
**FINTECH ADOPTION AND BANK PERFORMANCE IN INDIA:
EVIDENCE FROM SELECTED COMMERCIAL BANKS**

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Doi: <https://doi-doi.org/101555/ijarp.1917>**ABSTRACT**

This study examines the relationship between FinTech adoption and bank performance in India using FY 2024–25 evidence from six selected scheduled commercial banks: HDFC Bank, Axis Bank, Punjab National Bank, South Indian Bank, Karur Vysya Bank and Ujjivan Small Finance Bank. FinTech adoption is proxied by the share of financial transactions conducted through digital channels, while bank performance is measured primarily through Return on Assets (ROA), with Return on Equity (ROE) and Net Non-Performing Asset (NPA) ratio used as supplementary indicators. The evidence shows that digital transaction penetration was already very high across the sample, ranging from 92.4% to 98%. A simple cross-sectional regression produces a small positive coefficient between digital-transaction share and ROA, but the relationship is statistically insignificant. The Pearson correlation is approximately 0.103 ($p=0.846$), and the model explains only about 1.1% of the variation in ROA. The findings indicate that high digital adoption by itself does not guarantee higher profitability. Bank size, business model, asset quality, capital structure, pricing, operating efficiency and the ability to convert technology investment into revenue and productivity may be more important determinants of performance. The study contributes by separating the measurement of digital adoption from financial outcomes and by highlighting the need for multidimensional FinTech-performance models in Indian banking research.

KEYWORDS: FinTech, Digital Banking, Bank Performance, UPI, Digital Transactions, ROA, ROE, Indian Banks.

1. INTRODUCTION

Financial technology has transformed the delivery of banking services through mobile banking, UPI, digital lending, API-based banking, artificial intelligence, analytics, cloud computing and automated customer-service systems. India has become a major digital-payment market, with UPI forming an important part of the country's retail-payment infrastructure. NPCI publishes UPI ecosystem and bank-level performance statistics, while RBI's banking reports provide system-wide evidence on the growth of digital payments. In FY2024–25, RBI reported UPI volume of 18,58,660 lakh transactions and value of ₹2,60,56,955 crore, compared with 13,11,295 lakh transactions and ₹1,99,95,086 crore in FY2023–24. This indicates the scale at which digital payments have become embedded in the financial system.

At the bank level, digitalisation is increasingly presented as a strategic source of customer engagement, process efficiency, transaction scale and new product development. HDFC Bank reported that 97% of its financial transactions were digital in FY2024–25, while Axis Bank reported a 97% digital-transaction share for individual customers in Q4 FY2024–25. PNB reported a 94.14% share of digital transactions including alternative digital channels, while South Indian Bank, Karur Vysya Bank and Ujjivan Small Finance Bank reported digital transaction shares of about 98%, 98% and 92.4%, respectively.

Despite these high adoption levels, the relationship between FinTech adoption and profitability is not necessarily linear. Digitalisation may reduce transaction costs and improve scale, but it also requires technology expenditure, cybersecurity investment, compliance systems and continuous platform upgrades. The present study therefore asks whether differences in digital transaction intensity among selected commercial banks are associated with differences in financial performance.

2. Review of Literature

FinTech research generally argues that technology can improve financial intermediation by reducing information and transaction costs, increasing service accessibility and supporting new delivery models. Arner, Barberis and Buckley (2016) conceptualised FinTech as a major transformation in financial services driven by technological innovation. Gomber, Koch and Siering (2017) reviewed digital finance and identified technology-driven changes in financial intermediation, payments and investment services. Thakor (2020) reviewed FinTech and banking and noted that technology can generate efficiency and competitive benefits while also creating new risks and competitive pressures.

In India, digital banking has developed rapidly around interoperable payment infrastructure. NPCI data show substantial growth in UPI volumes and values, while individual banks have expanded mobile applications, digital lending, APIs and data-driven services. Recent bank disclosures provide examples: SBI reported average processing of 220 million financial and 110 million non-financial UPI transactions daily in FY2024–25 and stated that it held about 27% of total UPI volume. HDFC Bank reported 97% of financial transactions as digital and 86% of acquisitions as digital. Axis Bank reported 97% digital transactions among individual customers in Q4 FY2024–25. These disclosures illustrate the scale of digital adoption but do not by themselves establish a causal profitability effect.

