

Digital Economy- Metamorphosis from Paranoia to Panacea in Financial Inclusion

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Abstract

The onset of digital financial transactions in the arena of Indian banking sector have ushered in a resurgence in the financial inclusion. In this regard, this paper attempts to provide a comprehensive review of the growth of Digital financial inclusion in India covering various initiatives taken by the government to promote Digital financial inclusion in recent years. Further, the study will reconnoiter the mammoth growth of transactions and volume in Unified Payment Interface, National Electronic Funds Transfer, Immediate Payment Service, Prepaid Payment Instruments and such other platforms. This study will also make an endeavor to cover inter and intra country comparison to measure the growth of Digital Financial Inclusion worldwide.

Keywords: *Financial Inclusion; Digital Finance, UPI Banking, Mobile Banking, Inclusive Development*

Introduction

India is majorly a cash driven economy where cash is still the king in Indian society. But the scenario is rapidly changing in India. India is embracing cashless economy gradually by moving towards less cash society. Payment systems in a country foster economic development and financial stability as well as support financial inclusion. Ensuring safe, secure, reliable, accessible, affordable and efficient payment systems has been one of the important strategic objectives and goals of the Government of India. With a vision to transform India into a digitally empowered society and knowledge economy, the Government of India launched Digital India, a flagship programme. The journey of payment systems in India has been phenomenal in the recent couple of years. The past decade has

witnessed the mammoth growth in few payment systems, all for the convenience of common man with enhanced level of confidence through various safety and security measures. The role of RBI has transformed from being a regulator, operator and facilitator to creator of an environment for the structured development of the payments ecosystem in India.

To give boost and better settlement of digital payment system, the Government of India initiated number of new modes of digital payment under National Payments Corporation of India (NPCI). Several other products and services have been launched to make the payment system more brisk such as Bharat Interface for Money (BHIM), Unified Payment Interface (UPI), Immediate Payment Services

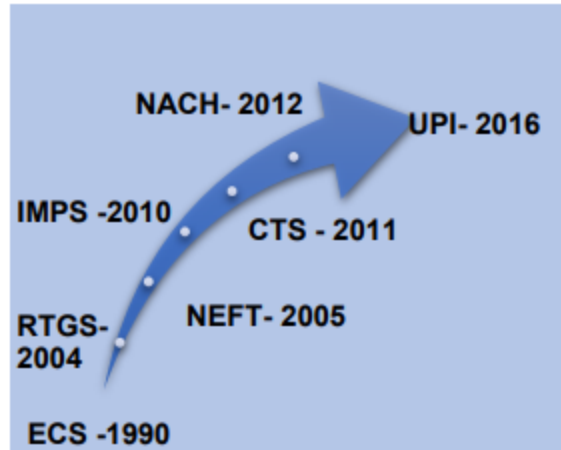
(IMPS), National Automated Clearing House (NACH), Cheque Truncation System (CTS), Aadhaar Enabled Payment System (AEPS), RuPay, Bharat Bill Payment System (BBPS), Bharat QR (BQR) and National Electronic Toll Collection (NETC).

JAM (Jan Dhan, Aadhaar and Mobile) trinity, which is a fusion of sovereign initiatives in the form of Jan Dhan and Aadhaar, along with low-cost mobile and data have been key enablers for the growth and steep trajectory of digital payments in the country. As per the RBI's Report on Payment Vision on 2019-2021, there are more than 131 crore Aadhaar card holders, there has been facilitation of the fold of digital payments by Direct Benefit Transfers (Government to Person or G2P payments) through the Aadhaar Payment Bridge System (APBS). This has also resulted in significant growth in Aadhaar-enabled Payment System (AePS) through the Business Correspondent assisted model for facilitating digital payments using micro-ATMs. The increase in mobile phone consumer base with about 114 crore mobile users (TRAI, February 2021), of which about 84 crore (Statista, 2021) have smart phones, has facilitated digital payments through technology driven platforms for mobile banking (banks), mobile wallets (dominance of private entities) and USSD based payments as well as UPI based payments (through UPI123Pay) for feature phone users.

Payment Vision Document 2025 of Reserve Bank of India focuses on E-Payments for Everyone, Everywhere, Every time (4 Es) with a vision to provide every user with Safe, Secure, Fast, Convenient, Accessible, and Affordable e-payment options.

India has made impressive progress towards innovation in digital payments. India has enacted a separate law for Payment and Settlement Systems which has enabled an orderly development of the payment ecosystem in the country. The present state-of-the-art payment systems that are affordable, accessible, convenient, efficient, safe, secure and available 24x7x365 days a year are a matter of pride for the nation. To continue the momentum, the Reserve Bank of India has recently introduced a Concept Note on Central Bank Digital Currency (CBDC).

Central Bank Digital Currency (CBDC) is a digital form of currency notes issued by a central bank. While most central banks across the globe are exploring the issuance of CBDC, the key motivations for its issuance are specific to each country's unique requirements. This Concept Note explains the objectives, choices, benefits and risks of issuing a CBDC in India, referred to as e₹ (digital Rupee). The e₹ will provide an additional option to the currently available forms of money. It is substantially not different from banknotes, but being digital it is likely to be easier, faster and cheaper. It also has all the transactional benefits of other forms of digital money. RBI has taken several initiatives since the mid-eighties to bring in technology-based solutions to the banking system. The developments in India's payment system have been indicated in the below chart:



Source: Reserve Bank of India-Concept paper on Digital Currency

This paper provides a comprehensive review of the growth of Digital Financial Inclusion in India i.e UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instruments.

