



## EFFECTIVENESS OF DIGITAL PAYMENT MODES IN INDIA

**Savita Devi**

Research scholar at University School of Management, Kurukshetra  
University Kurukshetra.



### ABSTRACT

*With the advancement of technology, there is a remarkable growth in electronic modes of payments in India. This paper focuses on various digital payment modes in India. Data for five years from 2013 to 2018 is taken into consideration for analyzing the effectiveness of various modes of payment. Various modes of payment like National Electronic Funds Transfer (NEFT), Real-time gross settlement (RTGS), Debit Cards, Credit Cards, NFS (National financial Switch), National Automated Clearing House (NACH), Rupay Card, Cheque Truncation System (CTS), Immediate Payments Service (IMPS), AePS (Aadhaar Enabled Payment System), BBPS (Bharat Bill Payment system), Unified Payment Interface (UPI), Bharat Interface for Money (BHIM), Unstructured Supplementary Service Data (USSD), NETC (National Electronic Toll Collection) is included in this study. Cross tabulation, Line chart, bar chart is used for analyzing the performance of various modes of payments. After analysis it is concluded that traditional modes of digital payment are growing at slow rate and new modes of payment are growing at high rate.*

**KEYWORDS:** Digital, NPCI, Payment.

### INTRODUCTION

In digital payment system, all the transactions are performed electronically. It is a faster medium of making payments. There is tremendous growth in digital payment system in India in recent year mainly after demonetization. First step in digitization is introduced in 1987 as establishment of ATMs (Automated Teller Machines). After that to encourage digitization RBI started Electronic Clearing Service (ECS) in 1990s. In 2007, the Payment and Settlement Systems Act was passed by the Indian Parliament. To set up new modes of digital payment, NPCI (National Payment Corporation of India) is established under the guidance of RBI (Reserve Bank of India) and IBA (Indian Banks' Association) in 2008. After establishment of NPCI, there has been a tremendous growth in retail digital payment system which include NFS (National financial Switch), National Automated Clearing House (NACH), Rupay Card, Cheque Truncation System (CTS), Immediate Payments Service (IMPS), AePS (Aadhaar Enabled Payment System), Unified Payment Interface (UPI), Bharat Interface for Money (BHIM), Unstructured Supplementary Service Data (USSD).

### REVIEW OF LITERATURE

Vidya shree (2015) studied the impact of new digital payment applications by taking sample of 30 customers of Pay U Money and 20 customers of Pay tm. The study concluded that people are using these applications in their cell phones more extensively because this application provides better payment structure than digital payment system. Mamta, Tyagi and Shukla (2016) studied the various problems faced by electronic payment methods and offer suggestions to improve electronic payment system quality. It is

suggested that if a customer wants security in payment then Smart cards should be used and E-cash or Net Bill Checks can be used for privacy purpose. The successful implementation of digital payments methods depends on customers and sellers. Garg and Panchal (2016) analyzed the people attitude towards cashless economy and digital payments methods in India. Data is collected by taking sample size of 100 respondents from Delhi NCR region. It is concluded that many respondents have positive responses towards usefulness of cashless economy as it curb corruption and money laundering. But financial literacy is the main problem that prevents the successful implementation of digital payment system in India. So Government should organize various financial literacy campaigns to aware people about usefulness of digital payments system. Joshi (2017) studied the trend in various digital payments methods during the period from the year 2014-15 to July 2017. It is concluded that there is outstanding growth in various modes of digital payments in previous two year and particularly during the year 2017-18. Shettar and Abbigeri (2018) studied the various mode of digital payments and benefits of digital payments methods and government efforts to make India as cashless economy. It is concluded that initiatives taken by government results greater acceptance by people.

### RESEARCH METHODOLOGY

This study is based on descriptive design. Secondary data is used for this study. Required data is taken from websites of [www.npci.org.in](http://www.npci.org.in) and [www.rbi.org.in](http://www.rbi.org.in). Data is taken for the period from the year 2013-14 to 2017 -18. For the third objective data is taken from 2014-2018 because full period data for all modes is available from 2014. Data for fourth objective is taken after from December 2016 to February 2018 because data for all modes is available from December 2016. Data is analyzed with the help of cross tabulation, line chart and bar chart.

### OBJECTIVES OF THE STUDY

1. To study various digital payment modes in India.
2. To study the trends in traditional digital payment modes.
3. To study the trends of digital payment modes at NPCI.
4. To study the trends of new digital payment modes at NPCI after demonetization.

