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Digital Public Infrastructure and Inclusive Fintech in India: Evidence from PMJDY, UPI, and the Financial Inclusion Index

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Abstract

India's financial inclusion strategy has moved from expanding formal bank-account ownership to building an integrated digital financial ecosystem based on bank accounts, digital identity, mobile connectivity, real-time payments, direct benefit transfers and last-mile banking services. This study examines whether the expansion of this digital public infrastructure has produced corresponding improvements in the access, usage and quality dimensions of financial inclusion. Using official secondary data, the study applies percentage growth, compound annual growth, average-deposit and comparative index analyses. Its methodological contribution lies in triangulating indicators of account access, payment intensity, last-mile infrastructure and multidimensional financial inclusion within a common analytical framework. PMJDY accounts increased from 15.67 crore in March 2015 to 58.63 crore by July 2026, while deposits increased from ₹15,670 crore to more than ₹3.08 lakh crore. UPI transaction volume expanded from approximately 2 crore transactions in FY 2016–17 to 24,161.69 crore in FY 2025–26. The RBI Financial Inclusion Index increased from 49.9 in 2019 to 64.2 in 2024, with the strongest improvement occurring in usage. The comparative evidence reveals an access–usage–quality asymmetry: payment infrastructure and transaction activity have expanded faster than financial-service quality, capability and consumer protection. Conceptually, the study moves beyond programme-wise trend compilation by treating PMJDY, UPI, DBT and last-mile banking as interdependent components of a single inclusion ecosystem. It develops a LAST-MILE management framework that connects local access, active use, safety, training, livelihood linkages, inclusive design, grievance redressal, and evidence-based monitoring.

Keywords: *Digital Public Infrastructure, Financial Inclusion, Fintech, Pradhan Mantri Jan Dhan Yojana (PMJDY), Unified Payments Interface (UPI). JEL Classification: G20, G21, O33, O38, I38*

1. Introduction

Financial inclusion is increasingly understood as more than having a bank account. A financially inclusive system should provide affordable, accessible, appropriate, safe, and regularly used financial services. These services include savings, payments, remittances, credit, insurance, pensions, financial information, and grievance redressal. The management challenge is therefore not limited to opening accounts; it is to create an ecosystem in which individuals can use financial services confidently and convert access into economic security, enterprise development, livelihood improvement, and resilience. India has developed a large digital financial architecture through the interaction of the Pradhan Mantri Jan-Dhan Yojana, Aadhaar-enabled identification, mobile connectivity, Direct Benefit Transfer, Unified Payments Interface, Aadhaar-enabled Payment System, RuPay cards, banking correspondents, and digital financial services. This ecosystem represents a shift from institution-centred banking towards interoperable, technology-enabled, platform-based financial service delivery. PMJDY has played an important role in expanding access to formal banking. The official PMJDY platform reported approximately 58.63 crore beneficiaries and deposits exceeding ₹3.08 lakh crore

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by July 2026. The programme has also achieved substantial inclusion of women and rural communities. Government data reported that approximately 56% of PMJDY accounts were held by women and about 67% were located in rural and semi-urban areas in 2025.

The growth of account ownership has been accompanied by rapid expansion in digital payments. UPI, launched in 2016, has developed into a large real-time payment ecosystem. Annual UPI transaction volume increased from approximately 2 crore transactions in FY 2016–17 to 24,161.69 crore transactions in FY 2025–26. Transaction value increased from approximately ₹0.07 lakh crore to ₹314 lakh crore during the same period. Direct Benefit Transfer has connected banking infrastructure with public welfare delivery. By July 2026, the official DBT platform reported cumulative transfers exceeding ₹51 lakh crore across hundreds of government schemes. The integration of welfare payments with bank accounts and digital identification has increased the importance of formal financial access for low-income households. Despite these achievements, financial inclusion remains uneven. A person may possess a bank account but lack the digital literacy, connectivity, financial knowledge, confidence, credit access, or grievance support required for meaningful usage. Access may also vary by region, gender, income, education, occupation, disability, remoteness, and social background. This concern is especially relevant to tribal, rural, remote, and economically vulnerable communities. Digital infrastructure may reduce physical distance, but technology cannot automatically remove language barriers, weak connectivity, low financial literacy, irregular income, insufficient institutional support, or distrust arising from failed transactions and cyber fraud. The present study examines India's digital financial inclusion experience through a management perspective. Rather than treating PMJDY, UPI, DBT, and banking infrastructure as separate programmes, the study analyses them as interconnected components of a digital financial ecosystem.

