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Impact of digital technologies on women's economic empowerment: Insights from SHGS in Bihar

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Abstract

The integration of digital technologies has significantly influenced women's economic empowerment, particularly in rural settings where socio-economic challenges persist. This study examines the role of digital tools in enhancing the economic activities and decision-making capabilities of women associated with Self-Help Groups (SHGs) in Bihar, India. SHGs have emerged as a transformative platform for financial inclusion, skill development, and entrepreneurial ventures among women. The research explores how access to mobile banking, e-commerce platforms, digital literacy programs, and online marketplaces has enabled SHG members to expand their income-generating activities and improve financial independence. Key findings indicate that digital technologies have streamlined financial transactions, facilitated better market linkages, and provided women with a broader platform for advocacy and networking. However, barriers such as limited digital literacy, inadequate infrastructure, and socio-cultural constraints continue to impede widespread adoption. The study underscores the need for targeted interventions, including capacity-building workshops and policy frameworks, to bridge the digital divide and maximize the potential of digital technologies for empowering women economically. By analyzing field data and case studies, this research highlights the transformative impact of digitization on women-led

Keywords: Digital technologies, women's economic empowerment, self-help groups (SHGs), financial inclusion, rural development

Introduction

Women's economic empowerment is a cornerstone of inclusive development, and in rural India, Self-Help Groups (SHGs) have emerged as a vital mechanism for achieving this goal. Bihar, one of India's most economically challenged states, presents a compelling case for examining how digital technologies are reshaping the economic opportunities available to women through SHGs. These groups, primarily aimed at fostering financial inclusion, entrepreneurship, and skill development, have empowered women to overcome traditional socio-economic barriers. However, the integration of digital tools—such as mobile banking, e-commerce platforms, and digital literacy initiatives—has further amplified their potential impact. Digital technologies streamline financial transactions, broaden market access, and enable capacity-building programs, offering women in SHGs opportunities to expand their economic activities and achieve financial independence. For instance, mobile wallets and online payment systems allow women to handle finances securely and independently, while e-commerce platforms enable them to reach broader markets with their products. Moreover, digital training and resources enhance entrepreneurial skills and foster connectivity among SHG members, creating opportunities for collective growth and advocacy. Despite these benefits, challenges persist, including limited digital literacy, inadequate infrastructure, socio-cultural restrictions, and concerns about cybersecurity and trust in digital systems. Addressing these barriers requires concerted efforts from the government, NGOs, and private sector stakeholders to improve infrastructure, subsidize access to technology, and provide targeted digital literacy programs. By exploring the intersection of SHGs and digital technologies in Bihar, this study highlights a transformative pathway to empower women economically and drive sustainable development in rural contexts.

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Literature Review

1. **Kabeer, N. (1999)** ^[1]: Kabeer's work lays the theoretical foundation for understanding women's empowerment as a multidimensional process that encompasses access to resources, the ability to make choices, and achieving desired outcomes. While not specific to digital technologies, this framework has been widely adopted in analyzing the impact of SHGs on women's economic agency.
2. **Mayoux, L. (2001)** ^[2]: This study emphasizes the role of SHGs and micro-finance initiatives in empowering women socially and economically. It argues that financial inclusion, coupled with capacity-building efforts, can challenge patriarchal structures. Mayoux also highlights the importance of collective action in achieving economic sustainability, a concept that has gained relevance with the advent of digital platforms.
3. **Sarumathi, S., & Mohan, K. (2011)** ^[3]: This empirical study examines how micro-finance, provided through SHGs, enhances women's financial independence and decision-making power. Although the study focuses on Tamil Nadu, its findings about the need for skill enhancement and market linkages are transferable to the context of SHGs in Bihar, especially with the integration of digital tools.
4. **Devi, K. S., & Reddy, N. M. (2017)** ^[4]: This research highlights the transformative potential of digital technologies in bridging gender gaps, particularly in rural India. It examines initiatives aimed at promoting digital literacy and technology adoption among women and underscores the importance of government interventions in creating enabling environments. This work provides a basis for understanding how digital inclusion impacts SHGs.
5. **Das, P., & Mili, B. (2020)** ^[5]: This study focuses on the economic empowerment achieved through SHGs, with specific references to the use of technology in promoting financial inclusion and entrepreneurship. It discusses the challenges of digital adoption, such as infrastructural limitations and digital literacy, while emphasizing the need for targeted interventions to maximize benefits for women in rural areas.

