



Research Article

Digital Financial Inclusion and Women's Economic Empowerment: An Empirical Study of Madhya Pradesh

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DOI: <https://doi.org/10.5281/zenodo.23261214>

Abstract

Digital financial inclusion has become a central component of contemporary financial inclusion because mobile phones, digital banking, UPI, RuPay cards, Aadhaar-enabled payment systems, Business Correspondents and other digital channels can reduce distance and transaction barriers between women and formal financial services. This paper examines the relationship between digital financial inclusion and women's economic empowerment in Madhya Pradesh, using a 2024–25 and 2025–26 evidence window and incorporating the latest available 2026 developments. The paper is grounded in the supplied synopsis on financial inclusion and women's economic empowerment and is expanded with official evidence from the Reserve Bank of India (RBI), Department of Financial Services (DFS), State Level Bankers' Committee–Madhya Pradesh (SLBC-MP), Government of India and recent Madhya Pradesh research.

The evidence indicates rapid national expansion of digital financial infrastructure. RBI's Financial Inclusion Index increased from 64.2 in March 2024 to 67.0 in March 2025, with improvement across access, usage and quality. RBI reported that by 31 March 2025, 100 per cent coverage under its expanding and deepening of digital payments ecosystem programme had been achieved in all districts of Madhya Pradesh. Digital payments in India exceeded 18,120 crore transactions during FY 2024–25 up to January 2025. By September 2026, PMJDY had 59.40 crore beneficiaries nationally, while Madhya Pradesh had 4.77 crore PMJDY beneficiaries as of 2 September 2026, with ₹20,189.56 crore in account balances and 3.56 crore RuPay cards issued.

The paper argues that digital financial inclusion should not be measured only by possession of a bank account or access to a smartphone. Meaningful digital inclusion requires regular use, independent control, affordability, digital and financial literacy, safety, privacy, ability to resolve failed transactions, and the capacity to use digital finance for savings, payments, credit, insurance, enterprise and income generation. For women, empowerment additionally depends on whether digital accounts and instruments are operated autonomously or controlled by other household members. Since no original respondent-level dataset was supplied, this paper does not present invented survey findings. It provides a complete empirical framework and clearly labelled illustrative analysis for replacement with actual field data.

KEYWORDS: Digital Financial Inclusion; Women's Economic Empowerment; UPI; Digital Payments; PMJDY; Financial Literacy; Digital Literacy; Madhya Pradesh; Women Entrepreneurs; 2024–25; 2025–26; 2026.

Manuscript Information

- ISSN No: 2583-7397
- Received: 18-08-2026
- Accepted: 03-10-2026
- Published: 09-10-2026
- IJCRM:5(5); 2026: 1016-1125
- ©2026, All Rights Reserved
- Plagiarism Checked: Yes
- Peer Review Process: Yes

How to Cite this Article

Yadav K, Khandelwal K. Digital Financial Inclusion and Women's Economic Empowerment: An Empirical Study of Madhya Pradesh. Int J Contemp Res Multidiscip. 2026;5(5):1016-1125.

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1. INTRODUCTION

Financial inclusion has evolved from the simple objective of bringing excluded populations into the formal banking system toward a broader objective of enabling people to use financial services safely, affordably and effectively. Digital technologies have accelerated this transformation. Mobile banking, UPI, RuPay cards, Aadhaar-enabled payment systems, Business Correspondents, digital wallets, internet banking and other digital channels can bring formal financial services closer to people who face geographical, economic or social barriers.

Women are a particularly important group in the study of digital financial inclusion. A woman may possess a bank account but have limited control over it; she may receive a digital transfer but depend on another household member to withdraw or use it; or she may use UPI for routine payments but remain excluded from digital savings, insurance or credit. Consequently, digital inclusion and economic empowerment are related but distinct concepts.

The supplied synopsis provides the conceptual starting point for this paper. It identifies financial inclusion as access to appropriate financial products and services at affordable costs and emphasizes access, availability and usage of financial services. It also identifies women's economic empowerment as a major outcome and recognizes barriers including limited awareness, documentation, asset ownership, financial literacy and social constraints. The present paper narrows that framework to digital financial inclusion and examines how digital access and usage may influence women's economic agency in Madhya Pradesh.

The 2024–25 period is particularly significant. RBI's Annual Report 2024–25 states that the Financial Inclusion Index rose to 64.2 in March 2024 and that the Reserve Bank continued initiatives to deepen financial inclusion, expand the digital payments ecosystem and formulate the National Strategy for Financial Inclusion 2025–30. By 31 March 2025, 100 per cent coverage under the expanding and deepening of digital payments ecosystem programme had been achieved in all districts of Madhya Pradesh. RBI's agenda for 2025–26 included a target of 100 per cent coverage in 80 per cent of districts nationally under the digital payment's ecosystem programme.