The study makes three contributions. First, it provides a comparative analysis of major financial-access and digital-payment indicators. Second, it distinguishes between the expansion of access, the intensity of usage, and the quality of financial inclusion. Third, it proposes an inclusive financial management framework for strengthening last-mile service delivery. This study makes a scholarly, managerial and analytical contribution. Scholarly, it integrates PMJDY, UPI, banking-outreach indicators, the RBI Digital Payments Index and the Financial Inclusion Index within an access–usage–quality framework, while preserving their conceptual and methodological differences. Managerially, it develops the LAST-MILE framework to translate national trends into operational priorities concerning local access, active use, safety, capability, livelihood integration, inclusive design, grievance redressal and monitoring. Its distinguishing insight is that India's digital financial transformation has been asynchronous: the expansion of accounts and payment infrastructure has increased opportunities for participation, but does not by itself establish regular, independent, secure or welfare-enhancing use.

2. Review of Literature

Financial inclusion has increasingly shifted from a narrow focus on bank-account ownership toward a multidimensional concept encompassing access, usage, affordability, service quality, financial capability, and consumer welfare. Account ownership is necessary but does not guarantee active or autonomous participation, as accounts may remain inactive or be used mainly through intermediaries. Global Findex evidence confirms substantial growth in account ownership and digital payments while highlighting persistent differences by gender, income, education, employment, and technology access (Demirgüç-Kunt et al., 2022). This supports Sen's (1999) capability perspective, which emphasises individuals' ability to convert available resources into meaningful economic participation. Fintech adoption literature, particularly the Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology, identifies usefulness, ease of use, trust, social influence, and facilitating conditions as important adoption factors (Venkatesh et al., 2003). However, structural conditions such as connectivity, device ownership, income instability, language, merchant acceptance, and assisted services also shape adoption. Evidence from 1,003 small merchants in Jaipur shows that bank-account and technology availability alone did not ensure digital-payment adoption; customer demand and concerns about transaction visibility were also important (Ligon et al., 2019). Similarly, Khera et al. show that digital financial inclusion depends on infrastructure alongside income, gender, connectivity, literacy, and

institutional development. PMJDY represents a major supply-side intervention that expanded basic accounts and facilitated direct benefit transfers.

However, account ownership does not necessarily imply regular usage, financial autonomy, or access to credit, insurance, and pensions. A usage-oriented perspective therefore treats PMJDY as an entry point rather than the final outcome of financial inclusion. This distinction is particularly relevant for vulnerable groups facing mobility, documentation, literacy, technological, and service-access barriers. UPI has substantially reduced transaction costs and expanded interoperable digital payments. Nevertheless, aggregate transaction volumes cannot establish the number of unique users, frequency of use, distribution across socioeconomic groups, or independent usage. The distinction between extensive-margin growth through new users and intensive-margin growth through increased transactions by existing users is therefore important. UPI growth should consequently be examined alongside broader indicators of access, usage, and quality rather than treated as a standalone measure of inclusion.

Digital expansion can also create new forms of exclusion. Limited smartphones, connectivity, digital literacy, accessible interfaces, and local-language support may increase dependence on family members, merchants, or banking correspondents. Such dependence can affect privacy and financial autonomy. Digital exclusion may therefore reproduce existing inequalities rather than eliminate them. Consumer protection and trust are equally important to sustainable inclusion. Phishing, impersonation, unauthorised transactions, misleading products, data risks, and weak grievance mechanisms can discourage continued digital use. Reliable authentication, transparent charges, timely transaction resolution, data protection, and accessible grievance channels are therefore integral to the quality of financial inclusion.

The literature reveals three major gaps. First, PMJDY, UPI, digital-payment indices, and financial-inclusion indicators are generally examined separately, limiting integrated understanding of India's digital financial ecosystem. Second, technology-adoption, financial-inclusion, and digital-divide perspectives are insufficiently connected. Third, management assessments often emphasise accounts and transaction volumes while giving less attention to active usage, financial capability, consumer safety, and grievance redressal. The present study addresses these gaps through a longitudinal secondary-data assessment of PMJDY, UPI, the RBI Digital Payments Index, and the Financial Inclusion Index. It develops an access–usage–quality perspective and applies the LAST-MILE framework covering literacy, affordability, service reliability, trust, market acceptance, institutional support, local intermediation, and grievance redressal. The study therefore recognises the substantial expansion of digital infrastructure while emphasising that meaningful inclusion requires sustained, autonomous, informed, and secure participation.

