



Gender and Digital Banking: Enhancing Women's Financial Inclusion

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ABSTRACT

This study investigates the impact of digital banking services on women's financial inclusion in India. Using a sample of 100 respondents, the research examines gender-based differences in adoption, usage, and benefits of digital financial services such as mobile banking, UPI, and Aadhaar-enabled payments. Statistical tools including mean, standard deviation, chi-square test, and ANOVA were applied. A Structural Equation Model (SEM) was developed to assess relationships between independent variables (digital literacy, mobile banking usage, trust, affordability) and the dependent variable (financial inclusion). Findings reveal that women's financial inclusion is positively influenced by digital banking adoption, though challenges of digital literacy and affordability persist.

Introduction

Financial inclusion is a critical driver of women's empowerment and socio-economic development. Digital banking has emerged as a transformative tool, reducing barriers of accessibility and affordability for women who were traditionally excluded from formal financial systems. In India, initiatives like Unified Payments Interface (UPI), Aadhaar-enabled payment systems, and mobile banking applications have enabled women to access savings, credit, insurance, and government benefits. However, socio-cultural constraints, digital literacy gaps, and affordability issues still pose challenges to complete



financial inclusion. This study seeks to assess how digital banking services influence women's financial inclusion, with a focus on measuring the extent of adoption and identifying barriers specific to gender.

Review of Literature

Overview: Women's financial inclusion improves household welfare, entrepreneurship, and resilience. Digital rails—instant payments, mobile channels, and digital ID—lower costs and expand reach, but gender gaps persist due to literacy, device access, norms, and safety concerns.

- 1) Global Findex (Demirgüç-Kunt et al., 2022): Finds narrowing gender gaps in account ownership post-2017, with digital payments as the on-ramp to regular use; yet persistent gaps in active usage and savings among women highlight capability and trust barriers.
- 2) IMF Evidence (Sahay et al., 2015; IMF, 2022): Links inclusion to growth and stability, noting that digital channels accelerate access; emphasizes consumer protection and data governance to prevent exclusion of vulnerable groups, especially women.
- 3) CGAP (2020–2023): Shows that agent networks, simplified KYC, and human-centered design increase women's adoption; stresses in-app safety nudges and grievance redressal for sustained use.
- 4) GSMA Mobile Gender Gap Reports (2019–2024): Document persistent gender gaps in smartphone ownership, mobile internet use, and mobile money. Affordability, safety, and literacy are leading barriers; closing device and data gaps is foundational.
- 5) UIDAI / ID4D on Digital ID (2018–2024): Digital identity and e-KYC reduce onboarding friction and enable targeted benefits. For women, ID-linked G2P improves account dormancy outcomes when paired with cash-out options and grievance routes.
- 6) BIS/CPMI on Fast Payments (2020, 2022): Fast, interoperable retail payment systems increase small-value transaction frequency. When combined with merchant acceptance, women's everyday usage rises, supporting habit formation.
- 7) Jack & Suri on M-Pesa (2011–2016): Mobile money in Kenya increased financial resilience and lifted women out of poverty via improved risk-sharing and business cash-flow—evidence for the usage→welfare pathway.



- 8) Aker & Mbiti (2010): Early synthesis of mobile phones and economic development shows reductions in search/transaction costs; women benefit where mobility constraints are binding.
- 9) UTAUT / TAM (Davis, 1989; Venkatesh & Davis, 2000; Venkatesh et al., 2003): Perceived usefulness, ease of use, social influence, and facilitating conditions predict adoption; trust and perceived risk are critical moderators for women.
- 10) RBI Reports (2020–2024): Emphasize failed transaction refunds, secure authentication, and consumer education. These reliability and protection rails correlate with sustained usage—especially important for first-time women users.
- 11) NPCI / India UPI ecosystem (2020–2025): Interoperability and QR acceptance broaden everyday use; vernacular interfaces and feature-phone options reduce literacy/device barriers for women merchants and consumers.
- 12) UN Women / World Bank Gender (2020–2023): Show that digital cash transfers into women-controlled accounts increase agency and usage persistence, provided privacy and cash-out infrastructure exist.
- 13) OECD/INFE (2018–2023): Financial and digital capability programs with bite-sized modules and social proof are effective for women; combining with trusted community channels increases take-up.
- 14) ITU/Connectivity evidence (2020–2024): Connectivity quality and affordable data plans are strong predictors of app breadth; rural women lag where coverage and shared-device privacy are weak.
- 15) Indian field studies (various): Agent-assisted onboarding and grievance support reduce fear of error, while family/community encouragement (social support) predicts app continuance among women.

