**Bharat Interface for Money (BHIM)** it's a payment application that uses the Unified Payments Interface to make simple, easy, and quick transactions (UPI). Its direct bank payments and receiving from or to anyone on UPI by scanning QR codes with the BHIM app or using their UPI ID. The National Payments Corporation of India (NPCI) pioneered and created BHIM, which was

conceived and launched by the Hon'ble Prime Minister of India on December 30, 2016. (BHIM, 2022)

**The Electronic Clearance Service (ECS)** Banks use this method to make bulk payments of interest, salary, pension, commission, dividend, and refunds (monthly, quarterly, half-yearly, yearly). The ECS transactions are distributed to a large number of Destination Account Holders from a single User source (EX: from the government to the employee). In the Department of Posts, the ECS is available in conjunction with the payment of monthly interest under the "Monthly Income Scheme." There is no need to issue and handle paper instruments, allowing the bank's divisions dealing with mass payments to provide better customer service. (Communications, 2022)

**National Automated Clearing House (NACH)** NPCI manages NACH, a centralized ECS system. It's an electronic payment system run by the RBI that allows businesses and organizations to make large payments in bulk. The NPCI introduced NACH with the goal of reducing the processing time for recurrent payments. Corporate salaries and pensions are examples of recurring payments. A single mechanism is used by the NACH system. By using one's netbanking or debit card information. (RBI, 2022)

**QR Code Payments:** It is reasonably priced for small businesses. Customers may use their phone's camera to automatically read codes and make payments without having to download any apps. QR codes can be accessed from a customer display or printed on a receipt to send customers to a payment website. Transactions can be completed without the use of a POS or payment terminal. (practicalbusinessskills, 2022)

**USSD:** This service allows you to make payments without using the internet by dialing \*99# and navigating through an interactive menu on your phone's screen to check your balance, transfer money, and so forth. (Lalita, Malusare, 2019)

**Point of sales (PoS)** it allows you to get money from consumers and perform transactions from the payer to the seller with ease. (Lalita, Malusare, 2019)

**Real-Time Gross Settlement (RTGS):** RTGS is a funds transfer system that allows money to be transferred from one bank to another in "real-time" and on a "gross" basis. This system, which was launched in 2004, settles all inter-bank payments and client transactions worth more than Rs. 2 lakh. There is no waiting period in an RTGS payment transaction. The term "gross settlement" refers to a transaction that is settled one to one, without bunching or netting with other transactions. Payments are final and irreversible after they have been processed. (RBI, 2022). (Bazaar, 2022)

**Payment Aggregators (PAs)** are organizations that enable e-commerce sites and merchants to accept a variety of payment instruments from customers in order to fulfill their payment commitments without having to build their own payment integration system. Payment Gateways are companies that provide technology infrastructure to route and enable online payment transaction processing without becoming involved in the money. Payment Gateways are referred to as 'technology providers' or 'outsourcing partners' by banks and non-banks, respectively. (RBI, 2022)

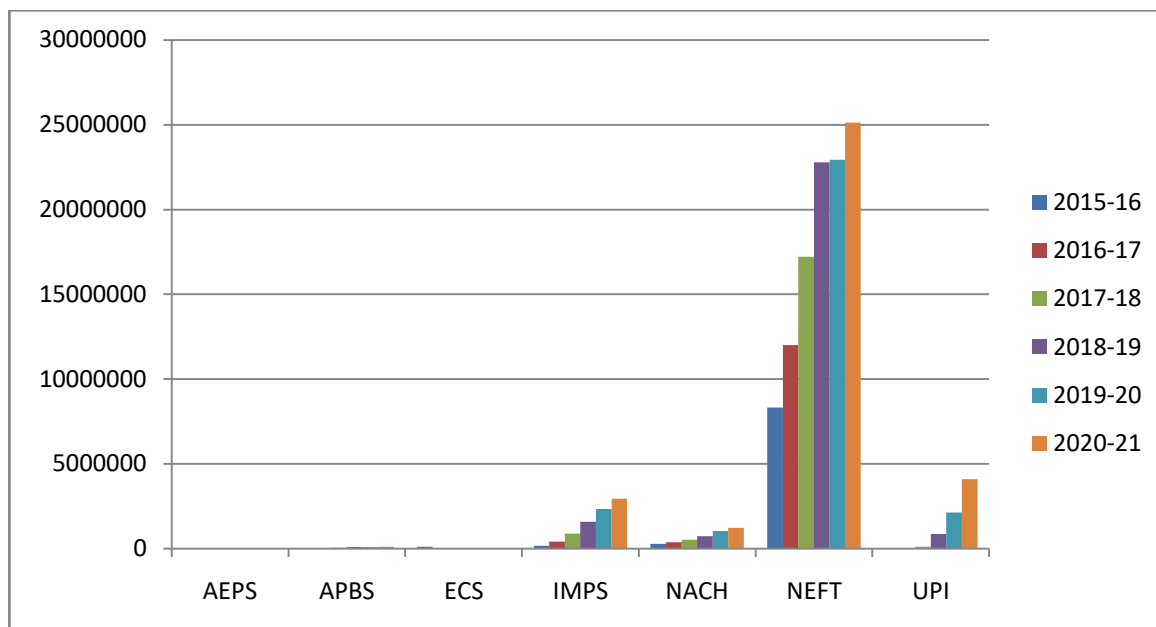
**(NETC) has developed by (NPCI)** to meet the Indian market's electronic tolling needs It provides a countrywide interoperable toll payment solution, as well as clearinghouse services for settlement and dispute resolution.