### VARIOUS MODES OF DIGITAL PAYMENTS:

**ECS (Electronic Clearing Service):** It facilitates high volume, interbank, electronic transactions that are recurring in nature. ECS can be used for distribution of interest, salary, pension, subsidies, dividends etc. and collecting payments for bulk transactions related to telephone, investments in mutual funds, electricity, water, loans, insurance premium etc. It combines various ECS that are operated across the country.

**NEFT (National Electronic Funds Transfer (NEFT))** is an online interbank funds transfer service that is operated by the Reserve Bank of India (RBI). It is introduced in November 2005. It works on deferred settlement basis. NEFT settles fund transfers in batches in hourly time slots during 8:00 a.m and 7:00 p.m. Online transactions are performed from Monday to Saturday except 2<sup>nd</sup> and 4<sup>th</sup> Saturday and bank holiday.

**Real-time gross settlement (RTGS)** is real time interbank transfer fund services introduced in 2004. This system facilitates processing of high-volume transactions that require instant clearing. Here Real time means transactions are processed at the time when they are received. Gross Settlement means transaction is settled individually (one-to-one basis).

**Debit card** is a plastic card that is used for making online payment for shopping without carrying cash. Cash is immediately deducted from cardholder account and credit to merchant account. Debit cards usually also permit instant withdrawal of money, functioning as an ATM card for this purpose.

**Credit card** is a card that is issued by a bank, financial institution. It enables cardholder to make online payment to merchant for goods and services. Cardholder promises to pay money back to card issuer with agreed interest.

**NFS (National financial Switch)** NFS inter-connects the ATMs in the country and facilitating ease banking. It is the largest network of shared ATM in the country and provides the facilities of Mini statement of the transactions made, cash withdrawal, balance Enquiry, instant fund transfer, change of ATM PIN , card to card fund transfer etc.

**Immediate Payments Service (IMPS)** is provided by NPCI and started in October 2010 that allowed 24\*7 interbank fund transfer facility. Earlier this service, only NEFT, RTGS provide this real time transfer fund facility during banking hours, but IMPS provides services on 24\*7 basis. This service can be accessed on multiple channels like ATM, Mobile, Internet, Branch and USSD (\*99#), Internet SMS.

NPCI has introduced "**National Automated Clearing House (NACH)**" in may 2013 that facilitates high volume, interbank, electronic transactions that are recurring in nature. NACH System can be used for distribution of interest, dividend, salary, pension, subsidies etc. and collecting payments for high volume transactions related to telephone, water, investments in mutual funds, electricity, loans, insurance premium etc. It combines various ECS that are operated across the country.

**RuPay** is household card scheme that is started by NPCI on 26 March 2012. The scheme was launched by the NPCI as a substitute to the Visa card, Mastercard schemes and to combine diverse payment systems in India. It fulfills the Reserve bank of India (RBI) vision to create an open (four-party), domestic, multilateral system which permits all financial institutions in India to join in digital payments. Almost all ATMs, PoS terminals in India accept RuPay cards. Rupay offers customized products and services for Indian consumers and Clearing and Settlement cost is lower for each transaction because processing of each transaction happens domestically.

**Cheque Truncation System (CTS)** launched in India on 24 September 2011. On 17 July 2013 conventional MICR based cheque processing was stopped. Cheque truncation means discontinuing the flow of the physical cheques in its way of clearing. In CTS, an electronic image of cheque with essential data is created at presenting bank and transmitted. So this would eliminate the cost and time of transit.

**AePS (Aadhaar Enabled Payment System)** is a platform started in 2011 that allowed online transactions at PoS (MicroATM) with the help of the Business correspondent of any bank that use Aadhaar authentication. It facilitates a bank customer to access Aadhaar enabled bank account using Aadhaar as identity and carry out transactions like balance enquiry, fund transfer, cash deposit, cash withdrawal, and get a mini statement through a Business Correspondent. To perform a transaction, a customer needs to provide fingerprint that captured on the time of enrollment, Aadhaar Number, IIN (Identify the Bank of customer).

**Bhart Bill Payment System (BBPS):** RBI authorized NPCI to operate Bhart Bill Payment System. Under this facility, a customer can pay bill at any time anywhere with the help of various modes of payment. A customer can pay bill related to electricity, telecom, DTH, gas, water bills etc by using various modes like mobile wallets, POS, ATM, internet banking, mobile banking etc.

