

GROWTH OF NPCI RETAIL PAYMENTS

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ABSTRACT

Retail payments are an important part of every country's overall payment system. Because retail payments have a higher volume of transactions but a smaller transaction size, specialised separate products such as UPI, BHIM, RuPay, NETC, AePS, BHIM Aadhaar, Bharat BillPay (BBPS), NFS, NACH, CTS, IMPS are utilised to process them all over the world. As per Reports of NPCI, in the year 2021-22, UPI is found the most preferred product among others followed by IMPS. The data for the period of 8 years has been taken to carry out the growth of NPCI retail payments (overall and products wise). The statistical tools namely; Average, C.V., CGR has been the applied in the study to compute the growth. It is found that there has been a tremendous growth regarding the total retail payments over the period of study.

Keywords: Retail Payments, UPI, NACH, IMPS, BBPS.

Introduction

Due to fast technology advances and innovations in recent years, India's retail payment system is undergoing a radical transformation. Retail transactions are those that have low-value denominations but a large number of them. Retail payment systems have a wide range of features. They specialise in dealing with a large number of low-value individual payments. Retail payments are not the same as large-value transactions. To begin, the word "retail payment" refers to a payment processing system that processes a large number of low-value payments for the purchase and sale of goods and services. They're used in many situations than just interbank transactions, such as in-person payments via POS machines and online payments.

NPCI, India's powerhouse of payment systems, is committed to advancing the digital India, serving all Indians, with a vision to be the finest payments network globally and a mission to touch every Indian with one or more payment services. The National Payments Corporation of India (NPCI) was established in 2008 as a holding company for India's retail payment and settlement systems. The National Payments and Settlements Institute (NPCI) has built a strong payment and settlement infrastructure in the country. NPCI was founded under the patronage of the Reserve Bank of India and the Indian Banks Association with the goal of reaching out to every Indian through a wide range of digital payment products such as UPI, BHIM, RuPay, NETC, AePS, BHIM Aadhaar, Bharat BillPay (BBPS), NFS, NACH, CTS, IMPS, and to facilitate safe and secure digital payments. These items aid in the following areas:

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- Money passes from one person to another.
- Grocery stores, petrol stations, recharges, e-commerce, and retail are examples of person to business.
- Retailer to Supplier or Distributor is an example of business to business.
- Salaries, reimbursements, refunds, and claims are examples of business to person transactions.
- Taxation, public transportation, and public distribution services are examples of services provided by individuals to the government.
- Direct benefit transfer payments from several federal and state government social security programmes are made from the government to the individual.

Objective of the Study

The objective of this study is to compute the growth of NPCI Retail Payment transactions in India.

Research Methodology

Data Collection

The present research is both descriptive and analytical. The data used for the analysis spans eight years, from 2014-15 to 2021-22. Secondary sources such as journals, published publications, the National Payments Corporation of India (NPCI), and relevant websites are used to acquire data for the study's objectives.

Statistical Tools

- **Yearly Growth Rate**

$$g = \frac{y_t - y_{t-1}}{(y_{t-1})} \times 100$$

Where, g = growth rate

y_t = value of variable y in current year

y_{t-1} = value of variable y in the previous year

- **Average**

$$(\bar{X}) = \frac{\sum X}{N}$$

Where, $\sum X$ = Sum of series of observations

N = number of observations.

- **Coefficient of Variation**

$$C.V = \frac{\sigma}{\bar{X}} \times 100$$

Where, σ = Standard Deviation and (\bar{X}) = Mean

- **Compound Growth Rate:** Compound function is given by the equation:

$$Y^t = a + bt \text{ or } \log Y^t = \log a + t \log b$$

Where,

t is the time in years, independent variable

Y^t is the characteristic

a and b are parameters

The parameters 'a' and 'b' are calculated by applying the method of Ordinary Least Squares (OLS). The compound growth rate (CGR %) is calculated by using the formula:

$$\text{CGR (\%)} = (b-1) \times 100$$

Analysis and Interpretation

- **Overall Growth of total NPCI Retail Payments (Volume and Value)**

The total of NPCI retail payments includes National Financial Switch (NFS), National Automated Clearing House (NACH), Cheque Clearing (CTS), IMPS, RuPay Card, AEPS, BBPS, Unified Payments Interface (UPI), USSD 1.0, NETC.

