

Empowering Women Through Information and Communication Technology (ICT): A Pathway to Social Inclusion and Sustainable Development

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ABSTRACT

Information and Communication Technology (ICT) has emerged as a powerful catalyst for social and economic transformation, offering new opportunities for individuals and communities worldwide. Among its many contributions, ICT plays a significant role in advancing women's empowerment by enhancing access to education, employment, financial services, healthcare, and social participation. This article examines the role of ICT in promoting women's empowerment and fostering inclusive development in contemporary society. It highlights how digital technologies such as computers, smartphones, internet services, social media platforms, and online learning systems have enabled women to overcome traditional barriers related to education, mobility, information access, and economic dependence. The study discusses the contribution of ICT to educational advancement through online learning platforms, digital libraries, and skill development programs that support lifelong learning. It further explores the role of ICT in economic empowerment by creating opportunities for entrepreneurship, e-commerce, remote employment, and digital marketing. The article also emphasizes the importance of digital financial services, including mobile banking and online payment systems, in improving women's financial inclusion and independence. Additionally, ICT-supported healthcare services and telemedicine have expanded access to health information and medical consultation, particularly for women living in remote areas. Special attention is given to the benefits of ICT for rural women, who can access agricultural information, market updates, weather forecasts, and government services through digital platforms. Despite these advantages, challenges such as limited digital literacy, inadequate infrastructure, affordability issues, online safety concerns, and the persistent digital gender divide continue to restrict women's full participation in the digital world. The article concludes that strengthening digital inclusion through supportive policies, improved connectivity, skill development initiatives, and safe digital environments is essential for ensuring that women can fully benefit from technological advancements and contribute meaningfully to sustainable development.

1. INTRODUCTION

Information and Communication Technology (ICT) has become one of the most transformative forces of the modern era. It includes digital tools and services such as

computers, smartphones, the internet, social media platforms, cloud computing, and communication networks. These technologies have revolutionized the way people access information, communicate, learn, conduct business, and participate in society. In recent years, ICT has emerged as a powerful instrument for women's empowerment. It has opened new opportunities for women to gain knowledge, develop skills, achieve financial independence, and actively participate in social, economic, and political life. As nations strive to achieve gender equality and sustainable development, the role of ICT in empowering women has become increasingly significant. According to international telecommunication reports, global internet usage increased from approximately 4.7 billion users in 2020 to more than 5.5 billion users by 2024, representing nearly 68 percent of the world's population. Mobile connectivity has also expanded significantly, with over 5.7 billion people worldwide owning mobile devices. Smartphones have become the primary gateway to digital services, particularly in developing countries where access to traditional computing infrastructure remains limited.

Despite these advancements, a significant digital gender divide persists. Studies conducted between 2021 and 2025 indicate that women remain less likely than men to own smartphones, access the internet, or possess advanced digital skills, especially in low- and middle-income countries. Reports estimate that women are approximately 15–20 percent less likely than men to use mobile internet services in several developing regions. Furthermore, hundreds of millions of women continue to face barriers related to affordability, digital literacy, infrastructure limitations, and socio-cultural constraints. Recognizing these challenges, governments, international organizations, and private-sector stakeholders have launched numerous initiatives aimed at promoting women's digital inclusion. Programs focusing on affordable internet access, digital literacy training, STEM education, entrepreneurship development, and online safety have gained increasing attention since 2020. International frameworks such as the United Nations Sustainable Development Goals (SDGs), particularly Goal 5 (Gender Equality) and Goal 9 (Industry, Innovation and Infrastructure), emphasize the importance of digital technologies in fostering inclusive and sustainable development.

ICT has emerged as a powerful tool for women's empowerment by expanding access to education, healthcare,

employment opportunities, financial services, and civic participation. Digital platforms enable women to acquire new skills, establish businesses, access markets, participate in decision-making processes, and connect with support networks beyond geographical boundaries. The rise of artificial intelligence, cloud computing, blockchain technology, big data analytics, and the Internet of Things (IoT) is expected to create additional opportunities for women's economic and social advancement during the coming years. As the world moves toward an increasingly digital future, ensuring equal access to ICT resources and opportunities has become essential for achieving gender equality and sustainable development. Empowering women through

ICT not only improves individual well-being but also contributes significantly to economic growth, poverty reduction, social inclusion, and national development. Therefore, understanding the role of ICT in women's empowerment is critical for policymakers, researchers, educators, and development practitioners seeking to build a more equitable and inclusive society.

2. UNDERSTANDING INFORMATION AND COMMUNICATION TECHNOLOGY

Information and Communication Technology (ICT) refer to the use of digital technologies such as computers, mobile phones, and the internet to create, store, and share information. Its aim is to improve communication, provide access to knowledge, and support social and economic development. The scope of ICT extends across sectors such as education, healthcare, agriculture, business, and governance, helping individuals and communities enhance productivity, connectivity, and quality of life. ICT enables online learning, digital communication, e-commerce, remote work, and access to essential services, thereby improving productivity, empowerment, and quality of life for individuals and communities.