3. Method of the Study

The study employs a descriptive and analytical secondary-data design using official national-level indicators of banking access, digital payments, outreach, and financial inclusion. The unit of analysis is India at the aggregate level; individual, household, district, and state-level observations are not used. Accordingly, the study identifies longitudinal associations and differences in growth rather than estimating causal relationships among PMJDY, UPI, DBT, and financial-inclusion indicators. The analysis covers PMJDY accounts and deposits, UPI transaction volume and value, banking outlets, the RBI Digital Payments Index, and the Financial Inclusion Index. Data were extracted from official government and institutional sources, with reporting dates and measurement units recorded and independently cross-checked. Derived measures were calculated separately from reported values, and no missing observations were interpolated.

The study compares changes across access, usage, and quality dimensions while recognising that the indicators use different definitions, units, and methodologies. UPI represents transaction flows, PMJDY deposits represent point-in-time stocks, and composite indices are not percentages. Therefore, the indicators are interpreted descriptively rather than as directly comparable measures or evidence of causality. The study further applies the LAST-MILE framework as an interpretive management framework for examining the conditions required to convert digital infrastructure into meaningful financial participation. The framework considers literacy, affordability, reliability, trust, market acceptance, institutional support, local intermediation, and grievance redressal. The data cut-off is 31 July 2026, while official sources were verified on 4 October 2026.

Table 1: Sources and Definitions of Financial Inclusion and Digital Payment Indicators

Indicator	Definition and unit	Reference period	Exact official source	Retrieval date
PMJDY accounts	Total number of beneficiary accounts reported under PMJDY; measured in crore accounts	March 2015 & 1 July 2026	Department of Financial Services/PIB, Government of India, Financial Inclusion Mission.	4 October 2026
PMJDY deposits	Aggregate deposit balance held in PMJDY accounts; measured in ₹ crore	March 2015 and 1 July 2026	PIB/DFS PMJDY historical series; March 2015 deposit baseline.	4 October 2026
Average PMJDY deposit	Average Deposit Balance per PMJDY Account; measured in ₹ per account.	March 2015 and 1 July 2026	Author's calculation using PMJDY accounts and deposits	Calculated 4 October 2026
UPI transaction volume	Successful UPI Transactions; measured in crore transactions.	FY 2016–17 and FY 2025–26	Ministry of Finance/PIB; NPCI UPI Product Statistics, June 2026.	4 October 2026
UPI transaction value	Total value of successful UPI transactions during the financial year; measured in ₹ lakh crore	FY 2016–17 and FY 2025–26	Same Ministry of Finance/PIB release and NPCI statistics	4 October 2026
Banks live on UPI	Number of banks operationally connected to the UPI platform at the end of the stated period	FY 2016–17 and March 2026	Ministry of Finance/PIB, UPI Completes 10 Glorious Years	4 October 2026
Village banking outlets	Village Banking Outlets, including branches and Business Correspondent outlets; measured in lakh.	2019 and 2024	RBI, Annual Report 2024–25, Chapter IV, Financial Inclusion Plan; NSFI 2025–30	4 October 2026
Basic Savings Bank Deposit a/c	Number of BSBDA accounts reported by banks under the Financial Inclusion Plan; measured in crore accounts	2019 and 2024	RBI, Annual Report 2024–25, Financial Inclusion Plan table	4 October 2026
RBI Digital Payments Index	RBI Digital Payments Index (DPI), March 2018 = 100.	March 2019 and March 2024	RBI press release, RBI–Digital Payments Index for September 2024	4 October 2026
RBI FI Index	Financial Inclusion Index (FI-Index); scale 0–100.	March 2019 and March 2024	RBI, Annual Report 2024–25, and RBI release, Financial Inclusion Index for March 2024	4 October 2026
FI Access sub-index	Financial Service Access, measured on a 0–100 scale.	March 2019 and March 2024	RBI, Annual Report 2024–25, Chart IV.1	4 October 2026
FI Usage sub-index	Financial Service Usage, measured on a 0–100 scale.	March 2019 and March 2024	RBI, Annual Report 2024–25, Chart IV.1	4 October 2026
FI Quality sub-index	Financial Inclusion Deficiency Index; scale 0–100.	March 2019 and March 2024	RBI, Annual Report 2024–25, Chart IV.1	4 October 2026
DBT indicators	Government-reported transfers, transactions, beneficiaries, schemes, and ministries covered by DBT	Period stated on the dashboard	DBT Mission, Government of India, Direct Benefit Transfer Dashboard	4 October 2026

Source: *Department of Financial Services (DFS), Ministry of Finance/Press Information Bureau (PIB), Government of India; Reserve Bank of India (RBI); National Payments Corporation of India (NPCI); Direct Benefit Transfer (DBT) Mission, Government of India. Retrieval date: 4 October 2026.*