The evidence window also extends into 2026. The Department of Financial Services' 2025–26 Annual Report was published on 1 April 2026, while the Government's August 2026 financial inclusion factsheet reports that the RBI FI-Index reached 70.0 in March 2026. The PMJDY dashboard reports 59.40 crore national beneficiaries as of 23 September 2026 and 47.74 million beneficiaries in Madhya Pradesh as of 2 September 2026. These developments make 2024–25, 2025–26 and 2026 an appropriate period for examining the rapid transition toward digital financial participation.

2. Conceptual Background

2.1 Digital Financial Inclusion

Digital financial inclusion refers to the meaningful access to and use of formal financial services through digital technologies. It includes digital payments, mobile and internet banking, digital savings, digital insurance, digital credit,

electronic government transfers and other technology-enabled financial services. In this paper, digital financial inclusion is treated as a multidimensional construct with three broad components: access, usage and quality. This corresponds closely with RBI's FI-Index framework, which explicitly measures access, usage and quality.

2.2 Digital Financial Access

Access concerns whether women possess the infrastructure and channels necessary to participate in digital finance. Indicators include a bank account, mobile phone, debit/RuPay card, smartphone, internet connection, proximity to a Business Correspondent, availability of UPI-enabled banking and ability to access digital financial services. Access is a necessary but insufficient condition for empowerment.

2.3 Digital Financial Usage

Usage concerns frequency, diversity and purpose of digital financial activity. Relevant indicators include UPI payments, mobile banking, ATM/debit card use, balance enquiries, digital transfers, government benefit receipts, digital savings, insurance premium payments and digital credit applications. Regular use can increase familiarity and reduce dependence on intermediaries.

2.4 Quality and Safety

Quality includes affordability, reliability, transparency, grievance redressal, consumer protection, privacy, fraud awareness and suitability of digital financial products. For women, quality also includes the ability to complete transactions independently and to recover from failed transactions or fraud without relying on male household members.

2.5 Women's Economic Empowerment

Women's economic empowerment is defined in this paper as women's increased capacity to access, control, use and benefit from economic resources and opportunities. It includes financial independence, control over income, savings, asset ownership, enterprise activity, employment, participation in household financial decisions and confidence in managing money.

2.6 Digital Finance as an Empowerment Mechanism

The proposed mechanism is: digital access → digital capability → regular financial use → greater control and visibility over money → improved savings, payments and economic opportunities → stronger financial independence and decision-making → women's economic empowerment. The pathway can be interrupted by gender norms, digital illiteracy, device dependence, fraud, poor connectivity and lack of control over passwords, SIM cards or bank accounts.

3. REVIEW OF LITERATURE

3.1 Literature in the Supplied Synopsis

The supplied synopsis reviews financial inclusion literature ranging from financial exclusion and banking access to microfinance, digital finance and women's empowerment.

Kempson et al. (2000) situate financial exclusion within wider processes of social exclusion. Chavan (2008) highlights gender inequality in banking access. Demirguc-Kunt and Klapper (2012) expand the measurement of financial inclusion to account ownership, formal savings, borrowing and alternative digital mechanisms. Swamy (2014) discusses the gender dimension of financial inclusion and microcredit. Shobha and Shalini (2015) examine women's financial perceptions, while Singh (2016) provides a Madhya Pradesh example concerning awareness of financial services among working women.

The synopsis also identifies digital financial inclusion as an emerging dimension and refers to evidence that digital products can reduce barriers but may create new gaps when women lack access, skills or confidence. The present paper extends this framework by treating digital access and usage as central explanatory variables rather than as a secondary component of financial inclusion.

3.2 Recent Evidence from Madhya Pradesh

A 2025 study by Pradhan, Kumar and Sharma specifically examined adoption of digital financial technology in Madhya Pradesh. The study used field-survey data and logistic and Poisson regression models and reported that adoption varies according to demographic, social and economic characteristics including age, caste, gender, education, income and occupation. This is directly relevant to the present study because it supports

the need to model digital financial inclusion as an outcome influenced by individual and socioeconomic characteristics rather than assuming uniform adoption.

A 2026 study on women's financial inclusion and financial agency in Madhya Pradesh further emphasizes operational autonomy, digital financial participation, access to credit and institutional support mechanisms. Its focus on financial agency is particularly relevant to the present paper because the key question is whether digital financial access translates into actual economic control.

3.3 RESEARCH GAP

Three gaps are important. First, aggregate digital-payment growth does not reveal gender-specific usage or autonomy. Second, bank-account ownership does not establish that women independently operate accounts. Third, the expansion of digital infrastructure does not automatically establish economic empowerment. The proposed empirical study therefore needs to measure not only whether women use digital finance but also who controls the device, PIN, SIM, account and money; whether digital finance reduces transaction costs; and whether it improves savings, enterprise activity and financial decision-making.

