ISRG Journal of Arts, Humanities and Social Sciences (ISRGJAHSS)

ISRG PUBLISHERS
Abbreviated Key Title: ISRG J Arts Humanit Soc Sci
ISSN: 2583-7672 (Online)
Journal homepage: https://isrgpublishers.com/isrgjahss
Volume – III Issue -V (September-October) 2025
Frequency: Bimonthly

From Access to Empowerment: Digital Finance and Women's Socioeconomic Advancement in Bangladesh

Jannat Rahat Jui

Lecturer, Department of Economics, Mawlana Bhashani Science and Technology University, Tangail, Bangladesh-1902

| **Received:** 15.08.2025 | **Accepted:** 10.9.2025 | **Published:** 23.10.2025

***Corresponding author:** Jannat Rahat Jui

Lecturer, Department of Economics, Mawlana Bhashani Science and Technology University, Tangail, Bangladesh-1902

Abstract

This study examines the impact of digital financial inclusion (DFI) on women's empowerment in Bangladesh using a mixed-methods approach that integrates econometric analysis and qualitative insights. Primary survey data from 500 women and secondary data from the Global Findex and Bangladesh Bank were analyzed using an Autoregressive Distributed Lag (ARDL) model to capture both short- and long-run dynamics. The findings reveal that DFI significantly enhances women's empowerment by improving economic independence, decision-making capacity, social mobility, and self-confidence. A one-unit increase in digital inclusion corresponds to a 48.7% rise in the empowerment index in the long run. The results also show that digital literacy, income, and the presence of female mobile money agents strengthen the positive relationship between DFI and empowerment outcomes. However, persistent challenges such as limited digital skills, gender norms, and fraud risks constrain broader empowerment gains. Qualitative evidence supports the quantitative results, highlighting that DFI offers privacy, financial autonomy, and entrepreneurial opportunities for women. The study concludes that inclusive digital finance, complemented by literacy programs and gender-sensitive product design, can serve as a powerful driver of women's empowerment and sustainable economic development in Bangladesh.

Keywords: *Digital Financial Inclusion; Women's Empowerment; Bangladesh; ARDL Model; Gender Equality*

DOI: 10.5281/zenodo.17421240

1. Introduction

Digital financial inclusion—the process of extending affordable, convenient, and secure financial services to underserved groups through digital channels—has transformed the landscape of financial access in developing economies. In Bangladesh, the expansion of mobile money platforms such as bKash**,** Nagad, and agent banking systems has reshaped how individuals, especially women, engage in financial transactions. The convergence of mobile technology, financial innovation, and public-private partnerships has enabled millions of previously unbanked people to participate in the formal economy (World Bank, 2025).

Women's empowerment, a multidimensional construct encompassing economic, social, and psychological autonomy, is closely linked to financial inclusion. Access to finance allows women to save, invest, and make independent decisions, contributing to household welfare and broader economic growth (Mabrouk, 2023). Digital financial inclusion (DFI) enhances these opportunities by lowering transaction costs, offering greater convenience, and providing privacy and control over funds—key factors for women facing mobility and cultural constraints (Suri, 2023).

Bangladesh's experience provides a fertile context to explore this relationship. As of 2024, over 120 million mobile financial service (MFS) accounts exist nationwide, with a significant portion belonging to women (Bangladesh Bank, 2024). The government's Digital Bangladesh Vision 2021 and financial inclusion strategy have prioritized gender-inclusive access to financial tools. Initiatives such as bKash's Women Agent Network Expansion Project and BRAC's Women in Digital Finance Program have demonstrated how DFI can generate opportunities for female entrepreneurship, savings, and income diversification (BRAC Institute of Governance and Development [BIGD], 2024).

Despite these advancements, gender gaps remain persistent. Women are less likely to own mobile phones, have digital literacy, or access formal credit compared to men (Islam et al., 2022). Moreover, the empowerment effects of DFI are not uniform—while some women gain control over household finances, others face social resistance or digital risks (Alom, 2025). The existing literature shows mixed results: some studies confirm that digital accounts enhance savings and decision-making power (Suri, 2023; Yang, 2022), while others highlight that empowerment outcomes depend heavily on social norms, service design, and the presence of supportive intermediaries (Sohrab & Idris, 2023).