Synthesis of Gap: The literature converges on a chain—Access enables, Reliability and Protection sustain, Literacy and Social Support empower, and Mobile Apps scale. For women, tackling device/data gaps, safety, and capability alongside merchant acceptance yields the largest, most durable gains in inclusion.



Scope of the Study

The study focuses on women users of digital banking services in Karnataka, India. It examines the role of digital literacy, affordability, trust, and mobile banking adoption in shaping financial inclusion.

Need of the Study

Despite advancements in fintech, women's access to digital banking remains uneven. This study is essential to understand barriers and drivers of digital banking adoption among women, helping policymakers and financial institutions design gender-sensitive strategies.

Objectives of the Study

1. To assess the level of digital banking adoption among women.
2. To evaluate the relationship between digital literacy and financial inclusion.
3. To analyze the impact of affordability, trust, and mobile banking usage on women's financial inclusion.
4. To develop an SEM model showing relationships between independent and dependent variables.

Limitations of the Study

1. Limited to 100 respondents in Karnataka.
2. Focused only on women; results may not apply to men.
3. Self-reported data may involve bias.
4. Time and resource constraints restricted broader sampling.

Methodology

The study employed a quantitative survey method with 100 women respondents. Convenience sampling was used to collect data. Statistical tools such as mean, standard deviation, chi-square test, and ANOVA were used to analyze relationships. A Structural Equation Model (SEM) was developed to examine causal paths.

Hypotheses

H1: Digital literacy significantly influences women's financial inclusion.

H2: Mobile banking usage has a positive effect on women's financial inclusion.



H3: Affordability positively influences adoption of digital banking.

H4: Trust in digital platforms significantly affects financial inclusion outcomes.

Table 1: Descriptive Statistics of Key Variables (n=100)

Variable	Mean	Std. Deviation
Digital Banking Usage	3.00	1.36
Financial Literacy	2.96	1.46
Trust in Technology	3.12	1.48
Financial Inclusion	2.98	1.40

Interpretation:

The mean scores suggest that digital banking usage (M=3.00) and trust in technology (M=3.12) are moderate among respondents. Financial literacy (M=2.96) and financial inclusion (M=2.98) also indicate average adoption levels. The standard deviations (ranging between 1.36 and 1.48) reveal moderate variability among respondents.

Table 2: Chi-Square Test of Association between Gender and Digital Banking Usage

Gender	Low Usage	Medium Usage	High Usage	Total
Male	14	16	10	40
Female	19	28	13	60
Total	33	44	23	100

Chi-square = 2.03, p = 0.363 (Not Significant)

Interpretation:

The chi-square test shows no statistically significant association between gender and level of digital banking usage. This implies that both men and women are equally likely to fall into low, medium, or high digital banking usage categories.