4. Madhya Pradesh Digital Financial Inclusion Context: 2024–25, 2025–26 and 2026

4.1 RBI Financial Inclusion Index

Reference year	RBI FI-Index	Key observation
March 2023	60.1	Base comparison reported by RBI
March 2024	64.2	6.8% year-on-year growth; improvement across sub-indices
March 2025	67.0	Growth across access, usage and quality
March 2026	70.0	Latest national index reported by Government in August 2026

The FI-Index is a national composite measure and is not a Madhya Pradesh-specific women's index. It is therefore used here as contextual evidence of the national environment in which the state's digital financial inclusion operates. The rise from 64.2 in March 2024 to 67.0 in March 2025 and then to

70.0 in March 2026 indicates continued improvement, but it should not be interpreted as proof that women in Madhya Pradesh experienced the same magnitude of improvement.

4.2 Digital Payment Expansion

Financial year / period	Digital payment transactions	Status / source
2023–24	16,443.02 crore	Full financial year
2024–25	18,120.82 crore	Up to January 2025 in the cited government release
2025–26	Use final RBI/DFS/NPCI annual figure when reporting completed FY	Do not substitute partial-year data
2026	Rapid continued expansion; latest policy/infrastructure evidence	Use date-specific figures rather than annualizing partial data

The Government reported more than 18,120 crore digital-payment transactions during FY 2024–25 up to January 2025. The growth demonstrates the scale of digital finance but again does not indicate who uses the services or whether women use them autonomously.

4.3 Madhya Pradesh: Digital Financial Inclusion Coverage

RBI reported that as of 31 March 2025, 100 per cent coverage under the expanding and deepening of digital payments ecosystem programme had been achieved in all districts of

Madhya Pradesh. The programme is designed around ensuring that eligible individuals in identified districts have at least one mode of digital payment, such as debit/RuPay cards, internet banking, mobile banking, UPI, USSD or Aadhaar-enabled payment systems. This is an important state-level infrastructure milestone.

4.4 PMJDY and Women

As of 28 February 2025, PMJDY had 54.97 crore accounts nationally, including 30.60 crore women's accounts (55.7 per

cent). The scheme provides a basic bank account, RuPay card, access to an overdraft facility subject to eligibility and financial literacy support. By September 2026, the national PMJDY

dashboard reported 59.40 crore beneficiaries and 33.11 crore female beneficiaries, demonstrating continued growth in the formal account base.

Date	Madhya Pradesh PMJDY indicator	Value
02 Sep 2026	Total PMJDY beneficiaries	47,736,405
02 Sep 2026	PMJDY balance in beneficiary accounts	₹20,189.56 crore
02 Sep 2026	RuPay cards issued	35,640,687
23 Sep 2026	National PMJDY beneficiaries	59.40 crore
23 Sep 2026	National female beneficiaries	33.11 crore

The September 2026 state figures are current dashboard observations and should be cited with the exact date because PMJDY data are continuously updated. They demonstrate the scale of the formal account ecosystem in Madhya Pradesh but do not by themselves measure active digital use or women's empowerment.

4.5 Digital Payments Governance in Madhya Pradesh

The SLBC-Madhya Pradesh structure includes a dedicated Sub-Committee on Digital Transactions, with Bank of India as convenor, alongside a Sub-Committee on Financial Inclusion. The SLBC calendar shows meetings continuing through FY 2026–27, including meetings in March, June and September 2026. This institutional structure indicates that digital transactions and financial inclusion are being monitored as distinct but interconnected policy areas at state level.

4.6 2025–26 and 2026 Policy Environment

The Department of Financial Services published its Annual Report 2025–26 on 1 April 2026. The report includes continuing financial-inclusion programmes and notes the expansion of PMMY, including the Tarun Plus category for

eligible repeat borrowers and a collateral-free guarantee framework up to ₹20 lakh. Although PMMY is primarily a credit programme, its relevance to digital financial inclusion lies in the increasingly integrated digital financial ecosystem through which applications, payments and account operations can be conducted.

The Government's August 2026 financial-inclusion factsheet reports that the RBI FI-Index increased to 70.0 in March 2026 and that banking access continues to be delivered through branches, Business Correspondents and India Post Payments Bank. As of 6 March 2026, 99.92 per cent of villages nationally were reported covered with a banking outlet within a 5 km radius. These national infrastructure figures provide context but should not be treated as a state-specific measure.

The evidence window should therefore be read chronologically: 2024 establishes the starting point, FY 2024–25 captures a major phase of digital-inclusion expansion, FY 2025–26 records the next policy and programme phase, and 2026 provides the latest available infrastructure and PMJDY indicators. The exact date attached to each statistic is essential for academic accuracy.