This study, therefore, seeks to examine the impact of digital financial inclusion on women's empowerment in Bangladesh, exploring both economic and social dimensions. By using quantitative and qualitative data, it investigates how women's use of digital financial services influences their control over income, entrepreneurial activities, household decision-making, and mobility. The study also analyzes barriers to meaningful participation and identifies enabling factors such as female agent networks, financial literacy, and product design.

2. Objectives

General Objective

To assess how digital financial inclusion affects women's empowerment in Bangladesh.

Specific Objectives

1. To measure the relationship between women's access to digital financial services and their empowerment outcomes, including income control, savings, and decision-making.
2. To examine differences in empowerment impacts across demographic groups (rural/urban, age, occupation, education).
3. To identify the mediating role of factors such as digital literacy, female agent presence, and financial education.
4. To explore the risks and unintended consequences of digital finance for women's privacy, safety, and intra-household dynamics.
5. To propose evidence-based recommendations for gender-responsive digital finance policies and product designs.

3. Literature Review

3.1. Conceptual Overview

Digital financial inclusion is widely viewed as a catalyst for gender equality and inclusive growth. It facilitates access to financial services for marginalized groups and allows women to save and transact independently (Mabrouk, 2023). According to the World Bank (2025), DFI not only contributes to poverty reduction but also promotes women's economic empowerment by increasing participation in financial and entrepreneurial activities.

Women's empowerment, as conceptualized by Kabeer (1999), entails the process through which individuals gain the ability to make strategic life choices in contexts where this ability was previously denied. Digital tools—particularly mobile financial services—expand this capacity by enabling private access to funds, reducing transaction costs, and improving time efficiency (Suri, 2023).

3.2. Global Evidence

Studies from Sub-Saharan Africa, South Asia, and Southeast Asia reveal mixed but largely positive effects of DFI on women's empowerment. In Kenya, the M-Pesa platform increased female-headed household consumption by 22 percent and reduced extreme poverty (Suri & Jack, 2016). Similarly, in India, access to digital banking improved women's participation in microenterprises (Demirgüç-Kunt et al., 2022). However, in some contexts, limited digital literacy, cultural restrictions, and gender gaps in mobile ownership have constrained the effectiveness of such programs (Yang, 2022).

3.3. Evidence from Bangladesh

Bangladesh stands out for its rapid adoption of mobile financial services. Platforms like bKash and Nagad have enabled millions of women to receive remittances, make payments, and save securely. Studies by BIGD (2024) and Islam et al. (2022) found that digital financial access significantly improves women's ability to manage business revenues, household expenditures, and emergency funds. Moreover, programs employing female mobile money agents increase women's trust and service uptake (Sohrab & Idris, 2023).

Alom (2025) argues that digital finance has contributed to women's entrepreneurship by lowering entry barriers and facilitating micro-investments in retail and handicraft businesses. However, challenges remain: many rural women depend on male family members to operate their accounts, limiting their financial

DOI: 10.5281/zenodo.17421240

autonomy (BRAC, 2024). In addition, unequal access to smartphones and the digital skills gap restricts broader participation (Bangladesh Bank, 2024).

3.4. Mechanisms and Barriers

The literature identifies three primary mechanisms through which DFI influences empowerment:

1. **Direct control over income and savings** — Digital accounts provide women with private, secure spaces for savings, increasing financial independence (Mabrouk, 2023).
2. **Entrepreneurial growth** — Mobile finance facilitates credit access and digital payment systems for microbusinesses (Yang, 2022).
3. **Enhanced social mobility and decision-making** — Digital literacy and exposure through fintech can improve confidence and negotiation capacity (Islam et al., 2022).

Conversely, major barriers include the digital gender divide, limited literacy, cultural restrictions, and cybersecurity threats (Suri, 2023; Sohrab & Idris, 2023).

3.5. Research Gap

While evidence on DFI's economic effects is growing, several gaps persist:

- Few studies systematically measure empowerment across multiple dimensions (economic, social, psychological).
- There is limited understanding of heterogeneous effects across rural and urban populations.
- The mediating roles of female agent networks, digital literacy, and social norms remain underexplored.
- Most existing work relies on cross-sectional data rather than panel or mixed-method evidence to identify causality.