Review of Literature

Allen, Demirguc-Kunt, Klapper & Peria (2012) conducted a study to understand the foundation of financial inclusion and cited that, the reasons for financial exclusion as stated by individuals depends on various factors like bank branches too far to reach, lack of money, documentary restrictions, too expensive, lack of trust, religious sentiments and family members having one account. Moreover, these reasons help in differentiating between voluntary (deficiency of money, religion reasons, already one family member has account) and involuntary exclusion (branch is far away, process is expensive, lack of document and trust in banks). Authors quote numerous examples in this league, for instance, owing a bank account expensive in Brazil and thus, 57% do not have a bank account, most people in China do not have an account because one member in the family is already an

account holder. In Russia and South Africa people point to expensive maintenance as the reason for keeping themselves away from formal bank account. In the Indian context, more so in comparison with most nations which are moving towards digital banking, the large part of the population is still unbanked. This implies that spreading awareness among people is very important. In India, 90% of the stakeholders have access to informal financial services and only 10% enjoy formal banking. Hence, voluntary exclusion, financial literacy and lack of awareness are all at the root of low financial access.

RBI (2014) presented a report to study various challenges and evaluate alternatives in the domain of technology that can help the large-scale expansion of mobile banking across the country. The report divided the challenges into 2 broad categories – Customer enrollment related issues and Technical issues. Customer enrollment related issues include mobile number registration, M-PIN (mobile pin) generation process, concerns relating to security as a factor affecting onboarding of customers, education of bank's staff and customer education. On the other hand, technical issues include access channels for transactions, cumbersome transaction process, and coordination with MNOs (Mobile Network Operators) in a mobile banking ecosystem. The report has a detailed comparison of four channels of mobile banking - SMS (Short Message Service), USSD (Unstructured Supplementary Service Data), IVRS (Interactive Voice Response System) and Mobile Banking Application, and evaluates each one of them based on accessibility, security, and usability. To resolve the different problems identified, the report suggests

developing a common mobile application, using SMS and GPRS channels, for all banks and telecom operators. The aforementioned application should enable the user to perform basic mobile banking operations such as enquiring his/her account balance, transfer and remittance of money. The application is expected to be developed in such a way that it provides a simple menu driven, interactive interface to the user. Such an application can be developed by the combined efforts of telecom operators and banks. The application can be embedded on all new SIM cards so that any person buying a new card has a pre-installed application. For customers already using SIM cards, the application can be transferred “over the air” (OTA) using a dynamic STK (SIM Application Tool Kit) facility.

Purvi Shah (2016) finds that there is less outreach of banks in the villages. People are less aware of financial products and services and recent government initiatives. The author identified eight factors affecting the access to financial services: legal identity, limited literacy, level of income, terms, and conditions while availing loans, complicated procedures, psychological and cultural barriers, access to a bank branch and lack of awareness. The author concluded that technology can play a vital role in integrating the people in people of economic and social class

Parakh Rishabh (2017) stated that technology plays the most crucial role in driving financial inclusion in India. The latest technological innovations like Big data analytics, Application Programming Interfaces (APIs) and Cloud computing/Software-as-a-service have synergistic applicability with financial

services. But the mobile phone is the most impactful technological invention that can be used to increase financial inclusion. This digital revolution had attracted Fintech in India; these companies are offering proprietary digital platforms and innovative tools in different sectors.

Ozili (2018) suggested a framework to illustrate the role of government, fintech, and banks in digital finance and financial inclusion. To achieve financial inclusion through digital finance there is a need for full-scale financial data inclusion, where financial data inclusion means merging the entire population's biometric information to their bank accounts. This can offer twin objectives; firstly; verification and tracing of financial transactions done via digital mode and secondly; monitoring the income and demographic profile of users of digital financial services. The ability and willingness of the population to participate in digital space is an essential prerequisite to achieve high financial inclusion.

Sahu & Goswani (2018) conducted a study to study the impact of demonetization on digital transactions through the usage of credit cards and debit cards. The author used secondary data obtained from RBI which only comprises three widely used digital transaction tools, these are; debit cards, credit cards, and point-of-sale (POS). The author used only two banks, one public bank (SBI & its associates) and one private bank (HDFC). The author concluded that there is an increase in the users of debit cards and credit card especially after demonetization and to take full advantage of digital mode government must deal with cyber risk.

Nahata (2018) conducted a study to identify the effect of demonetization in enhancing digital payment and a digital ecosystem. The study focusses on only three digital payment methods, these are; Debit card, mobile banking and Prepaid Payment Instrument (PPI). While infrastructure indicators included point of sales and number of ATMs. The author uses the secondary to analyse RTGS, NEFT, Debit card, Credit card, Mobile banking, and Prepaid instrument. The author concluded that people use cash because it has no associated cost with it and it is easier to use, people will only use digital payments only if the right incentive and benefit are provided. The author suggested that there should be an elimination of transaction costs while conducting digital transactions only than it will be promoted. The author further suggested that there should the protection of data, low ticket digital transaction must be given priority, reduction in charges of POS machines, reduced regulatory hurdles from POS, unified payment interface rather than multiple payment interfaces, adoption of digital payments by the government and helping the Fintech companies' efficient and minimal regulation.