5. Conceptual Framework

Dimension	Variables / indicators	Expected role
Access	Bank account, smartphone, mobile phone, RuPay card, UPI-enabled account, BC access, internet	Foundation for digital participation
Usage	UPI, mobile banking, ATM/debit card, digital transfers, online savings, bill payments	Measures active participation
Quality	Reliability, affordability, grievance redressal, privacy, security, transparency	Determines sustainability and trust
Digital literacy	Ability to install/use apps, scan QR, check balance, recognize fraud	Facilitates independent use
Financial literacy	Knowledge of interest, savings, insurance, credit, account rights	Improves quality of decisions
Digital autonomy	Own phone/SIM/PIN, independent login, control over account	Key gendered mechanism
Economic outcomes	Savings, income, enterprise, payments, asset formation, access to credit	Intermediate outcomes
Empowerment	Income control, financial independence, economic decisions, confidence	Dependent variable

The conceptual model proposes that digital financial inclusion affects empowerment through both economic and agency pathways. A woman may save transaction costs through UPI, build a digital record of financial activity, receive government transfers directly, pay suppliers or customers electronically, and access other financial products. These mechanisms can strengthen economic agency when women retain control over the digital tools and financial resources.

6. OBJECTIVES OF THE STUDY

1. To examine the level and dimensions of digital financial inclusion among women in Madhya Pradesh.

2. To assess women's access to digital banking, UPI, RuPay cards, mobile banking and other digital financial services.
3. To examine the frequency and purposes of women's digital financial usage.
4. To assess women's digital and financial literacy and their relationship with digital financial inclusion.
5. To identify the major barriers to women's independent use of digital financial services.
6. To examine the relationship between digital financial inclusion and women's savings, income generation, entrepreneurship and financial independence.

7. To analyze the relationship between digital financial inclusion and women's participation in household economic decision-making.
8. To examine whether rural-urban location, education, age, income, occupation and other demographic factors influence digital financial inclusion.
9. To suggest policy measures for strengthening gender-responsive digital financial inclusion in Madhya Pradesh.

7. Research Questions

1. What is the level of digital financial inclusion among women in Madhya Pradesh?
2. Which digital financial services are most frequently used by women?
3. To what extent do women independently operate digital financial accounts and devices?
4. What demographic, economic and technological factors influence digital financial inclusion?
5. What barriers do women face in using digital financial services?
6. Does digital financial inclusion relate to women's savings, income generation and financial independence?
7. Does digital financial inclusion relate to women's participation in household financial decisions?
8. Does digital literacy strengthen the relationship between digital financial inclusion and economic empowerment?

8. Hypotheses

1. **H01:** There is no significant association between women's demographic characteristics and their level of digital financial inclusion.
2. **H01a:** There is a significant association between women's demographic characteristics and their level of digital financial inclusion.
3. **H02:** There is no significant relationship between digital financial inclusion and women's economic empowerment.
4. **H02a:** There is a significant relationship between digital financial inclusion and women's economic empowerment.
5. **H03:** There is no significant relationship between digital financial inclusion and women's financial independence.
6. **H03a:** There is a significant relationship between digital financial inclusion and women's financial independence.
7. **H04:** There is no significant relationship between digital financial inclusion and women's participation in household economic decision-making.

9.5 Questionnaire Design

Section	Variables
A. Profile	Age, education, marital status, occupation, income, residence
B. Device access	Mobile phone, smartphone, SIM ownership, internet access
C. Banking access	Account, RuPay/debit card, BC, branch access
D. Digital usage	UPI, mobile banking, ATM, internet banking, QR payments
E. Digital literacy	Operational skills, authentication, fraud recognition
F. Financial literacy	Savings, credit, insurance, interest, account rights
G. Digital autonomy	Own device, PIN/password control, independent operation
H. Barriers	Connectivity, cost, trust, fraud, language, social restrictions

8. **H04a:** There is a significant relationship between digital financial inclusion and women's participation in household economic decision-making.
9. **H05:** Digital literacy does not significantly moderate the relationship between digital financial inclusion and women's economic empowerment.
10. **H05a:** Digital literacy significantly moderates the relationship between digital financial inclusion and women's economic empowerment.

9. RESEARCH METHODOLOGY

9.1 Research Design

The proposed study uses a descriptive, analytical and explanatory research design. Secondary evidence from 2024–25, 2025–26 and 2026 establishes the institutional context. A primary cross-sectional survey is proposed to measure women's individual experiences, digital behaviour and empowerment outcomes. The design is consistent with the supplied synopsis, which proposed primary and secondary data, a questionnaire, stratified sampling and statistical analysis.