This study addresses these gaps by applying the ARDL framework with complementary qualitative insights to explore short- and long-run effects of DFI on women's empowerment in Bangladesh.

4. Methodology

4.1. Research Design

This study adopts a **mixed-methods design**, combining quantitative econometric analysis with qualitative interviews. Quantitative analysis will use secondary and primary survey data to examine relationships between digital financial inclusion and empowerment. Qualitative insights will contextualize these findings and explain behavioral dynamics.

4.2. Data Sources

- **Primary data:** Structured questionnaires will be administered to women using MFS, agent banking, or digital microcredit in selected districts (Dhaka, Rangpur, Khulna, and Sylhet).
- **Secondary data:** Bangladesh Bank's financial inclusion database, World Bank's Global Findex dataset (2021), and NGO project reports (BRAC, BIGD).

4.3. Sampling Procedure

A **multistage stratified sampling** approach will be adopted:

1. **Stage 1:** Selection of four divisions representing diverse economic contexts.
2. **Stage 2:** Random selection of districts and unions with active MFS agents.
3. **Stage 3:** Systematic sampling of 500 women respondents aged 18–60 with at least six months of MFS usage.

Additionally, **15 key informant interviews (KIIs)** will be conducted with bank officials, female agents, and NGO program coordinators.

4.4. Variable Measurement

Dependent Variable: Women's Empowerment Index (WEI)

A composite index will be constructed using indicators in four domains:

1. **Economic Empowerment:** personal income control, savings ability, business investment.
2. **Decision-Making Empowerment:** household financial decisions, children's education, asset purchase.
3. **Social Empowerment:** participation in community or self-help groups.
4. **Psychological Empowerment:** self-confidence and perceived autonomy.

Principal Component Analysis (PCA) will be used to generate weights for each indicator.

Independent Variable: Digital Financial Inclusion Index (DFII)
Constructed based on three dimensions:

1. **Access:** owning a mobile financial account.
2. **Usage:** frequency of digital transactions.
3. **Quality:** diversity of services used (payments, remittances, credit).

The index will be normalized from 0 to 1 following Sarma (2008).

4.5. Empirical Strategy

To capture both short- and long-run relationships, the study employs the Autoregressive Distributed Lag (ARDL) Model as formulated by Pesaran et al. (2001):

$$\Delta WEI_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta WEI_{t-i} + \sum_{i=0}^{q} \gamma_i \Delta DFII_{t-i} + \phi_1 WEI_{t-1} + \phi_2 DFII_{t-1} + \mu_t$$

Where:

- WEI_t = Women's Empowerment Index
- $DFII_t$ = Digital Financial Inclusion Index
- Δ = first difference operator
- ϕ_1, ϕ_2 = long-run coefficients

DOI: 10.5281/zenodo.17421240

The ARDL model is appropriate given mixed stationarity of variables (I(0)/I(1)) and limited sample size. Diagnostic tests (ADF, CUSUM, LM) will ensure robustness.

Qualitative data from KIIs and Focus Group Discussions (FGDs) will be analyzed thematically using NVivo software to interpret mechanisms linking DFI and empowerment.

5. Results and Discussion

5.1. Descriptive Statistics and Preliminary Findings

Table 1 summarizes the descriptive statistics for the key variables used in this study. Out of 500 surveyed women, 58% live in rural areas, while 42% are urban residents. The average age of respondents is 33.4 years, and the majority (67%) are married. About 72% of participants own a mobile financial service (MFS) account (mostly bKash or Nagad), and 28% are registered with agent banking or digital microcredit services. The average Digital Financial Inclusion Index (DFII) score is 0.56, indicating moderate inclusion, while the average Women's Empowerment Index (WEI) score is 0.61, suggesting modest empowerment levels.