Objective of the study

1. To make a comprehensive review of the growth of Digital financial inclusion in India.
2. To know the various initiatives taken by the government to promote Digital financial inclusion in recent years.
3. To comprehend whether there is a significant difference or not in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid

Payment Instrument in terms of volume and value of transactions.

Research Methodology

1. **F-Test (One Factor Model):** This statistical tool will assist in comprehending the following:
 - i. Whether there is a significant difference or not in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument from the **volume point of view**.
 - ii. Whether there is a significant difference or not in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument from the **value point of view**
2. **Parabolic Trend Equation** – This statistical tool will assist in ascertaining the trend in the growth of various Digital Platform viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument from the volume and value point of view, whether this is positive or negative.

Limitations of the study

1. This research study is based on the secondary data.
2. Due to various technical constraints all the facets and facts of financial inclusion could not be studied.

Gauging the Performance of Digital Platforms

Whether there is a significant difference or not in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of **volume** during

the period considered for the study, i.e., March 2017 to March 2021.

a) F-Test (One Factor Model)- Volume wise

Null Hypothesis (H0): *There is no significant difference in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of volume of transactions during the period considered for the study, i.e., March 2017 to March 2021.*

Alternative Hypothesis (H1): *There is a significant difference in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of volume of transactions during the period considered for the study, i.e., March 2017 to March 2021.*

Decision: Since *p*-value is less than 0.05, so

null hypothesis is rejected. Hence, there is a significant difference in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of volume of transactions during the period considered for the study, i.e., March 2017 to March 2021.

b) F-Test (One Factor Model) – Value wise.

Null Hypothesis (H0): *There is no significant difference in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of value of transactions during the period considered for the study, i.e., March 2017 to March 2021.*

Alternative Hypothesis (H1): *There is a significant difference in the growth of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of value of transactions during the period considered for the study, i.e., March 2017 to March 2021.*

Value of transactions in Rs. Billion					
Year					
Digital Platforms	UPI	RTGS	NEFT	CREDIT CARD	Prepaid Payment Instrument
2017	69	981904	120040	3284	838
2018	1098	1167125	172229	4590	1416
2019	8769	1356882	227936	6034	2133
2020	21317	1311565	229456	7309	2156
2021	41040	1056000	251310	6300	1980
2021	84160	1286580	287250	9720	2940

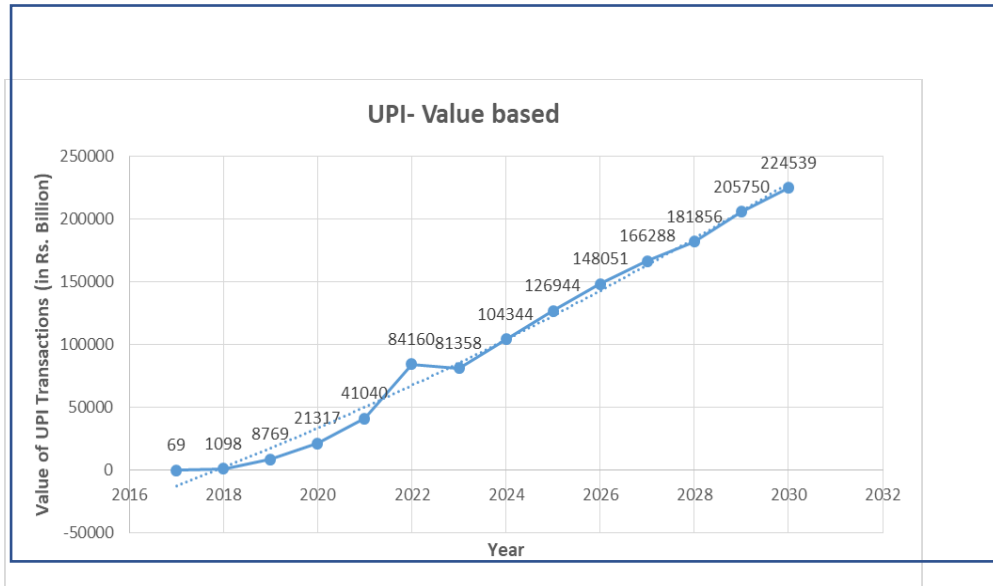
Anova: Single Factor SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Column 1	6	12117	2019.5	3.5		
Column 2	6	156453	26075.5	1044023443		
Column 3	6	7160056	1193343	22734303573		
Column 4	6	1288221	214703.5	3552205440		
Column 5	6	37237	6206.167	4950552.967		
Column 6	6	11463	1910.5	513852.7		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	6.73946E+12	5	1.35E+12	295.8500009	1.43108E-24	2.533555
Within Groups	1.3668E+11	30	4.56E+09			
Total	6.87614E+12	35				

Decision: Since calculated value of F i.e 295.85 is higher than the table value at 5% level of significance $F_{0.05} = 2.534$. Hence, null hypothesis is rejected. So, there is a significant difference in value of various Digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of value of transactions during the period considered for the study, i.e., March 2017 to March 2021.