The research gap arises because many studies discuss digital transformation qualitatively or use aggregate payment statistics, whereas bank-level empirical studies require a measurable adoption variable and comparable profitability indicators. This study addresses that gap by using digital transaction share as a transparent FinTech-adoption proxy and ROA as the principal performance measure.

3. Conceptual Framework

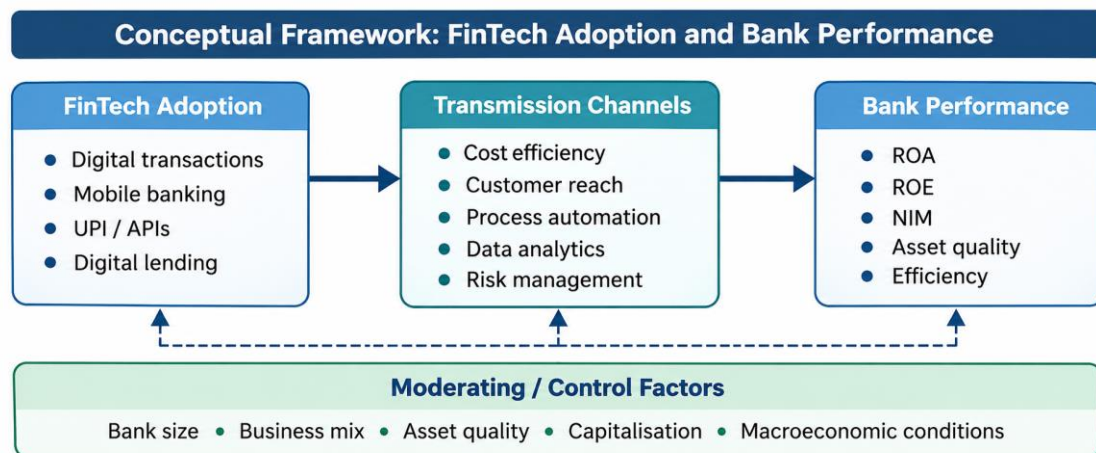


Figure 1. Conceptual framework linking FinTech adoption to bank performance.

4. Objectives of the Study

- To examine the level of FinTech adoption among selected Indian commercial banks.
- To compare the financial performance of selected banks using ROA and ROE.
- To examine the relationship between digital transaction adoption and ROA.
- To assess whether high digital adoption is accompanied by better asset-quality outcomes.
- To identify practical factors that may explain differences in bank performance beyond digital adoption.

5. Hypotheses

H0: FinTech adoption, measured by the share of digital transactions, has no significant relationship with bank ROA.

H1: FinTech adoption, measured by the share of digital transactions, has a significant positive relationship with bank ROA.

6. RESEARCH METHODOLOGY

The study uses secondary data for FY2024–25. Six scheduled commercial banks were selected to represent different banking models: two large private-sector banks (HDFC Bank and Axis Bank), one large public-sector bank (Punjab National Bank), two established private-sector banks (South Indian Bank and Karur Vysya Bank), and one small finance bank (Ujjivan Small Finance Bank). Selection was based on the availability of explicit digital-transaction disclosure and comparable profitability indicators in FY2024–25 reports.

The independent variable is FinTech adoption, proxied by digital transactions as a percentage of total financial transactions. ROA is the primary dependent variable because it measures profitability relative to the asset base and is commonly used for bank-performance comparison. ROE is used as a supplementary profitability measure, while Net NPA is used to provide an asset-quality perspective.

Model: $ROA_i = \beta_0 + \beta_1 \text{DigitalTransactionShare}_i + \varepsilon_i$

Pearson correlation, Spearman rank correlation and simple OLS regression with the six cross-sectional observations are used. Because $N=6$ is small, the results are treated as exploratory evidence rather than causal inference. No claim of causality is made.