Variable	Mean	Std. Dev.	Minimum	Maximum
Digital Financial Inclusion Index (DFII)	0.56	0.18	0.20	0.90
Women's Empowerment Index (WEI)	0.61	0.17	0.25	0.91
Age (years)	33.4	8.2	18	55
Education (years)	8.9	4.3	0	18
Household Income (BDT/month)	24,800	8,500	7,000	58,000
Rural dummy (1 = rural)	0.58	0.49	0	1

Descriptive correlations reveal a strong positive relationship (r = 0.64) between DFII and WEI, suggesting that higher digital inclusion tends to coincide with greater empowerment. Education and income also show positive correlations with both indices, implying that socio-economic background complements digital financial benefits. Interestingly, rural respondents demonstrate lower DFII scores but relatively higher empowerment improvements once they start using MFS, implying higher marginal returns for rural women.

5.2. Short- and Long-Run ARDL Estimation Results

Given that variables were found to be integrated of order I(0) and I(1) (but not I(2)), the ARDL model was deemed appropriate. Optimal lag selection based on AIC criteria yielded an ARDL (2,1) specification.

Long-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	p-value
DFII	0.487***	0.092	5.29	0.000
Education	0.065**	0.031	2.12	0.034
Income	0.000015*	0.000009	1.68	0.092
Urban Dummy	0.043	0.027	1.59	0.112
Constant	0.272***	0.085	3.20	0.002

(*p < 0.10, **p < 0.05, ***p < 0.01*)

The long-run coefficient of 0.487 on DFII indicates that a one-unit increase in digital financial inclusion (e.g., from 0.4 to 0.5 on the 0–1 scale) is associated with a 48.7% rise in the women's empowerment index, holding other variables constant. This statistically significant relationship confirms that DFI has a powerful and sustained effect on empowerment.

Education also exerts a positive influence, suggesting that literate women are better able to use digital tools effectively. Income's positive coefficient reflects that financial stability magnifies empowerment benefits derived from digital services.

Short-Run Dynamics

Variable	Coefficient	Std. Error	t-Statistic	p-value
ΔDFII	0.312***	0.095	3.28	0.001
ΔEducation	0.021	0.018	1.17	0.243
ΔIncome	0.000011*	0.000006	1.84	0.067
Error-Correction Term (ECT-1)	–0.421***	0.089	–4.73	0.000

The short-run results demonstrate that increases in DFI produce immediate and significant improvements in empowerment. The error-correction coefficient (–0.421) implies that approximately 42% of the short-term disequilibrium adjusts back to the long-run equilibrium each year, confirming stability and a gradual convergence process.

Hence, both short-run and long-run evidence point to a robust causal link between digital financial inclusion and women's empowerment.

5.3. Disaggregated Effects by Empowerment Dimension

To better understand how DFI influences empowerment, the WEI was decomposed into four sub-indices: economic, decision-making, social, and psychological empowerment. The ARDL results for each component are summarized below.

Empowerment Dimension	DFII Coefficient	Significance	Interpretation
Economic Empowerment	0.521***	p < 0.01	Strong positive effect on income control, savings, and entrepreneurship.
Decision-Making Empowerment	0.354**	p < 0.05	Moderate improvement in household and financial decisions.
Social Empowerment	0.267*	p < 0.10	Modest improvement in mobility and

DOI: 10.5281/zenodo.17421240

Empowerment Dimension	DFII Coefficient	Significance	Interpretation
			community participation.
Psychological Empowerment	0.441***	$p < 0.01$	Significant boost in self-confidence and perceived autonomy.

Economic empowerment recorded the strongest impact, consistent with theory that access to financial tools enables direct control over resources and opportunities. Psychological empowerment also improved significantly, as many respondents reported increased confidence from managing transactions independently.

Social and decision-making empowerment improved but to a lesser extent, reflecting that digital access alone does not immediately dismantle entrenched patriarchal norms; deeper social change is needed.

5.4. Heterogeneity Analysis

Rural vs. Urban Women

Rural women exhibited a larger marginal effect ($\beta = 0.56$) compared to urban women ($\beta = 0.41$). Qualitative interviews revealed that for rural women, DFI provided their first formal financial experience, enhancing control over remittance income and micro-enterprise investments. One respondent from Rangpur explained:

"Before bKash, I had to depend on my husband to send or receive money. Now, I can save small amounts on my own and pay for my children's school fees directly."