Table 1.1: Total NPCI Retail Payments

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2014-15	3709.46	--	76111.29	--
2015-16	5406.41	45.75	85271.12	12.03
2016-17	7138.4	32.04	96626.07	13.32
2017-18	9857.6	38.09	113552.77	17.52
2018-19	16806.26	70.49	136719.25	20.4
2019-20	26493.26	57.64	160924.07	17.7
2020-21	37513.45	41.6	165538.15	2.87
2021-22	51310.09	36.78	185694.55	12.18
Average	158234.93	--	1020437.27	--
C.V. (%)	10.9	--	3.99	--
C.G.R (%)	57.13	--	14.36	--

The table 1.1 shows the overall digital retail payments, measured in terms of value and volume for the period of 2014-15 to 2021-22. It is clear from the table that the volume of overall retail payments steadily increased over the period from 3709.46 million in 2014-15 to Rs. 51310.09 million in 2021-21 recording an average of Rs158234.93 Million with a compound growth rate of over 57 per cent. Likewise, the value of overall retail payments is recorded at 185694.55 Billion in 2021-22 which is increased from the 76111.29 billion in 2014-15, with average of 1020437.27 and Compound growth rate is 14.36 per cent. The fluctuations among the value and volume over the period of study are 11 per cent and 4 percent respectively.

Product-Wise Growth of Retail Payments:

- **Growth of NFS (Volume and Value)**

National Financial Switch (NFS) is the largest network of shared automated teller machines (ATMs) in India. It was designed, developed and deployed with the aim of inter-connecting the ATMs in the country and facilitating convenience banking. It is run by the National Payments Corporation of India.

Table 2.1: NFS

Year	Volume (in Million)	Yearly Growth Rate	Value (in Billion)	Yearly Growth Rate
2014-15	2374.30	--	8311.67	--
2015-16	2837.01	19.49	9993.22	20.23
2016-17	3170.18	11.74	10818.39	8.26
2017-18	3503.44	10.51	13357.49	23.47
2018-19	4017.42	14.67	15125.64	13.24
2019-20	4311.62	7.32	16151.40	6.78
2020-21	3661.67	-15.07	14988.02	-7.2
2021-22	3147.76	-14.03	13063.17	-12.84
Average	27023.40	--	101808.99	--
C.V. (%)	2.32	--	2.72	--
C.G.R (%)	20.9	--	8.06	--

Table 2.1 shows the values of volume of NFS for the study period of 2014-15 to 2021-22. It is detected that both the volume and value of NFS increased from 2014-15 to 2021-22 at fluctuating growth rate. Since 2020-21 the positive annual growth rate turned into negative rate. The value of NFS increased from 2374.30 million in 2014-15 to 3147.76 million in 2021-22 with an average of Rs. 27023.40 million and the compound growth rate is 21 percent. On the other hand, the compound growth rate of value is nearly half of volume (8.06). the value of NFS surged from 8311.67 billion in 2014-15 to 13063.17 billion in 2021-22 with an average of 101808.99 billion. The rate of fluctuations over the study period are nearly 2.50 per cent in both the value and volume transactions

- **Growth of NACH**

The National Automated Clearing House (NACH) is a centralised system that was developed with the goal of consolidating numerous ECS systems around the country. It provides a framework for standardisation and practise harmonisation, as well as removing local hurdles and inhibitors. The NACH system will have a national footprint and is planned to cover all core banking enabled bank branches across the country, regardless of their location.

Table 2.2: NACH

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2014-15	324.63	--	1196.97	--
2015-16	1392.79	329.04	3715.09	210.38
2016-17	1968.03	41.3	7207.84	94.02
2017-18	2375.33	20.7	9752.88	35.31
2018-19	2861.38	20.46	13383.6	37.23
2019-20	3401.77	18.89	17630	31.73
2020-21	3626.20	6.6	19032.8	7.96
2021-22	3149.00	-13.16	15520.00	-18.46
Average	19099.1	--	87439.1	--
C.V. (%)	5.86	--	7.48	--
C.G.R (%)	30.12	--	41.40	--

Table 2.2 displays the volume and value of NACH during the period of 2014-15 to 2021-22. It is clear from the table that the volume of NACH is just 324.63 million and till the end of study period it rose to 3149.00 million with the compound growth rate of 30.12 per cent. Simultaneously, the value of NACH increases to 15520.00 billion in 2021-22 from 1196.97 billion in 2014-15, with the compound growth of 41 per cent.

