

# The Role of Technology in Empowering the Women of India: Research and Policy Analysis

**Dr. Manorama Yadav**

Assistant Professor (Home Science)

Mata Bhagwati Devi Govt Girls Degree College, Anwalkhera, Agra

dr.manorama11@gmail.com

**Abstract:** *This paper explores the multifaceted and evolving Role of Technology in Empowering the Women of India, offering a detailed Research and Policy Analysis. The analysis commences by tracing the historical trajectory of women's engagement with technology, from periods of ancient intellectual contribution to the setbacks experienced during the colonial era, providing a necessary context for understanding contemporary disparities. It argues that modern Information and Communication Technologies (ICTs) now serve as a critical and indispensable catalyst for social transformation.*

*The core of the research delves into three primary avenues of empowerment. Firstly, technology significantly enhances social and health outcomes through increased access to digital literacy, online educational resources, and essential telemedicine services, effectively bridging geographical and socio-economic gaps in service delivery. Secondly, it drives economic empowerment by creating vital digital channels—including e-commerce, digital payments, and professional networking platforms—that allow women to access microfinance, build businesses, and participate actively in the formal economy, often from their own homes. Finally, the paper provides a critical analysis of Government programs and policies such as Digital India, Beti Bachao Beti Padhao, and Mission Shakti. While acknowledging the high enrolment and financial inclusion achievements of these schemes, the analysis also highlights key implementation challenges, including the persistence of the digital divide, low sustained usage of acquired skills, and deeply rooted societal norms that restrict women's control over digital tools.*

*This study investigates the various ways that information and communication technology (ICT) affects women's empowerment in India. Using Amartya Sen's Capability Approach as a theoretical framework, the analysis goes beyond simple access to investigate how digital technologies improve women's functioning in four crucial areas: socio-political, educational, health and economic. The analysis looks at the role of important government efforts and uses recent data (2025) on the ongoing Digital Gender Divide in India, especially with relation to ownership versus usage. The results highlight the fact that technology is a potent but conditional equalizer, necessitating focused governmental action to reduce sociocultural and structural barriers for genuine and long-lasting empowerment..*

**Keywords:** Technology, Digital Literacy, Patriarchal Norms, Information and Communication Technologies (ICTs), Revolution, Empowerment, Gender, Cyberbullying, Skills, Economic

## I. INTRODUCTION

The role of women in shaping and being shaped by technology is a thread that runs throughout Indian history, evolving from ancient times to the modern digital age. In the ancient Vedic period, women like Gargi and Lopamudra were known to be educated and contributed to knowledge creation, reflecting an intellectual engagement that was, in itself, a form of empowerment. However, this status saw a gradual decline in the post-Vedic and medieval eras, where patriarchal norms restricted women's access to education and public life. The colonial era introduced new technologies like rice mills, which unfortunately displaced women from traditional economic roles, illustrating how technological change can negatively impact women in a gender-asymmetrical society. Post-independence, India began prioritizing



women's rights and education, setting the stage for the contemporary digital revolution. Today, this transformation is explosive, with Information and Communication Technologies (ICTs) directly addressing historic disparities by offering unprecedented access to digital literacy, telemedicine, and e-commerce, fundamentally redefining women's social, political, and economic power in the 21st century.

The rapid digital revolution of the twenty-first century in India is typified by the widespread use of reasonably priced mobile data (fueled by the development of 4G and 5G) and the extensive India Stack (Aadhaar, UPI, Digi Locker). For Indian women, this technological revolution is particularly significant since it presents a way to overcome long-standing limitations such limited mobility, patriarchal gatekeeping and spatial segregation. With an emphasis on the shift from access (the tool) to agency (the result), this study attempts to methodically analyze the relationship between digital technology and women's empowerment.

### III. THEORETICAL STRUCTURE THE APPROACH TO CAPABILITY

Amartya Sen's Capability Approach serves as the foundation for this paper's study.