9.2 Study Area

The study area is Madhya Pradesh. To capture variation, the field survey should include selected districts representing rural, semi-urban and urban environments and different socioeconomic conditions. The final paper should report the actual districts and sampling frame used rather than claiming statewide representativeness unless the design supports it.

9.3 Population and Sample Size

The supplied synopsis proposed approximately 500 respondents. A sample of around 500 women is therefore retained as a practical research design, subject to formal sample-size calculation. The final paper must state the number actually contacted, completed, valid and excluded questionnaires.

9.4 Sampling

1. Stratify the study population by rural/urban residence and, where feasible, by regional socioeconomic characteristics.
2. Select districts and field units within strata.
3. Use random or systematic selection of respondents wherever a reliable sampling frame is available.
4. Maintain records of non-response and replacement.
5. Ensure adequate representation of women who are digitally active as well as women with limited or no digital financial use.

I. Economic outcomes	Savings, income, enterprise, payments, access to services
J. Empowerment	Income control, financial decisions, independence, confidence

9.6 Digital Financial Inclusion Index

A Digital Financial Inclusion Index (DFII) can be constructed from access, usage and quality dimensions. Example components include: own bank account, own mobile phone, smartphone availability, UPI activation, frequency of digital transactions, mobile banking use, digital savings, digital receipt of benefits, independent PIN/password control, awareness of fraud prevention, ability to resolve failed transactions and satisfaction with digital services. Each item can be standardized or scored on a Likert scale. Factor analysis should be used to test whether the proposed dimensions are empirically distinct.

9.7 Women's Economic Empowerment Index

The empowerment index can include control over personal income, control over savings, ability to make independent purchases, participation in household investment decisions, enterprise decisions, asset-related decisions, ability to access financial services independently, financial confidence and perceived economic security. A 5-point Likert scale may be used, followed by reliability testing.

9.8 Statistical Tools

1. Frequency and percentage analysis.
2. Mean, standard deviation and index scores.
3. Chi-square tests for categorical associations.
4. t-test and ANOVA for group comparisons.
5. Pearson or Spearman correlation depending on scale properties.
6. Exploratory factor analysis to validate digital inclusion and empowerment dimensions.
7. Multiple linear regression for continuous empowerment scores.
8. Logistic regression for binary outcomes such as independent digital financial use.
9. Moderation analysis to test whether digital literacy strengthens the digital inclusion–empowerment relationship.

9.9 Proposed Regression Model

$$\text{Economic Empowerment}_i = \beta_0 + \beta_1 \text{Digital Financial Inclusion}_i + \beta_2 \text{Digital Literacy}_i + \beta_3 \text{Financial Literacy}_i + \beta_4 \text{Income}_i + \beta_5 \text{Education}_i + \beta_6 \text{Occupation}_i + \beta_7 \text{Rural/Urban}_i + \beta_8 \text{Age}_i + \varepsilon_i$$

The principal coefficient is β_1 . A positive significant coefficient would indicate a positive association between digital financial inclusion and economic empowerment after controlling for observed characteristics. The model should not be interpreted as proof of causality in a cross-sectional design.

10. Empirical Evidence and Analysis

10.1 National Financial Inclusion Trend

RBI reported that the FI-Index increased from 60.1 in March 2023 to 64.2 in March 2024. Government reporting in August 2025 stated that the index reached 67.0 in March 2025, with growth across access, usage and quality. The latest Government factsheet in August 2026 reports an FI-Index of 70.0 for March

2026. This trajectory suggests continued broadening and deepening of formal financial participation.

10.2 Madhya Pradesh Digital Inclusion Coverage

The strongest state-specific digital evidence is RBI's statement that by 31 March 2025 all districts of Madhya Pradesh had achieved 100 per cent coverage under the expanding and deepening of digital payments ecosystem programme. This is a major infrastructure milestone. It establishes that the state has reached the policy target at district level, but it does not establish equal usage by women or equal digital autonomy.

10.3 Madhya Pradesh PMJDY Scale in 2026

The PMJDY state dashboard reported 47,736,405 beneficiaries in Madhya Pradesh on 2 September 2026. Of these, 37,230,840 were at rural/semi-urban centre branches and 10,505,565 at urban/metro centre branches. Account balances totaled ₹20,189.56 crore and 35,640,687 RuPay cards had been issued. These data show the scale of the formal financial infrastructure available to women and households, although the dashboard extract does not provide the state-level female total in the same row and should therefore not be used to infer a precise female share for Madhya Pradesh.

10.4 Digital Transaction Growth

Digital payment transactions in India rose from 16,443.02 crore in FY 2023–24 to 18,120.82 crore during FY 2024–25 up to January 2025, according to a Ministry of Finance/PIB release. The increase reflects the normalization of digital payments in everyday economic activity. For women's empowerment, the relevant research question is whether women are active participants in this digital economy rather than passive recipients of transfers.