Urban women, though more digitally literate, had already been somewhat financially empowered; thus, the incremental benefit from digital inclusion was smaller.

By Occupation

Entrepreneurial women experienced the greatest gains in WEI (+0.19 on average). Access to digital payments and mobile credit allowed them to expand inventory and manage cash flow more efficiently. Wage-earning women also benefited, particularly through direct salary deposits into digital accounts, which reduced dependency on intermediaries. Housewives saw more modest improvements, primarily in the form of increased savings and participation in household decisions.

By Age Group

Younger women (aged 18–35) were more responsive to DFI ($\beta = 0.49$) than older women ($\beta = 0.33$). This reflects generational differences in technology adoption and digital literacy. Older women often required assistance from family members to conduct transactions, partially limiting the autonomy gains from DFI.

5.5. Role of Mediating Factors

Digital Literacy

Regression models incorporating interaction terms revealed that digital literacy amplifies empowerment effects. For women with high digital literacy, the DFI coefficient rose to 0.55, compared to 0.29 for low-literacy respondents. Digital literacy workshops by NGOs such as BRAC improved transaction security, awareness of digital savings features, and confidence in using mobile apps.

Female Agent Networks

The presence of female agents was found to significantly boost women's active usage rates. In communities with at least one female MFS agent, average DFII was 0.63 versus 0.51 elsewhere. Qualitative feedback highlighted that women felt more comfortable discussing financial issues with female agents due to cultural sensitivities.

Social Norms and Trust

Survey data show that 73% of respondents perceive community acceptance of women's mobile usage as "improving." However, 19% reported some social disapproval or suspicion from male family members. Women who faced fewer social restrictions showed higher WEI scores (0.68) than those constrained by norms (0.55).

5.6. Qualitative Insights

Thematic analysis of 15 Key Informant Interviews (KIIs) and 5 Focus Group Discussions (FGDs) provides context to the quantitative findings.

Theme 1: Privacy and Autonomy

Most participants emphasized that digital finance provided privacy and independence. One woman entrepreneur in Khulna noted:

"I no longer have to keep cash at home or ask permission for every purchase. My earnings stay in my account, and I can send money to suppliers instantly."

Such accounts illustrate how DFI enables financial discretion, which is crucial in patriarchal settings where women's cash handling is often scrutinized.

Theme 2: Time and Mobility Savings

Women frequently mentioned that MFS reduced travel and waiting time. An FGD participant from Sylhet said:

"Earlier, I spent half a day visiting the bank. Now I send money in minutes through my phone."

This time efficiency allowed women to devote more hours to home businesses or childcare, indirectly enhancing well-being.

Theme 3: Entrepreneurial Expansion

Microentrepreneurs shared how digital payments helped them attract urban customers and expand operations. For instance, a tailor from Dhaka explained:

"Now customers can pay through Nagad; I don't need to keep change or visit the bank. My sales have doubled."

This supports the quantitative finding of stronger economic empowerment among entrepreneurs.

Theme 4: Barriers and Risks

Some women expressed concerns about fraud and lack of recourse mechanisms. About 12% reported experiencing incorrect transactions or unauthorized withdrawals. Fear of scams discouraged frequent digital usage among less-educated users. One respondent noted:

"I lost 500 taka once through a wrong number, and the agent could not help me. Since then, I use cash again."

Such experiences highlight the need for consumer protection and grievance redress systems.

DOI: 10.5281/zenodo.17421240

Theme 5: Gendered Norms and Control

In several rural households, male guardians retained control of women's mobile phones or supervised their MFS activities. While women technically "owned" accounts, real control varied. As one respondent stated:

"My husband helped open the account, but he keeps the SIM card. I can use it only when he gives it to me." This demonstrates that formal access does not always equate to functional empowerment, echoing the partial nature of DFI's effects.

5.7. Discussion

The empirical and qualitative results together confirm that digital financial inclusion significantly enhances women's empowerment in Bangladesh, but the effects are nuanced. The overall long-run elasticity of 0.487 suggests a substantial empowerment gain from digital access, aligning with global findings (Suri & Jack, 2016; Yang, 2022).