Women, SHGs, and Economic Empowerment in Bihar

Bihar, one of India's most populous and economically disadvantaged states, has seen significant engagement of women in SHGs, particularly under programs like the National Rural Livelihoods Mission (NRLM). These groups serve as grassroots-level institutions that promote financial inclusion, skill-building, and social capital. Members contribute small savings, access microcredit, and undertake collective economic activities. However, despite these advancements, traditional barriers such as limited mobility, low literacy rates, and socio-cultural norms restrict the full potential of these groups. The advent of digital technologies presents a unique opportunity to address some of these barriers. Mobile phones, the internet, and digital platforms can facilitate financial transactions, improve market access, and enable training and capacity-building. In Bihar, where rural infrastructure is improving steadily, the integration of such technologies into SHG operations is becoming increasingly viable.

The Potential of Digital Technologies in Empowering Women

1. **Enhance Financial Inclusion:** Digital banking and mobile wallets allow women to access and manage their finances independently. In Bihar, where formal banking services are often scarce in rural areas, digital tools bridge the gap and reduce transaction costs.
2. **Expand Market Access:** Online marketplaces provide SHG members with the opportunity to showcase and sell their products beyond local markets. For example, women engaged in traditional crafts, agriculture, or food processing can now reach a larger customer base through e-commerce platforms.
3. **Facilitate Capacity Building:** Digital tools enable remote learning and skill development. E-learning platforms and mobile apps can impart financial literacy, entrepreneurship training, and other essential skills to SHG members, overcoming barriers of distance and accessibility.
4. **Promote Networking and Advocacy:** Digital platforms offer women a voice in larger networks and forums, helping them advocate for their rights, share best practices, and collaborate with stakeholders.

Challenges in Adopting Digital Technologies

Despite the promise of digital empowerment, several challenges persist in Bihar:

- **Digital Literacy:** Many women in SHGs lack the necessary skills to effectively use digital tools. Training programs often fall short of addressing this gap comprehensively.
- **Infrastructure Deficits:** Inadequate internet connectivity, unreliable electricity, and the high cost of devices remain significant hurdles.
- **Socio-Cultural Barriers:** Gender norms and restrictions on mobility often prevent women from independently accessing digital tools or participating in training programs.
- **Trust and Security Concerns:** Fear of fraud and lack of trust in digital systems hinder adoption.

The Role of Policy and Stakeholders

To harness the potential of digital technologies, coordinated efforts from multiple stakeholders are essential. Government policies must focus on improving rural digital infrastructure, subsidizing digital devices, and promoting literacy programs tailored to women. Non-governmental organizations (NGOs) and private players can collaborate to design user-friendly digital tools and ensure their effective dissemination. SHG federations themselves can play a pivotal role in peer-to-peer learning and mentoring.

Objectives of the Study

1. To analyze the role of digital technologies in enhancing financial inclusion among women in SHGs in Bihar.
2. To examine the impact of digital tools on entrepreneurial activities and income generation within SHGs.
3. To assess the level of digital literacy and its influence on SHG members' adoption of technology.
4. To identify the barriers to digital technology adoption faced by women in SHGs.

5. To evaluate the role of digital platforms in expanding market access for SHG members' products and services.
6. To propose actionable recommendations for integrating digital technologies to maximize women's economic empowerment through SHGs.

Research Methodology

The study employs a mixed-methods research approach to explore the impact of digital technologies on women's economic empowerment through SHGs in Bihar. Primary data is collected through structured surveys and semi-structured interviews with SHG members, focusing on their access to and use of digital tools, economic activities, and challenges faced. Secondary data is sourced from government reports, scholarly articles, and case studies to provide contextual insights and support the analysis. A

purposive sampling method is used to select SHGs from diverse districts in Bihar, ensuring representation of rural, semi-urban, and marginalized communities. Quantitative data is analyzed using statistical techniques to identify trends, while qualitative data is thematically analyzed to capture nuanced perspectives. This methodology ensures a comprehensive understanding of how digital technologies influence financial inclusion, entrepreneurship, and market access, while also highlighting barriers and opportunities for enhancing women's economic empowerment in SHGs.

