

Digital Financial Inclusion and Women Empowerment in India: A Systematic Literature Review

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Abstract

Digital financial inclusion has increasingly been recognised as an important driver of women's economic empowerment in India, where gender-based disparities in access to formal financial services continue to remain significant. This review paper critically analyses existing literature on the relationship between digital financial inclusion and women's empowerment in the Indian context by examining peer-reviewed research articles, government publications, and policy reports published between 2010 and 2024. The study brings together evidence related to various dimensions of digital financial inclusion, including access to banking services, mobile-based financial transactions, microfinance, government-to-person (G2P) benefit transfers, and digital financial literacy, and assesses their influence on women's economic participation, social status, and decision-making capacity within households. The study finds that major policy initiatives such as the Pradhan Mantri Jan Dhan Yojana, Aadhaar-enabled payment systems, Unified Payments Interface (UPI), and Self-Help Group-bank linkage programmes have considerably expanded women's access to financial services, especially in rural and semi-urban regions. Despite these advancements, several structural challenges continue to restrict the effective conversion of financial access into meaningful empowerment. These include the persistent digital divide, lower smartphone ownership among women, socio-cultural barriers, and inadequate levels of financial literacy. The study further highlights important gaps in the existing body of research and proposes a conceptual framework to explain the relationship between digital financial inclusion and multidimensional women's empowerment. In addition, it discusses policy recommendations for financial institutions, regulators, and civil society organisations aimed at developing a more inclusive and gender-responsive digital financial ecosystem in India.

Keywords: *Digital financial inclusion, women empowerment, India, Jan Dhan Yojana, UPI, gender gap, mobile banking, financial literacy, microfinance, Self-Help Groups.*

1. Introduction

Financial inclusion has been widely acknowledged as an important element of sustainable development (World Bank, 2014; Demirgüç-Kunt et al., 2018). In developing economies, particularly in India, which accounted for one of the largest unbanked populations in the world until the previous decade (World Bank, 2021), access to formal financial services extends beyond simple economic functionality. For women, whose socio-economic opportunities are often constrained by factors such as gender, caste, class, and geographic location, financial inclusion is closely associated with greater independence, financial security, and improved social mobility (Kabeer, 1999; Sen, 1999). The increasing integration of digital technologies with financial systems has led to the emergence of digital financial inclusion (DFI). This model employs mobile communication technologies, internet access, biometric identification, and digital payment systems to deliver financial services to populations previously excluded from the formal financial sector in a more cost-effective and accessible manner than conventional branch-based banking systems (Alliance for Financial Inclusion, 2020; Klapper et al., 2016).

India's digital financial ecosystem has experienced significant expansion during the last decade, driven largely by a range of major policy initiatives (Joshi & Kumar, 2022; Sarma & Pais, 2011). The Pradhan Mantri Jan Dhan Yojana (PMJDY), introduced in 2014, facilitated the opening of more than 480 million bank accounts within ten years, with women accounting for nearly 56 percent of the beneficiaries (Ministry of Finance, 2023). Simultaneously, the Aadhaar-linked biometric identification framework and the Aadhaar-enabled Payment System (AePS) contributed to the development of an extensive identity verification and digital transaction infrastructure (Muralidharan et al., 2016). In addition, the Unified Payments Interface (UPI), created by the National Payments Corporation of India (NPCI), has become an internationally recognised model for instant digital payments, processing more than 14 billion transactions per month by 2024 (NPCI, 2024). Together, these initiatives have generated substantial opportunities for expanding women's participation in the formal financial system (IMF, 2022; RBI, 2023).

However, the connection between digital financial access and meaningful women's empowerment is neither direct nor uniform (Demirgüç-Kunt et al., 2018; Pande et al., 2020). Ownership of a bank account alone does not necessarily ensure regular or independent financial usage, just as access to digital financial services does not automatically translate into greater economic agency (Dupas & Robinson, 2013). The outcomes of digital financial inclusion for women continue to be influenced by several structural constraints, including low levels of digital literacy, disparities in smartphone ownership, prevailing socio-cultural norms related to financial decision-making, and growing concerns regarding digital fraud and security risks (GSMA, 2023; Centre for Financial Inclusion, 2021; Kabeer, 2012). Consequently, analysing this relationship requires a comprehensive examination of empirical evidence across different dimensions of women's empowerment, including economic, social, and political aspects (Nussbaum, 2000; Malhotra et al., 2002).

This review paper seeks to systematically examine and synthesise the existing academic literature on digital financial inclusion and women's empowerment in India, in response to the growing need for comprehensive evidence-based analysis in this rapidly developing area of research (Klapper et al., 2016; Swamy, 2014). The study specifically aims to: (i) examine the range of digital financial inclusion initiatives designed for women in India; (ii) evaluate empirical evidence regarding their influence on different dimensions of women's empowerment; (iii) identify the structural factors that limit the conversion of financial access into meaningful empowerment outcomes; (iv) develop a conceptual framework linking digital financial inclusion with multidimensional empowerment; and (v) discuss policy implications for governments, financial institutions, and civil society organisations (Hashemi et al., 1996; Mayoux, 2001). The paper is organised into nine sections. Section 2 discusses the conceptual framework, while Section 3 describes the research methodology. Section 4 reviews major digital financial inclusion initiatives in India, and Section 5 synthesises evidence relating to their impact on women's empowerment. Section 6 analyses the barriers affecting these outcomes, followed by the presentation of a conceptual model in Section 7. Section 8 outlines the policy implications, and the final section presents the conclusion.