10.5 2025–26 Institutional Development

The Department of Financial Services Annual Report 2025–26, published in April 2026, documents continuing expansion of financial-sector schemes. The report notes that PMMY had sanctioned more than 55.85 crore loans totaling ₹37.57 lakh crore since inception as of 10 January 2025 and that approximately 68 per cent of the number of PMMY loans had been sanctioned to women entrepreneurs. While these are national cumulative figures, they illustrate the policy environment in which women's digital and formal financial participation is expanding.

10.6 2026 Developments

The Government's August 2026 financial-inclusion factsheet reports a national FI-Index of 70.0 in March 2026, more than 1.81 lakh bank branches as of 17 July 2026, over 17.36 lakh Business Correspondents and 99.92 per cent national village coverage with a banking outlet within 5 km as of 6 March 2026. These figures demonstrate continued movement toward a hybrid system in which physical last-mile infrastructure and digital channels complement each other.

10.7 Interpretation for Women in Madhya Pradesh

Taken together, the evidence indicates that Madhya Pradesh has entered a phase in which the principal challenge is increasingly shifting from basic access to meaningful usage and quality. When all districts have digital-payment coverage, policy success can no longer be judged only by the presence of an available digital channel. The gender-sensitive question becomes whether women possess the device, skills, confidence,

autonomy and economic opportunities necessary to use those channels independently and productively.

11. Illustrative Primary-Data Analysis (Example Only)

The following figures are hypothetical examples for demonstrating the proposed analysis. They are NOT actual survey findings from Madhya Pradesh. They must be replaced by field data before submission as an empirical survey paper.

Illustrative indicator	Example n=500	Interpretation
Own formal bank account	450 (90%)	High account access in hypothetical sample
Own smartphone	360 (72%)	Device access remains below account access
Active UPI use	315 (63%)	Usage gap relative to account ownership
Independent digital transactions	270 (54%)	Autonomy gap remains
Reported digital-fraud concern	215 (43%)	Trust/safety is a substantial issue
Women reporting increased savings through digital tools	190 (38%)	Potential economic outcome
Women reporting greater financial decision-making	205 (41%)	Potential empowerment outcome

11.1 Example Cross-tabulation

Digital literacy	Independent digital use	Dependent/assisted use	Total
High	125	35	160
Moderate	105	85	190
Low	40	110	150
Total	270	230	500

A chi-square test can determine whether digital literacy and independent digital financial use are significantly associated. If $p < 0.05$, the null hypothesis of independence would be rejected. The example does not provide a calculated test statistic because no actual dataset has been supplied.

11.2 Example Regression

Suppose the actual field dataset produces a regression coefficient $\beta_1 = 0.28$ for the Digital Financial Inclusion Index with $p < 0.01$. The correct interpretation would be that, holding the observed control variables constant, a one-unit increase in the digital inclusion score is associated with a 0.28-unit increase in the economic empowerment score. This would support the positive-relationship hypothesis. It would not establish causality without a stronger research design.

12. DISCUSSION

The evidence supports a transition from basic financial access toward a more digital and usage-oriented financial inclusion model. Madhya Pradesh's 100 per cent district coverage under the digital payments ecosystem programme by March 2025 is especially important because it suggests that institutional availability is no longer the only major constraint. The next analytical challenge is to determine how women use the infrastructure and whether they can use it independently.

The first gender issue is digital autonomy. A bank account registered in a woman's name may still be operated through a spouse's phone or another person's PIN. Such arrangements can produce formal inclusion without genuine financial agency. The proposed survey therefore measures ownership of the mobile device and SIM, independent knowledge of PIN/passwords, frequency of self-initiated transactions and ability to resolve transaction problems.

The second issue is the digital literacy gap. Digital financial services require operational skills and risk awareness. A woman may know how to receive a payment but not how to verify a merchant, identify a fraudulent message, change a password, block a card or file a complaint. Consequently, digital literacy should be measured separately from financial literacy.

The third issue is economic opportunity. Digital payments can reduce transaction costs and facilitate market participation, but they do not create income automatically. A woman needs an economic activity, market access, savings capacity or entrepreneurial opportunity through which digital tools can produce economic benefits. Digital financial inclusion should therefore be studied alongside occupation, enterprise activity and income.

The fourth issue is safety and trust. As digital transactions expand, concerns about fraud, privacy and failed transactions can discourage independent use. The Department of Financial Services has highlighted action against digital financial fraud and mule accounts. Gender-responsive digital inclusion must therefore combine access with consumer protection and grievance redressal.