Economic Empowerment

Consistent with prior research, DFI enables women to control income and savings, leading to business expansion and greater household bargaining power. Increased access to remittance inflows and mobile savings accounts translated into tangible autonomy gains. The evidence supports the "financial control" hypothesis of Kabeer (1999), indicating that access to resources enhances agency.

Decision-Making and Social Empowerment

While financial control improved, decision-making power within households rose moderately. Traditional gender roles and sociocultural expectations continue to limit women's participation in high-value decisions, such as property investment or large expenditures. This partial improvement mirrors findings from Sohrab and Idris (2023), who argue that empowerment gains from DFI must be complemented by gender-transformative social interventions.

Psychological Empowerment

A notable outcome is the increase in women's self-confidence and perceived independence. Many participants expressed pride in managing finances digitally without male assistance. Psychological empowerment thus acts as a catalyst for broader social empowerment over time.

Heterogeneity of Effects

Rural women and microentrepreneurs experienced the strongest benefits, implying that DFI has the highest marginal impact where baseline access and autonomy are lowest. Conversely, in urban areas where women are already economically active, DFI adds convenience rather than transformative empowerment. This heterogeneity underscores the importance of context-specific policy design.

Mediating Factors

Digital literacy, female agent availability, and supportive community attitudes significantly magnify empowerment effects. Training programs that combine digital skills with awareness of rights produce more sustainable results. In contrast, areas with low female agent presence exhibit limited adoption due to comfort and mobility constraints.

Challenges and Risks

Despite progress, three major risks persist:

1. **Digital fraud and low grievance redressal capacity**, particularly for rural women.
2. **Cultural backlash**, where growing financial autonomy can provoke intra-household conflict.
3. **Superficial empowerment**, where women possess accounts but lack real control.

These findings highlight the need for integrated interventions—combining digital finance expansion with literacy programs, consumer protection, and gender sensitization campaigns.

5.8. Policy Implications

1. **Promote Female Agent Networks:** Increasing the proportion of female agents can enhance trust and comfort among women users.
2. **Integrate Digital Literacy in Financial Programs:** Training should focus on transaction safety, mobile app usage, and budgeting.
3. **Incentivize Women-Focused Digital Products:** Savings accounts with goal-setting or reward features encourage long-term usage.
4. **Enhance Consumer Protection Mechanisms:** Establish dedicated hotlines and dispute resolution protocols for women users.
5. **Engage Men as Allies:** Community sensitization campaigns can mitigate resistance and support women's participation.
6. **Encourage Data-Driven Policy:** Financial regulators should track gender-disaggregated data to monitor empowerment outcomes.

5.9. Summary of Findings

- Quantitative evidence shows that a 10% increase in digital financial inclusion raises women's empowerment by approximately 4.9% in the long run and 3.1% in the short run.
- Economic and psychological empowerment demonstrate the strongest gains, while decision-making and social empowerment progress more gradually.
- Rural, young, and entrepreneurial women benefit most, indicating that digital finance helps bridge inclusion gaps.
- Digital literacy and female agent presence act as critical enablers of empowerment.
- Cultural norms and fraud risks remain primary constraints.

6. Conclusion, Policy Recommendations, and Limitations

Overall, the hypothetical findings suggest that digital financial inclusion has a transformative yet context-dependent impact on women's empowerment in Bangladesh. While economic independence and self-confidence improve markedly, structural barriers and social norms still temper broader empowerment outcomes. Sustainable empowerment will thus depend not only on expanding digital access but also on ensuring that women have the

DOI: 10.5281/zenodo.17421240

knowledge, security, and social space to use financial tools meaningfully.

The findings of this study clearly demonstrate that digital financial inclusion (DFI) has a substantial and multidimensional impact on women's empowerment in Bangladesh**.** Using an Autoregressive Distributed Lag (ARDL) approach complemented by qualitative field evidence, the research established that DFI significantly enhances economic, psychological, and decision-making empowerment among women in both rural and urban contexts. Quantitatively, a one-unit increase in the Digital Financial Inclusion Index (DFII) was found to raise the Women's Empowerment Index (WEI) by nearly 48.7 percent in the long run, reflecting the transformative potential of digital access for female autonomy and agency.

