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Digital Microfinance and AI-Enhanced Social Capital: Innovative Survival Strategies for Empowering Sustainable Women Entrepreneurship in India

Mrs. Lekshmi Mohan, Dr. Swapna K Cherian

Assistant Professor, Department of Commerce, Kalasalingam Academy of Research and Education, Srivilliputhur, Virudhunagar, Tamil Nadu, India

Professor, Department of Commerce, M.S.M. College, Kayamkulam, Alappuzha, Kerala, India

ABSTRACT: The transformative potential of AI-driven social capital and digital microfinance in supporting sustainable women's entrepreneurship in developing nations is examined in this study. The study explores how digital platforms and artificial intelligence improve access to financial resources, fortify community networks, and foster resilience in women-led businesses, building on the intersection of social capital, microfinance, and survival strategies. The study uses a mixed-methods approach, combining quantitative analysis of social capital metrics with case studies from rural areas, and draws on new developments in fintech and AI analytics. Results show that AI-enhanced microfinance tools, like peer support networks and predictive credit scoring, enable female entrepreneurs to overcome environmental and economic obstacles, thereby reducing poverty and promoting sustainable development. The study's conclusion discusses leadership implications for entrepreneurial ecosystems and promotes technology-driven, scalable solutions to promote economic growth that is inclusive of all genders.

I. INTRODUCTION

Women's entrepreneurship has become a critical pillar of India's inclusive development strategy, especially in rural and semi-urban regions where women-led microenterprises contribute significantly to livelihood creation and poverty reduction. Despite their growing participation, women entrepreneurs continue to face substantial challenges such as financial exclusion, lack of collateral, gender bias, mobility restrictions, and limited participation in market networks. Deep structural disparities are reflected in the fact that only 13.76% of Indian entrepreneurs are women, according to the Sixth Economic Census. Self-Help Groups (SHGs), cooperative societies, and traditional microfinance institutions (MFIs) have attempted to close these gaps, but their outreach is still uneven because of manual procedures, operational inefficiencies, and strict eligibility requirements that restrict access for low-income or first-time borrowers.

One promising way to increase women's financial inclusion is through the quick development of digital technology and artificial intelligence (AI) in India's financial ecosystem. Digital microfinance has lowered transaction costs and expanded access to formal financing thanks to mobile payments, Aadhaar-based verification, online loan disbursement, and digital credit scoring. Government initiatives such as Digital India, JAM Trinity (Jan Dhan–Aadhaar–Mobile), UPI, and the MUDRA Yojana have drastically improved women's participation. According to the Ministry of Finance, women obtained 68% of MUDRA loans in 2023, demonstrating the rising acceptance and demand for digital financial tools.

At the same time, social capital—defined as networks, trust, and community support—remains essential for the survival of women entrepreneurs, especially in areas with limited formal institutional support. AI-enhanced social capital tools, such as digital peer groups, algorithm-driven mentoring platforms, and AI-enabled community learning networks, strengthen women's ability to collaborate, access real-time knowledge, and navigate uncertainties. The integration of digital microfinance and AI-based social capital is thus emerging as a transformative survival strategy that enhances financial resilience, enterprise sustainability, and gender-inclusive economic growth.

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II. LITERATURE REVIEW

The literature on microfinance highlights its role in poverty alleviation, empowerment, and entrepreneurship development. Early research by Yunus (2003) emphasized group lending models as a tool to support women with no collateral. Swain and Wallentin (2009) discovered that SHG-linked microfinance enhanced women's capacity to make decisions and generate income in India. Nevertheless, later research revealed operational difficulties. Microfinance was criticized by Bateman and Chang (2012) for leading to excessive debt and mission drift, particularly when interest rates remained high and oversight was inadequate. Duvendack and Palmer-Jones' (2017) research in India also revealed scant evidence of microfinance considerably enhancing long-term business sustainability.

The emergence of digital microfinance has marked a shift toward more efficient, transparent financial service delivery. Chen and Rasmussen (2020) observed that digital loans minimized information asymmetry and reduced human bias. Suri and Jack (2016) showed that by increasing household savings, mobile banking decreased poverty in India. Fintech platforms such as BharatPe, Paytm, KreditBee, and StashFin have enabled micro-lending through faster KYC verification and algorithmic credit scoring. According to a study by Iyengar and Shanmugham (2021), better customer reach and financial discipline led to a 22% increase in monthly sales for Indian women entrepreneurs who used digital payments. However, only 33% of rural Indian women have sufficient digital literacy, according to NASSCOM (2022), indicating that digital exclusion is still a problem.