Finally, the evidence suggests that Madhya Pradesh's policy environment is institutionally strong but that outcome measurement needs greater gender specificity. State-level digital infrastructure statistics show availability; national digital-payment statistics show scale; PMJDY statistics show formal account penetration. None of these alone establishes women's empowerment. Primary data are needed to connect digital usage with savings, income, enterprise activity and household decision-making.

13. Major Barriers to Women's Digital Financial Inclusion

Device ownership and control: Women may have access to a shared phone but not an independently controlled device.

SIM and authentication dependence: Dependence on another person for OTPs, passwords or PINs can reduce autonomy.

Digital literacy: Women may lack operational skills required for independent digital transactions.

Financial literacy: Digital ability does not automatically imply understanding of interest, savings, insurance or credit.

Fear of fraud: Scams, phishing, unauthorized transactions and misinformation can reduce trust.

Connectivity and infrastructure: Poor network coverage or electricity reliability can interrupt digital services.

Language and interface barriers: Complex English-language interfaces can discourage first-time users.

Social norms: Household restrictions on phone ownership, mobility or financial decision-making can limit use.

Grievance redressal: Failed transactions and complaints can be difficult to resolve without assistance.

Affordability: Smartphones, data plans and transaction-related costs can impose barriers for low-income women.

Privacy: Shared devices and household monitoring can make independent financial activity difficult.

Economic opportunity: Digital tools have limited empowerment effects if women lack income-generating activities or market access.

14. Policy Implications and Recommendations

1. Shift from account ownership to active and autonomous digital financial use as the principal gender-sensitive inclusion outcome.
2. Create district-level gender-disaggregated dashboards showing women's digital account activity, UPI usage, digital savings, insurance and credit participation.
3. Strengthen women-focused digital financial literacy through SHGs, Bank Sakhis, Business Correspondents, colleges, community organizations and financial literacy centres.
4. Promote independent device and SIM ownership for women where feasible, while ensuring safe authentication and privacy.
5. Develop simple Hindi and local-language digital finance training covering UPI, QR payments, PIN security, OTPs, fraud detection and complaint procedures.
6. Measure digital autonomy explicitly: who owns the phone, who controls the PIN, who initiates transactions and who receives transaction alerts.
7. Strengthen fraud prevention and rapid grievance redressal, with women-friendly assisted channels.
8. Integrate digital finance with livelihood and entrepreneurship programmes so that digital access is connected to actual economic opportunities.
9. Use SHG networks as local platforms for digital financial training, savings, enterprise payments and access to formal financial products.
10. Ensure that digitalization does not eliminate assisted service channels for women with low literacy, disability, age-related limitations or limited device access.

11. Encourage banks and fintech providers to use gender-sensitive user-experience design and transparent fee structures.
12. Conduct regular district-level studies to identify digital exclusion pockets even where aggregate coverage is reported as 100 per cent.
13. Include women's economic empowerment indicators in the evaluation of digital financial inclusion programmes.

15. Limitations

1. The paper uses secondary evidence for 2024–25, 2025–26 and 2026 but does not contain original respondent-level survey data.
2. Several official digital financial inclusion indicators are national rather than Madhya Pradesh-specific and cannot be used to infer state-level women's outcomes.
3. PMJDY state-level dashboard figures are continuously updated; therefore, every current figure should carry its exact observation date.
4. Digital-payment transaction totals measure volume, not the number of unique users or the gender distribution of users.
5. Cross-sectional survey evidence can establish association but has limited ability to establish causality.
6. Self-reported digital usage may be affected by recall or social-desirability bias.
7. Digital financial inclusion is multidimensional; a single index can simplify a complex phenomenon.

16. CONCLUSION

Digital financial inclusion has become an important pathway through which financial inclusion can contribute to women's economic empowerment. The 2024–25 to 2026 evidence shows continued expansion of India's financial inclusion ecosystem, rising RBI FI-Index values, rapid growth of digital payments, broad digital-payment coverage in Madhya Pradesh and a very large formal account base under PMJDY.

For Madhya Pradesh, the evidence is particularly significant because RBI reported 100 per cent district coverage under the digital payment's ecosystem programme by 31 March 2025. By September 2026, the state had more than 4.77 crore PMJDY beneficiaries, with more than 3.56 crore RuPay cards issued. These developments indicate strong infrastructure and formal access. However, infrastructure alone cannot demonstrate women's empowerment.

The critical issue is whether women can use digital financial services independently, safely and productively. Empowerment is more likely when women control their devices and accounts, understand digital and financial risks, can save and transact independently, access credit and insurance, receive income or government transfers directly, and use digital tools to strengthen enterprise and household financial decision-making. Accordingly, the proposed empirical study should measure digital financial inclusion through access, usage, quality and autonomy, while measuring empowerment through income control, savings, asset decisions, enterprise activity and household economic decision-making. The central proposition is that digital financial inclusion can strengthen women's economic agency, but the relationship is conditional on digital

literacy, financial literacy, social norms, economic opportunities, safety and actual control over digital financial resources.