**National Electronic Toll Collection (NETC)** is a toll plaza payment system that allows users to use their FASTag as a payment method on any of the toll plazas, regardless of who owns the toll plaza. (NETC) was created by (NPCI) to suit the Indian market's electronic tolling requirements. It provides a countrywide toll payment solution that includes clearinghouse services for settlement

and dispute resolution. (RBI, 2022)

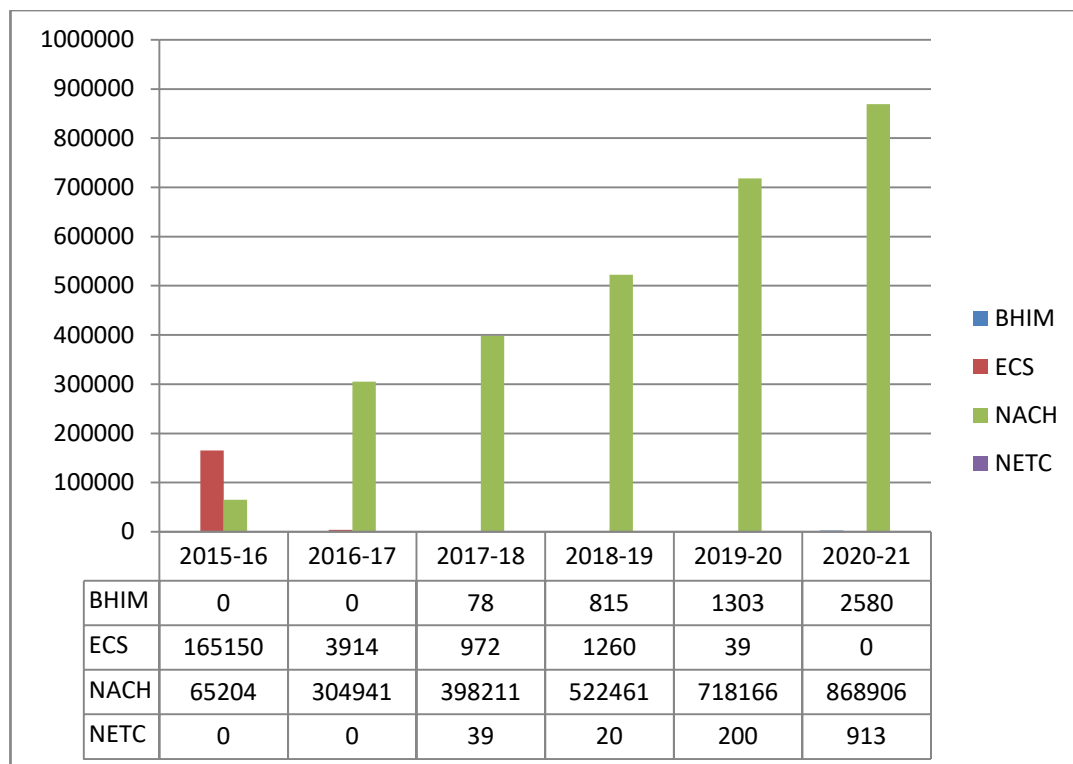
## Performance of Payment System Indicators:

Through data which show the performance and variation of the payment methods by comparing different methods.



**Figure 1 : Comparing Methods of Payment (source RBI report)**

NEFT that notes the first method in comparative then the UPI, IMPS and NACH. Other third methods as AEPS was started with week total and grow slowly to be finally 623. The APBS was started with 18598 to 112747 but in comparing it was little bit to others. ECS was opposite of all because it started in 105944 to zero that means it was dies.

