REVIEW PAPER

Management Insight, Vol. XXII , No. 1; 2026 Print ISSN: 0973-936X; Online ISSN: 2456-0936

Digital Inclusion and Women Entrepreneurship in Rural India: A Decade Review (2015-2025) and a Framework for Sustainable Development

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Abstract

This paper explores how digital inclusion fosters women entrepreneurship in rural India, promoting long-term sustainable development. It examines the intersections between digital literacy, government initiatives (like Start-Up India and Mudra Yojana), microfinance access and socio-cultural dynamics influencing rural women entrepreneurs. Drawing on literature published between 2015 and 2025, the study highlights digital transformation as a critical enabler of women's empowerment and economic participation. It identifies key barriers limited education, financial constraints, patriarchal norms and psychological resistance and assesses the role of emerging technologies (mobile banking, e-commerce, fintech) in overcoming these challenges. The paper proposes an integrated conceptual model linking digital access, social support and entrepreneurial performance to sustainability outcomes. Findings underscore the need for inclusive policy interventions, capacity-building and gender-sensitive ICT training to strengthen India's rural entrepreneurial ecosystem. The study contributes to sustainable development discourse by providing insights into how digital empowerment can drive gender equity, economic resilience and social transformation in rural India.

Keywords: Women entrepreneurs, digital inclusion, rural India, sustainable development, empowerment, microfinance, ICT adoption.

Management Insight (2026). DOI: https://doi.org/10.21844/mijia.22.1.11

Introduction:

Women entrepreneurship in India has emerged as a transformative force driving economic and social progress, particularly in rural regions. The proliferation of mobile technology, internet penetration and digital financial platforms has enabled new forms of participation for women who were traditionally excluded from formal economies. According to the Ministry of Skill Development and Entrepreneurship (2023), over 20% of India's entrepreneurs are women yet only a small fraction operate in rural settings due to socio-economic and infrastructural barriers.

Digital inclusion serves as a catalyst for empowerment bridging gaps in access to markets, finance and education. Studies such as Nair, Banerjee & Kulkarni (2025) emphasize that integrating digital tools enhances competitiveness and resilience among rural women-led enterprises.

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How to cite this article: Sultana M. (2026). Digital Inclusion and Women Entrepreneurship in Rural India: A Decade Review (2015-2025) and a Framework for Sustainable Development, Management Insight, 22 (1) 120-127
Source of support: Nil
Conflict of interest: None
Received: 08.01.2026; **Accepted:** 27.02.2026; **Published:** 30.06.2026

Simultaneously, Joshi & Pate (2025) argue that digital connectivity strengthens social inclusion contributing directly to the Sustainable Development Goals (SDGs) especially SDG 5 (Gender Equality) and SDG 8 (Decent Work and Economic Growth).

However, digital inclusion is not a uniform experience. Rural India faces challenges such as low digital literacy, weak infrastructure and socio-cultural resistance that hinder women's participation. Government programs like Mudra

Yojana and Stand-Up India attempt to close these gaps, yet evidence shows limited awareness and uneven benefits (Kumar & Rajput, 2025). This paper synthesizes recent literature to examine how digital inclusion can drive sustainable entrepreneurship for rural women, providing policy insights and a conceptual model for future empirical validation.

Most previous studies have explored digital inclusion and women entrepreneurship as separate themes. Only a limited number of works attempt to integrate these areas into a single analytical framework. There is still a lack of comprehensive research that links digital literacy, policy implementation, financial accessibility, psychological empowerment and long-term sustainability for rural women entrepreneurs in India. Addressing this gap, the present study reviews literature from 2015 to 2025 and develops a unified conceptual model that explains how digital empowerment can support sustainable entrepreneurship among rural women.

Literature Review

Most earlier studies have discussed digital inclusion and women entrepreneurship independently, without examining how these areas interact in real rural conditions. Only a few scholars have attempted to develop a combined perspective that connects digital skills, government policies, financial access, psychological factors, and sustainability outcomes for women entrepreneurs in rural India. This study fills this gap by reviewing literature from 2015 to 2025 and presenting an integrated framework for understanding sustainable, women-led entrepreneurship in rural regions.

Digital Inclusion as an Enabler of Women Entrepreneurship

Digital inclusion has emerged as a critical pathway for empowering women entrepreneurs, particularly in rural regions where access to formal markets and institutional support remains limited. Several recent studies highlight that digital technologies such as mobile banking, online marketplaces, and digital payment apps play a transformative role in improving women's autonomy, decision-making power, and business expansion. Deogaonkar et al. (2025) reported that access to digital tools enhances women's productivity and operational independence, while Putri & Anggraini (2025) emphasized that digital innovation strengthens entrepreneurial confidence in emerging economies. In the Indian context, V. Kumar et al. (2025) found that digital financial applications significantly improve microfinance outreach for rural women, enhancing credit access and long-term business sustainability. These studies collectively establish that digital inclusion is no longer optional it is essential for rural women aiming to participate meaningfully in entrepreneurial ecosystems.