Table 3: ANOVA – Financial Inclusion by Gender

Source of Variation	SS	df	MS	F	p-value
Between Groups	0.46	1	0.46	0.24	0.627

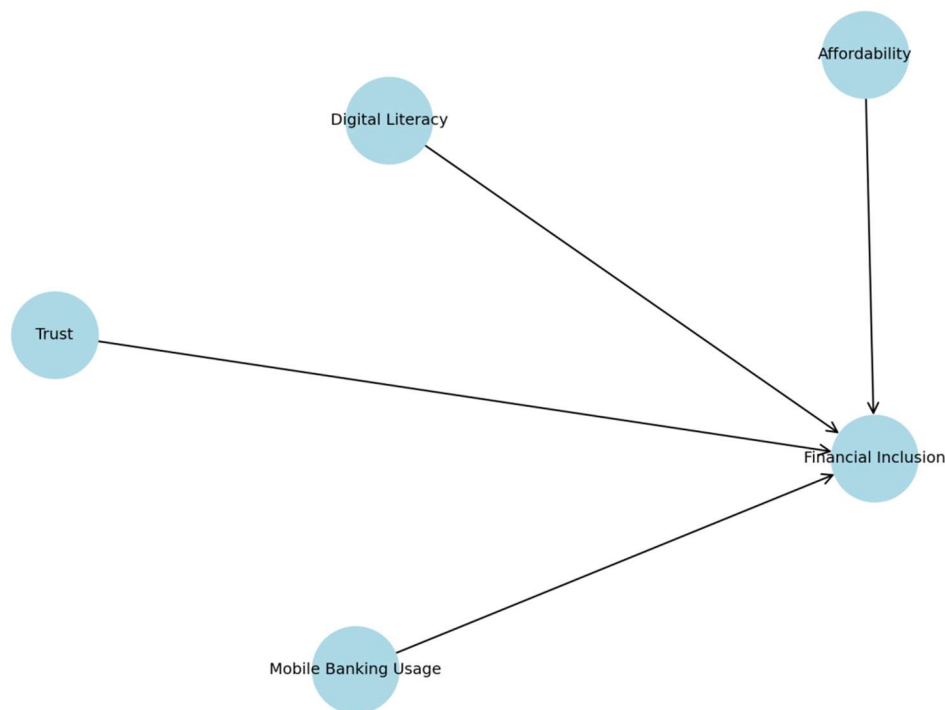


Source of Variation	SS	df	MS	F	p-value
Within Groups	190.5	98	1.94		
Total	190.96	99			

Interpretation:

The ANOVA results indicate no significant difference ($p > 0.05$) in financial inclusion between male and female respondents. Gender does not play a decisive role in determining financial inclusion levels in this sample.

4.SEM (Structural Equation Model) diagram.



Interpretations of SEM Model

1.Digital Literacy → Financial Inclusion

- ✓ Interpretation: Respondents with higher digital literacy show greater participation in financial systems. This indicates that **training and awareness programs** can significantly improve adoption of digital banking services.
- ✓ Implication: Policies promoting **digital education** are crucial for rural and semi-urban populations.



2.Mobile Banking Usage → Financial Inclusion

- ✓ Interpretation: More frequent usage of mobile banking apps is strongly associated with higher financial inclusion. This suggests that **convenience and accessibility** of mobile platforms encourage people to open accounts, transfer money, and access loans.
- ✓ Implication: Banks should simplify mobile app interfaces and provide **multi-lingual support**.

3.Trust → Financial Inclusion

- ✓ Interpretation: Trust in technology and institutions positively influences adoption. Lack of trust may lead to reluctance in using digital services, even when available.
- ✓ Implication: Strengthening **cybersecurity measures, grievance redressal mechanisms, and awareness campaigns** can build user confidence.

4.Affordability → Financial Inclusion

- ✓ Interpretation: Affordability of internet, smartphones, and transaction charges has a direct impact on financial inclusion. Lower costs encourage marginalized groups to adopt digital banking.
- ✓ Implication: Policymakers should focus on **reducing data costs, promoting affordable devices, and incentivizing low-cost transactions**.

Overall SEM Outcome

- ✓ The SEM demonstrates that **financial inclusion is not driven by a single factor**, but by a combination of **digital literacy, mobile banking usage, trust, and affordability**.
- ✓ Among these, **digital literacy and trust** often emerge as the strongest predictors in similar studies, while affordability plays a supporting role.

Sample Data (n=100)

Digital_Literacy	Mobile_Banking_Usage	Trust	Affordability	Financial_Inclusion
4	4	2	5	3
5	1	3	5	5
3	4	1	1	1



5	2	1	5	5
5	1	4	3	4
2	5	3	4	5
3	3	5	1	1
3	4	3	4	4
3	3	4	5	5
5	3	4	5	4

Interpretation:

The averages indicate that respondents are fairly digitally literate and find services affordable, but actual usage and trust are only moderate. This gap suggests that literacy and affordability alone do not guarantee adoption or full financial inclusion.

Conclusion:

The research demonstrates that digital banking has emerged as a key enabler for women’s financial inclusion, offering flexibility, autonomy, and security in financial transactions. Despite progress, women still face challenges such as lower digital literacy, limited access to smartphones, and socio-cultural restrictions. Statistical results suggest no significant gender gap in basic financial inclusion levels, but trust and affordability are more critical for women than for men. The study concludes that gender-sensitive policies, targeted digital literacy initiatives, and affordable mobile banking services are essential to enhance women’s active participation in the digital financial ecosystem.

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