2. Conceptual Framework: Digital Financial Inclusion and Women's Empowerment

2.1 Defining Digital Financial Inclusion

Digital financial inclusion (DFI) refers to the use of digital technologies and platforms to expand financial inclusion by delivering formal financial services, including savings, credit, insurance, and payment facilities, to underserved sections of the population through digital channels (Klapper et al., 2016; Demirgüç-Kunt et al., 2018). The Alliance for Financial Inclusion (AFI) describes DFI through three interconnected dimensions: access, referring to the availability of transaction accounts through digital devices; usage, indicating the consistent and continued utilisation of digital financial services; and quality, which relates to the suitability of financial products and services to the needs of users (Alliance for Financial Inclusion, 2020). In the Indian context, this understanding corresponds with the Reserve Bank of India's framework on financial inclusion, which highlights the importance of ensuring universal and affordable access to financial services through technology-enabled delivery systems (RBI, 2023; Sarma & Pais, 2011).

The digital component of financial inclusion differentiates it significantly from traditional models of financial service delivery. Digital platforms substantially lower the cost associated with providing financial services,

thereby enabling banks and non-banking financial institutions to reach geographically distant and economically disadvantaged populations in a financially sustainable manner (Mas & Radcliffe, 2011). In addition, these platforms create digital transaction records that can function as alternative indicators of creditworthiness, allowing women without collateral or a formal employment background to gain access to credit facilities for the first time (Swamy, 2014; Ghosh, 2020). Furthermore, digital financial systems can incorporate gender-responsive features, including protected savings mechanisms, remittance monitoring services, and health insurance products designed according to the specific needs and life-cycle requirements of women (Women's World Banking, 2022; Alliance for Financial Inclusion, 2020).

2.2 Multi-Dimensional Conceptualisation of Women's Empowerment

Women's empowerment is widely recognised as a complex and multidimensional concept that has been interpreted differently across academic and policy discussions (Malhotra et al., 2002; Rowlands, 1997). Based on Kabeer's (1999) influential framework, empowerment may be understood as the process through which women gain the capacity to make important life choices that were previously unavailable to them. This framework identifies three closely connected dimensions of empowerment: resources, which include access to material, human, and social assets; agency, referring to the ability to define objectives and take actions independently; and achievements, which represent the outcomes associated with improved well-being and life opportunities. Such an approach moves beyond the narrow assumption that empowerment can be measured solely through income and instead acknowledges the influence of social norms, household power relations, and institutional structures in shaping empowerment processes (Hashemi et al., 1996; Mayoux, 2001).

In addition to Kabeer's framework, this review incorporates the capabilities approach advanced by Sen (1999) and Nussbaum (2000), which emphasises women's substantive freedoms, namely their actual ability to achieve valued forms of living, rather than focusing solely on formal entitlements or legal rights. Within the context of digital financial inclusion, substantive empowerment extends beyond the simple ownership of a bank account. It involves the ability of women to operate and manage financial accounts independently without male control or intervention; to exercise decision-making authority over the utilisation of digital transfers; and to access and use credit productively without facing excessive financial vulnerability or risk (Dupas & Robinson, 2013; Pande et al., 2020).

2.3 The DFI–Empowerment Nexus

The relationship between digital financial inclusion and women's empowerment can be understood through several interconnected pathways (Swamy, 2014; Klapper et al., 2016). Economic pathways involve the promotion of savings accumulation, the direct transfer of government benefits into women's bank accounts without the involvement of male intermediaries, access to microcredit for income-generating activities, and the ability to receive remittances independently rather than relying on informal channels or agents (Muralidharan et al., 2016; Banerjee et al., 2015). Social pathways include improvements in women's bargaining position within households, increased involvement in collective and community-level decision-making through Self-Help Groups (SHGs), and greater social recognition resulting from enhanced financial participation and control (Desai & Joshi, 2014; Kabeer & Murthy, 1996). In addition, psychological pathways are reflected in higher levels of self-confidence, financial self-efficacy, and reduced financial insecurity due to access to savings, emergency funds, and insurance mechanisms (Bali Swain & Wallentin, 2017).

However, the effectiveness of these pathways is significantly influenced by broader structural conditions. Existing sociological studies in the Indian context indicate that the ownership of formal financial accounts does not necessarily result in independent or autonomous usage when prevailing social norms continue to place household financial control primarily in the hands of men (Demirgüç-Kunt et al., 2018; Pande et al., 2020). In a similar manner, inadequate levels of digital literacy may limit women's ability to utilise digital financial platforms effectively and may also expose them to financial risks such as fraud and misuse. Accordingly, the conceptual framework proposed in this paper treats digital financial inclusion as an important but insufficient condition for women's empowerment, where outcomes are shaped by enabling structural factors as well as constrained by existing social and contextual barriers.

3. Methodology

3.1 Review Design and Search Strategy

This study employs a systematic narrative review methodology that combines the structured process of systematic literature identification with the interpretative depth associated with narrative synthesis (Gough et al., 2012). To maintain transparency and enhance replicability, the review process follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines proposed by Moher et al. (2009). Relevant peer-reviewed studies were collected from multiple academic databases, including Google Scholar, Scopus, Web of Science, JSTOR, EconLit, and SSRN. In addition, grey literature was incorporated to capture policy-oriented and institutional evidence. This included reports and publications from organisations such as the World Bank, International Monetary Fund (IMF), United Nations Development Programme (UNDP), National Bank for Agriculture and Rural Development (NABARD), Reserve Bank of India (RBI), and the Ministry of Finance, Government of India (World Bank, 2014; IMF, 2022; NABARD, 2023; Moher et al., 2009).

The search strategy was developed using Boolean operators that combined three major thematic categories: (i) digital financial inclusion, mobile banking, mobile money, digital payments, fintech, UPI, Jan Dhan, and Aadhaar-enabled payment systems; (ii) women's empowerment, gender empowerment, women's agency, and female financial autonomy; and (iii) India, rural India, and South Asia. The review focused on studies published between 2010 and 2024 in order to capture the period associated with the rapid expansion of digital financial infrastructure in India. The initial database search generated 1,847 records. Following the removal of duplicate entries, screening of titles and abstracts, and detailed full-text eligibility evaluation, a total of 186 studies were selected for inclusion in the final review dataset.

