



GROWTH AND PERFORMANCE OF DIGITAL BANKING SERVICES IN INDIA

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ABSTRACT

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The present study examines the growth and performance of four major digital banking services in India—Unified Payments Interface (UPI), National Electronic Funds Transfer (NEFT), Real Time Gross Settlement (RTGS), and Immediate Payment Service (IMPS)—during the period 2016–17 to 2025–26. The study aims to analyse the growth pattern, relative performance, changing transaction share, and interrelationship among these digital payment systems. The study is based on secondary data collected from published sources, and descriptive statistics, year-on-year growth rate, percentage share analysis, and Pearson correlation analysis have been employed for data analysis. The findings reveal that UPI has emerged as the dominant digital payment system, recording remarkable growth in transaction volume and percentage share throughout the study period. NEFT and RTGS demonstrate stable and consistent growth, whereas IMPS exhibits comparatively slower growth with a declining transaction share in recent years. The percentage share analysis highlights a structural transformation in India's digital payment ecosystem in favour of UPI, while correlation analysis indicates a strong positive association among the selected digital payment systems. The study concludes that India's digital banking landscape has experienced substantial transformation over the study period, with UPI emerging as the principal digital payment system contributing to the expansion of digital transactions in the country.

KEYWORDS: Digital Banking; Digital Payment Systems; UPI; Banking Performance; India

1. INTRODUCTION

The Indian banking sector has experienced a remarkable transformation over the past decade, largely driven by advancements in digital technology and the widespread adoption of electronic payment systems. Increasing internet penetration, the growing use of smartphones, and continuous technological innovations have accelerated the shift from conventional banking practices to digital modes of financial transactions. As a result, digital banking has become an integral part of the country's payment ecosystem, enabling faster, secure, and convenient fund transfers for individuals as well as businesses. Among the various digital payment systems operating in India, Unified Payments Interface (UPI), National Electronic Funds Transfer (NEFT), Real Time Gross Settlement (RTGS), and Immediate Payment Service (IMPS) have emerged as the principal channels for electronic fund transfers. Each of these systems serves distinct transaction requirements while collectively strengthening the country's digital payment infrastructure. Their increasing use reflects the growing preference for electronic transactions across different sectors of the economy.

The expansion of digital payments has also been supported by several initiatives undertaken by the Government of India and

the Reserve Bank of India to encourage digital transactions and reduce reliance on cash-based payments. These efforts, combined with continuous improvements in payment infrastructure and increasing public acceptance of digital platforms, have contributed to substantial growth in digital transaction volumes over the years. Given the rapid evolution of India's digital payment ecosystem, it is important to examine how the major digital banking services have grown over time and how their relative importance has changed. Analysing their performance provides valuable insights into the changing pattern of digital transactions and the contribution of individual payment systems within the overall digital banking landscape.

2. REVIEW OF LITERATURE

The review of literature provides an understanding of previous research on digital banking services and digital payment systems in India. It identifies major developments, research trends, methodologies, key findings, and the existing research gap. The studies are presented in chronological order to illustrate the evolution of research and provide a theoretical and empirical foundation for the present study.

Timilsina and Appa Rao (2019) conducted a comparative analysis of NEFT and IMPS using RBI secondary data. Using

descriptive statistics and one-way ANOVA, the study found that IMPS recorded significantly higher transaction growth than NEFT, primarily due to its real-time and multi-platform payment features.

Nigam, Mehdi, and Mazhar (2021) examined the development of financial technology through India's e-payment system using RBI annual reports. The study found a substantial increase in digital payment transactions, with UPI emerging as the fastest-growing payment system during the study period.

Fahad and Shahid (2022) examined the determinants of Unified Payments Interface (UPI) adoption in India using the Diffusion of Innovation (DOI) theory. The study found that relative advantage, complexity, and observability had a significant positive association with users' intention to use UPI, whereas compatibility and trialability were not significant. It also found that intention to use and satisfaction positively influenced users' intention to recommend UPI.

Bhadra, Naaz, and Ghosh (2023) examined the performance of selected e-payment methods in India during the COVID-19 pandemic using RBI secondary data from June 2020 to November 2021. Using the GARCH (1,1) model, the study found positive volatility in RTGS, AEPS, and UPI, while NEFT and IMPS exhibited negative volatility during the study period.

Isha and Khurana (2023) examined the evolution of e-banking in India using secondary data from the RBI, NPCI, and other official sources. The study found that UPI recorded exponential growth and emerged as the dominant retail digital payment platform, while NEFT and RTGS continued to serve medium- and high-value transactions.