**Unified Payment Interface (UPI)** is a payment mode that facilitates to transfer funds between two bank accounts on mobile platform. This interface is developed by NPCI on 11 April 2016 and regulates by RBI that allows sending or requesting money on mobile platform. This facility is available for android phone users. To avail this service, a UPI app has to be downloaded from bank website/App Store and has to create a VPA (Virtual Payment Address) or UPI ID. Money can be transferred using Virtual Payment Address (VPA), Mobile number, Account number. This interface is fast, safe and secure platform. The Unified Payment Interface (UPI) is like an email ID that identify customer and used for making payments and transfer money using IMPS (Immediate Payments Service).

**Unstructured Supplementary Service Data (USSD):** USSD is also known as \*99# service. Customer can avail this service on basic feature mobile phone. Internet data in mobile is not needed for this service. A customer has to dial \*99# on mobile to perform transactions. There is no need to download any app. Services provided under \*99# service include Balance enquiry, Funds transfer using MMID, A/c no, Aadhaar and get mini statement. To avail the service the mobile number of the customer should be linked with bank account and a customer has to register for USSD, MPIN MMID (Mobile Number Identifier).

**NETC (National Electronic toll Collection):** NPCI has introduced this facility. Under this facility, a customer can directly pay toll with the help of FASTag device while vehicle is in motion. So time and fuel can be saved because customer does not have to stop vehicle on toll plaza.

**FACTS AND FIGURES:**

**Table 1: Traditional Digital Modes of Payment (value in billions)**

Digital modes of payments	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
1. RTGS	904,968.04	929,333.09	1,035,551.64	1,253,652.08	1,467,431.99
2. MICR Clearing	30,942.81	1,850.40	-	-	-
3. ECS	3,760.15	3,758.92	2,710.94	183.22	124.72
4.EFT/NEFT	43,785.52	59,803.83	83,273.11	120,039.68	172,228.52
5. Credit Cards	1,556.72	1,922.63	2,437.02	3,312.21	4,626.33
6. Debit Cards	20,602.86	23,492.65	26,960.63	26,901.79	33,588.31

**Figure 1: Trend Percentage Analysis of Traditional Payment modes (in rupees)**

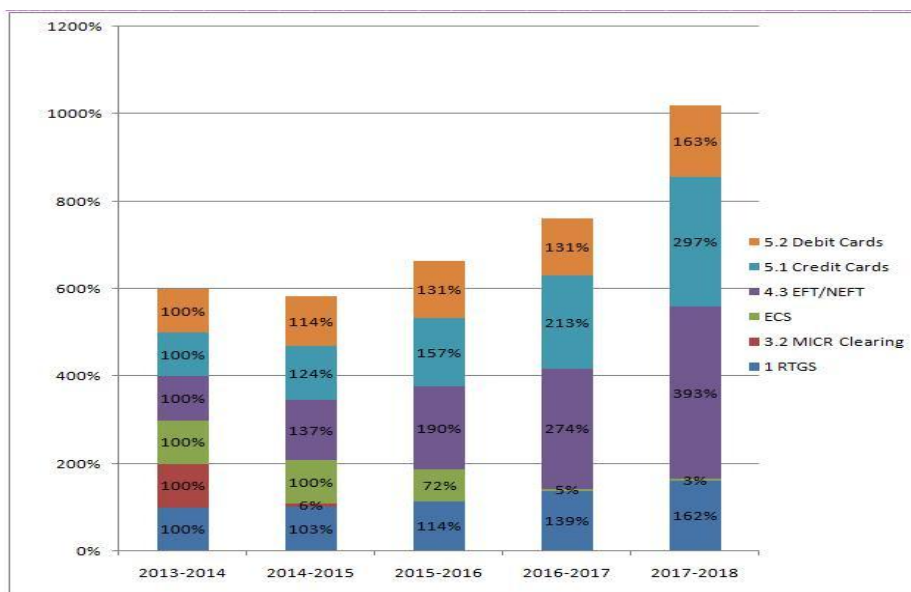


Table 1 reveals traditional digital payment modes. Maximum number of transactions on the basis of values is performed on RTGS in all five years in comparison to NEFT. Debit card has maximum number of transactions on the basis of values in all five years in comparison to credit card. Transactions in terms of values in all five years on ECS platform are decreased over the year due to introduction of NACH interface. In the same way, transactions in MICR clearing are stopped from 2013 due to the introduction of Cheque Truncation System (CTS). Trend percentage method is more valuable than simple tabulation method to analyze the growth in various modes of digital payment.

Figure 1 reveals that NEFT, RTGS grow at normal rate but NEFT grow higher in comparison to RTGS. In the same way Debit Cards, and Credit cards grow at normal rate but Credit cards grow higher in

comparison to Debit Cards. And growth in ECS and MICR clearing is decreased due to the introduction of new modes of digital payment i.e NACH, CTS.