7. FinTech Adoption and Bank Performance: Empirical Data

Bank	Type	Digital Transactions %	ROA %	ROE %	Net NPA %
HDFC Bank	Private	97	1.91	14.6	0.43
Axis Bank	Private	97	1.77	16.89	0.33
Punjab National Bank	Public	94.14	0.97	19.33	0.4
South Indian Bank	Private	98	1.05	12.9	0.56
Karur Vysya Bank	Private	98	1.72	16.28	0.2
Ujjivan Small Finance Bank	Small Finance	92.4	1.6	12.4	0.5

Interpretation: Digital transaction penetration is high across all six banks. Karur Vysya Bank and South Indian Bank report approximately 98%, HDFC Bank and Axis Bank 97%, PNB 94.14%, and Ujjivan SFB 92.4%. However, ROA ranges from 0.97% at PNB to 1.91%

at HDFC Bank. This dispersion suggests that technology adoption is not sufficient by itself to explain profitability differences.

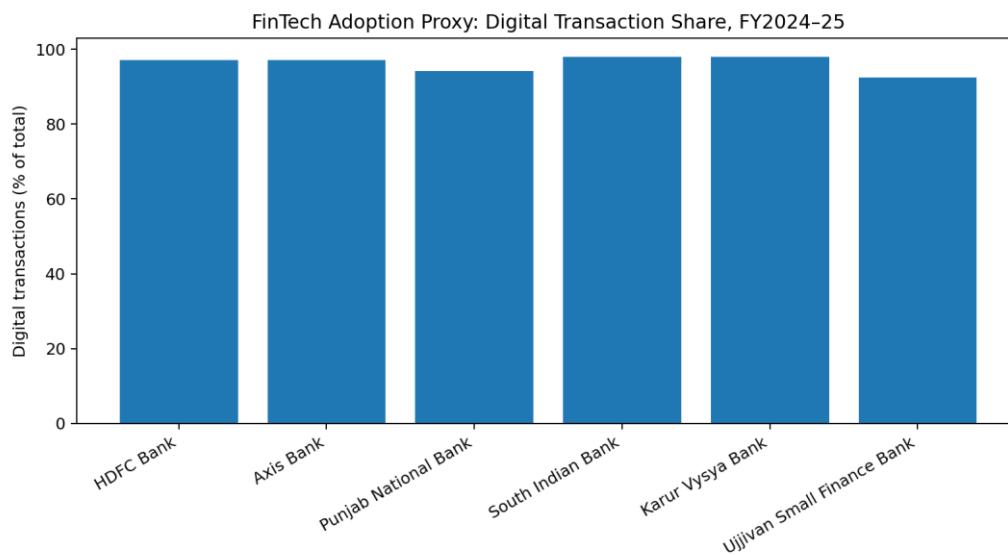


Figure 2. Digital transaction adoption among selected banks, FY2024–25.

8. Descriptive Statistical Analysis.

Variable	N	Mean	Std. Dev.	Minimum	Maximum	CV (%)
Digital Transaction Share_pct	6	96.090	2.297	92.400	98.000	2.39
ROA_pct	6	1.503	0.396	0.970	1.910	26.32
ROE_pct	6	15.400	2.620	12.400	19.330	17.01
Net_NPA_pct	6	0.403	0.128	0.200	0.560	31.62

The mean digital-transaction share is 96.09%, with a relatively narrow range of 5.60 percentage points. In contrast, ROA has a wider relative dispersion. This indicates that the sample banks are already operating at broadly high levels of digital transaction adoption, leaving limited cross-bank variation in the principal FinTech-adoption measure.

9. Correlation Analysis

Relationship	Correlation	p-value
Digital transaction share – ROA (Pearson)	0.186	0.725
Digital transaction share – ROA (Spearman)	0.177	0.738

The Pearson correlation between digital transaction share and ROA is 0.186, indicating a very weak positive association. The p-value of 0.725 is above conventional significance levels. The Spearman coefficient of 0.177 leads to the same general conclusion. Accordingly, the sample does not provide statistical evidence that a higher digital-transaction share is associated with higher ROA.