Government Policies, Schemes & Institutional Support

Government initiatives play an important role in shaping entrepreneurial opportunities for rural women. Programs such as Start-Up India, Stand-Up India and Pradhan Mantri Mudra Yojana (PMMY) have attempted to provide credit access, mentorship, and institutional support. S. Kumar & A. Kumar (2025) reported that these schemes have encouraged many first-generation women entrepreneurs to start micro-enterprises. However, the implementation of these schemes is uneven. Deoskar et al. (2025) observed that awareness remains extremely low in remote rural districts, which limits the expected benefits of government interventions. Microfinance institutions (MFIs) and Self-Help Groups (SHGs) help bridge this gap by offering financial literacy and community-based mentoring, but challenges such as paperwork delays, collateral issues, and inconsistent policy outreach persist.

Thus, while policies are well-designed, structural bottlenecks reduce their effectiveness for rural women.

Socio-Cultural & Psychological Barriers

Beyond financial and technological challenges, rural women entrepreneurs continue to face strong socio-cultural and psychological constraints. Traditional gender norms, mobility restrictions and expectations around domestic responsibilities limit women's ability to scale their enterprises. Mano (2025) noted that “mompreneurs” struggle to balance business and household roles, which affects business continuity. Similarly, Bhatti, Abro & Aureejo (2025) highlighted that stigma, fear of failure, and lack of peer networks limit entrepreneurial confidence across South Asian rural communities.

Psychological barriers such as low self-efficacy, fear of digital tools, and limited exposure to technology further restrict rural women's participation in digital ecosystems. These constraints make it clear that economic interventions alone are insufficient unless accompanied by social and psychological empowerment.

Digital Literacy, Training & Skill Development

Digital literacy is a crucial mediator that links technology access with entrepreneurial success. Simply providing devices or internet connectivity does not guarantee meaningful digital participation. Murthy (2025) argued that when digital skills training is integrated into rural entrepreneurship programs, women show higher sustainability and improved decision-making capacity.

Dwivedi & Deb (2025) suggested that introducing Industry 5.0 tools such as smart technologies and human-centric innovation can further transform women-led enterprises in developing economies. These insights show that targeted digital training is essential for women to fully leverage the benefits of ICT tools.

Sustainability, Inclusive Development & Digital Platforms

Sustainable entrepreneurship emphasizes the long-term viability of enterprises along with their social and environmental contributions. Digital platforms have allowed rural women to diversify income sources, access wider markets, and reduce dependency on local middlemen. Alamuri et al. (2025) found that digital livelihood platforms significantly improved resilience and income stability among rural women.

Yashasvi (2025) demonstrated that integrating cultural and digital entrepreneurship enhances community sustainability and strengthens social cohesion. These findings position digital inclusion as not only an economic tool but also a driver of long-term social transformation.
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Synthesis of Literature

Overall, the existing literature confirms that digital inclusion positively influences women's entrepreneurial outcomes by improving financial access, market linkages and business sustainability. However, rural women still experience structural limitations such as weak infrastructure, low digital literacy, socio-cultural resistance and uneven implementation of government schemes. While digital tools offer immense potential, their benefits are not equally distributed across India's rural landscape. Thus, a comprehensive understanding of how digital inclusion interacts with policy support, psychological empowerment and sustainability outcomes is essential for strengthening rural women's entrepreneurship.

Conceptual Framework / Model

Table 1: Conceptual model

Component	Description	Role in Entrepreneurship
Digital Literacy	Ability to use mobile apps, digital payments, online platforms, ICT tools	Enables access to financial services, improves market linkages
Access to Finance	Microfinance, Mudra loans, SHGs, digital banking, fintech tools	Provides capital for starting and scaling rural enterprises
Entrepreneurial Success	Business performance, income stability, innovation, market expansion	Represents the direct outcome of digital and financial empowerment
Sustainability Outcomes	Long-term enterprise survival, community development, resilience	Ensures durable economic & social impact aligned with SDGs
Family / Social Support	Emotional encouragement, mobility support, decision-making freedom	Strengthens confidence & improves digital adoption
Psychological Empowerment	Self-efficacy, motivation, reduced fear of technology	Enhances digital participation and entrepreneurial confidence

The model suggests that digital literacy and financial inclusion jointly enhance entrepreneurial capacity, moderated by social and psychological factors. These, in turn, lead to sustainable business outcomes contributing to local development.