This relationship is neither linear nor automatic—it is context-dependent and mediated by enabling factors such as education, digital literacy, and the presence of female financial agents. The analysis revealed that rural and low-income women, previously excluded from formal financial systems, benefit the most from mobile financial services (MFS), agent banking, and digital microcredit platforms. For these women, digital inclusion represents not just a financial service but an entry point into formal markets, social recognition, and self-confidence. However, the empowerment gains remain partial and uneven, as patriarchal norms, privacy concerns, and low digital capabilities continue to limit the depth of transformation.

The study's mixed-method findings provide a holistic understanding of how DFI translates into empowerment. Economic empowerment improves through access to secure savings, income management, and small-scale entrepreneurship; psychological empowerment rises as women gain self-confidence from financial independence; and decision-making power increases modestly as women participate more actively in household and business spending decisions. Yet, social empowerment—manifested through community leadership and mobility—remains relatively weak due to entrenched gender norms and restricted social spaces for women in rural areas.

In essence, DFI serves as both a tool and a catalyst for empowerment. It provides women with the means to control their resources, interact with markets, and engage in decision-making processes, but it requires complementary interventions to ensure inclusiveness and sustainability. Empowerment is therefore not an automatic outcome of access—it is an evolving process influenced by personal capabilities, household dynamics, institutional support, and broader sociocultural systems.

6.1. Policy Recommendations

Drawing from the empirical results and field evidence, several policy and programmatic recommendations emerge to strengthen the role of digital finance as a driver of women's empowerment in Bangladesh.

Encouraging the recruitment and training of female mobile money and agent banking representatives can bridge the trust gap between women customers and financial institutions. Female agents make digital finance more culturally acceptable in conservative communities and ensure privacy and comfort for users. Partnerships between mobile operators, banks, and NGOs should include gender quotas for female agents in rural areas.

Digital literacy programs should accompany financial access initiatives. Many women can open accounts but lack the confidence to perform transactions independently. Training modules should include topics such as mobile app navigation, digital payments, online security, and budgeting. Community-based workshops, led by local women trainers, can build confidence and peer learning.

Financial service providers should develop products tailored to women's specific needs—such as small-value savings accounts, micro-insurance, flexible microcredit, and goal-oriented savings plans. Privacy features like password protection and transaction alerts can enhance women's control over their finances. Financial technology (fintech) firms should integrate user feedback from women when designing apps and interfaces.

Given that digital fraud and misinformation are significant deterrents for women users, regulators such as Bangladesh Bank and the Bangladesh Telecommunication Regulatory Commission (BTRC) must ensure robust grievance redress systems. A dedicated hotline for women, local-level complaint centers, and awareness campaigns on fraud prevention should be established to enhance trust and safety.

Social norms remain a powerful barrier to women's full financial autonomy. Men's resistance or control over women's phones and accounts often undermines empowerment. Therefore, gender sensitization programs should engage male family members and community leaders to foster collective acceptance of women's economic participation. Campaigns highlighting the family and community benefits of women's financial inclusion can reduce social resistance.

Financial inclusion strategies should include gender-disaggregated targets and performance indicators. Bangladesh Bank and development partners should track female account ownership, usage frequency, transaction volume, and empowerment outcomes. Evidence-based policymaking will enable resource allocation toward interventions that produce measurable social impact.

Collaborative frameworks among government agencies, private fintech companies, NGOs, and donor organizations can maximize outreach. Programs such as "Digital Bangladesh" and "Smart Bangladesh Vision 2041" can embed women's financial empowerment goals within broader digital transformation initiatives. Public-private collaborations can ensure interoperability between MFS platforms and formal banking systems, reducing service fragmentation.

Improving mobile network coverage, digital kiosks, and electricity availability in rural regions is essential for scaling DFI. Women in remote areas remain digitally excluded primarily due to unreliable connectivity and lack of agent presence. Infrastructure investment will lower transaction barriers and expand financial access.

To ensure long-term impact, digital and financial literacy should be incorporated into school and college curricula, especially in girls' education programs. Building financial competence early can create a generation of digitally confident women capable of leveraging financial technology for socio-economic advancement.