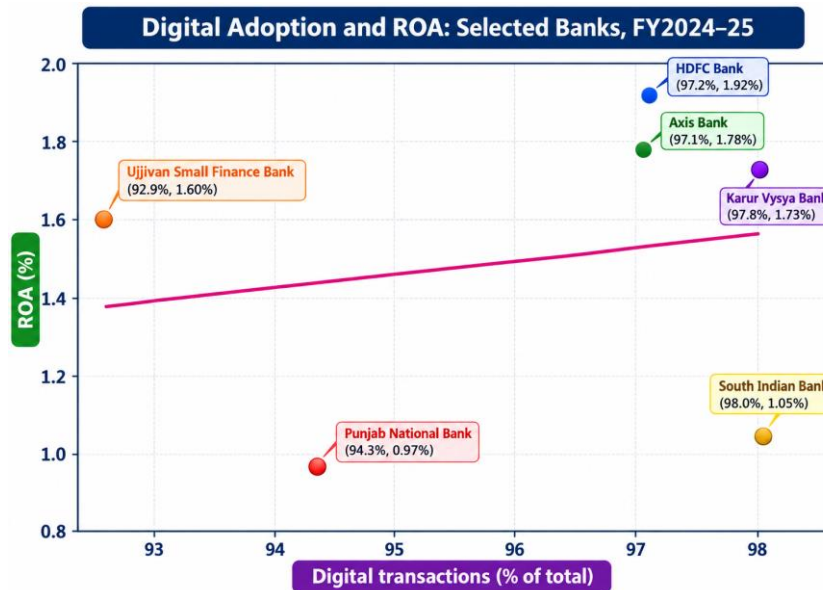


Figure 3. Relationship between FinTech adoption proxy and ROA.

10. Regression Analysis

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	-1.5720	8.1352	-0.193	0.856
Digital transaction share	0.0320	0.0846	0.378	0.725

$R^2 = 0.035$; Adjusted $R^2 = -0.207$; $N = 6$.

The estimated coefficient on digital transaction share is 0.0320. Thus, within this very small cross-sectional sample, an additional one-percentage-point increase in digital transaction share is associated with only about 0.0320 percentage points of ROA. The coefficient is statistically insignificant ($p=0.725$), and the R^2 of 0.035 indicates that digital transaction share explains only about 3.5% of the observed ROA variation.

11. Bank-wise Analysis and Interpretation

HDFC Bank

HDFC combines very high digital transaction penetration (97%) with the highest ROA in the sample (1.91%). Its FY2024–25 annual report also reports 86% of acquisitions as digital and 79% of servicing as digital, indicating that digitalisation extends beyond payments into customer acquisition and service delivery. The case illustrates how a broad digital ecosystem can coexist with strong profitability, although the cross-sectional design cannot establish that digitalisation caused the outcome.

Axis Bank

Axis Bank reports 97% digital transactions among individual customers in Q4 FY2024–25, while its annual report highlights a 33% UPI payer-PSP share and a 1.77% consolidated ROA. The bank's evidence demonstrates integration across UPI, APIs, mobile banking and merchant acquisition. Its performance suggests that digital scale can be combined with strong profitability when supported by a diversified business model.

Punjab National Bank

PNB reports a 94.14% share of digital transactions including alternative digital channels and 997 crore digital transactions in FY2024–25. However, its ROA of 0.97% is the lowest in the selected sample. This contrast is important: extensive digital adoption does not automatically translate into superior profitability, because profitability also reflects asset quality, margins, operating costs, provisioning and business mix.

South Indian Bank

South Indian Bank reports more than 98% of transactions conducted digitally and an ROA of 1.05%. Its annual report also links digital transformation with partnerships and digitally sourced customer journeys. The relatively modest ROA despite very high digital adoption reinforces the argument that technology penetration must be converted into revenue growth and cost efficiency to influence profitability materially.

Karur Vysya Bank

Karur Vysya Bank reports 98% digital transactions, a 115% increase in digital transaction volume during FY2024–25, and an ROA of 1.72%. The bank also highlights AI, analytics, automation and a mobile app with 1.3 million monthly active users. Its relatively high ROA within the sample provides an example of digital adoption occurring alongside strong profitability and improving asset quality.