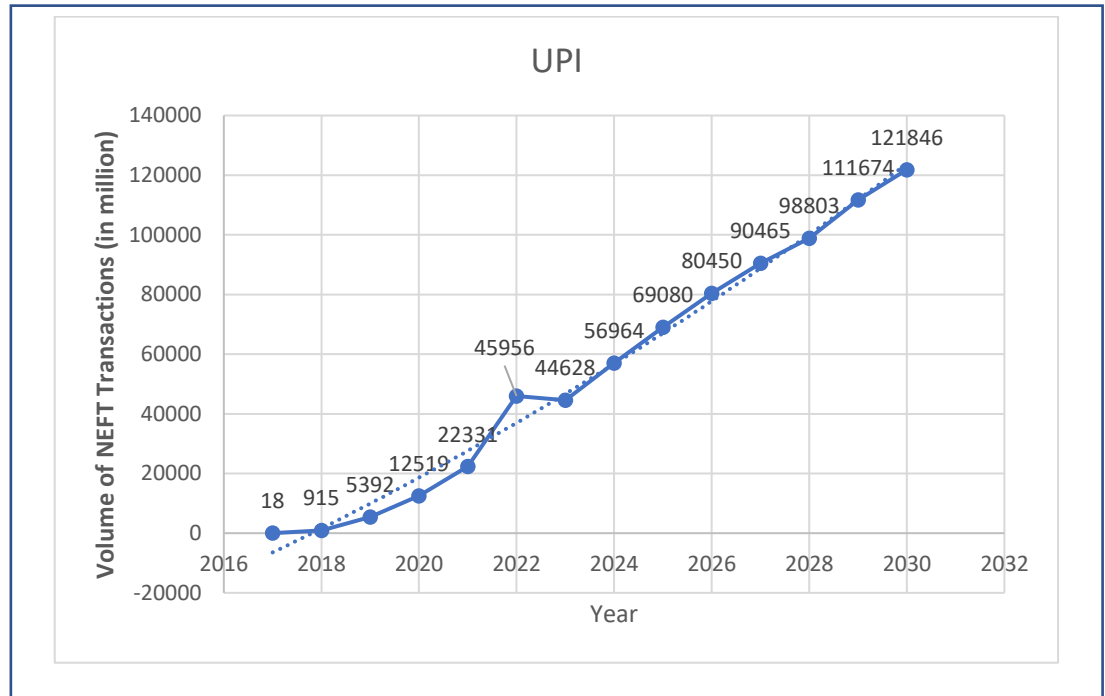
Parabolic Trend Equation

Unified Payment Interface (UPI)

Year	Value of UPI Transactions (in Rs. Billion)
2017	69
2018	1098
2019	8769
2020	21317
2021	41040
2021	84160
2021	81358
2024	104344
2025	126944
2026	148051
2027	166288
2028	181856
2029	205750
2030	224539

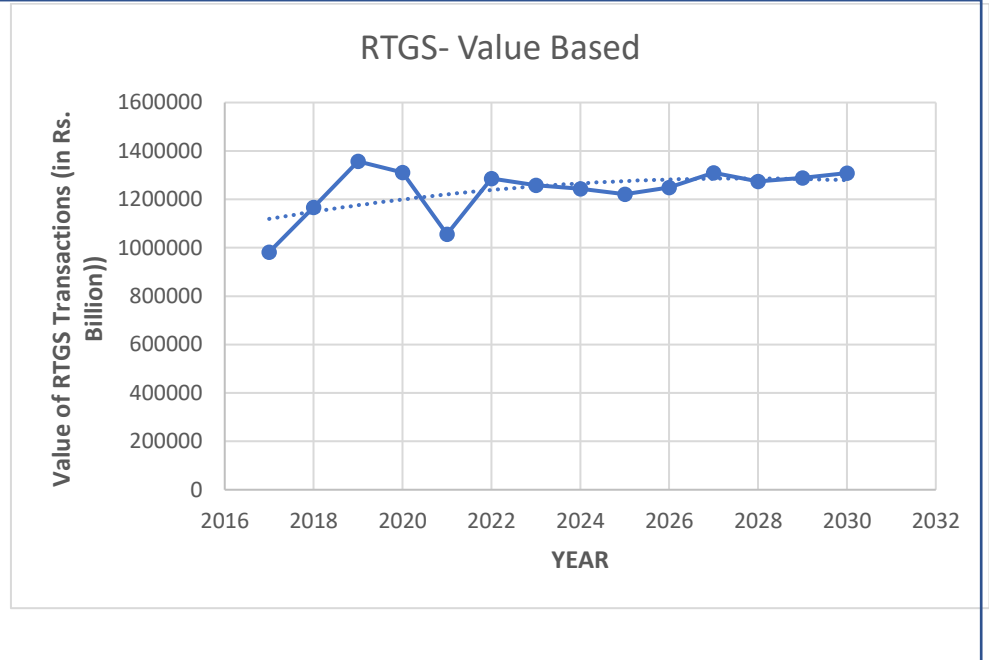


Year	Volume of UPI Trans. (in Mn.)
2017	18
2018	915
2019	5392
2020	12519
2021	22331
2021	45956
2021	44628
2024	56964
2025	69080
2026	80450
2027	90465
2028	98803
2029	111674
2030	121846