3. THE ROLE OF ICT IN WOMEN'S IMPROVEMENT

3.1. ICT and Access to Education

Women's empowerment refers to the process of enhancing women's ability to make decisions, access resources, exercise their rights, and participate equally in society. Empowered women contribute not only to their families' well-being but also to the economic growth and social development of their communities and nations. Historically, women have faced barriers such as limited educational opportunities, restricted mobility, financial dependence, and unequal access to information. ICT helps overcome many of these barriers by providing women with direct access to knowledge, networks, and opportunities regardless of geographical location.

Education is one of the strongest foundations of empowerment. ICT has transformed traditional education by making learning more accessible, flexible, and affordable.

Women and girls can now participate in online courses, virtual classrooms, webinars, and digital training programs from anywhere in the world. Digital libraries and educational websites provide access to a vast range of learning materials that were once available only in urban institutions. Through online learning platforms, women can improve literacy, gain professional qualifications, and develop technical skills needed in today's job market.



Fig 1: Empowering women through information and communication technology

3.2. Economic Empowerment Through ICT

Economic independence is a key component of women's empowerment. ICT has created numerous employment and entrepreneurial opportunities for women. Through digital technologies, women can start and manage businesses, market products online, communicate with customers, and expand their reach beyond local markets.

E-commerce platforms have enabled women entrepreneurs to sell handmade products, agricultural goods, clothing, and services to national and international customers. Social media marketing has further increased visibility and business growth. Additionally, remote work opportunities, freelancing, content creation, and digital services have provided women with flexible employment options. Such opportunities are especially beneficial for women who may face mobility constraints or family responsibilities.

3.3. Financial Inclusion and Digital Banking

ICT has significantly improved women's access to financial services. Mobile banking, online payment systems, digital wallets, and internet banking allow women to manage finances securely and independently.

3.4. Social Inclusion and Community Participation

ICT helps bridge social gaps by connecting women to support networks, community groups, and information resources. Through social media platforms and digital communication channels, women can exchange ideas, share experiences, seek assistance, and advocate for social causes. ICT also enables women to participate more actively in governance and civic engagement. They can access government information, engage in public discussions, and contribute to policy-making processes.

3.5. ICT and Healthcare Services

Healthcare is another area where ICT has made a significant impact. Digital health technologies provide women with access to reliable healthcare information and services. Mobile health applications offer guidance on maternal health, child care, nutrition, reproductive health, and disease prevention. Telemedicine services allow women, especially those in remote locations, to consult doctors and healthcare professionals without travelling long distances. Timely access to healthcare information improves health outcomes, reduces maternal mortality rates, and promotes healthier families and communities.

4. CHALLENGES FACING BY WOMEN IN ACCESSING ICT

Challenges to Women's Digital Inclusion

Despite its benefits, several challenges continue to limit women's access to ICT. The digital gender divide remains a major concern across many regions of the world. Common barriers include:

- ✚ Limited access to smartphones and computers.
- ✚ Poor internet connectivity in rural areas.
- ✚ Low levels of digital literacy.
- ✚ Economic constraints and affordability issues.
- ✚ Cultural and social restrictions.
- ✚ Online harassment and cyberbullying.

Privacy and cybersecurity concerns. These challenges prevent many women from fully utilizing digital technologies and benefiting from the opportunities they offer.

5. FUTURE OPPORTUNITIES FOR WOMEN IN DIGITAL ERA

The digital era has created numerous opportunities for women to excel in fields such as Artificial Intelligence (AI), information technology, digital marketing, entrepreneurship, online education, content creation, and remote work. By leveraging AI technologies and digital platforms, women can enhance their skills, access global career opportunities, and drive innovation across industries. As technology continues to advance, women's active participation in the digital workforce will be essential for building a more inclusive, sustainable, and technologically empowered future. Emerging technologies such as Artificial Intelligence (AI), cloud computing, big data, blockchain, and the Internet of Things (IoT) are creating new opportunities for innovation and employment. Ensuring equal access to technology will help women contribute more significantly to sustainable development. In addition, digital technologies are helping women gain access to knowledge, financial services, healthcare information, and professional networks that were previously difficult to reach. Online learning platforms and ICT tools enable women, especially those in rural areas, to develop technical skills, improve productivity, and participate in decision-making processes

The increasing availability of digital resources not only supports economic independence but also strengthens women's confidence, leadership abilities, and social empowerment. By embracing digital transformation, women can become key contributors to community development and national progress in the years ahead.



Fig 2: Rural women knowledge, development and empowerment through ICT tools

6. CONCLUSION

ICT has evolved into a powerful instrument for advancing women's empowerment, promoting social inclusion, and supporting sustainable development. While substantial progress has been achieved between 2020 and 2026, continued efforts are needed to address persistent digital inequalities and ensure that all women can benefit from technological advancements. By fostering equitable access to digital resources and opportunities, societies can unlock the full potential of women as innovators, entrepreneurs, leaders, and agents of change, thereby contributing to a more inclusive, resilient, and sustainable future.

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