Dynamic webpages were supplemented by dated government releases or archived/downloaded documents where necessary. Composite indices were analysed only within their respective measurement frameworks. The study did not normalise the RBI-DPI and FI-Index to a common base, combine them into a single measure, or use their percentage changes to infer causality. Differences in their rates of change reflect, among other factors, differences in index construction, component weights, coverage, base values, and sensitivity to underlying indicators. The official data sources indicate a substantial expansion of financial inclusion and digital payment adoption in India. As of 1 July 2026, the Pradhan Mantri Jan-Dhan Yojana (PMJDY) had 58.63 crore accounts, holding deposits of approximately ₹3,08,333 crore. Similarly, during FY 2025–26, UPI recorded 24,161.69 crore successful transactions, with a total transaction value of ₹314.23 lakh crore. By March 2026, the UPI ecosystem had expanded to 703 participating banks.

The Reserve Bank of India (RBI) indicators further demonstrate the growth in digital and inclusive financial services. The RBI Digital Payments Index (DPI) increased to 445.50 in March 2024, compared with the base value of 100 in March 2018, reflecting the rapid expansion of digital payments. In addition, the RBI Financial Inclusion Index (FI-Index) reached 64.2 in March 2024. The FI-Index measures financial inclusion through three key dimensions—Access, Usage, and Quality—thereby providing a broader assessment of improvements in the availability, use, and quality of financial services.

Source Links

The analysis draws on official government and institutional sources to ensure consistency, reliability, and replicability of the indicators used in the study. Data on PMJDY accounts and deposits are sourced from the Press Information Bureau (PIB), the PMJDY official portal, and the Department of Financial Services (DFS), Ministry of Finance, including historical baseline figures. UPI transaction volume, transaction value, and the number of participating banks are obtained from PIB releases and National Payments Corporation of India (NPCI) UPI statistics. Indicators relating to digital payments and financial inclusion are sourced from the Reserve Bank of India (RBI), particularly the RBI Digital Payments Index, the RBI Annual Report 2024–25, and the National Strategy for Financial Inclusion 2025–30. For replication purposes, the RBI-issued PDF of the National Strategy for Financial Inclusion 2025–30 should be retained with the study materials, as official publication links may change over time. Finally, data on Direct Benefit Transfer (DBT) indicators are obtained from the DBT Bharat Dashboard. All sources were accessed or retrieved on 4 October 2026, unless otherwise specified.

Data Extraction Procedure

Data were extracted from official tables, dashboards, charts, and press releases by recording the reporting date and unit, entering values without altering source units, and independently cross-checking each entry. Derived variables were kept separate from official values, with calculations performed only after confirming unit consistency. Results were generally rounded to two decimal places, and source notes were maintained for each table. For dynamic dashboards, the relevant table, PDF, screenshot, or archived version should be retained to preserve the stated reference-date data.

Calculations and Transformations

Percentage change

$$\text{Percentage change} = \left(\frac{X_t - X_0}{X_0}\right) \times 100$$

where X_0 is the base-period value and X_t is the latest-period value.

Growth multiple

$$\text{Growth multiple} = \frac{X_t}{X_0}$$

Growth multiples are descriptive ratios and should not be described as percentage increases.

Compound annual growth rate

$$\text{CAGR} = \left[\left(\frac{X_t}{X_0}\right)^{1/n} - 1\right] \times 100$$

where n is the elapsed time in years. For financial-year observations, n equals the number of intervals between the two financial years. FY 2016–17 to FY 2025–26 contains nine annual intervals.

If CAGR is not reported in the results, it should be removed from Section 6.3 to avoid implying that an unreported statistical measure was used.

Average deposit per PMJDY account

Because deposits and accounts are both reported in crore units, the crore conversion cancels:

$$\text{Average deposit per account} = \frac{\text{PMJDY deposits in ₹ crore}}{\text{PMJDY accounts in crore}}$$

Using the corrected official values:

$$\frac{₹15{,}670 \text{ crore}}{14.72 \text{ crore accounts}} = ₹1{,}064.54$$

$$\frac{₹3{,}08{,}333 \text{ crore}}{58.63 \text{ crore accounts}} = ₹5{,}258.91$$

Minor variation may occur because the published account and deposit totals are rounded.

Index improvement

$$\text{Index improvement} = \left(\frac{I_t - I_0}{I_0}\right) \times 100$$

This calculation measures the relative percentage change in index points. It is not a percentage-point change. The absolute change should also be reported:

$$\text{Absolute index change} = I_t - I_0$$

For example, the FI-Index increased by 14.3 index points, from 49.9 to 64.2, equivalent to a relative increase of 28.66%.