Swami and K. (2023) The study found substantial growth in digital payments, with UPI accounting for the highest transaction volume and RTGS contributing the highest transaction value during the study period.

Sheikh (2024) the study analysed the transaction volume and value of major e-banking components, including UPI, NEFT, RTGS, IMPS, AePS and APBS, using CAGR analysis. The findings revealed that digital payment transactions recorded a CAGR of 45% during the study period, while UPI registered the highest CAGR (147%) among the selected payment systems, indicating its rapid growth in India's digital payment ecosystem.

Singh and Devi (2024) applying CAGR and trend analysis, the study found substantial growth in digital payment transactions over the study period. The findings further indicated that UPI recorded the highest growth among the selected payment modes, while the overall growth of digital payment indicators remained positive despite fluctuations across individual services.

Kumar et al. (2025) examined the adoption of Unified Payments Interface (UPI) among Indian micro-enterprises using an ethnographic approach and the Technology Affordances and Constraints Theory. The study found that UPI adoption evolved through the interaction of technological affordances and constraints, with innovations such as the All-

in-one QR code improving payment capabilities while also introducing challenges such as fraud risks.

Iyer (2025) examined the diffusion of card payments and the Unified Payments Interface (UPI) in India using the innovation systems approach. The study found that UPI experienced faster diffusion than card payments due to its lower costs, interoperable design, and supportive policy initiatives.

2.1 Research Gap

The review of literature indicates that substantial research has been conducted on digital banking services and digital payment systems in India. Previous studies have examined digital payment adoption, comparative performance, growth trends, transaction volatility, and the impact of technological and policy initiatives. However, comprehensive comparative studies integrating the growth, year-on-year growth, percentage share, and interrelationship of UPI, NEFT, RTGS, and IMPS using recent secondary data remain limited. Therefore, the present study analyses the growth and performance of these major digital banking services in India using descriptive statistics, year-on-year growth rate, percentage share analysis, and Pearson correlation analysis.

2.2 Objectives of the Study

1. To analyse the growth pattern of selected digital banking services in India during the period 2016–17 to 2025–26.
2. To evaluate the performance of selected digital banking services in India using descriptive statistical measures.
3. To examine the changing share of selected digital banking services in total digital banking transactions in India.
4. To analyse the relationship among selected digital banking services using correlation analysis.

3. RESEARCH METHODOLOGY

3.1 Research Design

The present study adopts a descriptive and analytical research design. The descriptive approach is used to examine the growth trends and transaction patterns of the selected digital banking services, while the analytical approach facilitates the comparative assessment of their growth, relative transaction share, and interrelationship using appropriate statistical techniques.

3.2 Data Source

The study is based on secondary data collected from the Reserve Bank of India (RBI) Annual Reports covering the period 2016–17 to 2025–26. The data have been obtained from Chapter IX, *Payment and Settlement Systems and Information Technology*, Table IX.1, *Payment System Indicators – Annual Turnover (April–March)*.

3.3 Data Selection

The study uses transaction volume as the primary indicator to analyse the growth and performance of selected digital banking services in India. Transaction volume provides a consistent and comparable measure of the usage of digital payment systems over time. Although the Reserve Bank of India reports both transaction volume and transaction value, only transaction volume is considered, as transaction values are influenced by the size of individual transactions, particularly in high-value payment systems such as RTGS.

3.5 Variables of the Study

The study includes the following digital banking services as variables:

- Unified Payments Interface (UPI)
- National Electronic Funds Transfer (NEFT)
- Real Time Gross Settlement (RTGS)
- Immediate Payment Service (IMPS)

These services represent the major digital payment systems considered for analysing the growth and performance of digital banking services in India.

3.6 Analytical Tools and Techniques

The following statistical tools have been employed for data analysis:

3.6.1 Descriptive Statistics

Descriptive statistical measures, including mean, median, standard deviation, minimum, maximum, and coefficient of variation, have been used to summarise the characteristics of the selected digital banking services.

3.6.2 Year-on-Year Growth Rate

$$\text{Growth Rate (\%)} = \left(\frac{V_t - V_{t-1}}{V_{t-1}} \right) \times 100$$

The year-on-year growth rate was calculated to measure the annual percentage change in the transaction volume of the selected digital banking services over the study period.