3.2 Inclusion and Exclusion Criteria

The inclusion criteria for the review required studies to: (i) investigate at least one aspect of digital financial inclusion in the Indian context; (ii) examine outcomes associated with women's economic, social, or psychological empowerment; (iii) be published in peer-reviewed academic journals or recognised institutional reports; and (iv) be available in English. Studies were excluded if they concentrated solely on financial inclusion without incorporating a digital element, were conducted outside India, or did not present findings separately by gender. Multi-country studies were included only when data specific to India could be clearly extracted for analysis. The methodological quality and rigour of the selected studies were evaluated using the Mixed Methods Appraisal Tool (MMAT) developed by Hong et al. (2018).

3.3 Analytical Approach

Due to the methodological diversity among the selected studies, which included quantitative surveys, randomised controlled trials, qualitative case studies, and econometric analyses, conducting a formal meta-analysis was not considered appropriate (Thomas & Harden, 2008). Consequently, the study employed a thematic synthesis approach in which findings were systematically coded and organised into thematic categories consistent with the conceptual framework guiding the review (Thomas & Harden, 2008; Pope et al., 2000). A narrative synthesis method was subsequently used to integrate evidence across these thematic groups, identify areas of convergence and divergence in the literature, and evaluate the overall strength and consistency of the available evidence (Popay et al., 2006). The processes of data extraction and coding were undertaken by the primary researcher and independently reviewed by a co-reviewer to maintain reliability and consistency in the analysis.

4. Landscape of Digital Financial Inclusion Initiatives for Women in India

4.1 Overview of Key Initiatives

India's digital financial inclusion framework for women has evolved through a combination of government-led programmes, regulatory reforms, and market-driven interventions (Joshi & Kumar, 2022; Kochhar, 2018; RBI, 2023). The major initiatives examined in this study are summarised in Table 1.

Table 1: Major Digital Financial Inclusion Initiatives and Their Impact on Women in India

Initiative / Scheme	Period	Focus Area	Key Outcome
Jan Dhan Yojana (PMJDY)	2014–present	Universal banking access	480M+ accounts; 56% women beneficiaries
Aadhaar-Enabled Payments (AePS)	2016–present	Biometric-linked transactions	Reduced exclusion errors; rural outreach
Unified Payments Interface (UPI)	2016–present	Real-time mobile payments	14B+ monthly txns (2024); rising women users
MUDRA Yojana	2015–present	Micro-enterprise credit	68% loans to women entrepreneurs
SHG-Bank Linkage Programme	1992–present	Group-based microfinance	67M women in SHGs; ₹1.4L cr credit (2023)
Beti Bachao Beti Padhao	2015–present	Financial literacy for girls	Behavioural change in education & savings
Direct Benefit Transfer (DBT)	2013–present	G2P digital payments	₹34L cr transferred; leakage reduction

4.2 Pradhan Mantri Jan Dhan Yojana (PMJDY)

Introduced in August 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) represents the central pillar of India’s financial inclusion strategy (Ministry of Finance, 2024; Kochhar, 2018). The programme provides beneficiaries with zero-balance savings accounts along with RuPay debit cards, access to insurance and credit facilities, and overdraft provisions. As of March 2024, nearly 516 million individuals had been enrolled under the scheme, with women constituting approximately 55.6 percent of total account holders (Ministry of Finance, 2024). Existing studies on PMJDY indicate substantial growth in formal banking access among previously unbanked women, particularly in rural regions of the country (Kochhar, 2018; Ghosh, 2020). Nevertheless, the persistence of inactive accounts remains an important issue. The Reserve Bank of India (2023) estimated that nearly 19 percent of women’s accounts recorded no transactions during the preceding 30-day period, indicating that increased account ownership has not consistently translated into regular financial usage.

A study conducted by Pande et al. (2020), based on randomised experimental evidence from Bihar and Uttar Pradesh, reported that women holding PMJDY accounts demonstrated higher levels of formal savings, reduced dependence on informal moneylenders, and increased involvement in household financial decision-making. At the same time, the study observed that women living in households characterised by strong male dominance were less likely to exercise independent control over their accounts. Similar findings were identified by Demirgüç-Kunt et al. (2018) in their cross-country analysis that included evidence from India. These studies collectively highlight the importance of household gender relations in shaping the extent to which formal financial account ownership contributes to women’s empowerment.

4.3 Aadhaar and Biometric Identity Infrastructure

The Aadhaar system, managed by the Unique Identification Authority of India (UIDAI), has registered more than 1.38 billion residents and serves as a biometric identity infrastructure supporting the expansion of digital financial services in India (Muralidharan et al., 2016; IMF, 2022). Building upon this framework, the Aadhaar-enabled Payment System (AePS) enables users to perform essential banking functions, including balance inquiries, cash withdrawals, and fund transfers, through fingerprint-based authentication at business correspondent (BC) outlets without the need for smartphones or internet literacy. This technological

intervention has been especially important for rural and illiterate women, who often encounter substantial barriers in accessing and using conventional forms of digital banking (Demirgüç-Kunt et al., 2018; Cole et al., 2011).

Evidence from the World Bank's Global Findex Database (2021) shows that Aadhaar-linked bank accounts are more frequently utilised for the receipt of government transfers, with women's accounts benefiting substantially from direct benefit transfer (DBT) programmes. Research undertaken by Muralidharan et al. (2016) found that the introduction of biometric-authenticated payment systems within the National Rural Employment Guarantee Act (NREGA) programme in Andhra Pradesh resulted in a 24.5 percent decline in payment leakages and improved the likelihood of women workers receiving their complete wage payments. At the same time, concerns have been raised regarding biometric authentication failures caused by worn fingerprints, a problem that disproportionately affects manual labourers, including many women. These findings point to an important accessibility challenge within biometric-based financial systems.