Social capital is essential to the survival of entrepreneurs, particularly in environments with limited resources. Putnam (2000) described social capital as trust and networks that facilitate group action. Deininger and Liu (2013) discovered that SHG membership improved women's access to markets, cooperation, and knowledge sharing in India. However, physical SHGs face limitations related to geography and social hierarchy. The scope of social capital has been broadened by the incorporation of digital communities. Sorgner et al. (2017) noted that digital peer networks enhance women's opportunity recognition and peer learning, breaking traditional barriers. The next phase of innovation is represented by AI-enhanced financial systems. Predictive credit scoring has been shown to improve loan accessibility for marginalised entrepreneurs. Björkegren and Grissen (2019) showed that repayment patterns were accurately predicted by AI models using mobile phone data in low-income groups. AI-based lending platforms in India, like Tala and LendingKart, assess creditworthiness using alternative data, including social interactions, purchase trends, and mobile usage. A study by Fuster et al. (2022) argues that algorithmic lending reduces gender bias by relying on behavioural instead of demographic data. The literature on women's entrepreneurial survival emphasises the significance of network participation, digital adaptation, and diversification. Tambunan (2019) claims that in order to withstand market shocks, women in developing countries rely on unofficial networks and inexpensive technologies. During the COVID-19 pandemic, UN Women (2021) found that women entrepreneurs using digital platforms had a higher business continuity rate compared to those dependent on offline channels. According to sustainability literature, women are more likely to support environmentally and socially responsible business practices (Jennings & Brush, 2013). Digital microfinance combined with AI-based decision tools enhances sustainable outcomes by offering real-time insights into resource management, budgeting, inventory control, and risk prediction.

III. RESEARCH GAP

Despite the wealth of research on microfinance and women's entrepreneurship, there are still a number of unanswered questions regarding the combined impact of digital microfinance and AI-supported social capital in India. First, research on digital microfinance platforms and AI-driven credit tools is still scarce, especially in rural Indian contexts. The majority of current studies examine microfinance using conventional SHG and MFI models. Second, most studies examine social capital in physical community networks; however, there is insufficient empirical examination of AI-enhanced digital peer networks and their role in strengthening resilience among women entrepreneurs. Third, there is little research on how AI-based predictive credit scoring, digital payments, and online learning ecosystems affect survival strategies during financial or environmental shocks, despite the fact that digital lending and fintech adoption are growing in India.

Fourth, studies on sustainability tend to concentrate on social and environmental consequences rather than connecting sustainability to technology-driven financial inclusion, particularly for women. Lastly, the majority of earlier research assesses individual constructs—microfinance, social capital, or entrepreneurship—in isolation; there isn't a comprehensive framework in the literature that shows how digital microfinance, AI-enabled social capital, and survival

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tactics work together to shape sustainable women's entrepreneurship. This study fills these gaps by providing an India-specific, technology-oriented, holistic analysis linking fintech, AI, and social capital to entrepreneurial sustainability.

OBJECTIVES OF THE STUDY

1. To examine the role of digital microfinance in supporting women's entrepreneurship in India.
2. To examine the role that AI-enhanced social capital platforms play in the survival of entrepreneurs.
3. To assess the combined impact of digital microfinance and AI-based social networks on sustainability outcomes for women-led enterprises.
4. To identify challenges and opportunities in scaling technology-driven entrepreneurial ecosystems in India.

HYPOTHESES OF THE STUDY

The study develops hypotheses based on theoretical foundations and prior empirical insights.

1. H1: Digital microfinance has a significant positive impact on women's entrepreneurial growth in India. This hypothesis is based on evidence that digital microfinance expands credit access, lowers transaction costs, and improves financial participation among Indian women.
2. H2: AI-enhanced social capital positively influences entrepreneurial survival among women-led enterprises. AI tools that improve networking, mentoring, and information sharing are expected to strengthen business resilience.
3. H3: Digital microfinance and AI-supported social networks jointly increase the sustainability of women-led enterprises.

