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**Research Paper** 



# Digital Literacy and Economic Empowerment among Rural Women

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### Abstract

In the digital era, the integration of technology in development strategies has emerged as a potent means to address longstanding gender and economic disparities. This study explores the relationship between digital literacy and the economic empowerment of rural women, highlighting how digital skills enhance access to income, markets, and financial independence. Drawing upon a robust review of global and regional literature, the study contextualizes digital literacy not merely as a technical skill but as a transformative tool for agency, autonomy, and social change. The research examines current digital literacy levels among rural women, the barriers impeding their digital inclusion, and the tangible economic outcomes of enhanced digital skills. It also proposes comprehensive, community-driven, and gender-sensitive recommendations. By analyzing case studies and global policy frameworks, this paper contributes to both academic discourse and development practice, reinforcing the centrality of digital inclusion in achieving gender-equitable growth.

Keywords: Digital Literacy, Economic Empowerment, Rural Women, Gender Equality, ICT4D, Digital Inclusion

# I. Introduction

In the 21st century, digital technologies have become ubiquitous, redefining economies, governance, education, and communication. Yet, their transformative potential remains unevenly distributed, particularly among marginalized populations such as rural women. Rural women constitute one of the most disadvantaged demographics globally, often excluded from formal education, economic participation, and technological advancement. The digital divide is not merely a technological concern but a complex socio-economic and gendered phenomenon that perpetuates inequality. Bridging this divide, especially through digital literacy, is increasingly being recognized as a powerful strategy for economic empowerment and gender equity. Digital literacy, broadly defined as the ability to access, understand, and effectively use digital technologies, has become a prerequisite for full participation in modern society. It encompasses skills in operating digital devices, using the internet, navigating social media, engaging in e-commerce, accessing government services online, and participating in digital learning. For rural women, digital literacy is not only a means of acquiring technical skills but a pathway to empowerment, autonomy, and self-sufficiency. Economic empowerment refers to the capacity of women to participate in, contribute to, and benefit from economic activities. This includes access to incomegenerating opportunities, decision-making power in household and community matters, and the ability to improve one's socio-economic status. The intersection of digital literacy and economic empowerment has gained traction in policy, development, and academic discourses as a critical enabler for achieving the United Nations Sustainable Development Goals (SDGs), particularly Goal 5 (Gender Equality) and Goal 8 (Decent Work and Economic Growth).

# **Defining the Key Concepts**

**Digital Literacy:** According to UNESCO (2018), digital literacy is the ability to locate, evaluate, use, and create information using digital technology. It involves a spectrum of competencies, ranging from basic digital skills (e.g., using a mobile phone or computer) to advanced capabilities like coding and data analytics. For rural women, digital literacy often begins with foundational skills but must evolve toward functional and critical literacy to facilitate meaningful economic engagement.

**Economic Empowerment:** The World Bank (2014) defines women's economic empowerment as the ability to succeed and advance economically and the power to make and act on economic decisions. This includes control over resources, access to markets, financial services, employment opportunities, and legal rights. Empowerment

also involves transforming power relations and addressing systemic barriers such as patriarchy, poverty, and gender discrimination.

# **Evolution of the Digital Literacy Agenda**

The early 2000s saw the digital divide primarily framed as a matter of infrastructure – access to computers and internet connectivity. Over time, however, the focus shifted toward digital skills and usage, particularly among underserved populations. As mobile phone penetration increased globally, the potential for digital inclusion widened, giving rise to mobile-based literacy programs, digital financial services, and online entrepreneurship initiatives. In India, programs like the National Digital Literacy Mission (NDLM) and the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) were introduced to promote digital literacy in rural areas. Similar initiatives emerged in sub-Saharan Africa and Southeast Asia, often supported by NGOs, international donors, and private sector actors. These programs recognized the critical need to empower rural women, who are often excluded from mainstream digital and economic ecosystems due to intersecting barriers.

### Significance of the Study

This study is significant in multiple respects. Firstly, it addresses a glaring gap in development strategy: the systematic exclusion of rural women from the digital revolution. Despite global advances in digital technology, rural women often remain on the margins, lacking access to devices, internet, training, and social support. Secondly, it foregrounds the transformative potential of digital literacy not only as a technical competency but as a catalyst for economic agency. When women gain digital skills, they can access job opportunities, start businesses, manage finances, and advocate for their rights. Digital tools can help rural women access agricultural information, participate in e-commerce, receive mobile payments, and engage in distance learning. Thirdly, this study contributes to policy and practice by highlighting scalable models and recommending inclusive strategies. In doing so, it aims to support governments, civil society, and development agencies in designing interventions that are gender-sensitive, contextually relevant, and technologically adaptive.