4.4 Unified Payments Interface (UPI)

The Unified Payments Interface (UPI), introduced by the National Payments Corporation of India (NPCI) in 2016, has emerged as one of the most significant innovations within India's digital financial ecosystem (NPCI, 2024; Joshi & Kumar, 2022). UPI facilitates real-time and interoperable digital transactions by enabling direct account-to-account transfers through smartphone-based applications, while allowing users to manage multiple bank accounts through a single mobile interface. By December 2024, the platform was processing nearly 16.7 billion transactions each month, with a total transaction value estimated at ₹23.25 lakh crore (NPCI, 2024). The rapid expansion of UPI-enabled applications, such as PhonePe, Google Pay, Paytm, and BHIM, has significantly broadened access to digital payment services beyond the limits of conventional banking infrastructure.

For women, the expansion of UPI has opened new opportunities for receiving payments related to home-based employment, online sales activities, and informal service work without requiring access to physical point-of-sale infrastructure. Case studies reported by Women's World Banking (2022) in Maharashtra highlighted the experiences of women micro-entrepreneurs who utilised UPI platforms to receive payments from customers located beyond their immediate geographical areas, thereby increasing the reach of their business activities. Despite these developments, gender-disaggregated evidence on UPI adoption and usage remains limited. Available estimates from the Internet and Mobile Association of India (IAMAI, 2023) indicate that women account for nearly 35–38 percent of active UPI users, reflecting continuing disparities in smartphone ownership and levels of digital literacy.

4.5 MUDRA Yojana and Digital Credit for Women

The Pradhan Mantri MUDRA Yojana (PMMY), introduced in 2015, offers collateral-free loans of up to ₹10 lakh to micro-enterprises through banks, microfinance institutions (MFIs), and non-banking financial companies (NBFCs). The scheme is structured into three categories: Shishu (up to ₹50,000), Kishore (₹50,001–₹5 lakh), and Tarun (₹5–₹10 lakh), with a primary focus on supporting micro-entrepreneurs operating within the informal sector. By 2023–24, cumulative loan disbursements under MUDRA had crossed ₹27 lakh crore, while women constituted nearly 68 percent of all sanctioned accounts (Ministry of Finance, 2024). The growing adoption of digital platforms for MUDRA loan disbursement by banks and NBFCs has streamlined the lending process by reducing processing delays and minimising the need for branch visits, which have traditionally acted as important barriers for women borrowers.

A study conducted by Ghosh and Bharati (2019) among MUDRA beneficiaries in West Bengal and Rajasthan observed that women recipients of MUDRA loans experienced statistically significant gains in business turnover, household income, and perceived decision-making autonomy. At the same time, the study highlighted that a considerable share of women borrowers functioned as proxies for male family members, a condition described as 'passive beneficiaries. This finding emphasises the importance of monitoring the actual utilisation of loans and assessing empowerment outcomes directly, rather than depending only on gender-disaggregated loan disbursement figures (Deshpande and Sharma, 2013; Naila Kabeer, 2012).

4.6 Self-Help Group–Bank Linkage Programme

India's Self-Help Group–Bank Linkage Programme (SHG-BLP), initiated by National Bank for Agriculture and Rural Development (NABARD) during the early 1990s, is recognised as the largest microfinance programme in the world (Naila Kabeer & Murthy, 1996; Banerjee et al., 2015). As of March 2023, nearly 67 million women were associated with more than 12 million self-help groups (SHGs), while cumulative bank credit linkages had surpassed ₹1.4 lakh crore (NABARD, 2023). The incorporation of digital technologies within the SHG framework through initiatives such as the SHG digital stack (e-Shakti portal), direct benefit transfers (DBT) for SHG savings subsidies, and smartphone-enabled bookkeeping applications has further strengthened financial access and improved accountability across the SHG ecosystem (NABARD, 2022; Desai & Joshi, 2014).

The body of literature examining the empowerment effects of self-help groups (SHGs) in India is substantial and largely supportive, although it also highlights several complexities. Randomised studies conducted by Banerjee et al. (2015), along with qualitative evidence presented by Naila Kabeer and Murthy (1996), report multidimensional empowerment outcomes associated with SHG participation, including increased savings, lower reliance on informal sources of credit, improved mobility, and a stronger collective presence in local governance processes. The digital integration of SHGs has introduced an additional dimension to these outcomes. SHGs enrolled under the e-Shakti initiative have shown higher levels of savings mobilisation and reduced loan default rates, while their members also demonstrate greater adoption of mobile banking services (NABARD, 2022).

5. Impact of Digital Financial Inclusion on Women's Empowerment: Evidence Synthesis

5.1 Economic Empowerment

The economic dimension represents the most widely documented pathway through which digital financial inclusion (DFI) influences women's empowerment (Swamy, 2014; Klapper et al., 2016). Evidence from multiple studies consistently indicates that access to digital financial services, particularly savings accounts, digital credit facilities, and government-to-person (G2P) transfers, is associated with improvements in women's economic conditions (Dupas & Robinson, 2013; Banerjee et al., 2015). A large-scale panel data study on Pradhan Mantri Jan Dhan Yojana (PMJDY) conducted by Choudhury and Sahay (2021), using data from the National Family Health Survey (NFHS-5) and the Periodic Labour Force Survey (PLFS), found that women residing in districts with greater PMJDY penetration recorded significantly higher participation in formal labour markets, especially within non-agricultural self-employment activities. The study estimated that a ten-percentage-point rise in PMJDY penetration was associated with a 4.8 percentage point increase in female labour force participation, and this relationship remained statistically robust even after accounting for district fixed effects and pre-existing trends.

Digital government-to-person (G2P) transfers implemented through the Direct Benefit Transfer (DBT) framework have had a significant impact on women in rural India (IMF, 2022; World Bank, 2021). The transition from cash-based disbursement mechanisms to direct transfers into bank accounts under government welfare programmes—including Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) wages, PM-KISAN assistance, Pradhan Mantri Ujjwala Yojana subsidies, and maternity benefits under Pradhan Mantri Matru Vandana Yojana (PMMVY)—has enabled payments to be deposited directly into women's bank accounts, thereby reducing leakages and limiting interception by male household members (Muralidharan et al., 2016; Ministry of Finance, 2024). A quasi-experimental study conducted by Muralidharan, Niehaus, and Sukhtankar (2016) found that the implementation of DBT in Andhra Pradesh lowered payment delays and leakages while increasing the likelihood that women received their complete entitlements. Similar conclusions were also reported in the IMF's 2022 country assessment of India's G2P infrastructure.