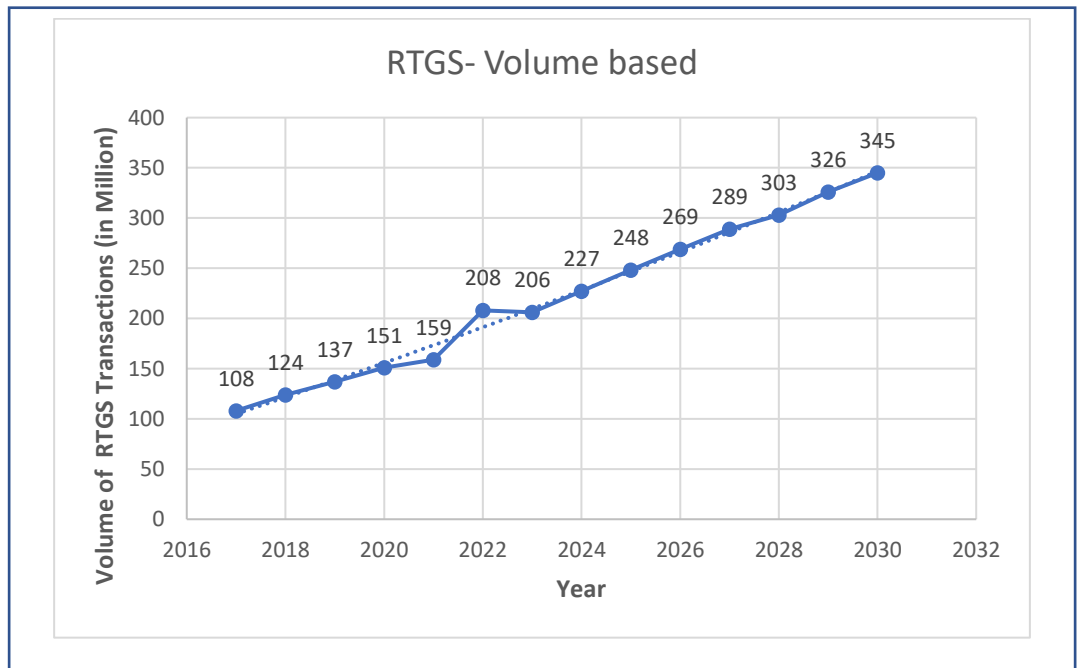


Real Time Gross Settlement (RTGS)

Year	Value of RTGS Trans. (in Rs. Bn.)
2017	981904
2018	1167125
2019	1356882
2020	1311565
2021	1056000
2021	1286580
2021	1258168
2024	1244000
2025	1220620
2026	1249504
2027	1310369
2028	1273662
2029	1288685
2030	1308611

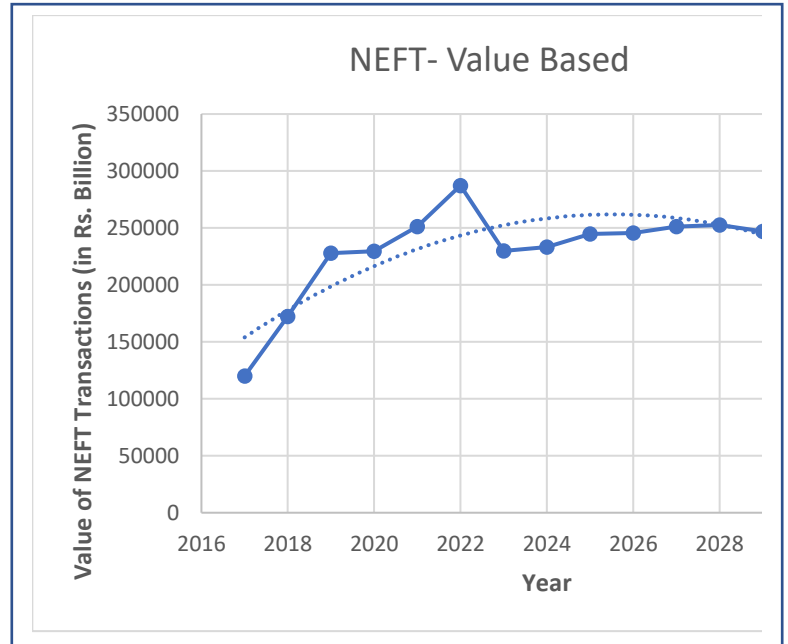


Year	Volume of RTGS Trans. (in Million)
2017	108
2018	124
2019	137
2020	151
2021	159
2021	208
2021	206
2024	227
2025	248
2026	269
2027	289
2028	303
2029	326

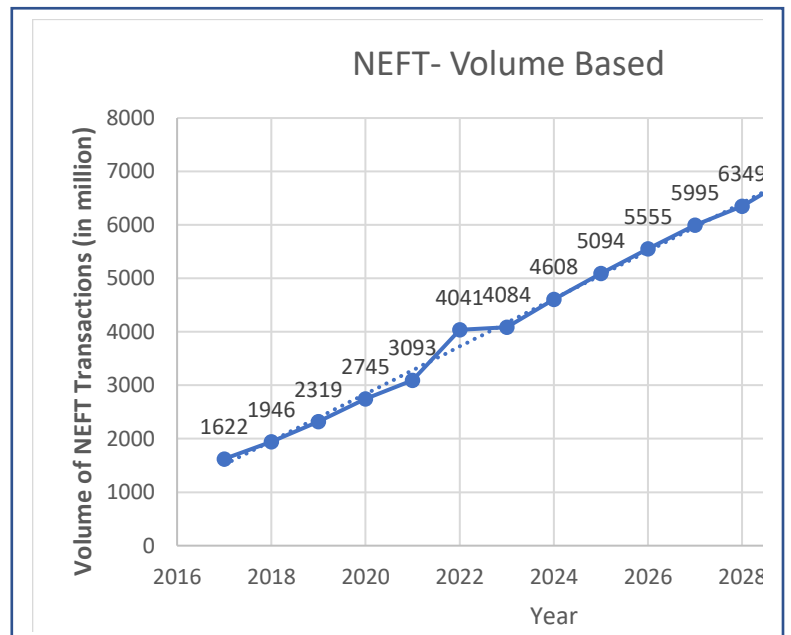


National Electronic Funds Transfer (NEFT)

