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Role of Technology in Empowering Women: A Pathway to Inclusive Development



Abstract: Technology has emerged as a powerful tool for women's empowerment enabling access to education, economic opportunities, safety measures and thus, social inclusion. In the Indian context, digital advancements have played a transformative role in bridging gender gaps by providing women with the means to overcome traditional socio-cultural barriers. This paper examines the impact of technology on women's empowerment, with a particular focus on digital education, financial inclusion, entrepreneurship, and safety measures. This research paper highlights how digital platforms have enhanced women's participation in the workforce and enabled flexible learning opportunities. The paper also addresses challenges such as the digital divide, cyber-security threats, and gender biases in technological spaces. Furthermore, the study emphasizes the need for inclusive policies and initiatives that promote digital literacy, affordable access to technology, and gender-sensitive innovations.

Keywords - Women Empowerment, Digital Inclusion, Technology, Gender Equality, Digital Literacy, Entrepreneurship.

Introduction

Over the past two decades, the digital revolution has reshaped how people interact, learn, and engage with the world. While this transformation has benefited society as a whole, its impact on women has been particularly profound. Digital technology has provided women with new opportunities for education, employment, entrepreneurship, and social inclusion, helping them overcome traditional barriers imposed by socio-cultural norms.

Women's empowerment is a multi-dimensional process that involves enhancing their access to resources, decision-making power, and financial independence. Historically, women have faced economic, social, and political barriers, often restricting them to traditional roles within the household and limiting their participation in public and professional life. However, technological advancements have played a catalytic role in bridging these gender gaps, enabling women to gain greater control over their personal and professional lives. From online education and digital banking to e-commerce and telemedicine, technology has expanded women's access to knowledge, skills, and financial services. Women who were once excluded from formal education and employment due to societal constraints can now learn new skills, start businesses, and engage in economic activities all from the comfort of their homes. Initiatives such as *Digital India*, *Pradhan Mantri Jan Dhan Yojana*, and *Startup India* have played a critical role in increasing women's participation in various sectors [Ministry of Electronics and Information Technology (MeitY, 2022)]. However, access to technology

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remains unequal, particularly for women in rural and marginalized communities, highlighting the importance of targeted policy interventions (World Bank, 2022).

Impact of Technology on Women's Education

Education is one of the most critical drivers of women's empowerment. Digital technology has made learning more accessible, affordable, and flexible, allowing women to pursue education at their own pace despite societal restrictions. E-learning platforms such as SWAYAM, Coursera, and Udemy have democratized education, providing women with opportunities to acquire skills and degrees (UNESCO, 2022).

A report by the World Economic Forum (2022) highlights that over 60% of women in developing countries have benefited from online education platforms, particularly in fields such as computer science, business management, and digital marketing. These courses help women improve their employability and economic opportunities.

Digital Literacy Programs for Women

According to reports from the Ministry of Electronics and Information Technology (MeitY), internet penetration in India has grown significantly, with nearly 75% of the population having access to mobile internet. However, women still lag behind men in digital adoption, especially in rural areas. The digital gender divide continues to pose a significant challenge.

According to Global system for Mobile Communication Association (GSMA, 2023) report, only 43% of women in India own a smart phone, compared to 64% of men. Similarly, women's access to digital literacy and financial technology remains limited, affecting their ability to fully participate in the digital economy. Addressing these disparities requires policy interventions, digital literacy programs, and initiatives to improve women's access to technology.

Despite the growth of online education, many women in rural areas remain digitally illiterate, preventing them from taking advantage of digital learning tools. To address this gap, governments and nonprofits organizations have launched various digital literacy programs for instance, Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) launched in 2017 aims to make 60 million rural Indians digitally literate, with a special focus on women (MeitY, 2022). Intel's "She Will Connect" initiative has helped thousands of women gain digital skills (Intel, 2022).

Google's "Internet Saathi" program has trained rural women in digital literacy and financial transactions (Google India, 2022). These initiatives are crucial in bridging the digital gender gap and ensuring that women have the skills to benefit from technological advancements.

Digital Banking and Mobile Payments

According to the Global Findex Report (2021) Over 500 million women worldwide have gained access to financial services through mobile banking. UPI (Unified Payments Interface) transactions in India have enabled women entrepreneurs to receive payments seamlessly, reducing their reliance on cash transactions.

Self-Help Groups (SHGs) supported by digital platforms have facilitated microloans for rural women, promoting entrepreneurship. Technology-driven microfinance institutions and peer-to-peer lending platforms such as Finzy, LenDenClub etc. and SHG-bank linkage programs have enabled women to access capital for starting businesses.