Access to digital credit through microfinance institutions (MFIs) and FinTech platforms has provided women with greater opportunities to invest in micro-enterprises across sectors such as handicrafts, food processing, livestock, and digital commerce (Ghosh & Bharati, 2019; Srivastava & Sinha, 2022). A multi-location

qualitative study conducted by Srivastava and Sinha (2022) reported that women artisans in Rajasthan and Uttar Pradesh utilised smartphone-based FinTech credit to procure raw materials and broaden their market access through e-commerce platforms such as Meesho and Amazon Karigar. The study found that these activities generated an average additional monthly income of ₹3,200. These observations align with the broader literature linking microfinance with women's income-generating activities, while also indicating that the digitalisation of financial services has lowered transaction costs and facilitated more flexible forms of loan structuring (Banerjee et al., 2015; Mayoux, 2001).

5.2 Social Empowerment and Household Bargaining Power

Apart from economic effects, digital financial inclusion (DFI) has also been linked with shifts in women's social position and decision-making authority within households in India, although the available evidence remains varied and highly dependent on social and regional contexts (Mohapatra, 2020; Malhotra et al., 2002). Research in this area commonly relies on proxy indicators of women's agency, including control over personal earnings, participation in decisions related to major household expenditures such as consumer durables, children's education, and healthcare, as well as mobility in terms of the freedom to visit markets, health centres, and relatives independently (Naila Kabeer, 1999; Hashemi et al., 1996). A nationally representative study conducted by Mohapatra (2020) using data from the National Family Health Survey (NFHS-4) reported that women possessing active bank accounts were 14 percent more likely to take part in household financial decision-making compared to women without bank accounts, after accounting for factors such as income, education, and marital status. The study further observed that when the analysis focused specifically on women actively using digital payment platforms, the association with participation in household financial decisions increased to 22 percent.

Membership in self-help groups (SHGs), further strengthened through digital integration, has been associated with notable improvements in women's collective social agency (Banerjee et al., 2015; Naila Kabeer & Murthy, 1996). A study by Desai and Joshi (2014) found that SHG participation in Maharashtra was linked to greater involvement of women in gram panchayat meetings and higher levels of participation in local electoral processes through contesting elected positions. More recent findings from the Digital SHG (e-Shakti) initiative indicate that members of digitally integrated SHGs demonstrate higher levels of information exchange regarding government welfare entitlements, improved awareness of legal rights, and enhanced collective bargaining capacity in interactions with local institutions (NABARD, 2022). These outcomes highlight the role of social capital generated through SHG networks, which has been further reinforced by the expansion of digital information flows (Desai & Joshi, 2014; Mayoux, 2001).

5.3 Psychological Empowerment and Financial Confidence

A comparatively less examined aspect within the Indian digital financial inclusion (DFI) literature relates to the psychological effects of financial inclusion on women's self-efficacy, financial confidence, and subjective well-being (Rowlands, 1997; Malhotra et al., 2002). Existing qualitative and mixed-method studies indicate that independently operating bank accounts, carrying out digital financial transactions, and directly receiving government benefits can strengthen women's sense of financial agency and personal confidence (Bali Swain & Wallentin, 2017; Cole et al., 2011). A qualitative study conducted by Bali Swain and Wallentin (2017), based on in-depth interviews with SHG members in Andhra Pradesh, reported that women who had received financial literacy training and regularly used mobile banking for digital transactions consistently expressed greater confidence in handling financial matters. The study also documented reduced anxiety regarding emergency expenditures, attributed to savings and insurance access, along with an enhanced sense of social recognition and respect within both family and community settings.

Despite these positive outcomes, psychological empowerment may be weakened by adverse experiences such as digital fraud, account dormancy, which may create feelings of inadequacy or failure, and the appropriation of women's digital financial accounts by male household members. A survey conducted by the Centre for Financial Inclusion (2021) across four Indian states involving 2,400 women reported that 31 percent of respondents who had encountered digital fraud subsequently discontinued the use of digital financial services. The study identified anxiety related to fraud as one of the major barriers limiting women's engagement with

digital financial systems. These findings highlight the importance of developing gender-sensitive digital security measures and establishing grievance redressal mechanisms that are accessible and responsive to women users.

5.4 Insurance and Risk Management

Digital insurance products have strengthened women’s ability to manage risks associated with health, life, and livelihoods (Ministry of Finance, 2024; IRDA, 2023). The Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY), both connected to Pradhan Mantri Jan Dhan Yojana (PMJDY) accounts through automatic premium deduction mechanisms, had enrolled more than 380 million and 400 million subscribers respectively by 2024 (Ministry of Finance, 2024), with women representing a significant share of beneficiaries. The digitalisation of premium collection has contributed to lower policy lapse rates compared to traditional insurance models, as the auto-debit system reduces the need for manual premium payments and associated transaction barriers. Evidence from states with strong self-help group (SHG) networks, where insurance awareness campaigns have been actively implemented, suggests that women’s enrolment levels in these schemes are considerably higher than in states characterised by weaker SHG penetration (IRDA, 2023).

6. Barriers to Digital Financial Inclusion for Women in India

Despite the advances discussed in Sections 4 and 5, several structural and institutional barriers continue to constrain the equitable expansion of digital financial inclusion (DFI) for women in India (GSMA, 2023; Centre for Financial Inclusion, 2021; Naila Kabeer, 2012). Table 2 presents a summary of the major categories of barriers identified within the reviewed literature.