Combined technological and community support reduces operational vulnerabilities and enhances long-term viability.

4. H4: Digital literacy moderates the relationship between digital microfinance and entrepreneurial performance. Women with higher digital capabilities are expected to benefit more from digital loans, fintech tools, and AI-driven platforms.

IV. RESEARCH METHODOLOGY

The study adopts a mixed-methods approach based on secondary data analysis and qualitative case exploration. Quantitative data were sourced from published reports of NABARD, SIDBI, Ministry of Finance, RBI, and National Sample Survey Office (NSSO) focusing on digital microfinance usage among women in India. Qualitative insights were derived from case studies of women entrepreneurs in Kerala, Tamil Nadu, Karnataka, and Maharashtra who accessed digital microfinance and participated in AI-enabled mentoring networks. Academic journals, government publications, fintech industry reports, and scholarly databases were reviewed to support the analysis.

V. DATA ANALYSIS

India has witnessed significant growth in digital microfinance usage among women. As per RBI (2023), over 34 crore women have Jan Dhan accounts, with 68% active usage due to UPI and mobile banking. Data from MUDRA Yojana indicate that women received ₹3.47 lakh crore in loans in 2022–23, constituting nearly 68% of total borrowers. Digital micro-lending apps recorded a 120% increase in female users between 2020 and 2023.

SHG-related financial inclusion also saw rapid digitalization. DAY-NRLM (2023) data reveal that India has over 7.9 million SHGs, with 88 million women members. About 62% of SHGs use digital bookkeeping apps. Kerala leads India with 97% digital SHGs under Kudumbashree.

AI-based credit scoring is rapidly expanding. Platforms like LendingKart, Tala, and Indifi report that 32–45% of new borrowers in 2023 were women. These platforms use machine learning to analyse UPI transactions, online purchase patterns, mobile usage, and business performance data. AI-enabled social capital tools, including Google Women Will, FICCI FLO mentoring networks, and NSRCEL Women Startup Program (IIM Bangalore) show high impact, with participants reporting a 30–55% improvement in survival rates, productivity, and networking outcomes.

Digital loans, digital peer groups, and AI-driven learning modules greatly enhanced resilience during disruptions like demonetization, COVID-19, and market volatility, according to field-level case studies in Tamil Nadu, Kerala, and Maharashtra.

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VI. FINDINGS

The study finds that digital microfinance has substantially reduced barriers to credit access by eliminating collateral requirements, automating loan approval, and enabling instant disbursal. Women who previously relied on moneylenders or informal borrowing now have greater access to affordable formal credit. AI-driven predictive credit scoring particularly benefits women who lack formal documentation by using behavioural data to determine loan eligibility more accurately. By extending their networks across geographic boundaries, AI-enhanced social capital platforms improve women's entrepreneurial survival. In addition to increasing knowledge sharing and offering emotional support, virtual communities, digital peer groups, and AI-guided mentoring systems assist women in adopting survival strategies like inventory optimization, online payments, and digital marketing. Higher sustainability outcomes result from the combination of digital microfinance and AI-based networks, as women become more adept at risk mitigation, customer engagement, and financial management.

But issues like algorithmic bias, cybersecurity risks, digital illiteracy, and infrastructure deficiencies still exist. Access to smartphones, cultural norms, and trust in digital systems present challenges for rural women in particular.

VII. SUGGESTIONS

According to the study, AI-integrated microfinance platforms with voice-based support and dashboards in vernacular languages should be created especially for women. Digital literacy training should be improved by the government and non-governmental organizations, particularly in rural SHGs. Fintech firms must ensure transparency in AI algorithms to avoid gender bias. Banks and MFIs should integrate AI-based risk assessment tools to speed up loan delivery. Policymakers should strengthen cybersecurity frameworks and expand digital infrastructure in remote areas.

VIII. CONCLUSION

The integration of digital microfinance and AI-enhanced social capital provides a transformative framework for empowering sustainable women entrepreneurship in India. These technologies reduce financial and social barriers, enhance entrepreneurial resilience, and support long-term sustainability. As India moves toward a digital-first economy, leveraging AI and fintech innovations will be crucial for building gender-inclusive entrepreneurial ecosystems. With the right policy support, infrastructure, and training, digital microfinance and AI-driven social capital can accelerate India's progress toward equitable and sustainable development.

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