4. DATA ANALYSIS

Table 4.1. Descriptive Statistics of Digital Banking Services in India (2016–17 to 2025–26)

Financial Year	UPI	NEFT	RTGS	IMPS
2016-17	179	16221	1078	5067
2017-18	9152	19464	1244	10098
2018-19	53534	23189	1366	17529
2019-20	125186	27445	1507	25792
2020-21	223307	30928	1592	32783
2021-22	459561	40407	2078	46625
2022-23	837144	52847	2426	56533
2023-24	1311295	72640	2700	60053
2024-25	1858660	96198	3025	56250
2025-26	2416169	100996	3500	49431
Mean	729418.70	48033.50	2051.60	36016.10
Median	341434.00	35667.50	1835.00	39704.00
Standard Deviation	861004.67	31576.44	828.97	20512.83
Minimum	179	16221	1078	5067
Maximum	2416169	100996	3500	60053
Coefficient of Variation (%)	118.04	65.74	40.41	56.95

Source: Reserve Bank of India. (2017–2026). Annual Reports (2016–17 to 2025–26), Chapter IX: Payment and Settlement Systems and Information Technology, Table IX.1: Payment System Indicators – Annual Turnover (April–March).

Interpretation of Table 4.1- The descriptive statistics reveal substantial differences in the transaction characteristics of the selected digital banking services. UPI recorded the highest mean annual transaction volume, followed by NEFT, IMPS, and RTGS, indicating its dominance during the study period. The coefficient of variation shows that UPI exhibited the highest relative variability, reflecting its rapid expansion,

3.6.3 Percentage Share Analysis

$$\text{Percentage Share (\%)} = \left(\frac{\text{Individual Service Transactions}}{\text{Total Digital Transactions}} \right) \times 100$$

Percentage share analysis was employed to determine the proportion of each digital banking service in the total digital transactions. This analysis facilitates the comparison of the relative contribution of UPI, NEFT, RTGS, and IMPS to the overall digital payment ecosystem during the study period.

3.6.4 Correlation Analysis

$$r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

Pearson's correlation coefficient (r) was employed to examine the linear relationship among the selected digital banking services. The coefficient ranges from –1 to +1, with positive values indicating a positive association, negative values indicating an inverse association, and values close to zero indicating a weak or no linear relationship. This analysis helps assess whether the growth in one digital banking service is associated with the growth in another.

3.7 Statistical Software

Microsoft Excel has been used to perform the statistical analysis, including the computation of descriptive statistics, year-on-year growth rates, percentage share analysis, and Pearson correlation coefficients.

whereas RTGS recorded the lowest variability, indicating comparatively greater stability. Overall, the results demonstrate significant differences in the transaction volume and variability of the selected digital banking services.

Table 4.2: Year-on-Year Growth Rate (%).

Financial Year	UPI	UPI Growth %	NEFT	NEFT Growth %	RTGS	RTGS Growth %	IMPS	IMPS Growth %
2016-17	179		16221		1078		5067	
2017-18	9152	5013	19464	20	1244	15	10098	99
2018-19	53534	485	23189	19	1366	10	17529	74
2019-20	125186	134	27445	18	1507	10	25792	47
2020-21	223307	78	30928	13	1592	6	32783	27
2021-22	459561	106	40407	31	2078	31	46625	42
2022-23	837144	82	52847	31	2426	17	56533	21
2023-24	1311295	57	72640	37	2700	11	60053	6
2024-25	1858660	42	96198	32	3025	12	56250	-6
2025-26	2416169	30	100996	5	3500	16	49431	-12

Interpretation of Table 4.2 The year-on-year growth analysis reveals distinct growth patterns among the selected digital banking services. UPI recorded exceptionally high growth during the initial years and maintained positive growth throughout the study period, reflecting its rapid expansion. NEFT and RTGS exhibited stable and consistent positive

growth, whereas IMPS showed strong initial growth followed by decelerating growth, with negative growth recorded in the final two years. Overall, the findings indicate that UPI experienced the most remarkable growth, while NEFT and RTGS maintained steady performance over the study period.

Table 4.3 Percentage Share of Digital Banking Services in Total Digital Transactions (%)

Financial Year	UPI %	NEFT %	RTGS%	IMPS%
2016-17	0.79	71.95	4.78	22.48
2017-18	22.90	48.71	3.11	25.27
2018-19	55.99	24.25	1.43	18.33
2019-20	69.57	15.25	0.84	14.33
2020-21	77.37	10.72	0.55	11.36
2021-22	83.76	7.36	0.38	8.50
2022-23	88.22	5.57	0.26	5.96
2023-24	90.64	5.02	0.19	4.15
2024-25	92.28	4.78	0.15	2.79
2025-26	94.01	3.93	0.14	1.92

Interpretation of Table 4.3 The percentage share analysis indicates a significant transformation in the composition of digital banking transactions during the study period. UPI's share increased substantially, emerging as the dominant digital payment channel, while the relative shares of NEFT, RTGS, and

IMPS declined despite growth in their transaction volumes. These findings reflect a marked shift in users' preference towards UPI-based transactions. Overall, the results highlight the increasing dominance of UPI in India's digital payment ecosystem over the study period.