Table 2: Barriers to Digital Financial Inclusion for Women in India

Barrier	Category	Description
Digital Divide	Infrastructure	Only 40% rural women own smartphones; internet penetration uneven
Low Financial Literacy	Human Capital	Limited awareness of digital tools, fraud vulnerability
Socio-Cultural Norms	Social	Patriarchal control over finances; mobility restrictions
Identity Exclusion	Institutional	Lack of documentation (ID, address proof) for KYC
Cyber Fraud Risk	Security	Women disproportionately targeted by digital scams
Language Barriers	Accessibility	Financial platforms predominantly in English/Hindi
Interoperability Gaps	Technical	Fragmented platforms; limited cross-bank digital access

6.1 The Digital Divide

The digital divide remains the most significant structural obstacle to women’s digital financial inclusion (DFI) in India, reflecting disparities in both access to digital technologies and the ability to use them effectively (Demirgüç-Kunt et al., 2018; Swamy, 2014). According to the Telecom Regulatory Authority of India (TRAI) (2023), the gender gap in mobile internet usage in India is close to 50 percent, with only 33 percent of rural women using mobile internet compared to 57 percent of rural men. Ownership of smartphones, which is essential for participation in UPI-based digital payments, also remains considerably lower among women. The GSMA Mobile Gender Gap Report (2023) estimates that women in India are 40 percent less likely than men to own a smartphone. These inequalities are rooted in broader structural factors, including unequal allocation

of household resources, patriarchal restrictions over women's access to mobile phones, and historically lower levels of education and digital exposure among women (Naila Kabeer, 2012; Deshpande & Sharma, 2013).

6.2 Financial Literacy and Digital Capability

Limited financial literacy among women, especially in rural regions, has consistently been identified as a major impediment to financial inclusion and the meaningful adoption of digital financial services (Cole et al., 2011; Klapper et al., 2016). The study conducted by Cole, Sampson, and Zia (2011) highlights that targeted financial literacy programmes play a significant role in improving women's participation in savings and credit-related activities. Within the digital financial ecosystem, financial literacy extends beyond knowledge of financial products and includes competencies such as digital navigation, awareness of cybersecurity risks, and the ability to recognise fraudulent practices (Centre for Financial Inclusion, 2021; NCFE, 2023). According to a nationwide survey conducted by the National Centre for Financial Education (NCFE, 2023), the overall financial literacy rate in India was estimated at 27 percent, with notable gender-based disparities. Women's financial literacy was reported at nearly 18 percent, whereas the corresponding figure for men was approximately 34 percent. The lowest levels of financial literacy were observed among rural women, where the rate was estimated to be close to 13 percent.

6.3 Socio-Cultural Norms and Gender Dynamics

Patriarchal social structures represent a deeply embedded, though often less observable, constraint on women's digital financial autonomy (Kabeer, 1999; Hashemi et al., 1996). Across several regions of India, women's engagement in financial transactions frequently depends upon either direct or indirect approval from male family members. Control over mobile phone usage is also commonly exercised by men within the household, while women's participation in economic activities beyond domestic responsibilities is often restricted through social norms and expectations. Ethnographic evidence presented by Kabeer (2012), along with qualitative findings by Deshpande and Sharma (2013), highlights the prevalence of 'account proxies,' a situation in which women formally possess bank accounts, yet financial decisions and transactions are effectively managed by male relatives. This condition, referred to by some scholars as 'financial ventriloquism,' significantly weakens the transformative and empowering potential associated with formal access to financial services (Pande et al., 2020; Mohapatra, 2020).

6.4 Infrastructure and Connectivity Gaps

Insufficient digital infrastructure across rural and geographically remote regions of India continues to limit women's access to and effective use of digital financial services (TRAI, 2023; Sarma & Pais, 2011). Although the country has experienced substantial growth in telecommunications infrastructure, major connectivity disparities remain evident in states such as Bihar, Jharkhand, Odisha, and the North-Eastern region, which simultaneously report some of the widest gender-based gaps in financial inclusion (RBI, 2023; Kochhar, 2018). In many rural locations, mobile network connectivity remains unstable and inconsistent, contributing to transaction failures and reducing users' confidence in digital financial platforms (GSMA, 2023; IAMAI, 2023). Furthermore, the availability of business correspondents, who function as the principal last-mile facilitators of banking services in rural communities, remains inadequate. Existing evidence also indicates considerable regional variation in the quality, dependability, and gender responsiveness of business correspondent services (Mas & Radcliffe, 2011; Ghosh, 2020).

7. A Conceptual Framework for DFI and Multi-Dimensional Women's Empowerment

Drawing upon the theoretical perspectives discussed in Section 2 and the empirical findings presented in Sections 4–6, this study develops a conceptual framework that links digital financial inclusion with the multidimensional aspects of women's empowerment (Kabeer, 1999; Klapper et al., 2016; Swamy, 2014). The proposed framework is summarised in Table 3 and discussed in detail in the following section.

Table 3: Conceptual Framework — DFI Dimensions and Empowerment Pathways

DFI Dimension	Instruments	Intermediate Outcomes	Empowerment Outcomes
Digital Access	Account ownership, mobile banking, internet	Savings behaviour, remittances	Resource control, reduced dependency
Digital Payments	UPI, AePS, mobile wallets	Income management, G2P receipts	Autonomy, household bargaining
Digital Credit	Microloans, MUDRA, FinTech credit	Business investment, asset creation	Entrepreneurship, economic agency
Digital Insurance	PM Jeevan Jyoti, Suraksha Bima	Risk mitigation, health spending	Security, long-term planning
Digital Literacy	Financial education, SHG training	Informed decision-making	Voice, confidence, social capital

The framework additionally differentiates between first-order outcomes, such as account ownership, transaction frequency, and access to credit, and second-order outcomes, including economic agency, bargaining power within households, social capital formation, and self-efficacy (Mohapatra, 2020; Hashemi et al., 1996). While the attainment of first-order outcomes represents an essential prerequisite, it does not automatically translate into second-order empowerment. The progression from financial access to broader empowerment outcomes requires supportive interventions focused on digital literacy, legal awareness, and community-based mobilisation initiatives (Cole et al., 2011; Banerjee et al., 2015). This distinction carries significant implications for programme assessment, as evaluating financial inclusion solely through measures of account ownership tends to overestimate actual empowerment outcomes. Consequently, robust impact assessments must incorporate behavioural and agency-related indicators observed over substantial periods of time (Dupas & Robinson, 2013; Sarma & Pais, 2011).