Research Gap

- Existing studies mostly examine digital inclusion or women entrepreneurship separately, with very limited work integrating both dimensions into a single analytical framework.
- Research rarely connects digital literacy, government policies, financial access, psychological empowerment, and sustainability outcomes for rural women entrepreneurs.
- Many studies focus on urban or semi-urban women, while rural digital inclusion patterns remain underexplored.
- Most existing literature highlights digital tools but lacks evidence on how these tools translate into long-term sustainable business outcomes for rural women.
- Psychological factors such as confidence, fear of technology and motivation are discussed superficially and not incorporated into conceptual models.
- Policy studies emphasize schemes like Mudra and Stand-Up India but do not examine why scheme awareness and adoption remain low among rural women despite digital expansion.

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Objectives

- To analyze the role of digital inclusion in empowering rural women entrepreneurs.
- To assess the impact of government schemes and microfinance initiatives.
- To evaluate the mediating role of digital literacy in entrepreneurial sustainability.
- To identify socio-psychological barriers affecting digital adoption.

- To propose a framework for sustainable women entrepreneurship in rural India.

Methodology

This study adopts a systematic literature review (SLR) approach. A total of 20 peer-reviewed papers (2015–2025) from Elsevier, Springer, Emerald, and Google Scholar were analyzed. Data was categorized using thematic coding (digital inclusion, sustainability, policy, social support, psychological factors). Qualitative synthesis was applied to identify common findings and gaps.

Findings / Analysis

Table 2: : Key Findings on Digital Inclusion and Rural Women Entrepreneurship (2015–2025)

Finding Theme	Evidence from Literature	Implication for Rural Women Entrepreneurs
Digital inclusion improves entrepreneurial sustainability	Studies highlight positive correlation between digital tools (mobile banking, e-commerce, digital payments) and business survival rates.	Women using digital platforms show higher income stability and long-term enterprise growth.
Awareness of government schemes remains low	Limited knowledge of Mudra Yojana, Stand-Up India & Start-Up India reported across rural districts.	Women cannot access credit/benefits due to poor dissemination and complex procedures.
Social capital strongly influences digital adoption	Family encouragement and peer networks boost confidence to use digital tools.	Supportive households enhance digital readiness and business expansion.
Digital literacy acts as a mediator	Skill-based training increases confidence, reduces fear of technology, and enables productive ICT use.	Digital skills directly support better financial decisions, marketing, and customer engagement. engagement.
Women using e-commerce have higher resilience	Data shows improved market reach, reduced dependency on middlemen, and diversified income sources.	E-commerce enhances competitiveness and helps women overcome geographical l imitations.
Psychological empowerment strengthens innovation	Research indicates that confidence, self-belief, and reduced tech-related anxiety improve innovation capability.	Empowered women entrepreneurs adopt new tools more effectively and scale their ventures.

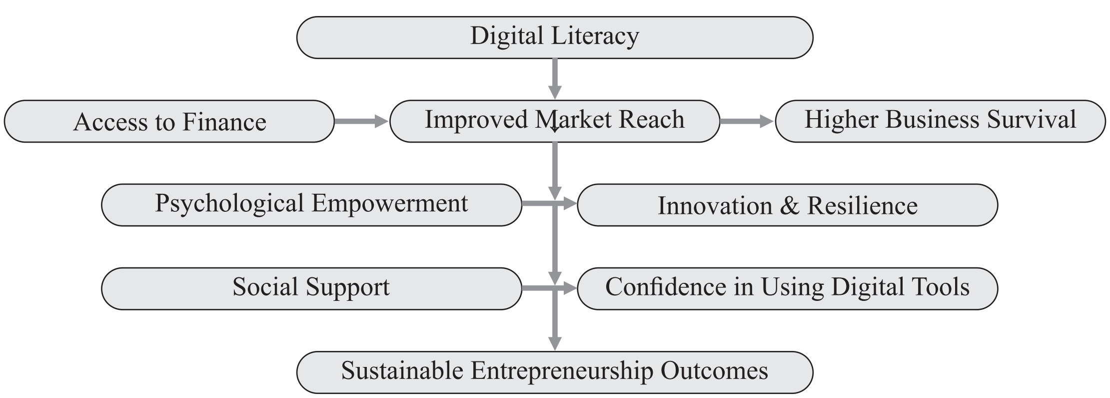

Figure1: Summary Map- How Digital Inclusion Shapes Sustainable Women Entrepreneurship

Discussion

The findings of this study show a clear link between digital inclusion and the entrepreneurial growth of rural women in India, reinforcing global research on the transformative power of ICTs in developing economies. Across several countries in the Global South, digital technologies have emerged as critical tools for strengthening financial inclusion, expanding market access, and building economic resilience. The Indian context reflects similar patterns, where digital platforms such as mobile banking, UPI-based payments, e-commerce portals, and e-governance services have significantly reduced structural barriers for women entrepreneurs.