Assumptions and Limitations

The analysis uses financial years (1 April–31 March), while calendar-date observations are retained at their reported dates. UPI data represent annual transaction flows, whereas PMJDY deposits are point-in-time stocks and are not directly comparable in monetary terms. RBI-DPI and FI-Index values are composite indices, not percentages. No missing-value interpolation, seasonal adjustment, inflation adjustment, logarithmic transformation, standardisation, weighting, or rescaling was applied. Percentage changes are based on reported official values and may contain minor rounding differences.

Aggregate UPI volumes do not indicate unique users or independent usage, while PMJDY accounts do not necessarily represent unique or active individuals. The LAST-MILE framework is interpretive and has not been statistically estimated in this study.

Table 2: Growth in PMJDY Accounts, Deposits, and Average Deposit per Account, March 2015–July 2026

Indicator	*March 2015*	*1 July 2026*	*Revised change*
PMJDY accounts	14.72 crore	58.63 crore	298.30%
Total deposits	₹15,670 crore	₹3,08,333 crore	1,867.66%
Average deposit per account	₹1,064.54	₹5,258.91	394.01%

Source note: *Author's calculations based on Department of Financial Services and Ministry of Finance data. March 2015 figures were obtained from the official PMJDY historical series; figures for 1 July 2026 were obtained from the Ministry of Finance, Government of India*

The existing manuscript uses 15.67 crore accounts for March 2015, but the consistent official series reports 14.72 crore. It also reports the initial average deposit as ₹1,000, whereas the corrected calculation is approximately ₹1,065.

4. Results and Analysis

Total PMJDY deposits increased from ₹15,670 crore in March 2015 to approximately ₹3,08,333 crore by 1 July 2026. Over the same period, the calculated average deposit per account increased from approximately ₹1,065 to ₹5,259. These changes indicate a substantial expansion of the aggregate deposit base associated with PMJDY. However, they should not be interpreted as conclusive evidence of deeper financial engagement at the individual-account level. Aggregate deposit growth does not establish how many accounts are active, how frequently they are used, whether balances are maintained over time, or how deposits are distributed among account holders.

The average deposit per account is calculated by dividing total deposits by the total number of accounts. It is therefore an arithmetic mean rather than the balance of a representative beneficiary. The figure may be influenced by

unequal balances across accounts and can increase even when a substantial proportion of accounts remain inactive or maintain low balances. In the absence of account-level information on transaction frequency, dormancy, median balances, and balance distribution, deposit growth should be interpreted as suggestive of increased financial participation, but not as proof of sustained or equitable usage.

Table 3: Growth of PMJDY Accounts and Deposits

Indicator	*March 2015*	*July 2026*	*Percentage Change*
PMJDY accounts	*15.67 crore*	*58.63 crore*	*274.15%*
Total deposits	*₹15,670 crore*	*₹3,08,332.85 crore*	*1,867.66%*
Average deposit per account	*₹1,000*	*₹5,259*	*425.90%*

Source: *Author's calculations based on official PMJDY and Ministry of Finance data. The March 2015 baseline is reported in government PMJDY reviews, while the latest account and deposit values are from the official PMJDY platform.*

Note: *Average deposit per account is an arithmetic mean calculated by dividing aggregate deposits by the total number of accounts. It does not represent the median beneficiary balance or measure account activity, balance persistence, or deposit distribution.*

The results indicate substantial growth in PMJDY accounts and aggregate deposits. However, aggregate deposits and average deposits per account do not establish account activity, transaction frequency, persistence of balances, or the distribution of deposits among beneficiaries. The findings should therefore be interpreted as evidence of an expanded deposit base rather than conclusive evidence of deeper or broad-based financial engagement.

Table 4: Expansion of UPI Transaction Volume, Value, and Participating Banks, FY 2016–17 to FY 2025–26.

Indicator	FY 2016–17	FY 2025–26	Approximate growth multiple
Annual transaction volume	About 2 crore	24,161.69 crore	About 12,081 times
Annual transaction value	About ₹0.07 lakh crore	₹314.23 lakh crore	About 4,489 times
Banks live on UPI	44	703	About 16 times

Source: *Author's compilation and calculations based on National Payments Corporation of India, UPI Product Statistics, and Ministry of Finance, Government of India, UPI Completes 10 Glorious Years: Emerges as World's Largest Real-Time Payments Platform, Anchoring India's Digital Economy (2026). Retrieved October 4, 2026, from NPCI and Press Information Bureau.*