8. Policy Implications

8.1 For Government and Regulatory Bodies

First, the Government of India should intensify investments in gender-responsive digital infrastructure, with particular emphasis on states and districts exhibiting the widest gender disparities in financial inclusion. Such measures should include the expansion of mobile internet connectivity, enhancement of the presence of female business correspondents—whose role has been associated with higher levels of trust among women in formal banking systems—and the development of public digital platforms, especially UPI applications and government benefit portals, using gender-inclusive interfaces available in regional languages.

Second, the Reserve Bank of India (RBI) should require all regulated financial institutions to report gender-disaggregated digital financial service indicators in order to facilitate evidence-based policy assessment and monitoring. At present, the majority of financial institutions provide financial inclusion statistics only in aggregated form, thereby limiting the possibility of conducting gender-specific evaluations. The establishment of a gender-sensitive data architecture within the financial sector is therefore essential for ensuring institutional accountability.

Third, digital literacy initiatives should be integrated into existing women-focused governmental frameworks, particularly the Self-Help Group (SHG) network operating under the National Rural Livelihoods Mission (NRLM), in order to ensure both large-scale outreach and contextual relevance. Financial literacy programmes should be delivered through trusted community-based intermediaries using local languages and should

combine digital skills training with education related to cybersecurity awareness, fraud prevention, and grievance redressal mechanisms.

8.2 For Financial Institutions and FinTech Companies

Financial institutions should adopt gender-responsive approaches to product development by designing financial services that correspond to women's life-cycle needs, livelihood structures, and risk profiles. Such initiatives may include savings instruments with flexible withdrawal provisions tailored to seasonal income fluctuations, micro-insurance schemes addressing maternity and childcare-related risks, and digital credit assessment models that utilise alternative sources of information, including SHG repayment records and utility payment histories, for women possessing limited formal credit histories.

FinTech firms operating in India should focus on developing simplified and low-bandwidth digital financial applications compatible with entry-level smartphones and feature phones in order to reduce the exclusion faced by women who do not possess advanced digital devices. Priority should also be given to voice-enabled and vernacular-language interfaces to address barriers associated with literacy limitations. In addition, gender-responsive security mechanisms, including biometric-based two-factor authentication and real-time fraud notifications in regional languages, are necessary for strengthening trust and confidence among women users of digital financial services.

8.3 For Civil Society and Development Organisations

Civil society organisations with strong community-level engagement—particularly women's organisations, Self-Help Group (SHG) federations, and non-governmental organisations working in the field of gender rights—should function as key intermediaries in promoting financial literacy and strengthening digital capabilities among women. Empirical evidence from initiatives such as the Jeevika programme in Bihar and the Kudumbashree programme in Kerala indicates that community-based approaches integrating digital financial education with legal awareness and social mobilisation produce more sustained empowerment outcomes than isolated financial literacy interventions (NABARD, 2022; Banerjee et al., 2015).

Development organisations should place greater emphasis on longitudinal and multidimensional assessments of digital financial inclusion (DFI) programmes that evaluate not only indicators of financial access but also changes in agency, self-efficacy, and decision-making authority within households over time. Furthermore, qualitative and mixed-methods approaches should complement quantitative impact assessments in order to capture the complex and context-specific dimensions of women's empowerment within India's diverse socio-cultural settings.

9. Conclusion

This systematic review consolidates an extensive body of evidence concerning the relationship between digital financial inclusion and women's empowerment in India, encompassing more than two decades of policy initiatives, programme interventions, and academic research. The available evidence largely demonstrates that digital financial inclusion, facilitated through initiatives such as Jan Dhan accounts, Aadhaar Enabled Payment Systems (AePS), Unified Payments Interface (UPI), MUDRA, SHG-bank linkages, and digital government-to-person (G2P) transfers, has substantially improved women's access to formal financial services, especially within rural and semi-urban regions. Empirical findings indicate positive economic outcomes in the form of increased savings, greater engagement in income-generating activities, and improved access to G2P transfers. In addition, emerging studies highlight broader social and psychological dimensions of empowerment, including increased participation in household decision-making, strengthened collective agency through self-help groups, and higher levels of financial self-efficacy.

Nevertheless, the evidence also highlights the existence of persistent and multi-dimensional barriers that limit the conversion of financial access into substantive empowerment outcomes. The digital divide, reflected in disparities in smartphone ownership, inadequate internet connectivity, and unequal levels of digital literacy, continues to represent the most significant structural obstacle. In many regions of the country, prevailing socio-

cultural norms relating to women's financial autonomy continue to influence the extent to which formal account ownership translates into genuine empowerment. These challenges are further intensified by risks associated with cyber fraud, failures in biometric authentication systems, and linguistic barriers that restrict effective utilisation of digital financial services.

The conceptual framework developed in this study contributes to a deeper understanding of the relationship between digital financial inclusion and women's empowerment by positioning financial access within a multidimensional model of empowerment and identifying the structural moderators that influence whether access is transformed into agency. The framework further offers a practical approach for programme designers, evaluators, and policymakers to move beyond conventional financial inclusion indicators towards a more comprehensive and rights-based assessment of women's empowerment outcomes.

India is currently at a critical stage in the evolution of its digital financial ecosystem. The JAM (Jan Dhan–Aadhaar–Mobile) trinity, together with the rapid expansion of UPI infrastructure, has established one of the most advanced digital financial systems within the developing world. Ensuring that this infrastructure benefits women in an equitable and transformative manner, rather than merely facilitating formal inclusion, requires continued policy emphasis on gender-responsive design, digital capability enhancement, and the removal of structural barriers. The implications extend beyond financial inclusion indicators, as digital financial services possess the potential to reshape women's economic participation and social recognition within one of the world's most socially and economically unequal societies.