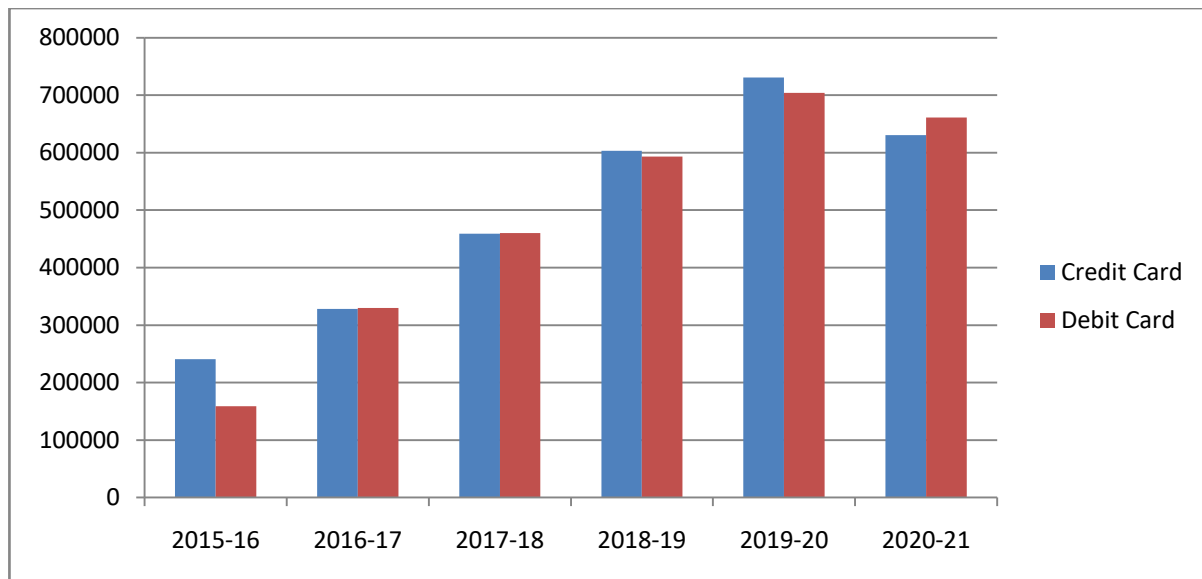


**Figure 2 Comparison among BHIM, ECS, NACH and NETC**

(source RBI report)

This figure shows a comparison between four types of digital payment methods, the first is BHIM, which began to rise and appear in the period 18/19 with a continuous increase of approximately 47%. While the rate of increase amounted to approximately 796 units. This comparison is the same path as NETC. It started from zero and continued to grow in a weak and volatile manner, reaching in the period 17-18 to 39, but it declined to 20 and then rose to 200 and is equal to ten times and grew to 913 with a lower percentage of the previous growth. We note in the comparison that the ECS started strongly and then weakened, as it was at its beginning equal to 165150 and then declined until it reached zero. The comparison shows that NACH kept growing and increasing and maintaining the increase, which explains the acceptance of individuals to deal with it and the severity of the need for it.