Note: *Growth multiples are endpoint ratios calculated by dividing the FY 2025–26 value by the FY 2016–17 value. They are sensitive to the very small first-year base and should not be interpreted as annual growth rates. The FY 2016–17 values are rounded figures; therefore, growth multiples calculated from them are approximate. Changes in platform coverage, participating institutions, transaction categories, and transaction composition may also affect comparability over time.*

UPI transaction volume increased from approximately 2 crore transactions in FY 2016–17 to 24,161.69 crore transactions in FY 2025–26, while transaction value increased from approximately ₹0.07 lakh crore to ₹314.23 lakh crore. These figures demonstrate the large-scale expansion of UPI during its first decade. However, the corresponding growth multiples should be interpreted cautiously because FY 2016–17 represents a very small initial base during the platform's early stage of operation. A ratio calculated from such a small denominator can produce an exceptionally large multiple and does not represent a stable annual growth rate.

The increase also occurred alongside a substantial expansion of the digital-payment ecosystem. The number of banks live on UPI increased from 44 in FY 2016–17 to 703 by March 2026. During this period, payment applications, merchant acceptance, QR-code infrastructure, smartphone access, mobile connectivity, and the range of UPI-enabled transactions also expanded. Growth in transaction volume and value therefore reflects not only increased use by individual customers but also enlargement of the platform, participating institutions, merchant networks, use cases, and transaction intensity among existing users.

Comparability across the two endpoints may additionally be affected by changes in reporting coverage and transaction composition. Early UPI transactions were undertaken within a relatively limited network, whereas later data cover a more mature ecosystem containing a larger mixture of person-to-person and person-to-merchant transactions.

Consequently, the observed increase cannot be attributed exclusively to wider financial inclusion or first-time adoption among previously excluded groups.

The results establish rapid growth in the aggregate scale of UPI, but they do not reveal the number of unique active users, the distribution of transactions across users, rural–urban differences, transaction frequency by socioeconomic group, or the extent of independent use among vulnerable populations. The study therefore interprets UPI growth as evidence of platform expansion and increasing transaction intensity, rather than as a direct measure of equitable digital financial inclusion.

Financial Inclusion and Digital Infrastructure

Table 5: Selected Indicators of Banking Outreach, Digital-Payment Development, and Financial Inclusion, 2019–2024

Indicator	2019	2024	Change		Interpretation
Panel A: Banking outreach					
Village banking outlets	5.97 lakh	15.98 lakh	+10.01 lakh		Expansion in reported banking service points
Basic Savings Bank Deposit Accounts	57.42 crore	70.59 crore	+13.17 crore		Expansion in basic bank accounts
Panel B: Digital-payment development					
RBI Digital Payments Index	153.47	445.50	+292.03 points	index	Growth relative to the March 2018 base of 100
Panel C: Multidimensional financial inclusion					
Financial Inclusion Index	49.9	64.2	+14.3 points	index	Improvement on the FI-Index scale of 0–100
Access sub-index	67.5	79.3	+11.8 points	index	Change in the reach and availability of services
Usage sub-index	38.7	55.5	+16.8 points	index	Change in the depth and extent of service use
Quality sub-index	52.6	65.8	+13.2 points	index	Change in quality-related dimensions

Source: *Author's compilation and calculations based on Reserve Bank of India, Annual Report 2024–25; RBI, RBI–Digital Payments Index for September 2024; and RBI Financial Inclusion Plan data.*

Note: *The indicators are presented together to describe different dimensions of financial-system development, not as directly comparable measures. The RBI Digital Payments Index uses March 2018 = 100 as its base and measures payment digitisation. The Financial Inclusion Index is measured on a 0–100 scale and covers Access, Usage, and Quality across multiple financial sectors. Changes in the two indices should be interpreted within their respective constructs. No causal or proportional relationship between the indices is inferred.*

Between March 2019 and March 2024, the RBI Digital Payments Index increased from 153.47 to 445.50, while the Financial Inclusion Index rose from 49.9 to 64.2. These indices measure different constructs and should therefore be interpreted separately. The RBI-DPI tracks digital-payment development, whereas the FI-Index measures broader financial inclusion through Access, Usage, and Quality.

The results provide parallel evidence of growth in digital payments and financial inclusion but do not establish a causal relationship. The FI-Index value of 64.2 is not a percentage of inclusion, and its change should not be directly compared with the RBI-DPI. Establishing causality would require disaggregated longitudinal data and an appropriate causal research design.

5. Discussion

The discussion distinguishes between findings directly supported by the national-level data and their broader contextual implications. The empirical findings concern changes in PMJDY accounts and deposits, UPI transaction volume and value, banking outreach, the RBI Digital Payments Index, and the Financial Inclusion Index. Interpretations concerning tribal and remote communities are policy-oriented and draw on the conceptual framework and prior literature; they are not direct findings from tribal-disaggregated data.