Year	Value of NEFT Trans. (in Rs. Billion)
2017	120040
2018	172229
2019	227936
2020	229456
2021	251310
2021	287250
2021	229972
2024	233230
2025	244640
2026	245706
2027	251248
2028	252503
2029	246872
2030	251046

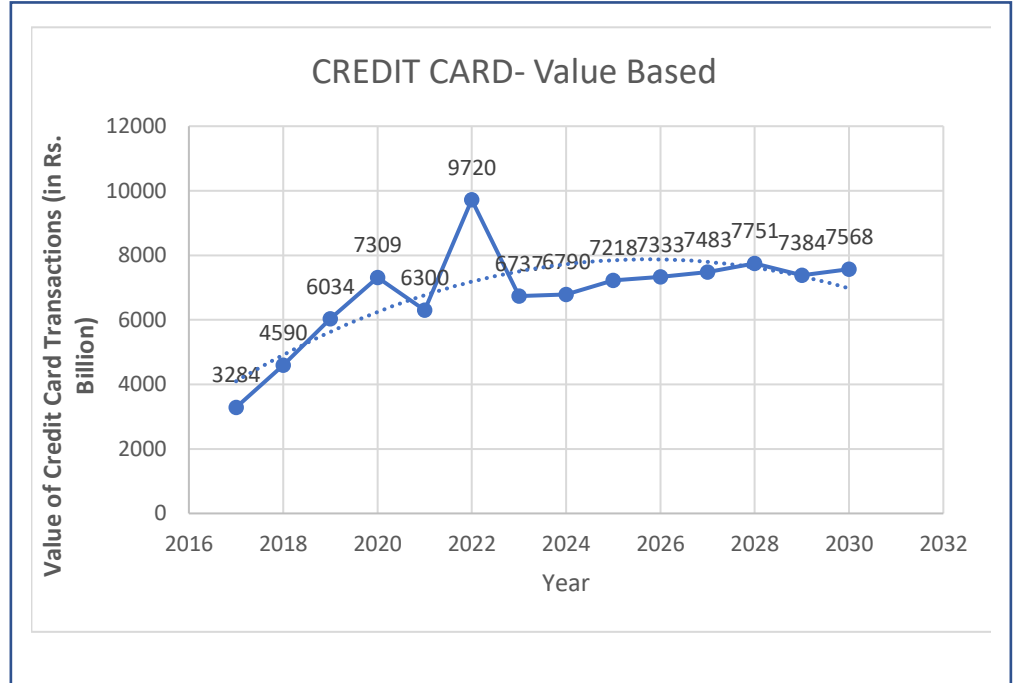


Year	Volume of NEFT Transactions (in Million)
2017	1622
2018	1946
2019	2319
2020	2745
2021	3093
2021	4041
2021	4084
2024	4608
2025	5094
2026	5555
2027	5995
2028	6349
2029	6874

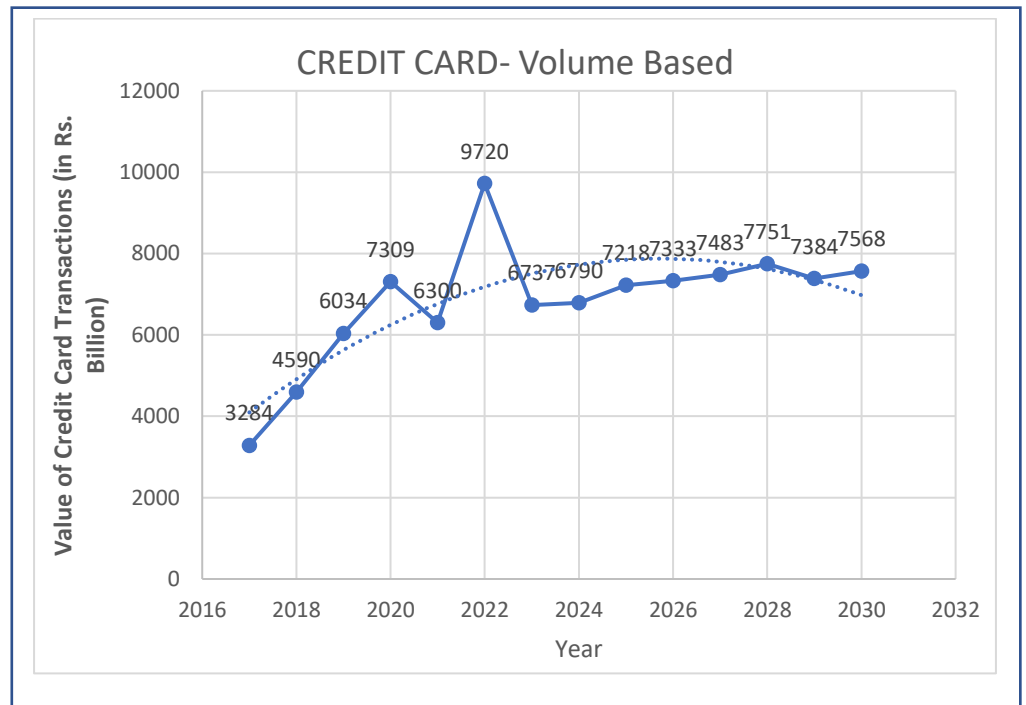


Credit Card

Year	Value of Credit Card Transactions (in Rs. Bn.)
2017	3284
2018	4590
2019	6034
2020	7309
2021	6300
2021	9720
2021	6737
2024	6790
2025	7218
2026	7333
2027	7483
2028	7751
2029	7384
2030	7568

