

Financial Impact and Customer Adoption of UPI in Banking Services in India

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Abstract — The Unified Payments Interface (UPI), launched by NPCI in 2016, has emerged as one of the most transformative financial innovations in India's economic history, processing over 117 billion transactions worth INR 183 lakh crore in FY 2023–24. This paper examines two critical dimensions: the financial impact of UPI on Indian banking services, and patterns and drivers of customer adoption. Primary data was collected via structured questionnaire from 102 respondents across varied demographics. Key findings: 94.12% actively use UPI; convenience (43.14%), fast transactions (23.53%), and ease of use (17.65%) are primary drivers; Paytm (41.18%) and PhonePe (31.37%) dominate the app market; 73.53% confirm reduced cash dependency; 80.39% perceive UPI as secure; 28.43% have experienced fraud; and 69.60% report high satisfaction. The study concludes that UPI has fundamentally restructured banking operations, reduced transaction costs, expanded financial inclusion, and deeply embedded itself into Indian consumer financial behaviour.

Keywords: *UPI, Digital Payments, Customer Adoption, Financial Impact, Banking Services, NPCI, TAM, Financial Inclusion, India*

1. INTRODUCTION

India's financial landscape has witnessed a paradigm shift with the advent of digital payment systems, most notably the Unified Payments Interface (UPI). Developed by the National Payments Corporation of India (NPCI) and launched in April 2016 under the guidance of the Reserve Bank of India (RBI), UPI is a real-time, interoperable payment platform enabling instant fund transfers via mobile devices using a Virtual Payment Address (VPA). Its open architecture supports multiple banks and third-party applications — including PhonePe, Google Pay, Paytm, and BHIM — on a single interoperable platform.

The demonetization of November 2016 catalysed mass UPI adoption, pushing millions of citizens toward cashless alternatives. The COVID-19 pandemic further accelerated the shift toward contactless digital payments. UPI processed over 117 billion transactions worth INR 183 lakh crore in FY 2023–24, making it the world's largest real-time digital payment system. Despite this phenomenal growth, a gap exists in empirical research that simultaneously examines both the financial impact on banking and customer adoption behaviour. This paper addresses that gap through primary survey data from 102 respondents and secondary literature analysis, offering actionable insights for banks, policymakers, and fintech companies.

2. REVIEW OF LITERATURE

Davis (1989) proposed the Technology Acceptance Model (TAM), identifying Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) as primary determinants of technology adoption — a framework widely validated in UPI studies. Venkatesh et al. (2003) extended this through the Unified Theory of Acceptance and Use of Technology (UTAUT), adding Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions as key adoption drivers.

Kalra (2020) found that performance expectancy, security, social influence, and habit significantly determine UPI satisfaction among skilled youth. Singh et al. (2020) highlighted that perceived usefulness, social influence, and perceived risk shape mobile payment adoption intent. Jain and Sabharwal (2019) noted that younger users adopt digital payments faster, while security concerns deter older users. Chawla and Joshi (2019) established that trust, security, and lifestyle compatibility significantly impact consumer UPI attitudes.

The RBI Annual Report (2023–24) documented that UPI has significantly reduced per-transaction costs for banks. Deloitte India (2022) estimated that digital transactions cost banks approximately ten times less than branch

transactions. NPCI (2023) noted that banks are increasingly leveraging UPI transaction data for cross-selling financial products. Eappen (2019) identified trust as the most critical adoption factor, while Punwatkar and Verghese (2018) found perceived security to be the dominant behavioural determinant in digital payment adoption.

3. RESEARCH OBJECTIVES AND HYPOTHESES

Objectives:

- To analyze UPI adoption patterns among different demographic segments in India
- To examine the financial impact of UPI on banking services and consumer cash usage
- To identify key factors driving customer preference for UPI-based payments
- To assess customer perception regarding security and reliability of UPI
- To evaluate overall satisfaction levels of UPI users

Hypotheses:

- H1: The majority of respondents actively use UPI for digital payments
- H2: Convenience is the primary factor driving UPI adoption
- H3: UPI has significantly reduced cash usage among users
- H4: Most users perceive UPI as a secure payment platform
- H5: The overall satisfaction level of UPI users is high

4. RESEARCH METHODOLOGY

This study employs a Descriptive Research Design combining primary and secondary data. Primary data was collected via a structured Google Forms questionnaire from 102 respondents selected through convenience sampling from urban and semi-urban India. The questionnaire covered demographics (age, gender, occupation), UPI usage behaviour (frequency, preferred app, adoption drivers), security perception, fraud experience, and overall satisfaction level.

Secondary data was sourced from NPCI Annual Reports, RBI Annual Reports, Deloitte India (2022), and peer-reviewed academic journals. Analysis tools included frequency distribution, percentage analysis, cross-tabulation, and descriptive statistics.

Parameter	Details
Research Design	Descriptive Research
Primary Data Tool	Structured Questionnaire (Google Forms)
Sample Size	102 Respondents
Sampling Technique	Convenience Sampling
Area of Study	Urban and Semi-Urban India
Secondary Sources	NPCI, RBI, Deloitte India, Journals

5. DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Respondents

Category	Group	Respondents	Percentage
Age	Below 25	52	50.98%
Age	25–35	22	21.57%
Age	36–45	6	5.88%
Age	46–55	15	14.71%
Age	Above 55	7	6.86%
Gender	Female	58	56.86%
Gender	Male	43	42.16%

Gender	Prefer not to say	1	0.98%
Occupation	Student	47	46.08%
Occupation	Working Professional	22	21.57%
Occupation	Home Maker	15	14.71%
Occupation	Business	14	13.73%
Occupation	Retired	3	2.94%

The sample is youth-dominated (50.98% below 25) with a slight female majority (56.86%). Students form the largest occupational group (46.08%). Homemakers (14.71%) and business owners (13.73%) are also well- represented, indicating UPI’s penetration across diverse demographic segments.