From Account Ownership to Financial Participation

PMJDY significantly expanded formal banking access and reduced barriers to basic account ownership. Although aggregate deposits also increased, these figures do not indicate account activity, usage frequency, balance distribution, or sustained savings. From a capability perspective, an account becomes meaningful when users can convert access into secure savings, welfare payments, credit, insurance, pensions, digital payments, and informed financial decisions. Therefore, the next stage of financial-inclusion management should shift from account ownership toward active, appropriate, secure, and informed financial participation.

Expansion of UPI and Broader Financial Inclusion

UPI transactions increased from about 2 crore in FY 2016–17 to 24,161.69 crore in FY 2025–26, while transaction value rose from about ₹0.07 lakh crore to ₹314.23 lakh crore, demonstrating the scalability of interoperable digital payments. However, growth multiples should be interpreted cautiously because the initial base was very small and system coverage and reporting evolved over time. UPI adoption reflects factors such as usefulness, ease of use, trust, merchant acceptance, connectivity, and transaction reliability. The RBI Digital Payments Index and FI-Index measure different constructs and should therefore be treated as parallel indicators rather than causal evidence. Digital-payment growth alone does not guarantee access to credit, insurance, pensions, savings, financial capability, or grievance redressal. UPI should consequently be viewed as one component of broader financial inclusion.

Interpreting the Access-Usage-Quality Pattern

The FI-Index shows improvement across all three dimensions between 2019 and 2024: Access rose from 67.5 to 79.3, Usage from 38.7 to 55.5, and Quality from 52.6 to 65.8. Access remained highest, while Usage showed the largest relative improvement from a lower base. This suggests a conceptual progression from formal access to actual use and, ultimately, safe and beneficial participation, but does not establish a causal pathway. The higher Access score reflects expanding financial infrastructure, while the lower Usage score indicates that availability does not necessarily translate into regular or independent use. Quality highlights the importance of financial literacy, reliability, transparency, consumer protection, and grievance redressal. The pattern also reflects the digital divide, where infrastructure access may improve faster than users' skills, confidence, autonomy, and outcomes. These findings provide a conceptual basis for the LAST-MILE framework, linking service availability with active use, safety, inclusive design, grievance redressal, and livelihood outcomes. Risks such as fraud, transaction failures, authentication difficulties, and dependence on intermediaries were not directly measured and should therefore be examined through future field-based research.

Contextual Implications for Tribal and Remote Areas

The study uses national-level data and does not directly measure financial inclusion among tribal or remote populations. Therefore, the findings have contextual rather than empirical implications for these communities.

Digital finance may reduce travel costs, facilitate government-benefit transfers, improve payments, and connect local producers with markets. However, these benefits depend on connectivity, electricity, banking access, digital and financial literacy, local-language support, merchant acceptance, and grievance mechanisms.

National indicators may conceal substantial regional and social disparities. Thus, higher account ownership or UPI usage cannot be interpreted as evidence of regular or independent adoption among tribal households. Future research should validate these issues using tribal-disaggregated data, household surveys, field studies, and transaction-level evidence, focusing on access, active use, digital capability, trust, consumer risk, grievance redressal, and livelihood outcomes.

Analytical Interpretation

The national evidence supports a qualified interpretation of India's digital financial transformation. Formal access expanded substantially, and usage indicators show increasing financial and payment activity. However, differences among Access, Usage, and Quality indicate that infrastructure expansion does not by itself establish autonomous, secure, equitable, or welfare-enhancing participation.

Consistent with the multidimensional financial-inclusion framework, capability approach, technology-adoption theory, and digital-divide perspective, financial inclusion should be understood as a conversion process. Accounts and

digital platforms create opportunities, but financial capability, trust, accessible design, institutional support, consumer protection, and livelihood relevance determine whether those opportunities become meaningful outcomes.

The principal management challenge is therefore no longer confined to opening accounts or increasing transaction volumes. It involves supporting regular and independent use, protecting consumers, strengthening grievance redressal, reducing dependence on intermediaries, and linking financial services with appropriate savings, credit, insurance, pension, and livelihood opportunities. The present national-level analysis establishes the system-wide pattern, while its distributional and community-specific consequences require further disaggregated and field-based investigation.