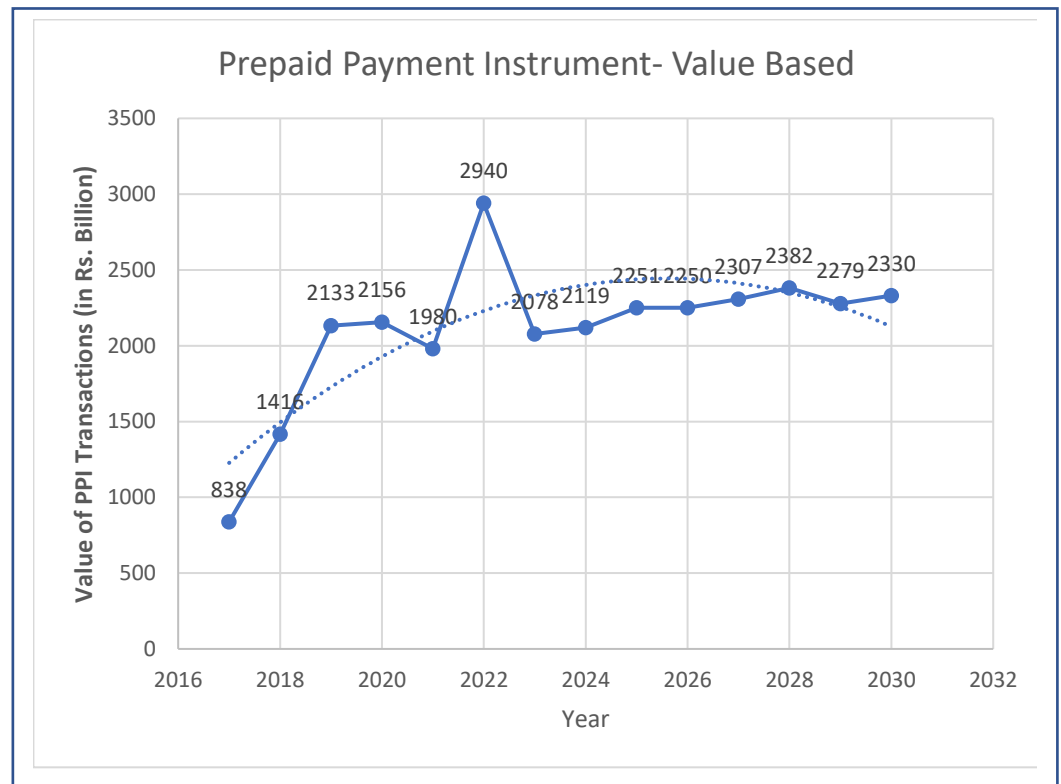


Year	Volume of Credit Card Transactions (in Million)
2017	1087
2018	1405
2019	1762
2020	2177
2021	1764
2021	2240
2021	2371
2024	2511
2025	2610
2026	2729
2027	2975
2028	3041
2029	3189
2030	3334

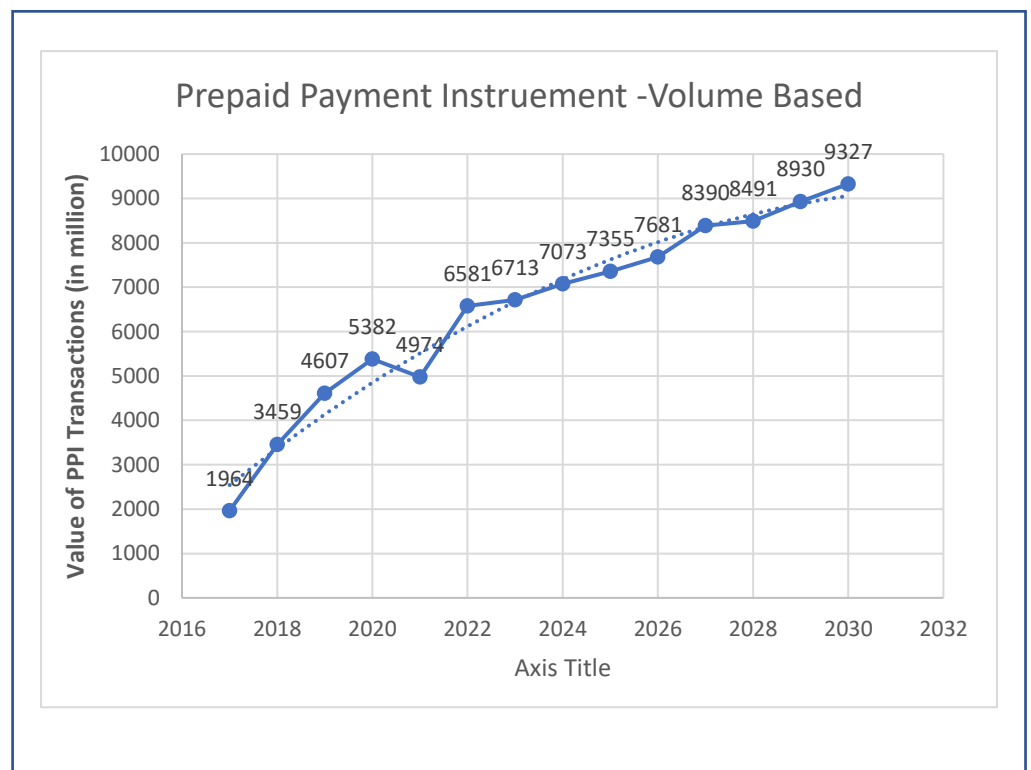


Prepaid Payment Instrument (PPI)