**Table 2 Retail Payment Modes on NPCI (value in billions)**

Sr. No.	NPCI Operated Systems	2014-15	2015-16	2016-17	2017-18
1	NFS Inter Bank ATM Cash Withdrawal	8,311.67	9,993.22	10,818.39	13,357.49
2	IMPS	581.89	1,622.29	4,116.24	8,924.98
3	RuPay Card	11.27	50.50	349.29	654.32
4	NACH	1,196.97	3,715.09	7,207.84	9,752.88
5	CTS Cheque Clearing (Processed Volume)	66,009.50	69,889.15	74,035.22	79,451.24

Table 2 reveals major methods of retail digital payment on NPCI platform. CTS has maximum number of transactions in terms of values in all three years followed by NFS. IMPS and Rupay card are least in all three years but growths in both are highest among all four digital modes. Trend analysis method is more valuable than simple tabulation method to analyze growth in various modes of payments.

**Figure 2: Trend Analysis of Retail Payment modes (in rupees) on NPCI Platform**

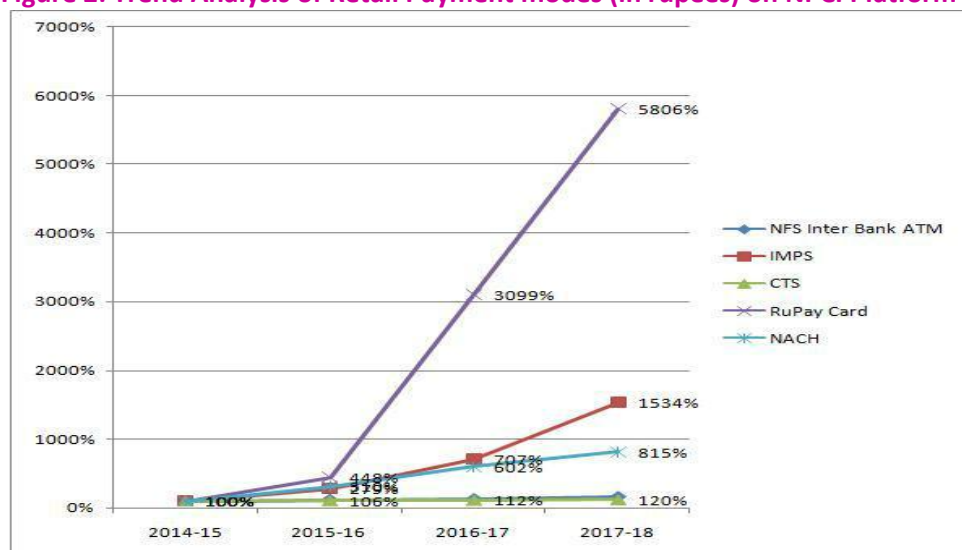


Figure 2 shows that growth rate in NACH, CTS, NFS in last three years is normal. But IMPS and Rupay card grow at higher rate in comparison to NACH, CTS, and NFS. Growth rate of IMPS is 707%,1534% from 2016-17 to 2017-18 respectively and growth rate of Rupaycard is 3099%,5806% from 2016-17 to 2017-18 respectively which reveals extremely high acceptability of these modes of digital payment due to fast fund transfer ,security.

**Table 3 New Retail Payment Modes on NPCI after demonetization (value in billions)**

NPCI operated platform	AEPS (Inter bank) Txn over Micro ATM	BBPS	UPI	BHIM	USSD 2.0	UPI excluding BHIM & USSD	NETC
Dec-16	2.07	0.0004	7.02	0.02	0.02	6.98	0.88
Jan-17	3.16	0.004	16.96	3.56	0.37	13.02	1.79
Feb-17	3.92	0.01	19.38	6.23	0.36	12.79	1.84
Mar-17	5.64	0.02	24.25	8.23	0.34	15.68	2.09
Apr-17	7.93	0.03	22.71	10.02	0.30	12.39	2.11
May-17	11.69	0.06	27.97	13.07	0.32	14.59	2.25
Jun-17	13.12	0.15	30.98	14.87	0.31	15.80	2.26
Jul-17	14.09	0.26	34.11	16.00	0.30	17.81	2.34
Aug-17	16.73	0.56	41.57	18.99	0.29	22.29	2.58
Sep-17	20.47	0.65	53.26	22.45	0.32	30.48	2.75
Oct-17	25.25	0.73	70.58	23.49	0.30	46.79	2.63
Nov-17	25.62	1.01	96.69	25.49	0.29	70.92	2.85
Dec-17	26.09	1.69	131.74	30.83	0.30	100.61	3.20
Jan-18	32.85	1.75	155.71	36.47	0.29	118.95	3.28
Feb-18	34.86	2.06	191.26	40.11	0.27	150.88	3.34

Table 3 reveals that there are maximum transactions performed on UPI platform during the period December-2017 to February 2018 followed by AePS, BHIM platforms. BBPS and NETC are least in during the period. So its shows that demonetization plays a major role in increasing digitalization. Trend analysis method is more valuable than simple tabulation method to analyze growth in various modes of payments.