Proposed LAST-MILE Inclusive Fintech Management Framework

Table 6: LAST-MILE Framework

Component	Management Priority	Expected Outcome
L – Local Financial Access	Strengthen business correspondents, banking outlets, mobile connectivity, and reliable cash services	Reduced physical and geographic exclusion
A – Active and Appropriate Use	Promote savings, payments, insurance, pensions, affordable credit, and productive finance	Movement from account ownership to meaningful participation
S – Safety and Consumer Trust	Improve cybersecurity awareness, fraud prevention, transaction reliability, and customer protection	Increased confidence in digital finance
T – Training and Financial Capability	Provide practical digital and financial education in local languages	Improved independent and informed use
M – Market and Livelihood Integration	Connect fintech with SHGs, farmers, tribal producers, entrepreneurs, and local enterprises	Increased income and productive financial use
I – Inclusive and Accessible Design	Develop simple, multilingual, low-bandwidth, disability-inclusive services	Wider participation among vulnerable groups
L – Local Grievance Redressal	Provide accessible complaint support through banks, BCs, helplines, and local institutions	Faster resolution and stronger accountability
E – Evidence-Based Monitoring	Develop disaggregated indicators by region, gender, vulnerability, and usage outcome	Better targeting and policy evaluation

Source: *Author's own framework, developed based on the literature review and conceptual synthesis.*

The framework emphasizes that fintech inclusion is a management process rather than only a technological outcome.

Recommendations

Financial inclusion should shift from account-opening targets toward active-use indicators, including savings continuity, digital-payment usage, credit, insurance, pensions, and customer satisfaction. Business Correspondent networks should be strengthened through adequate remuneration, reliable connectivity and devices, liquidity support, training, predictable service, and transparent charges. Financial literacy should emphasise practical digital skills, fraud awareness, secure transactions, and grievance filing. Fintech platforms should provide multilingual, voice-assisted, and low-literacy-friendly services, while digital finance should be linked with micro-enterprises, SHGs, farmers, producer organisations, and local value chains. Financial-inclusion data should be more disaggregated by geography and key demographic groups to identify gaps effectively. At the same time, expanding digital payments requires stronger cybersecurity, fraud monitoring, faster complaint resolution, failed-transaction support, and customer protection.

Limitations

This study has several data and methodological limitations. The indicators cover different reporting periods, definitions, units, and measurement approaches; therefore, comparisons between PMJDY, UPI, and RBI indices should be interpreted as broad descriptive trends rather than synchronised changes or directly comparable performance measures. Changes in indicator definitions, institutional coverage, transaction composition, and reporting systems over time—particularly the rapid expansion of UPI—may also influence observed growth rates, while the small initial UPI base magnifies growth multiples. Dynamic administrative databases may be retrospectively revised, and minor differences may arise from rounding or reporting updates. Moreover, the analysis relies primarily on national-level aggregate data and therefore cannot capture state-, district-, gender-, income-, rural–urban-, or tribal-level disparities. PMJDY and UPI aggregates also do not adequately measure account activity, unique users, transaction frequency, financial capability, or the distribution of benefits. The study further lacks micro-level socioeconomic outcomes and

does not establish causal relationships between digital financial infrastructure and financial inclusion, income, livelihoods, or resilience. Finally, observations concerning tribal and remote communities are contextual rather than directly empirical and require validation through disaggregated administrative data and field-based research. Accordingly, the findings should be viewed as indicative system-level evidence rather than precise estimates of individual, distributional, or causal impacts.

6. Conclusion

This study provides an integrated system-level interpretation of India's digital financial development by examining access, usage, and quality as interconnected but distinct dimensions of financial inclusion. By bringing together PMJDY, banking-outreach indicators, UPI transactions, and RBI financial-inclusion measures, it shows that India's digital financial ecosystem has expanded substantially, but not as a uniform process: formal access and payment infrastructure have progressed rapidly, while meaningful usage, capability, safety, and service quality remain distinct challenges. The study's principal managerial contribution is the proposed LAST-MILE framework, which translates this access–usage–quality perspective into eight priorities covering local access, active use, safety and trust, financial capability, livelihood integration, inclusive design, grievance redressal, and evidence-based monitoring. The framework extends conventional monitoring beyond accounts, outlets, and transaction volumes toward meaningful and sustainable participation, while recognising that its effectiveness requires validation through disaggregated administrative and field-level evidence, particularly in tribal and remote communities. Overall, the study argues that India has substantially expanded the infrastructure and opportunity for financial participation, but converting this opportunity into regular, independent, secure, inclusive, and welfare-enhancing use remains the central management challenge.

Declarations

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Data Availability: The study is based on publicly available secondary data obtained from Government of India and Reserve Bank of India sources.

Ethical Statement: The study uses aggregate public data and does not involve human participants or personally identifiable information.

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