Year	Value of PPI Transactions (in Rs. Bn.)
2017	838
2018	1416
2019	2133
2020	2156
2021	1980
2021	2940
2021	2078
2024	2119
2025	2251
2026	2250
2027	2307
2028	2382
2029	2279
2030	2330



Year	Volume of PPI Transactions (in Million)
2017	1964
2018	3459
2019	4607
2020	5382
2021	4974
2021	6581
2021	6713
2024	7073
2025	7355
2026	7681
2027	8390
2028	8491
2029	8930
2030	9327



Findings

Taking the first statistical analysis that is whether there is a significant difference or not in the growth of various digital platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument in terms of volume and value of transactions during the period considered for the research study, i.e., March 2017 to March 2021, it may be opined that Unified Payment Interface (UPI) has been proved to be panacea for digital banking system merging several banking features, seamless fund routing & merchant payments into one hood.

Since UPI was found to be innovative digital platforms, it is evident that there is multifold growth in the value and volume of UPI transactions during the research period compared to other platforms i.e RTGS, NEFT, Credit Card, PPI.

With reference to the parabolic trend equations which has been applied to ascertain the trend in the growth of various Digital Platforms viz. UPI, RTGS, NEFT, Credit Card and Prepaid Payment Instrument, following are the findings:

1. There is a mammoth growth of transactions ***in terms of volume and value of transactions*** in Unified Payment Interface. Since consumer perceived it as innovative digital platform, there is surge in the value of UPI transactions from Rs. 69 bn. in 2017 to Rs. 84160 bn. in 2021 and it is expected that similar growth may be observed by 2030 as depicted by trendline. Similarly, the volume of UPI transactions is also increased 18 million in 2017 to 45956 million in 2021 and expected to register a substantial growth

in 2030 i.e 121846 million. It is to be noted that as a quick payment mode, public at large is accepting this mode of digital payment.

2. If we see the growth RTGS and NEFT transactions, it is observed that volume of transactions in both the platforms has increased constantly but there is downward trend in terms of value of transactions. The reasons may be the shifting of users from these instruments to UPI platform as well as negative impact of Covid-19 pandemic, other economic development taking place in national and international arena. It is expected to register the growth of RTGS transaction with similar pace in 2030 i.e Rs. 1308611 Bn in terms of value and 345 million in terms of volume. Similar growth is expected in NEFT transactions i.e Rs. 251046 bn in terms of value and 345 million in terms of volume.
3. Reference to the Credit Card usage, it is evident that there is less growth in credit card and Prepaid Payment Instrument (PPI) transactions comparing to UPI platform. The value of credit card transactions has increased from Rs. 3284 bn. in 2017 to Rs. 9720 bn. in 2021. Similarly, the volume of Credit Card transactions has also increased 1087 million in 2017 to 2247 million in 2021. It is expected that the value of Credit card transactions may go down to Rs. 7568 bn. and volume of credit card transactions may reach to 3334 million. Similarly, the value of Prepaid Payment Instrument (PPI) transactions has increased from Rs. 838 bn. in 2017 to

Rs. 2940 bn. in 2021 and the volume of Prepaid Payment Instrument (PPI) transactions has also increased 1964 million in 2017 to 6581 million in 2021.

On observing the UPI platform data, it is opined that public at large has accepted the UPI platform both in terms of volume and value of transactions, in light of its key attributes such as faster mode, anywhere anytime mode of payment, easy accessibility etc. Further, we observe the growth of other platforms too but there is less growing comparing to UPI.

It is to be noted that merely on the basis of aforesaid statistical analysis, it may not be concluded that the growth of various Digital platforms has been random or erratic, since there are numerous political, economic, social, technological, legal and environmental factors that influence the digital platforms and banking system.

To put in nutshell, it may be stated from the above analysis that the mammoth growth in these digital platforms or leveraging digital financial innovation will definitely enhance the growth of financial inclusion in the country and will take it on the next level by the end of this decade.

Conclusion

This study intends to observe the growth of digital platforms in India since 2017 and to ascertain the trend in the growth of these Digital Platform in the coming years. It is observed that India is making rapid strides in digital financial inclusion. With the help of given data and its analysis, it is clear that more and more population is coming under the ambit of Financial Inclusion. The tremendous growth in the value and volume of UPI transactions shows that people are now techno savvy and believe in Digital India. At the same time, there are some

risks of fraud associated with it. The Government is taking various steps to increase the awareness among the masses to mitigate the chances of fraud in online transactions. This will help the economy in attaining higher digital financial inclusion.

By accelerating the pace of financial inclusion the Government has brought substantial number of unbanked population under the fold of formal banking system, as evident from the growing number of transactions in Digital platforms i.e UPI, RTGS, NEFT, Credit Card, Prepaid payment Instruments etc.

Thus, it may be opined that in near future the network of digital platform will be developed and due to robust financial inclusion initiatives, the whole population of India will be covered under the formal financial framework.

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