Table 2: UPI Usage Behaviour

Question	Response	Respondents	%
Use UPI?	Yes	96	94.12%
Use UPI?	No	6	5.88%
Most Used App	Paytm	42	41.18%
Most Used App	PhonePe	32	31.37%
Most Used App	Google Pay	13	12.75%
Most Used App	BHIM	6	5.88%
Frequency	Daily	48	47.06%
Frequency	Weekly	22	21.57%
Frequency	Occasionally/Rarely	23	22.54%
Prefer UPI Because	Convenience	44	43.14%
Prefer UPI Because	Fast Transactions	24	23.53%
Prefer UPI Because	Easy to Use	18	17.65%
Prefer UPI Because	Secure Payments	9	8.82%
Prefer UPI Because	Cashback/Rewards	7	6.86%

94.12% actively use UPI (H1 Accepted). Paytm leads with 41.18%; BHIM lags at 5.88% despite government backing. 47.06% use UPI daily, demonstrating deep behavioural integration. Convenience is the top driver (43.14%), validating H2 and TAM theory. Cashback ranks last (6.86%), confirming that sustained adoption is utility-driven, not incentive-driven.

Table 3: Financial Impact and Security Perception

Question	Response	Respondents	%
UPI Reduced Cash Usage?	Yes	75	73.53%
UPI Reduced Cash Usage?	Maybe	14	13.73%
UPI Reduced Cash Usage?	No	13	12.75%
UPI Is Secure?	Yes	82	80.39%
UPI Is Secure?	Maybe	13	12.75%
UPI Is Secure?	No	5	4.90%
Faced Fraud/Issue?	No	74	72.57%

Faced Fraud/Issue?	Yes	29	28.43%
Satisfaction Level	Very Satisfied	38	37.25%
Satisfaction Level	Satisfied	33	32.35%
Satisfaction Level	Neutral	29	28.43%
Satisfaction Level	Dissatisfied	2	1.96%

73.53% confirm reduced cash usage (H3 Accepted), demonstrating UPI's direct financial impact on consumer behaviour and banking operations. 80.39% perceive UPI as secure (H4 Accepted). However, 28.43% have experienced fraud — a critical paradox demanding urgent policy intervention. 69.60% are satisfied or very satisfied with UPI services (H5 Accepted).

Table 4: Hypothesis Testing Summary

Hypothesis	Finding	Result
H1: Majority use UPI	94.12% use UPI	Accepted
H2: Convenience is primary driver	43.14% cite convenience	Accepted
H3: UPI reduced cash usage	73.53% confirm reduction	Accepted
H4: UPI perceived as secure	80.39% say Yes	Accepted
H5: High overall satisfaction	69.60% satisfied/very satisfied	Accepted

6. KEY FINDINGS

- UPI adoption is near-universal (94.12%) among urban/semi-urban consumers; youth below 25 are the dominant adopters (50.98%).
- Paytm (41.18%) and PhonePe (31.37%) dominate the UPI ecosystem; BHIM holds only 5.88% despite being the government flagship application.
- 47.06% use UPI daily, reflecting deep behavioural integration beyond mere awareness.
- Convenience (43.14%) is the primary adoption driver — sustained adoption is utility-driven, not incentive-driven, as cashback ranks last at 6.86%.
- 73.53% confirm reduced cash usage, demonstrating UPI's direct impact on displacing cash from daily transactions.
- Fraud paradox: 80.39% trust UPI's security, yet 28.43% have personally experienced fraud or transaction issues — a critical ecosystem vulnerability.
- Female (56.86%) and homemaker (14.71%) adoption challenges earlier findings of male-dominance in digital payment literature.
- UPI has reduced per-transaction banking costs by up to 90%, expanded financial inclusion via Jan Dhan linkage, and enabled data-driven cross-selling for banks.

7. CONCLUSIONS

This study establishes that UPI has achieved remarkable penetration among Indian consumers, driven by functional utility rather than promotional incentives. All five research hypotheses are accepted, confirming the validity of the Technology Acceptance Model (TAM) in the Indian UPI context. UPI's financial impact on banking is transformative — reducing operational costs, enabling financial inclusion, and creating new revenue streams through data-driven cross-selling.

The critical unresolved challenge is the fraud paradox: while 80.39% perceive UPI as secure, 28.43% have experienced actual fraud or transaction issues, indicating that social engineering and phishing attacks exploit consumer vulnerabilities outside the technical system. UPI's evolution through UPI Lite, credit-on-UPI, and international

payment corridors positions India as a global fintech leader. Sustained investment in security infrastructure, rural digital penetration, and consumer education will be essential to deepening UPI's impact.

8. RECOMMENDATIONS

- Banks: Leverage UPI transaction data for cross-selling tailored financial products; invest in AI-driven real-time fraud detection and 24x7 grievance redressal mechanisms.
- NPCI/RBI: Mandate fraud insurance coverage for UPI losses; establish a centralized UPI fraud registry; redesign BHIM with competitive features to reduce dependence on private platforms.
- Government: Accelerate rural UPI infrastructure — affordable smartphones, reliable mobile internet, and widespread merchant QR code deployment in Tier-3 and rural areas.
- Fintech Companies: Move beyond cashback to value-added services such as expense tracking, savings goals, and instant credit lines integrated within UPI applications.
- All Stakeholders: Launch sustained national cybersecurity awareness campaigns targeting phishing, fake QR codes, and social engineering attacks targeting UPI users.

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