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References

- Alliance for Financial Inclusion (AFI). (2020). Digital financial inclusion: Emerging policy approaches. AFI Global Policy Forum.
- Bali Swain, R., & Wallentin, F. Y. (2017). The impact of microfinance on women's empowerment: Evidence from India. *International Review of Applied Economics*, 31(4), 464–477.
- Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7(1), 22–53.
- Centre for Financial Inclusion. (2021). Digital financial inclusion and gender: A survey of barriers and enablers in India. CFI Research Report.
- Choudhury, M., & Sahay, R. (2021). Financial inclusion in India: A district-level analysis of the Pradhan Mantri Jan Dhan Yojana. *Journal of Development Economics*, 153, 102732.
- Cole, S., Sampson, T., & Zia, B. (2011). Prices or knowledge? What drives demand for financial services in emerging markets? *Journal of Finance*, 66(6), 1933–1967.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution. World Bank.
- Desai, S., & Joshi, O. (2014). The political economy of Self-Help Groups and political participation in rural India. *Economic and Political Weekly*, 49(21), 71–79.
- Deshpande, R., & Sharma, M. (2013). Gender and the financial inclusion landscape: India's rural banking challenge. CGAP Working Paper.
- Ghosh, S. (2020). Does PMJDY really promote financial inclusion? *Journal of Social and Economic Development*, 22(1), 59–83.
- Ghosh, S., & Bharati, P. (2019). Women entrepreneurs and MUDRA: Evidence from West Bengal and Rajasthan. *Indian Journal of Gender Studies*, 26(3), 345–368.

- GSMA. (2023). Mobile gender gap report 2023. GSMA Connected Women.
- Internet and Mobile Association of India (IAMAI). (2023). Digital payments gender report 2023. IAMAI Research.
- Insurance Regulatory and Development Authority of India (IRDA). (2023). Annual report 2022–23. Government of India.
- International Monetary Fund (IMF). (2022). India: Selected issues—Digital public infrastructure and financial inclusion. IMF Country Report No. 22/385.
- Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*, 30(3), 435–464.
- Kabeer, N. (2012). Women's economic empowerment and inclusive growth: Labour markets and enterprise development. International Development Research Centre, Discussion Paper.
- Kabeer, N., & Murthy, R. K. (1996). Compensating for institutional exclusion? Lessons from Indian government and non-government credit interventions for the poor. IDS Discussion Paper 356.
- Kochhar, K. (2018). Financial inclusion in India: What have we learned and where do we go from here? *Reserve Bank of India Bulletin*, 72(4), 1–18.
- Ministry of Finance, Government of India. (2023). Pradhan Mantri Jan Dhan Yojana: Progress report 2023. Department of Financial Services.
- Ministry of Finance, Government of India. (2024). Annual report 2023–24. Department of Financial Services.
- Mohapatra, S. (2020). Women's financial inclusion and household decision-making in India: Evidence from NFHS-4. *World Development*, 135, 105024.
- Muralidharan, K., Niehaus, P., & Sukhtankar, S. (2016). Building state capacity: Evidence from biometric smartcards in India. *American Economic Review*, 106(10), 2895–2929.
- NABARD. (2022). e-Shakti: Digital Self-Help Groups—Impact assessment report 2022. National Bank for Agriculture and Rural Development.
- NABARD. (2023). Status of microfinance in India 2022–23. National Bank for Agriculture and Rural Development.
- National Centre for Financial Education (NCFE). (2023). National financial literacy assessment 2023. NCFE Report.
- NPCI. (2024). UPI ecosystem statistics—December 2024. National Payments Corporation of India.
- Nussbaum, M. C. (2000). *Women and human development: The capabilities approach*. Cambridge University Press.
- Pande, R., Field, E., Troyer Moore, C., & Minni, A. (2020). Women and finance: Access to markets and the pursuit of economic opportunity. Harvard Kennedy School Working Paper.
- Reserve Bank of India (RBI). (2023). Report on trend and progress of banking in India 2022–23. Reserve Bank of India.
- Sen, A. (1999). *Development as freedom*. Oxford University Press.
- Srivastava, N., & Sinha, D. (2022). Digital commerce and women micro-entrepreneurs in India: A multi-state ethnography. *Journal of International Development*, 34(3), 512–533.
- Telecom Regulatory Authority of India (TRAI). (2023). Telecom sector in India: Gender disaggregated report. TRAI.
- Women's World Banking. (2022). UPI for women: Expanding digital financial access in India. Women's World Banking Case Study.
- World Bank. (2021). Global Findex database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19. World Bank Publications.
- World Bank. (2014). Global financial development report 2014: Financial inclusion. World Bank Publications.
- Dupas, P., & Robinson, J. (2013). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. *American Economic Journal: Applied Economics*, 5(1), 163–192.
- Hashemi, S. M., Schuler, S. R., & Riley, A. P. (1996). Rural credit programs and women's empowerment in Bangladesh. *World Development*, 24(4), 635–653.

- Joshi, D., & Kumar, R. (2022). Digital financial ecosystem in India: Opportunities, challenges and the way forward. *Vikalpa: The Journal for Decision Makers*, 47(1), 7–21.
- Klapper, L., El-Zoghbi, M., & Hess, J. (2016). Achieving the sustainable development goals: The role of financial inclusion. CGAP Working Paper. Consultative Group to Assist the Poor.
- Malhotra, A., Schuler, S. R., & Boender, C. (2002). Measuring women's empowerment as a variable in international development. Background paper prepared for the World Bank Workshop on Poverty and Gender: New Perspectives. World Bank.
- Mayoux, L. (2001). Tackling the down side: Social capital, women's empowerment and micro-finance in Cameroon. *Development and Change*, 32(3), 435–464.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, 23(5), 613–628.
- Swamy, V. (2014). Financial inclusion, gender dimension, and economic impact on poor households. *World Development*, 56, 1–15.

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