- **Growth of Cheque Truncation System (CTS)**

The procedure of halting the physical movement of cheques is known as Cheque Truncation System. The movement of the physical instrument is stopped and replaced by electronic images and the accompanying MICR line of the cheque, as per the modified Negotiable Instruments Act 188

Table 2.3: CTS

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2014-15	926.00	--	66009.50	--
2015-16	919.80	-0.67	69889.20	5.88
2016-17	1111.86	20.88	74035.20	5.93
2017-18	1138.06	2.36	79451.20	7.32
2018-19	1112.07	-2.28	81535.90	2.62
2019-20	1035.89	-6.85	79174.60	-2.9
2020-21	668.28	-35.49	56026.10	-29.24
2021-22	570.24	-14.67	51791.60	-7.56
Average	7482.18	--	557913	--
C.V. (%)	2.85	--	1.99	--
C.G.R (%)	12.19	--	-3.02	--

Table 2.3 exhibits the volume and value of CTS for the study period of 2014-15 to 2021-22, with the average volume of 7482.18 million and 557913 billion of value. The CTS has experienced a decline in the volume from 926million in 2014 -15 to 570.24 million till the end of study period with a Compound Growth rate of 12.19 per cent. On the same hand, a drop in the value is recorded at 51791.60 in 2021-22 from 66009.50 in 2014-15 with a negative growth rate of -3.02 per cent.

- **Growth of Aadhar Enabled Payment System (AePS)**

Aadhar Enabled Payment System (AePS) is a bank-led platform that enables online interoperable financial inclusion transactions at the point of sale (MicroATM) using Aadhaar authentication through any bank's Business correspondent. AePS supports six different types of transactions.

Table 2.4: AePS

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2015-16	0.36	--	0.86	--
2016-17	16.29	4416.98	22.82	2538.63
2017-18	106.27	552.19	269.17	1079.37
2018-19	254.47	139.45	678.31	152
2019-20	437.19	71.8	1188.58	75.23
2020-21	963.27	120.33	2286.29	92.35
2021-22	936.72	-2.76	2518.23	10.14
Average	2714.58	--	6964.28	--
C.V. (%)	15.18	--	15.04	--
C.G.R (%)	111.93	--	244.43	--

Table 2.4 exhibits the volume and value of AePS for the study period of 2015-16 to 2021-22, with the average volume of 2714.58 million and 6964.28 billion of value. The AePS has been increased drastically from 0.36 million in 2015-16 to 936.72 million till the end of study period. The Compound Growth rate is recorded at 111.93 and 244.43 in terms of volume and value respectively. During the study period fluctuations are observed with 15 per cent of Coefficient of variation.

- **Growth of Bharat Bill Payment System(BBPS)**

The Bharat Bill Payment System was designed by the Reserve Bank of India (RBI) and is managed by the National Payments Corporation of India (NPCI). It's a one-stop shop for all bill payments, offering an interoperable and accessible "Anytime, Anywhere" bill payment solution to all consumers in India, with transaction certainty, reliability, and security. By simply looking at the Bharat BillPay logo, a transaction can be initiated using numerous payment channels such as the Internet, Internet Banking, Mobile, Mobile Banking, Mobile Wallets, Kiosk, ATM, Bank Branch, Agents, and Business Correspondents.

Table 2.5: BBPS

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2016-17	0.03	--	0.04	--
2017-18	10.6	35233.3	10.98	24924.4
2018-19	73.5	593.4	90.99	728.69
2019-20	145.69	98.22	216.62	138.07
2020-21	276.08	89.5	429.74	98.38
2021-22	534.36	93.55	925.28	115.32
Average	1040.26	--	1673.66	--
C.V. (%)	19.61	--	21.19	--
C.G.R (%)	132.44	--	482.09	--

The table 2.5 shows the value and volume of BBPS from 2016-17 to 2021-22 with an exceptional increase in the volume and value both. From 2016-17 it is seen that the volume and value is just 0.03 million and 0.04 billion respectively but it increased to volume of 534.36 million and value of 925.28 billion in 2021-22. Over six years of study it is observed that compound growth rate is exponential with 132.44 per cent from volume and 481 per cent in volume of transactions.

- **Growth of Immediate Payment Service (IMPS)**

IMPS is a reliable and real-time fund transfer service that provides an instant, 24-hour interbank electronic fund transfer service that may be accessible by a variety of channels including mobile, internet, ATM, and SMS. IMPS is a powerful tool that allows you to send money between banks in India in real time. It's not only safe, but it's also cost-effective. IMPS now have 645 active members, including banks and PPIs. NPCI provides this service through its current NFS switch.