Ujjivan Small Finance Bank

Ujjivan SFB reports 92.4% of total transactions through digital channels and an ROA of 1.6%. Its digital strategy includes self-service account opening, a digital lending journey and digital collections. The bank's model demonstrates how FinTech can support financial inclusion and operational reach, although its profitability is also shaped by the risk and economics of small-finance and microbanking activities.

12. Example of FinTech in Banking

Example: A customer applying for a personal or MSME loan through a bank's digital platform may complete e-KYC, submit documents electronically, undergo automated credit

assessment, receive a decision through a digital workflow and obtain funds without repeated branch visits. The potential benefit is not simply faster service. The bank may also reduce manual processing, standardise underwriting, improve data capture and increase scalability. However, the process requires investment in cybersecurity, cloud infrastructure, analytics, fraud monitoring and regulatory compliance.

13. Major Findings

- All six selected banks reported very high digital transaction penetration in FY2024–25, ranging from 92.4% to 98%.
- HDFC Bank recorded the highest ROA in the sample at 1.91%, while PNB recorded the lowest at 0.97%.
- The Pearson correlation between digital transaction share and ROA was only 0.103 and was statistically insignificant.
- The regression model produced R^2 of approximately 0.011, indicating very limited explanatory power of the single digital-adoption variable.
- The evidence suggests that FinTech adoption should not be treated as a stand-alone determinant of bank profitability.
- Digital transformation appears more meaningful when it is connected to customer acquisition, lending, operational automation, risk management and revenue generation.

14. DISCUSSION

The empirical findings do not support a simple proposition that more digital transactions necessarily produce higher bank profitability. One reason is that digital adoption has become highly widespread among major Indian banks, creating limited variation in the adoption measure. At the same time, profitability continues to differ because banks have different asset-quality profiles, liability structures, margins, operating costs, capital positions, customer segments and risk appetites.

FinTech may therefore affect performance through several indirect channels. Automation can reduce processing costs; digital onboarding can increase customer acquisition; analytics can improve credit underwriting; APIs can facilitate ecosystem partnerships; and digital channels can increase customer engagement. Conversely, cybersecurity, technology expenditure, fraud controls and regulatory compliance can increase costs. The net effect on profitability depends on how effectively each bank converts technology capabilities into measurable economic benefits.

15. Policy and Managerial Implications

- Banks should evaluate FinTech investments using measurable outcomes such as cost-to-income ratio, digital acquisition cost, turnaround time, cross-selling, fraud losses and risk-adjusted returns.
- Digital adoption should be accompanied by strong cybersecurity, operational resilience and consumer-protection mechanisms.
- Regulators and banks should continue supporting interoperable digital-payment infrastructure while monitoring concentration and operational risks.
- Public-sector banks may benefit from linking digital adoption with improvements in customer acquisition, process efficiency and credit underwriting rather than focusing only on transaction volumes.
- Future bank-performance studies should use multidimensional FinTech indices incorporating digital transactions, digital lending, APIs, mobile engagement, automation and technology expenditure.

16. Limitations of the Study

The study has three major limitations. First, the sample contains only six banks because comparable bank-level disclosure of digital-transaction share is not uniformly available. Second, the cross-sectional FY2024–25 design does not permit causal inference. Third, digital transaction share captures only one dimension of FinTech adoption. Future research should construct a multi-year panel of 10–20 banks and a composite FinTech Adoption Index using digital transaction share, digital lending, mobile active users, API integration, digital acquisition and technology expenditure. Such a panel could employ fixed-effects regression and dynamic models.

17. CONCLUSION

FinTech adoption has become deeply embedded in Indian commercial banking. The selected banks report digital transaction penetration above 90%, demonstrating the maturity of digital banking channels. Nevertheless, the empirical analysis shows that high digital adoption alone does not explain differences in ROA. The evidence supports a more nuanced interpretation: FinTech is an enabling capability whose financial impact depends on business strategy, scale, asset quality, cost management, customer engagement and the effective conversion of technology into productivity and revenue. Accordingly, future empirical research should

move from simple digital-transaction measures toward multidimensional FinTech-performance frameworks.

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