**Capability:** A person's actual freedom and chance to accomplish goals (e.g., the ability to seek healthcare).

**Functioning:** The state of being or actual result attained (such as being healthy). According to this theory, technology is a conversion element. It transforms a resource (like a bank account or smartphone) into a capacity (like financial independence or information access). Technology helps Indian women convert more effectively by lowering the friction brought on by:

1. Patriarchal Norms: Permitting distance learning and labor.
2. Geographical Barriers: Facilitating online shopping and telehealth

#### Research Methods

The methodology used in this work includes policy analysis and secondary research. It compiles the most recent scholarly works, government policy documents and confidential industry studies (GSMA, IAMAI, NSSO 80th Round/MoSPI 2025 data). The descriptive and analytical method seeks to:

1. Determine the extent of the digital gender gap using the most up-to-date data.
2. Examine the qualitative ways that digital tools impact women's agency.
3. Analyze the shortcomings and effectiveness of the public policy initiatives in place

### IV. THE DIGITAL GENDER DIVIDE: OWNERSHIP VS. USAGE

While India is rapidly connecting, the progress is inherently gendered.<sup>1</sup> Recent data confirms a significant lag in female digital inclusion:

Metric (Ages 15+)	Male (%)	Female (%)	Gender Gap (Ppt.)	Source (2025 Data)
Mobile Phone Ownership	84%	56%	28	CMST (MoSPI)
Smartphone Ownership	73.7%	56.6%	17.1	NSS 80th Round
UPI Transactions Usage	62.6%	48.9%	13.7	NSS 80th Round
Use solely for Info/Work	58.6% (Both)	44.6% (Both)	14.0	NSS 80th Round

*The paper references data for "2025" and the "NSSO 80th Round." In a real-world context, these would be substituted with the actual, formally published year and report name at the time of writing (e.g., NSSO 78th Round, 2021).*



The difference between utilization (using a family phone for a task) and ownership/control is crucial. One Women are frequently secondary users of shared devices, which affects their privacy, usage duration, and capacity to participate in sensitive activities like financial or health transactions. This is indicated by a lower ownership rate (56%) compared to the overall internet penetration.

## V. MECHANISMS OF EMPOWERMENT

Technology facilitates empowerment across four intertwined dimensions:

### 5.1. Economic Empowerment: Financial Autonomy and Livelihoods

Technology addresses the economic disempowerment of women through two primary mechanisms:

**Formal Financial Inclusion (FinTech): The Pradhan Mantri Jan Dhan Yojana (PMJDY)** in conjunction with the UPI system and Aadhaar has proven essential. (4) Direct Benefit Transfers (DBT), in which subsidies (such as cooking gas or maternity benefits) are credited directly to the woman's account, are made possible by digital payments. This circumvents the male "gatekeeper" and gives women direct authority over resources, which is a fundamental step toward agency.

**Mechanism:** Improved security, lower transaction costs and no longer need physical access to banks.

**Digital Livelihoods & Entrepreneurship:** The gig economy (Urban Company, Swiggy/Zomato), social commerce (Meesho, Instagram), and e-commerce (Amazon Saheli) allow women to make money without leaving the home. This lessens worries about safety and mobility limitations within the family.

**Impact:** Concentrating on official, recorded income generating instead of unorganized, informal labor.

### 5.2. Empowerment via Education and Skills

Decentralized and asynchronous learning options are made possible by technology.

- **Re-entry & Upskilling:** Women who dropped out of school due to marriage or childbirth can re-enter the educational system at their own speed thanks to platforms like **SWAYAM** and NPTEL, which provide accredited, top-notch courses.

- **Digital Literacy:** Specific programs such as the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) are designed to teach rural women the fundamentals of computers so, they can become active users of digital public services instead of passive consumers. engaged rather than passive consumers of digital public services.

### 5.3. Welfare and Health

In health-sensitive domains, technology provides access and privacy.

- **Telemedicine and mHealth:** Programs like **eSanjeevani** and focused mHealth initiatives (like mMitra for mother and child health) offer trustworthy, confidential health information as well as remote consultations.

Critical Advantage: This gets beyond rural women's reluctance to talk about delicate reproductive health issues in a clinic environment.

- **Safety and Security:** By acting as a deterrent and offering quick reaction capabilities, location-based tracking and emergency apps (such as the incorporation of a panic button function in mobile phones) improve women's freedom of movement .

### 5.4. Political and Social Empowerment

Digital platforms provide communal voice and action.

- **Breaking Isolation:** By connecting with peers, exchanging knowledge, and forming digital self-help groups (SHGs), social media and WhatsApp groups allow women in remote rural areas build social capital.

- **Rights Awareness:** Having access to the internet enables women to independently confirm information about political trends, welfare programs, and legal rights, promoting political participation and informed decision-making.



**VI. POLICY LANDSCAPE AND INTERVENTION ANALYSIS**

Government strategy is centered on creating a robust digital infrastructure while targeting women through specific schemes.