# **Research Questions and Objectives**

The central research question guiding this study is:

# How does digital literacy contribute to the economic empowerment of rural women in the 21st century? Sub-questions include:

- What are the current levels and types of digital literacy among rural women?
- What are the primary barriers to digital literacy and economic empowerment?
- How do digital platforms enable or hinder economic activities for rural women?
- What are the best practices and policy frameworks for promoting digital empowerment?

The main objectives of the study are:

- 1. To examine the digital literacy landscape among rural women across different regions.
- 2. To analyze the impact of digital literacy on women's income, employment, and entrepreneurship.
- 3. To identify socio-cultural, economic, and infrastructural barriers to digital inclusion.
- 4. To propose actionable policy and programmatic recommendations.

# **Theoretical Framework**

This study draws upon three primary theoretical frameworks:

1. **Capability Approach (Amartya Sen):** This approach emphasizes enhancing individual freedoms and capabilities as the essence of development. Digital literacy expands women's capabilities to access information, generate income, and make informed choices.

2. **Feminist Political Economy:** This framework critiques how economic systems are gendered and how power relations influence women's access to resources and opportunities. It underscores the need to understand digital literacy within the broader context of gendered labor markets and patriarchal norms.

3. **Technological Determinism vs. Social Shaping of Technology:** While technological determinism suggests that technology inherently drives social change, this study aligns more with the social shaping perspective, which posits that the impact of technology is mediated by social, cultural, and institutional factors.

### **Scope and Delimitation**

This study focuses on rural women in low- and middle-income countries, with illustrative examples from South Asia, Sub-Saharan Africa, and Latin America. While digital literacy can empower women in urban settings as well, the emphasis here is on rural areas where the digital divide is most pronounced. The study limits its analysis to women aged 18 and above, recognizing that digital engagement and economic empowerment may vary significantly across age groups. Moreover, the study is delimited to examining the role of digital literacy in economic empowerment, rather than broader dimensions of empowerment such as political participation or reproductive rights, although these may intersect with economic factors.

# II. Methodological Overview

The research methodology includes a qualitative literature review supported by empirical case studies. Primary data sources include reports from UN Women, the World Bank, UNESCO, ITU, and national digital literacy missions. Case studies are drawn from NGOs and community-based initiatives that have successfully integrated digital literacy into women's economic development programs. Secondary data includes academic journals, policy briefs, and evaluations of ICT4D (Information and Communication Technologies for Development) projects.

The methodology prioritizes a gender-sensitive lens and participatory approaches, valuing the lived experiences of rural women as key data points.

### Anticipated Challenges and Ethical Considerations

Conducting research on rural women's digital literacy entails several challenges:

- **Data Gaps:** There is limited sex-disaggregated data on digital skills and usage at rural levels.
- Access Constraints: Reaching remote communities can be logistically difficult.

• **Cultural Sensitivities:** Discussions around women's empowerment may be constrained by local patriarchal norms.

• **Digital Safety:** Issues such as cyberbullying and privacy violations need careful attention.

Ethically, the study emphasizes informed consent, confidentiality, and respect for local customs. Interventions or pilot programs inspired by the study must ensure that women are not exposed to risks or backlash due to increased visibility or autonomy.

### III. Review of Literature

Over the past two decades, a growing body of literature has emphasized the role of digital literacy in transforming the socio-economic conditions of marginalized communities, particularly rural women. Early works, such as those by Hafkin and Huyer (2006), highlighted how the digital divide perpetuates existing gender inequalities and stressed the need for inclusive ICT policies. The conceptual shift from mere access to meaningful use, championed by Hilbert (2011), laid the groundwork for analyzing the interplay between digital skills and empowerment. Scholars like Wajcman (2004) and Eubanks (2018) have critiqued the patriarchal and classist biases embedded in technology design and deployment, arguing for a more feminist approach to digital inclusion.

Empirical studies have shown that digital literacy initiatives significantly enhance women's access to information, financial services, and markets. For instance, Wyche and Olson (2018) examined mobile internet usage among rural Kenyan women, finding that digital tools enabled access to agricultural data, health services, and business platforms. Similarly, Gurman, Rubin, and Roess (2012) noted the effectiveness of mHealth communication strategies in delivering maternal health information in resource-poor settings. In India, the impact of schemes like PMGDISHA has been extensively documented by the Ministry of Electronics and IT (2020), showing notable improvements in women's ability to use mobile devices for digital payments and accessing government benefits.