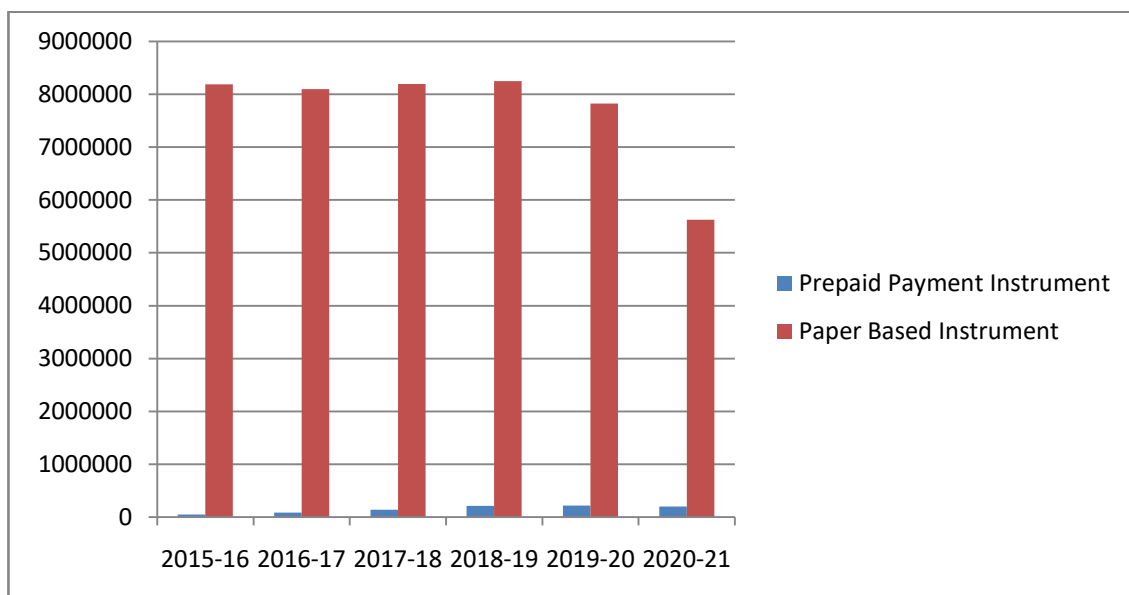
### Card Payments



**Figure 3: Comparison between Credit Card and Debit Card (source: RBI reports)**

A comparison between the debit card and the credit card shows the convergent performance, in the period 15/16 the highest performance of the card appears, then in the remaining periods the performance is equal between them with minor differences. While the performance of the credit card increased in the period 19/20. In the period 20/21 debit Card performance increases by a small margin.

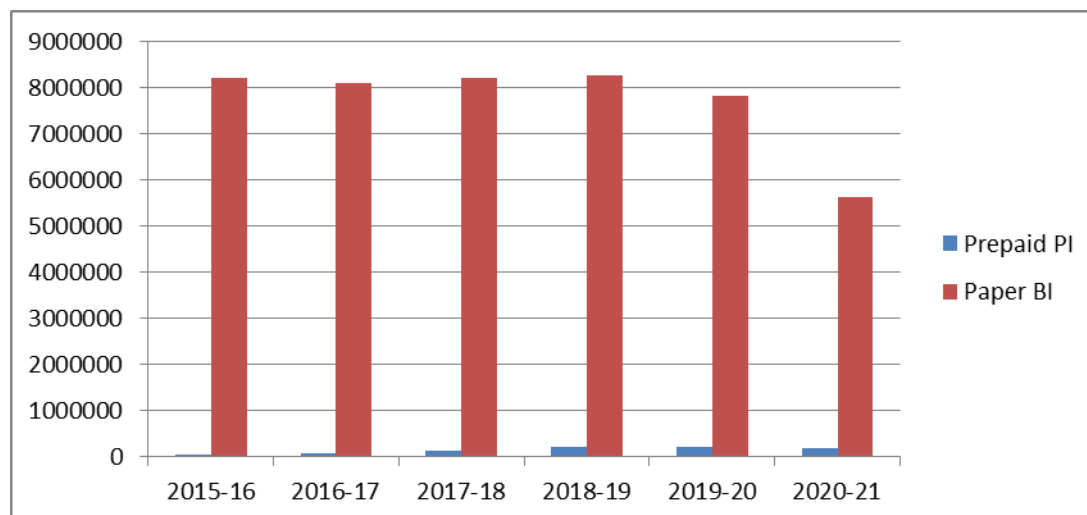
### Prepaid Payment and Paper based Instrument:



**Figure 4: comparison prepaid payment instruments and paper-based instrument (source RBI reports)**

The comparison shows the greater reliance on paper payment tools





**Figure 5: comparing prepaid PI and paper BI (source RBI)**

This compares prepaid PI and paper BI shows that paper BI is the biggest for all periods.

### Results and Discussion:

Source of Variance	SS	df	MS	F	P-value	F-crit
Rows	6.515	5	1.30	0.093	<b>0.088</b>	2.53
Columns	1.587	6	2.64	43.27	1.875	2.42
Error	1.83	30	6.11			
Total	1.836					

Source of Variance	SS	df	MS	F	P-value	F-crit
Rows	7660.82	5	1532.17	0.62	0.68	3.8378
Columns	9.96	3	3.32	13.65	<b>0.0001</b>	3.28
Error	3.649	15	2433			
Total						

### CONCLUSION:

The research examined the disparities in the performance of India's payment systems. That India is an excellent model in terms of a wide range of successful experiences in the field of a wide range of tools today Payments, and as the study indicates, a culture of financial education is still needed to promote financial education among individuals. The government has made a significant effort through a number of measures, such as cashless transactions, and the establishment of strategic strategies, according to this report. India also submitted a memorandum to the International Telecommunication Union (ITU) in April 2018 to build an office and a technology innovation center in India for South Asia.(Attia, 2021)There is still a pressing need to investigate the impact of financial technology on payments, as well as the impact of the variety of payment methods on financial stability and development. This is a project that contributes to the development and the advancement of technology's involvement in all parts of life. By evaluating the performance of payment instruments in India, the researcher discovered a disparity in payment performance. Paper payments are issued to the rest of the payment instruments, according to the report. According to the study, all key parties must band together in order to fulfill the overall purpose of the payment system, which is to promote financial stability and eventually general development. The researcher

suggests that further research be done into the barriers to using payment systems and the demand for banks.

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