One successful example is SEWA (Self-Employed Women's Association), which provides microcredit to rural women through digital platforms, empowering them to build sustainable livelihoods (SEWA, 2022).

According to Amazon India (2020), over 200,000 women entrepreneurs have benefited from the Amazon Saheli program, gaining access to national and international markets. The rise of the gig economy and remote work platforms such as Fiverr, Upwork, and LinkedIn has provided women with

new employment opportunities.

Women can now work from home, balance family responsibilities, and earn independent incomes without traditional workplace constraints. One example is UrbanClap (now Urban Company), which has enabled thousands of women to offer beauty, home, and wellness services through digital bookings.

Mobile Safety Apps and AI-Based Security Tools

Technology has also played a significant role in enhancing women's safety by providing tools for emergency assistance and personal security. Several mobile applications have been developed to protect women from gender-based violence like, bSafe and My Safetipin – Provide GPS tracking and emergency alerts.

Himmat App (Delhi Police) – This App was launched on 1st January, 2015. It Allows women to send distress signals directly to authorities.112 India Emergency App Integrates police, ambulance, and emergency services.

According to a report by the National Crime Records Bureau (NCRB, 2022), the use of mobile safety apps has led to a 25% increase in the timely reporting of crimes against women in urban areas. These applications empower women to take control of their security and provide immediate recourse in times of crisis.

Moreover, Artificial Intelligence powered predictive analytics help law enforcement agencies track patterns of gender- based violence and respond more effectively. CCTV-based Artificial Intelligence (AI) surveillance in cities like Hyderabad and Bengaluru has improved women’s safety in public spaces (NITI Aayog, 2023).

A study conducted by NITI Aayog (2023) found that Artificial Intelligence (AI) driven surveillance has contributed to a 30% reduction in cases of street harassment and violence against women in cities where these technologies have been implemented.

Methodology

The present research paper included a few case studies based on secondary sources, blogs, research reports, and real-life experiences shared through various digital platforms. The data has been collected from government reports, industry analyses, corporate white papers, academic studies, and success stories documented in online articles and blogs.

Additionally, experiences of women who have benefitted from digital learning, employment, and online education have been drawn from published sources and impact reports of initiatives such as SWAYAM, Meesho, SHEROES, Google’s Women Will, eSanjeevani etc.

Digital Platforms for Empowering Women

The digital platforms that not only developed women in to entrepreneurs but also help them in accessing the education have been discussed here and a few case studies are being explored to support this fact.

MEESHO

Meesho, India’s largest social commerce platform has revolutionized home-based entrepreneurship for women. It allows women to start and manage businesses without the need for capital investment or physical infrastructure. The platform provides a user-friendly interface that enables women to resell products via WhatsApp, Instagram, and Facebook, earning a commission on every sale. Unlike traditional business models that require investment in inventory, warehousing, and logistics, Meesho handles these aspects for sellers, allowing women to focus solely on customer engagement and sales. The platform also provides training in online marketing and product promotion, helping women scale

their businesses, access to digital payment systems, ensuring secure and hassle-free transactions, community support networks where women entrepreneurs can share strategies, experiences, and business insights.

A Meesho impact study (2021) reported that over 9 million women entrepreneurs in India have successfully built businesses using the platform. Many of these women come from rural and low-income backgrounds where traditional employment options were previously unavailable.

Case 1 - From Homemaker to Digital Entrepreneur

Kavita, a 32-year-old homemaker from Uttar Pradesh, had never worked professionally before. Like many women in her community, she was expected to prioritize household responsibilities and had no access to formal job opportunities. However, she was introduced to Meesho by a friend and decided to try reselling sarees and home decor items through WhatsApp groups. Initially, she earned a modest ₹5,000 per month, but after attending Meesho's digital training sessions, she learned how to use social media marketing strategies to grow her customer base. She started running targeted promotions on Facebook and Instagram, expanding her business reach beyond her local network. With increased orders and higher sales volume, Kavita's monthly income rose to ₹25,000, allowing her to financially contribute to her household and support her children's education. Encouraged by her success, she later employed three other women from her neighbourhood, turning her small reselling business into a community-led entrepreneurial initiative.

The platform offers various services, including work-from-home opportunities for women who cannot pursue traditional employment, career counseling, mentorship, and networking to help women transition into digital careers, skill development programs in digital marketing, content creation, graphic design, and business management.

SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds)

According to a report by UNESCO (2022), a percentage of women are forced to discontinue their studies due to family obligations, lack of financial support, and the expectation that they prioritize domestic responsibilities over academic and professional aspirations.

One of the most impactful digital learning initiatives in India is SWAYAM, a government-led national e-learning platform developed by the Ministry of Education. This platform offers free online courses in various fields, including business, IT, healthcare, and management, providing women with an opportunity to up-skill and obtain recognized certifications.

Case 2 - Overcoming Barriers to Education through Digital Learning

In the case study of Anita, a 29-year-old woman from Bihar. After marriage, Anita was forced to discontinue her education due to household responsibilities. However, with access to SWAYAM's online Bachelor's degree in business management, she was able to complete her studies remotely. Encouraged by her success, she further pursued a Coursera certification in digital marketing, equipping herself with the necessary skills to start an online bakery business. Today, she successfully manages customer orders, social media promotions, and financial transactions all from home. Anita's story exemplifies how digital learning platforms have provided women with a second chance at education and professional growth. These platforms not only empower women to re-enter the workforce but also enable them to become self-reliant entrepreneurs, breaking free from traditional limitations.

Challenges in the way of Women's Digital Empowerment

Digital platforms have created immense opportunities for women, particularly in education and employment along with challenges remain. Many women, especially in rural and marginalized communities, struggle with digital access, online safety, and bias in technological spaces. These

barriers prevent them from fully benefiting from the digital revolution. To truly empower women through technology, it's essential to recognize and address these challenges head-on. The digital divide, cyber-security risks, and gender biases in technology are not just obstacles but real-life issues that millions of women face daily. A lack of affordable internet, limited digital literacy, and concerns about online harassment discourage many women from participating in the digital economy. Even when they do engage with technology, they often find that digital tools and platforms are not designed with their needs in mind.

The Digital Divide- Unequal Access to Technology

Despite all the progress in digital infrastructure, women are still being left behind when it comes to accessing technology. In many low-income households, owning a smart phone is still considered a luxury, and if a family does have one, it's often controlled by male members. Women in rural areas also face poor internet connectivity, making it difficult to access online education as well as work opportunities. The cost of data plans and smart phones is another major issue. Many women simply cannot afford to stay connected, and thus, cutting them off from opportunities that could help them become financially independent.

According to Global System for Mobile Communications Association (GSMA, 2022), women in India are 28% less likely than men to own a mobile phone and 56% less likely to use mobile internet. That's a huge gap that directly affects their ability to learn, work, and even access essential services like telemedicine. To make sure women aren't left behind, we need subsidized internet plans and smart phones for low-income women. Secondly, more government and private sector programs that focus on digital literacy and financial inclusion. Furthermore, programs like Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) have already helped millions of people gain digital skills, but more needs to be done to specifically target women, especially those in rural and underserved communities. Community-based internet centers are need of the hour where women can safely access technology and learn digital skills

Cyber- security Threats and Online Harassment

With the increasing reliance on digital platforms, cyber threats and online harassment are becoming major concerns for women. Many women who start using social media, digital banking, or work-from-home platforms face online harassment, financial scams, and privacy breaches. Unfortunately, there aren't enough strong legal protections or easy ways for women to report and handle these issues. Online abuse is a real deterrent for women who want to explore opportunities in the digital world. Women journalists, entrepreneurs, and social media influencers often receive threats, cyber-stalking, and hate speech, making them think twice before engaging online. This forces many women to withdraw from digital spaces, limiting their ability to benefit from technology.

To ensure that women feel safe online, we need stronger cyber laws, better reporting mechanisms for online harassment, digital education programs that teach women how to secure their personal data and protect themselves from scams. Platforms like SHEROES and Cyber Saathi are already working towards creating safer online spaces for women, but more government intervention and corporate responsibility is needed to ensure that women can use technology without fear.

Conclusion

From the above discussion, it is clear that women face multiple barriers when it comes to digital inclusion, but these challenges can be tackled with the right policies and initiatives. Governments, corporations, and NGOs must collaborate to create digital environments where women feel safe, supported, and empowered. Digital education needs to reach women in every part of the country, not

just urban centers. The government and private companies must work together to provide low-cost smart phones, laptops, and stronger cyber-security laws and better cybercrime response teams are necessary to protect women from digital threats and harassment. There is need to be more programs that support women in technology and leadership roles.

Technology is meant to connect, uplift, and create opportunities. By taking these steps, technology can truly become a tool for empowerment rather than exclusion. The digital world should be a place where women can learn, work, and connect freely without fear of discrimination, harassment, or financial barriers.

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