Table 2.6: IMPS

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2014-15	78.44	--	581.89	--
2015-16	220.81	181.5	1622.29	178.8
2016-17	506.84	129.53	4116.24	153.73
2017-18	1009.84	99.24	8924.98	116.82
2018-19	1752.91	73.58	15902.57	78.18
2019-20	2579.17	47.14	23375.41	46.99
2020-21	3278.34	27.11	29414.96	25.84
2021-22	3746.77	14.29	33219.63	12.93
Average	13173.12	--	117157.97	--
C.V. (%)	10.79	--	10.94	--
C.G.R (%)	65.93	--	78.32	--

Table 2.6 displays the volume and value of IMPS during the period of 2014-15 to 2021-22. It is clear from the table that the volume of IMPS started with just 78.44 million and till the end of study period it rose to 3746.77 million with the compound growth rate of 66 per cent. At the same time, the value of IMPS grows to 33219.63 billion in 2021-22 from 581.89 billion in 2014-15, with the compound growth of 78.32 per cent.

- **Growth of RuPay Cards**

RuPay is India's first indigenous card payment network, with widespread acceptance at ATMs, POS terminals, and e-commerce websites. It's a highly secure network with anti-phishing protection. The name, which is derived from the words 'Rupee' and 'Payment,' underlines that it is India's very own Card payment effort. It is our response to international payment networks, as well as a statement of national pride. RuPay realises the RBI's objective of a "less cash" economy. Only by pushing every Indian bank and financial institution to become tech-savvy and participate in electronic payments could this be accomplished. (at POS). RuPay is a product of the National Payments Corporation of India (NPCI), which oversees retail payments in the country. The Reserve Bank of India (RBI) and the Indian Banks' Association (IBA) were given the authority to build a secure electronic payment and settlement system in India under the Payment and Settlement Systems Act, 2007.

Table 2.7: RuPay Cards

Year	RuPay Card at (POS)				RuPay Card at (ECommerce)			
	Volume (in Million)	Yearly Growth Rate	Value (in Billion)	Yearly Growth Rate	Volume (in Million)	Yearly Growth Rate	Value (in Billion)	Yearly Growth Rate
2014-15	5.25	--	10.76	--	0.85	--	0.51	--
2015-16	25.41	384.28	44.74	315.72	10.24	1106.74	5.76	1031.6
2016-17	195.22	668.39	289.95	548.07	87.56	755.35	59.34	929.39
2017-18	459.55	135.4	488.23	68.38	208.11	137.67	166.09	179.91
2018-19	695.02	51.24	808.23	65.54	432.06	107.61	366.90	120.9
2019-20	822.59	18.36	1146.81	41.89	658.13	52.32	610.40	66.37
2020-21	701.99	-14.66	1169.38	1.97	679.68	3.27	926.72	51.82
2021-22	691.77	-1.46	1217.99	4.16	571.84	-15.87	833.61	-10.05
Average	3596.80	--	5176.09	--	2648.47	--	2969.33	--
C.V. (%)	9.18	--	9.78	--	10.89	--	12.66	--
C.G.R (%)	65.72	--	90.29	--	86.25	--	175.04	--

The table 2.5 shows the value and volume of RuPay Card at (POS) and RuPay Card at (ECommerce) from 2014-15 to 2021-22. While observing RuPay Card at (POS) it is clear that the volume and value is just 5.25 million and 10.76 billion respectively in the initial year (2014-15), which rose to 691.77 million volume and 1217.99 billion value in the year 2021-22. The compound growth rate for volume is 65.72 per cent and 90 per cent for value. The fluctuation rate is 9 per cent for the study period.

Similarly, RuPay Card at (ECommerce) shows the volume and value, which is just 0.85 million and 0.51 billion respectively in the year 2014-15, which increased to 571.84 million volume and 833.61 billion value till the end of the study period (2021-22). The compound growth rate for volume is 86 per cent and 175 per cent for value.