However, consistent with global ICT4D (Information and Communication Technology for Development) literature, the distribution of digital benefits remains uneven. Studies from Africa, Southeast Asia and South America similarly report that while digital tools empower women, low digital literacy, gender norms, limited mobility, and infrastructural inequalities restrict their participation. India's rural landscape mirrors these challenges despite rapid digital growth, many women continue to face psychological barriers such as fear of technology, low self-confidence and limited exposure to digital environments. These findings align with global evidence showing that psychological empowerment is as important as technological access.

Another important observation is that government interventions whether in India or other developing countries do not automatically guarantee entrepreneurial success. Policies like Mudra Yojana, Stand-Up India and Digital India have improved opportunities, yet their effectiveness is reduced when rural women lack awareness or face bureaucratic complexities. Similar policy gaps are documented in global studies where well-designed programs fail to achieve impact due to poor implementation, lack of capacity-building or social resistance.

The discussion also highlights the critical role of social capital. Family support, peer networks, and community groups significantly influence digital adoption and entrepreneurial confidence. This is consistent with global research indicating that women's entrepreneurial decisions are often shaped by social relationships rather than economic incentives alone. For rural Indian women, supportive community structures especially SHGs and women-led networks act as bridges between technology access and productive usage.

Overall, the study's findings confirm that *digital inclusion can accelerate rural women's entrepreneurship,* but only when combined with *targeted training, social support, and inclusive policies.* Strengthening digital ecosystems in rural India will require addressing both infrastructural barriers and the socio-cultural realities that shape women's everyday experiences. The global evidence supports this integrated approach, emphasizing that sustainable entrepreneurship emerges from a combination of digital empowerment, institutional support and social transformation.

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Policy Implications

Digital inclusion has the potential to greatly strengthen rural women's entrepreneurship, but its impact depends on supportive policies, infrastructure, and community-level engagement. Based on the review of literature and conceptual framework, the following policy implications are essential for improving digital adoption and ensuring sustainable entrepreneurial outcomes.

Government-Level Policy Implications

Improve rural digital infrastructure:

Better internet connectivity, affordable smartphones and village-level digital access centers are needed to ensure smooth use of digital tools.

Women-focused digital literacy programs:

Training should be customized for rural women and conducted through SHGs, community centers and local institutions to build confidence and digital skills.

Simplify access to schemes:

Awareness campaigns in regional languages and door-to-door facilitation can help women understand and apply for schemes like PMMY, Stand-Up India, and Digital India.

Digital financial support:

Paperless verification, UPI-based micro-lending and digital credit scoring systems can reduce delays and ease access to finance for women entrepreneurs.

Gender-sensitive implementation:

Field officers and support staff should be trained to address gender-based constraints, mobility issues and cultural barriers affecting rural women.

Community & Institution-Level Policy Implications

Strengthen SHGs and women networks:

SHGs can act as local training hubs, provide peer support and guide women in using digital tools effectively.

Digital mentorship programs:

Successful local women entrepreneurs should be trained as “Digital Champions” to mentor others in the community.

NGO and MFI involvement:

NGOs and MFIs can offer focused digital skill-building, financial training and hand-holding during technology adoption.

Family and community awareness:

Sensitization sessions for men, elders, and local leaders can reduce resistance and encourage support for women's mobility and digital learning.

Inclusive digital marketplaces:

Village-level e-commerce kiosks and shared digital platforms can help women access larger markets even without personal devices.

Conclusion & Future Scope

Digital inclusion has become a foundational element in strengthening women-led entrepreneurship across rural India. The review of literature from 2015 to 2025 clearly shows that digital tools ranging from mobile banking to e-commerce enhance access to finance, expand market reach and enable more informed business decisions. However, the benefits of digital participation are not evenly distributed. Structural barriers such as low digital literacy, inadequate ICT infrastructure, limited awareness of government schemes and deeply rooted socio-cultural norms continue to constrain women's entrepreneurial potential.

The findings suggest that digital literacy, psychological empowerment and social support work together to determine whether rural women can effectively use technology for sustainable business outcomes. While government programs like Mudra Yojana, Stand-Up India and Digital India have improved opportunities at the policy level, gaps in awareness, training and implementation reduce their actual impact on the ground. Strengthening digital inclusion, therefore, requires coordinated interventions that combine skill-building, institutional support and long-term community engagement.

Overall, the study concludes that digital empowerment plays a transformative role in advancing gender equity, entrepreneurship growth and sustainable rural development. Yet, realizing this potential demands targeted investments in capacity-building, local infrastructure and gender-sensitive policies that address the unique challenges faced by rural women.

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