Table 4.4 Correlation Matrix of Selected Digital Banking Services in India (2016–17 to 2025–26)

	UPI	NEFT	RTGS	IMPS
UPI	1.000			
NEFT	0.990	1.000		
RTGS	0.976	0.982	1.000	
IMPS	0.757	0.814	0.872	1.000

Interpretation of Table 4.4 The Pearson correlation analysis indicates positive relationships among all the selected digital banking services, suggesting that their transaction volumes generally moved in the same direction during the study period. UPI, NEFT, and RTGS exhibited very strong positive correlations, while IMPS showed strong positive correlations with the other payment systems. Overall, the findings reflect a high degree of association among the selected digital banking services; however, these relationships should not be interpreted as evidence of causality.

4. FINDINGS

The findings reveal a clear transformation in the structure and dynamics of digital payment systems in India. The descriptive statistics indicate that UPI has emerged as the most dominant digital payment channel in terms of transaction volume, followed by NEFT, IMPS, and RTGS. The higher standard deviation and coefficient of variation for UPI reflect substantial fluctuations in transaction volumes, which is consistent with its rapid adoption and expansion during the study period. In contrast, RTGS shows relatively lower variability in transaction volume, indicating comparatively greater stability over the study period. The year-on-year growth analysis further confirms the exceptional performance of UPI, particularly in

the initial years of adoption, followed by sustained growth over time. NEFT and RTGS exhibit relatively stable and moderate growth patterns, reflecting their established role in the digital banking ecosystem. IMPS shows moderate growth initially but indicates a declining trend in recent years, reflecting the increasing prominence of UPI-based transactions. The percentage share analysis highlights a significant structural shift in digital banking transactions. UPI's share has increased substantially over the study period, while the shares of NEFT, RTGS, and IMPS have declined. This indicates a clear concentration of digital transaction activity towards UPI, reflecting changing transaction patterns within India's digital payment ecosystem. The correlation analysis shows a strong positive relationship among all the selected digital banking services. This indicates that the transaction volumes of the selected digital banking services generally moved in the same direction during the study period, reflecting the overall expansion of digital banking in India. However, despite this positive association, the intensity of growth differs across the selected services, with UPI exhibiting the strongest growth momentum. Overall, the findings suggest that India's digital banking landscape has undergone a significant transformation, with UPI emerging as the dominant digital payment platform, while NEFT and RTGS continue to maintain steady, albeit comparatively slower, growth.

5. CONCLUSION

The findings reveal a significant transformation in India's digital payment ecosystem during the study period. UPI emerged as the dominant digital payment platform, recording the highest transaction volume and share, while NEFT and RTGS maintained stable and consistent growth. In contrast, IMPS exhibited comparatively slower growth and a declining transaction share in the later years. The positive correlations among the selected payment systems indicate their simultaneous expansion, reflecting the overall growth of digital banking in India. Overall, the study highlights UPI's emergence as the leading digital payment platform while reaffirming the continued importance of NEFT, RTGS, and IMPS in India's evolving digital banking ecosystem.

6. POLICY IMPLICATIONS

The findings have important implications for policymakers, banking institutions, and financial regulators in India. The rapid growth of digital payment services underscores the need to strengthen digital payment infrastructure, cybersecurity, and system efficiency. Continuous technological innovation and the reliability of existing payment systems are essential to support the evolving digital payment ecosystem. Furthermore, the Reserve Bank of India and other stakeholders should continue to promote interoperability, financial inclusion, and technological advancement to ensure the sustainable growth of digital payments in India.

7. LIMITATIONS OF THE STUDY

The present study has certain limitations. First, it is based solely on secondary data obtained from published sources, which limits the analysis to the available information. Second, the study focuses only on four major digital banking services (UPI, NEFT, RTGS, and IMPS) and excludes other emerging digital payment systems. Third, the analysis covers the period from 2016–17 to 2025–26 and does not reflect subsequent

developments. Finally, the study is quantitative in nature and employs descriptive statistics, year-on-year growth rate, percentage share analysis, and Pearson correlation analysis. Future research may incorporate primary data, additional digital payment systems, and advanced statistical or econometric techniques to provide deeper insights into the growth and dynamics of digital banking services.

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