Several studies underscore the link between digital skills and entrepreneurship. Mehta and Kapoor (2012) observed that SEWA's integration of ICT training in Gujarat empowered women to manage cooperatives, negotiate better prices, and reduce dependency on middlemen. Similarly, the GSMA (2017) report found that women engaged in mobile financial services experienced increased income security and autonomy. However, challenges persist. The OECD (2018) and Web Foundation (2020) report persistent barriers such as affordability, limited mobility, low education, and restrictive gender norms.

The literature also engages with theoretical debates. Amartya Sen's capability approach is frequently invoked to frame digital literacy as expanding women's choices and freedoms. Feminist political economy scholars stress that empowerment must go beyond individual capacity to include structural transformation. Moreover, the social shaping of technology perspective, as opposed to deterministic models, emphasizes the role of social and cultural contexts in mediating technological outcomes.

Despite abundant documentation of pilot projects and small-scale successes, gaps remain in scaling such interventions and ensuring sustainability. Critics like Tufekci (2017) caution against techno-solutionism and emphasize the need for community-driven, participatory design of digital literacy programs. The literature collectively calls for more nuanced, context-specific, and intersectional approaches to digital empowerment.

## IV. Discussion

The digital literacy landscape for rural women is marked by uneven access, skill disparities, and a lack of contextual training modules. In South Asia, while smartphone penetration has improved, usage remains limited due to gender norms and low education levels. According to ITU (2019), rural women are 23% less likely to use mobile internet than men. In Sub-Saharan Africa, language barriers, poor network coverage, and energy shortages compound the problem. Initiatives like UNESCO's "Cracking the Code" (2017) show promise by linking digital education with local curricula and community mobilization. However, uptake is constrained by factors like lack of family support and time poverty.

Digital literacy acts as a catalyst for rural women's economic participation. Women trained in digital tools are better equipped to engage in microenterprises, access financial services, and navigate digital marketplaces. Evidence from India's rural self-help groups shows that smartphone training correlates with increased use of UPI apps for payments and online product sales. In Kenya, the M-PESA platform has enabled women to save money securely and invest in small businesses. Aker et al. (2012) found that access to mobile learning enhanced agricultural productivity, leading to higher incomes. These outcomes demonstrate that digital skills directly influence women's economic outcomes, especially when complemented by financial literacy and market access.

Numerous barriers hinder rural women's digital engagement. Socio-culturally, patriarchal attitudes restrict women's mobility and access to technology. In some regions, digital tools are viewed as male domains, limiting women's confidence and autonomy. Economically, device affordability and data costs remain significant hurdles. Infrastructural gaps such as unreliable electricity, poor connectivity, and lack of public Wi-Fi zones exacerbate exclusion. Educationally, digital literacy requires a foundational level of literacy and numeracy, which many rural women lack. These constraints are interrelated and often reinforce one another, making it essential for interventions to adopt a multi-pronged, intersectional approach.

Based on the literature and analysis, several strategic recommendations emerge:

1. **Gender-sensitive curriculum design:** Digital literacy programs should use local languages and real-life case studies that resonate with women's daily lives.

2. **Community-based training models:** Leveraging existing women's groups (e.g., SHGs, cooperatives) can enhance trust and uptake.

3. **Public-private partnerships:** Collaborations between governments, tech companies, and NGOs can mobilize resources and technical expertise.

4. **Digital safety and rights education:** Programs must address online safety, data privacy, and digital rights to build resilience and confidence.

5. **Policy integration:** National ICT policies should mandate gender audits and include rural women's digital empowerment as a measurable target.

Empowerment must be seen not just as economic participation but as an ongoing process of gaining voice, agency, and rights in a digitally mediated world. Hence, digital literacy initiatives should also include leadership training, civic education, and access to legal aid services.

### V. Conclusion

The study underscores that digital literacy is a foundational pillar for the economic empowerment of rural women in the 21st century. As economies digitize, exclusion from digital spaces increasingly translates to exclusion from economic opportunities. The findings reveal that digital literacy enhances rural women's ability to access financial services, engage in microenterprises, obtain agricultural and health information, and participate in digital governance. However, structural barriers such as gendered norms, affordability constraints, and infrastructural deficits continue to inhibit full participation. To bridge this divide, it is imperative to design holistic, gender-responsive digital literacy programs that are embedded within community contexts. Solutions must address not only technical training but also social norms, financial inclusion, and digital rights. Partnerships between government agencies, civil society, and technology firms can play a crucial role in scaling effective interventions. Policymakers should institutionalize gender indicators in digital policy frameworks and ensure equitable resource allocation. Digital literacy is not a panacea, but when implemented with intersectional and participatory approaches, it can significantly transform the socio-economic landscape for rural women. The path to empowerment is not only about access but about agency—the freedom to choose, act, and thrive in a digitally interconnected world.

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