17. Scope for Future Research

1. District-wise comparison of women's digital financial inclusion in Madhya Pradesh.
2. Rural-urban comparison of digital autonomy and UPI usage.
3. Longitudinal studies of women before and after digital financial training.
4. Role of Bank Sakhis, Business Correspondents and SHGs in women's digital adoption.
5. Relationship between UPI usage and women's micro-enterprise performance.
6. Digital financial inclusion and women's access to formal credit.
7. Digital fraud experiences and women's willingness to use digital finance.
8. Impact of smartphone ownership on women's financial autonomy.
9. Comparison of age cohorts and generational digital financial behaviour.
10. Comparative studies between Madhya Pradesh and other central Indian states.

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20. Data Integrity and Date Note

This paper deliberately uses a three-period evidence window. "2024" refers principally to the RBI FI-Index for March 2024 and institutional developments during 2024. "2024-25" refers to the financial year ending March 2025 and associated reports published in 2025. "2025-26" refers to the financial year ending March 2026 and reports published during 2026. "2026" figures are date-specific current observations where available, such as the PMJDY dashboard and Government financial-inclusion factsheet. These periods should not be merged into a single undated statistic.

No primary respondent-level findings have been invented. The illustrative tables in this paper are examples of how the proposed field survey can be analyzed. Before academic submission as an empirical survey paper, the researcher should replace those tables with actual observations and report sample size, response rate, reliability statistics, test statistics, p-values, effect sizes and regression coefficients calculated from the collected dataset.

Appendix I: Suggested Questionnaire

- Age: 18–25 / 26–35 / 36–45 / 46–55 / 56+
- Residence: Rural / Semi-urban / Urban
- Education: No schooling / Primary / Secondary / Higher secondary / Graduate / Postgraduate+
- Occupation: Agriculture / Wage work / Business / Self-employment / Service / Homemaker / Other
- Do you have a bank account in your own name? Yes / No
- Do you have your own mobile phone? Yes / No
- Do you have your own smartphone? Yes / No
- Do you personally know your bank PIN/password/UPI PIN? Yes / No
- Do you use UPI? Never / Rarely / Monthly / Weekly / Daily
- Do you use mobile banking? Never / Rarely / Monthly / Weekly / Daily
- Do you use ATM/debit/RuPay card independently? Yes / No / With assistance
- Do you receive government benefits directly into your account? Yes / No
- Can you independently check your account balance? Yes / No
- Can you independently identify a suspicious/fraudulent digital message? Yes / No / Not sure
- Have you ever experienced a digital transaction failure? Yes / No
- Do you know how to lodge a complaint about a failed or fraudulent transaction? Yes / No
- Who usually operates your digital financial account? Self / Spouse / Child / Other
- Who controls your mobile phone/SIM used for banking? Self / Spouse / Shared / Other
- Has digital finance increased your ability to save? Yes / No / Not sure
- Has digital finance reduced your need to depend on others for payments? Yes / No / Not sure
- Has digital finance helped your business or income-generating activity? Yes / No / Not applicable
- Do you participate in major household financial decisions? Always / Often / Sometimes / Rarely / Never
- How confident are you in managing your own digital finances? Very high / High / Moderate / Low / Very low
- What is the biggest barrier to your digital financial use? Device / Internet / Literacy / Fraud fear / Social restriction / Cost / Other

Appendix II: Operationalisation of Variables

Construct	Suggested measurement	Role
Digital Financial Inclusion Index	Access + usage + quality + autonomy indicators	Independent variable
Digital literacy	Objective and self-reported operational skills	Moderator / control
Financial literacy	Knowledge of financial concepts and products	Control / mediator
Digital autonomy	Independent device, SIM, PIN, login and transaction control	Mediator
Economic empowerment	Income control, savings, decisions, enterprise, financial independence	Dependent variable
Income	Monthly personal/household income category	Control
Education	Ordinal education category	Control
Residence	Rural/semi-urban/urban	Control
Age	Years/category	Control
Occupation	Categorical	Control

Appendix III: Suggested Empirical Result Format

Test	Outcome	Predictor/group	Statistics	Interpretation
Chi-square	Independent digital use	Education/income/residence	χ^2 , df, p	Association
ANOVA	Empowerment score	Low/moderate/high digital inclusion	F, df, p	Group difference
Correlation	Empowerment	Digital inclusion index	r, p	Strength/direction
Regression	Empowerment	Digital inclusion + controls	β , SE, t, p, R^2	Adjusted association
Moderation	Empowerment	Digital inclusion $\times$ digital literacy	Interaction β , p	Conditional relationship

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