Data Analysis

The data collected from surveys and interviews with 200 SHG members across five districts in Bihar were analyzed to assess the impact of digital technologies. The findings are summarized in the table below.

Table 1: Impact of Digital Technologies on SHG Members in Bihar

Indicators	Number of Respondents	Percentage (%)
Access to mobile phones	180	90%
Use of mobile banking apps	120	60%
Engagement in online financial transactions	100	50%
Participation in digital literacy programs	80	40%
Use of e-commerce platforms for sales	50	25%
Reported increase in income through digital tools	110	55%
Key challenges faced		
Lack of digital literacy	140	70%
Poor internet connectivity	120	60%
Fear of fraud or mistrust in digital tools	90	45%

Key Insights

1. **High Mobile Access:** A significant majority (90%) of SHG members reported access to mobile phones, highlighting the potential for digital intervention.
2. **Moderate Digital Adoption:** While 60% used mobile banking apps, only 25% engaged in e-commerce activities, suggesting limited but growing digital adoption for entrepreneurial activities.
3. **Challenges:** Digital illiteracy (70%) and poor connectivity (60%) were identified as primary barriers to technology adoption.
4. **Income Growth:** Over half (55%) of respondents reported increased income due to the use of digital tools, indicating their potential to enhance economic empowerment.

Importance of the Study

The study on the impact of digital technologies on women's economic empowerment through SHGs in Bihar is crucial in understanding the transformative potential of technology in bridging gender and economic disparities in rural areas. Bihar, one of India's most socio-economically disadvantaged states, offers a unique context where SHGs serve as critical platforms for women's financial inclusion, skill development, and entrepreneurship. With digital tools becoming increasingly accessible, this research highlights how technologies like mobile banking, e-commerce platforms, and digital literacy programs can enhance the economic capabilities and decision-making power of women. By identifying the benefits, challenges, and gaps in digital adoption, the study provides actionable insights for policymakers, NGOs, and stakeholders aiming to promote gender-inclusive development. Furthermore, it underscores the need for targeted interventions to overcome barriers

such as digital illiteracy and infrastructural deficits, paving the way for more sustainable and scalable models of women's empowerment through SHGs.

Findings of the Study

1. **Increased Digital Access:** Most SHG members had access to mobile phones, with a growing number adopting digital tools like mobile banking and online payments.
2. **Enhanced Financial Inclusion:** Digital technologies streamlined financial transactions, enabling women to manage savings and access credit more efficiently.
3. **Expanded Market Reach:** A section of SHG members utilized e-commerce platforms to sell products, gaining access to wider markets.
4. **Improved Income Levels:** Over half of the respondents reported an increase in income due to the use of digital tools for business activities.
5. **Barriers to Adoption:** Challenges included limited digital literacy, poor internet connectivity, socio-cultural constraints, and mistrust of digital systems.
6. **Need for Training:** Many members expressed the need for targeted digital literacy programs to maximize the benefits of technology integration.

Conclusion

The integration of digital technologies in Self-Help Groups (SHGs) has shown promising potential in empowering women economically in Bihar, a region marked by socio-economic challenges. This study reveals that digital tools such as mobile banking, e-commerce platforms, and digital literacy initiatives have enhanced financial inclusion, facilitated access to broader markets, and supported entrepreneurial growth among SHG members. Many women

reported increased income levels and greater independence in managing financial activities, showcasing the transformative impact of technology. However, significant barriers persist, including limited digital literacy, inadequate internet infrastructure, socio-cultural restrictions, and concerns over trust and security in digital systems. These challenges highlight the urgent need for targeted interventions, including capacity-building programs, improved digital infrastructure, and community-based support systems. Furthermore, collaboration among government bodies, NGOs, and private stakeholders is essential to create a conducive environment for widespread digital adoption. By addressing these barriers and leveraging opportunities, digital technologies can play a pivotal role in reducing gender disparities, fostering economic independence, and driving sustainable development in rural Bihar. This study underscores the critical importance of tailored strategies to ensure that digital empowerment reaches the most marginalized women, enabling them to fully realize their economic potential through SHGs. The insights provided contribute to policy-making and practical initiatives aimed at scaling the benefits of digital inclusion across similar contexts in India and beyond.

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