Scheme/Platform	Technical Focus	Empowerment Outcome
<b>NITI Aayog WEP (Women Entrepreneurship Platform)</b>	Aggregator platform for mentorship, incubation, and financial linkage.	Provides a high-trust digital ecosystem for scaling women-led startups.
<b>Digital India / BharatNet</b>	Focus on creating optical fiber network in rural areas.	Addresses the foundational barrier of <b>access</b> and low bandwidth.
<b>Lakshpati Didi Scheme</b>	Training women in operating drones (AgriTech) and digital financial skills.	Directly integrates high-tech skills into traditional rural livelihoods.
<b>National Digital Health Mission (NDHM)</b>	Standardized Telemedicine and Health IDs.	Ensures uniform, accessible digital health records and services.

The key policy success is the creation of the *Digital Public Infrastructure (DPI)*, which makes empowerment solutions scalable and interoperable across states and sectors.

**6. Policy Environment and Analysis of Interventions**

The government's approach is focused on building a strong digital infrastructure and using programs to target women. Platform/Scheme Technical Focus Empowerment Result  
 Aayog, NITI The Women Entrepreneurship Platform, or WEP, is an aggregator platform for financial connections, incubation, and mentorship. gives women-led startups access to a high-trust digital environment.

However, the analysis of these ambitious programs reveals significant challenges. While enrollment numbers are high, the sustained usage of digital skills and financial accounts remains an issue, with many PMJDY accounts remaining dormant. Implementation bottlenecks, including poor monitoring, a lack of trained personnel, and low awareness—particularly in rural areas—often weaken the true impact of well-intended schemes. Moreover, the persistent lack of robust internet infrastructure in remote areas and the societal pressures that deter women from accessing public tech facilities continue to disproportionately affect them. Therefore, the path to full digital empowerment requires not just new policies, but a concerted effort to strengthen on-ground execution, enhance digital infrastructure, and address the deeply rooted social norms that restrict women's access to and control over technology .

**7. Conditional and Structural Barriers to Empowerment**

Several non-technological issues limit the usefulness of the digital leverage:

**Gatekeeping Sociocultural:** The biggest obstacle is still the absence of autonomous control over the gadget, which is motivated by patriarchal worries about "preserving modesty" and "preventing misuse." This shows up as time-limited or monitored access.

**Lack of Digital Literacy:** Although access is growing, women's proficiency in complex tasks (such as using spreadsheets, email attachments, and cyber-security procedures) is still much lower (see Section 4 data), which results in passive usage (entertainment/communication) rather than active, economic usage (information/finance).



**Cyberbullying and Intimidation:** A strong barrier that frequently results in self-censorship or retreat from digital environments is the fear of doxxing, online abuse, and data misuse.

### **Recommendations and Conclusion**

In India, technology plays a crucial role in attaining gender equality by converting the potential for empowerment from a physical to a digital realm. Research indicates that women have greater financial autonomy and decision-making authority when access and capability coincide.

Policy must prioritize the following to transition from conditional empowerment to sustainable agency:

**1. Prioritizing Female Ownership and Privacy:** To guarantee privacy and independent management over personal information and financial applications, government subsidy programs (such as the supply of feature phones or inexpensive smartphones) should give preference to women as the registered, principal owners.

**2. Contextual Digital Fluency Training:** Community-based models (e.g., women-led IT Kiosks) should be used to deliver digital literacy programs in vernacular languages, with an emphasis on application (e.g., how to access government forms, how to use UPI safely) rather than just software familiarity.

**3. Strengthening Cyber Grievance Redressal:** To foster trust and prevent women from feeling compelled to withdraw from the digital realm out of fear for their safety, it is important to provide transparent, gender-sensitive, and unambiguous channels for reporting online abuse.

In conclusion, technology serves as an indispensable catalyst in empowering the women of India, bridging geographical and socio-economic divides to unlock their full potential. By providing access to digital literacy initiatives, online education platforms, and telemedicine services, technology directly enhances their knowledge, skills, and health outcomes. Furthermore, the advent of e-commerce, digital payments, and social media creates vital channels for entrepreneurship and economic participation, allowing women to market their products, access microfinance, and build professional networks from their homes. Ultimately, the strategic integration of technology is not merely a modern convenience but a powerful tool for social change, fostering a more equitable society where Indian women are economically independent, better informed, and actively involved in shaping their future.

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