**Figure 3: Trend Analysis of New Retail Payment modes (in rupees) on NPCI Platform**

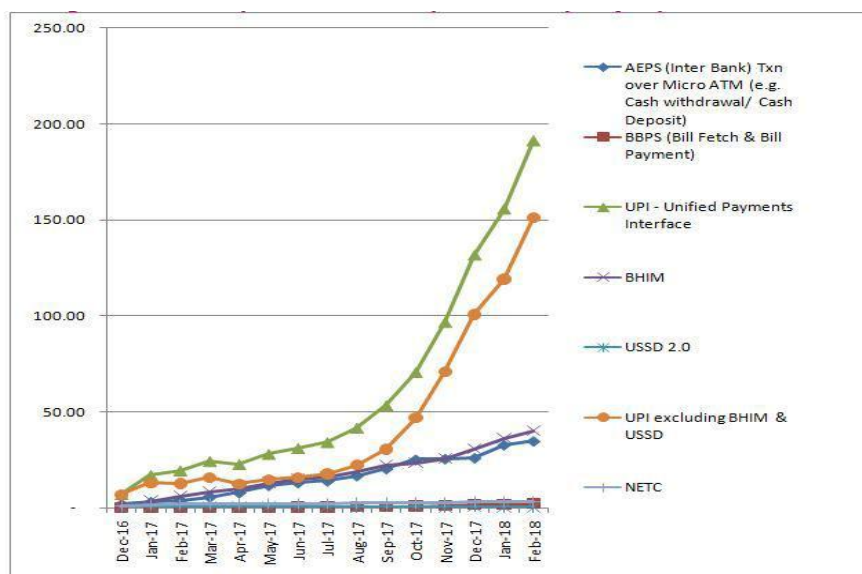




Figure 3 shows that there is a tremendous growth in AEPS, UPI and BHIM (UPI) modes of digital payments in comparison to other modes of digital payments. USSD, BBPS and NETC increase at a normal rate. It means people are performing mostly transactions with the help of these modes. This is due to fast transactions, security in new modes of payments.

### CONCLUSION:

This study reveals performance of digital modes of payment. It can be concluded that traditional modes of payment like NEFT, RTGS, debit cards, credit cards grow at a normal rate. Modes of payment on NPCI like NACH, CTS, and NFS also grow at a normal rate. And in recent modes of payment, BBPS, NETC, USSD grow at a normal rate. But Rupaycard, IMPS, AePS, UPI, BHIM (UPI) grow at a remarkable rate. Growth in these modes of payment is mainly due to demonetization. And people are using new modes of payment for performing transactions because these modes provide safety, convenient way of fund transfer and speed. If government continuously takes efforts to makes India as cashless economy then these modes will certainly help in social and economic growth. Further study can be carried out on the factors that will help in better implementations of digital payment modes and reduced challenges and risk that prevent the better implementations of digital payment modes.

### REFERENCES:

- Vidya Shree DV, Yamuna N. and Nitua Shree G.(2015). A Study on new Dynamics in Digital Payment System - with special reference to Paytm and Pay U Money, *International Journal of Applied Research* ,1(10), 1002-1005.
- Mamta, Tyagi, H., and Shukla , A.(2016) The Study of Electronic Payment Systems. *International Journal of Advanced Research in Computer Science and Software Engineering*.
- Preeti Garg, P., and Panchal, M. (2016). Study on Introduction of Cashless Economy in India : Benefits & Challenge's". *IOSR Journal of Business and Management (IOSR-JBM)*.
- Joshi, M.C.(2017). Digital Payment System: A Feat Forward of India. Retrieved march 2019, from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3043609](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3043609).
- Shettar, R.M., & Abbigeri., P. S.(2018) . The Changing Trends in Payments: An Overview ,*International Journal of Business and Management Invention (IJBMI)*, 7(7), 1-5.



**Savita Devi**

Research scholar at University School of Management, Kurukshetra University Kurukshetra.