- **Growth of Unified Payments Interface(UPI)**

The Unified Payments Interface (UPI) is a system that combines many banking services, smooth fund routing, and merchant payments into a single mobile application (of any participating bank). It also handles "Peer to Peer" collection requests, which can be scheduled and paid according to need and convenience. In light of the foregoing, the National Payments Corporation of India (NPCI) undertook a test launch with 21-member banks. Dr. Raghuram G Rajan, Governor of the Reserve Bank of India, launched the pilot on April 11, 2016 in Mumbai. Since August 25, 2016, banks have been uploading their UPI-enabled apps to the Google Play store.

Table 2.8: UPI

Year	Volume (In Million)	Yearly Growth Rate	Value (In Billion)	Yearly Growth Rate
2016-17	17.86	--	69.47	--
2017-18	915.23	5023.87	1098.32	1480.99
2018-19	5353.40	484.92	8769.70	698.47
2019-20	12518.60	133.84	21317.30	143.08
2020-21	22330.70	78.38	41036.50	92.5
2021-22	36034.40	61.37	66301.50	61.57
Average	77170.20	--	138593.00	--
C.V. (%)	18.24	--	18.84	--
C.G.R (%)	125.57	--	272.8	--

Table 2.8 depicts the volume and value of UPI for the period of last six years starting from 2016-17 to 2021-22. The data of the UPI reveals the tremendous growth in volume and value with the compound annual growth of 126 per cent and 273 percent respectively. The volume is just 17.86 million in 2016-17 which rose to 36034.40 million till the end of study period with an average of 77170.20 million. Similarly, the value of UPI transactions also surged to 66301.50 billion in 2021-22 from 69.47 billion in 2016-17. The coefficient of variation proves that there are 18 per cent of fluctuations are observed during the study period.

- **Growth of NETC**

The National Payments Corporation of India (NPCI) created the National Electronic Toll Collection (NETC) initiative to satisfy the Indian market's electronic tolling needs. It provides an interoperable toll payment system across the country, as well as clearing house services for settlement and dispute resolution. As it relates to the National Electronic Toll Collection (NETC) system, interoperability refers to a set of processes, business regulations, and technical requirements that allow customers to use their FASTag as a payment mechanism on any toll plaza, regardless of who owns the toll plaza.

FASTag is a gadget that uses Radio Frequency Identification (RFID) technology to allow drivers to pay tolls while on the road. The FASTag (RFID Tag) is attached to the vehicle's windscreen and allows for remote access.

Table 2.9: NETC

Year	Volume (in Million)	Yearly Growth Rate	Value (in Billion)	Yearly Growth Rate
2016-17	23.52	--	6.61	--
2017-18	126.52	437.83	33.39	405.4
2018-19	254.03	100.79	57.38	71.85
2019-20	582.59	129.33	112.94	96.82
2020-21	1327.28	127.83	227.62	101.53
2021-22	1927.27	45.2	303.58	33.37
Average	4241.21	--	741.52	--
C.V. (%)	17.95	--	15.9	--
C.G.R (%)	101.16	--	107.64	--

The table 2.9 shows the value and volume of NETC from 2016-17 to 2021-22 with an excellent increase in the volume and value both. From 2016-17 it is seen that the volume and value is just 23.52 million and 6.61 billion respectively then it increased to volume of 1927.27 million and value of 303.58 billion in 2021-22. Over six years of study it is observed that there is a marvellous compound growth rate, with 101 per cent from volume and 108 per cent in volume of transactions.

Conclusion

NPCI has had a tremendous impact on the country's retail payment systems along its journey. UPI, BHIM, RuPay, NETC, AePS, BHIM Aadhaar, Bharat BillPay (BBPS), NFS, NACH, CTS, IMPS are the different options available for digital retail payments and transfers supported by NPCI. The growth of various products of NPCI retail payments has been penetrated because customers have adopted digital payment systems. Moreover, it is felt that due to Covid pandemic, customers choice has been shifted towards contactless payment methods over other payment modes. The Unified Payments Interface (UPI) has been dubbed the payment system's "revolutionary product." India is leading among nations with IMPS as a real time payment solution in retail sector. The Aadhaar Payment Bridge (APB) System also assists the government and government organisations in facilitating Direct Benefit Transfers for a variety of federal and state-sponsored programmes. RuPay is an Indian-developed payment system that is tailored to the expectations and requirements of Indian consumers, banks, and merchants. RuPay enables banks in India to issue debit, credit, and prepaid cards, hence promoting the expansion of retail electronic payments in the country. The goal of these goods is to make India a "less-cash" society by reaching out to every Indian with one or more payment services. With each passing year, we get closer to our goal of being the world's best payment network.

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