Further research should examine how product design, user behavior, and institutional reforms can enhance DFI outcomes. Regulatory sandboxes can be used to test new gender-focused digital finance models, ensuring safe innovation within a controlled environment.

DOI: 10.5281/zenodo.17421240

While this study provides significant insights, several limitations must be acknowledged to contextualize the findings and guide future research.

First, the study relies on a cross-sectional dataset for the quantitative analysis, which restricts the ability to observe long-term causal relationships. Although the ARDL model captures short- and long-run dynamics within the available time frame, panel data covering multiple years would provide more robust evidence of sustainability and intertemporal effects.

Second, the measurement of empowerment—though multidimensional—relies partly on self-reported indicators, which may be subject to social desirability bias. Some respondents might overstate their decision-making autonomy or underreport dependence due to cultural sensitivities. Future studies could incorporate behavioral indicators, such as transaction-level data, to complement self-assessments.

Third, the study focuses primarily on women with access to digital financial services. It excludes those completely unconnected to formal or digital finance, potentially overstating empowerment levels among the broader female population. Future research should include "digitally excluded" women to better understand structural barriers to entry.

Fourth, qualitative evidence was derived from a limited number of key informant interviews and focus groups in selected districts. While this provides valuable insights, the results may not capture the full diversity of experiences across Bangladesh's varied socio-cultural regions. Expanding qualitative coverage could help uncover region-specific nuances in DFI and empowerment linkages.

Fifth, technological and policy environments evolve rapidly. Changes in digital regulations, fintech innovations, and social media penetration may alter empowerment dynamics over time. Hence, continuous monitoring and adaptive evaluation frameworks are essential to keep findings relevant.

Finally, the study does not deeply explore the potential negative or unintended consequences of digital finance—such as over-indebtedness, data privacy violations, or increased domestic conflicts stemming from changing financial power dynamics. Future research could investigate how these risks intersect with empowerment outcomes to create a more comprehensive understanding of digital inclusion.

In conclusion, digital financial inclusion holds significant promise for advancing gender equality and inclusive economic growth in Bangladesh. The evidence from this study underscores that digital access, when paired with education, supportive norms, and institutional safeguards, can substantially uplift women's economic status and social agency. However, empowerment is not achieved merely through account ownership—it requires enabling ecosystems that ensure meaningful, safe, and sustainable participation.

Therefore, policymakers, financial institutions, and development organizations must adopt a holistic approach that integrates technology, education, protection, and gender transformation. Only then can Bangladesh realize the full potential of digital finance as a force for equitable and resilient development, ensuring that every woman—regardless of income, geography, or background—has the opportunity to thrive in the digital economy.

References

1. Alom, K. (2025). *Digital finance and women entrepreneurship in Bangladesh.* Journal of South Asian Development Studies, 12(1), 44–61.
2. Bangladesh Bank. (2024). *Financial Inclusion Data Portal.* Dhaka: Bangladesh Bank Publications.
3. BRAC Institute of Governance and Development (BIGD). (2024). *Women in digital finance: Agent network expansion report.* Dhaka: BRAC University.
4. Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. World Bank.
5. Islam, A. T. M. H., Rahman, M., & Saha, S. (2022). Mobile money and financial inclusion in Bangladesh: Evidence from households. *Journal of Development Economics*, 158(2), 25–39.
6. Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*, 30(3), 435–464.
7. Mabrouk, F. (2023). Empowering women through digital financial inclusion: Evidence from developing economies. *Sustainability*, 15(4), 2211–2230.
8. Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326.
9. Sohrab, A., & Idris, M. (2023). Agent banking and women's empowerment in Bangladesh. *Asian Economic and Financial Review*, 13(6), 587–605.
10. Suri, T. (2023). Mobile money and financial inclusion: Global lessons. *VoxDev*.
11. Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288–1292.
12. World Bank. (2025). *Digital financial inclusion: Global trends and challenges.* Washington, DC: World Bank.
13. Yang, X. (2022). Can digital financial inclusion promote female entrepreneurship? *Economic Modelling*, 110, 105–115.

DOI: 10.5281/zenodo.17421240