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BRIDGING THE DIGITAL DIVIDE: WOMEN'S ACCESS TO INFORMATION AND DIGITAL SERVICES IN RURAL INDIA

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RESEARCH ARTICLE

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Abstract

Digital technology has become an essential part of everyday life. Digital technology influences access to education, healthcare, banking, government schemes, employment opportunities and social interaction. The expansion of internet connectivity and digital governance has opened up new opportunities for development in India. However, these opportunities are not equally accessible to everyone. Rural women, particularly those belonging to economically disadvantaged and socially marginalised communities, continue to experience barriers in accessing and effectively using digital technologies. These barriers include limited ownership of digital devices, poor internet connectivity, affordability, inadequate digital literacy, language barriers, gender-based social norms and concerns around safety of online use. This article examines the digital divide affecting rural women in India, with particular attention to their access to information and digital services. A narrative review will be undertaken using literature from academic, government documents and relevant organisations. The discussion highlights that digital inequality extends beyond the availability of internet connections and includes differences in digital skills, patterns of usage and the ability to benefit from online resources. The article also examines government initiatives such as Digital India, the Pradhan Mantri Gramin Digital Saksharta Abhiyan and Common Service Centres. The article argues that meaningful digital inclusion requires more than technological infrastructure. This calls for demands gender-sensitive policies, access to digital education, affordable devices, learning materials in local-languages and strong community-based support systems. Strengthening women's digital capabilities can contribute to educational participation, economic independence, social empowerment and inclusive rural development.

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Introduction

The rapid development of information and communication technologies has transformed the ways in which people communicate, learn, work and access essential services. The internet and digital platforms have become important sources of information and opportunities in contemporary society. With the growing use of digital technology, People now rely on online platforms for various everyday needs, including education, employment information, banking, healthcare services, government schemes and social communication. Consequently, access to digital technology is no longer simply a matter of convenience; it has become closely connected with social participation and development. In India, digital transformation has received considerable attention through initiatives aimed at expanding internet connectivity, promoting digital literacy and improving the delivery of public services. Digital platforms have created opportunities for citizens to access government information, make financial transactions, participate in online learning and obtain services without travelling long distances. However, the benefits of digital development are not distributed equally across different sections of society. The digital divide refers to inequalities in access to, use of and benefits derived from information and communication technologies. Although internet connectivity has expanded considerably, differences remain between urban and rural populations, men and women, educated and less-educated individuals, and economically advantaged and disadvantaged communities. These inequalities become particularly significant when gender intersects with poverty, geographical isolation, limited educational opportunities and traditional social expectations.

Rural women often face multiple disadvantages in accessing digital technologies. In many households, women may have less control over financial resources, restricted access to personal mobile phones and less freedom to use digital devices independently. Even when a smartphone is available within the household, it does not necessarily mean that women have

unrestricted access to it. Their use may depend on permission, household responsibilities or the availability of another family member.

According to the National Family Health Survey-5 (2019–2021) reported that 33.3 per cent of women aged 15–49 in India have accessed the internet. The proportion was 51.8 per cent among urban women and 24.6 per cent among rural women (Government of India, 2023). These shows the substantial difference between rural and urban women's internet use during the survey period.

The issue is not limited to internet access alone. Women who have access to mobile phones and internet connections may still lack the confidence or skills required to use digital platforms independently. Some may use mobile phones primarily for communication and entertainment without being able to access educational resources, online banking, employment portals or government services. Therefore, digital inclusion must be understood in terms of access, skills, meaningful usage and the ability to benefit from technology. The challenges are particularly important in rural and geographically remote regions of India. Difficult terrain, scattered settlements, inconsistent network connectivity, limited digital infrastructure and linguistic diversity can affect the accessibility of digital services. For women living in such areas, the digital divide may reinforce existing inequalities in education, employment, information and social participation.

Against this background, the present article examines women's access to information and digital services in rural India. It explores the barriers to digital inclusion, reviews relevant government initiatives and discusses strategies for making digital development more gender-sensitive and inclusive.

Objectives of the Study: The main objectives of this article are:

1.To examine the nature and dimensions of the digital divide affecting rural women in India.
2.To identify the major socio-economic, educational, technological and cultural barriers to women's access to digital information and services.
3.To analyse the role of digital literacy in strengthening rural women's participation in the digital environment.
4.To review major government initiatives aimed at promoting digital inclusion in rural India.
5.To discuss the challenges and opportunities for digital inclusion among women in Northeast India.
6.To suggest measures for improving women's access to digital technologies and digital services.

Methodology

The article adopts a narrative review approach based on secondary sources. It draws upon published research articles, academic books, government reports, policy documents and publications of national and international organisations dealing with digital inclusion, gender equality and rural development. The literature was considered in relation to four broad areas: digital access and gender inequality, digital literacy and skills, women's use of digital services, and government interventions for rural digital inclusion. Relevant studies were examined to identify recurring challenges, policy developments and areas requiring further attention. The article is conceptual and review-based in nature. It does not involve primary data collection, interviews, surveys or field experiments. Therefore, its observations and recommendations are based on the interpretation of existing literature and published information rather than original empirical findings. The review aims to develop a broader understanding of the relationship between gender, rural development and digital access in India.

Understanding the Digital Divide

The digital divide is commonly understood as the gap between individuals and communities that have access to digital technologies and those that do not. However, the concept has developed beyond the simple distinction between people with and without internet connectivity. Van Dijk (2020) explains digital inequality through different stages of access, including motivation, material access, digital skills and actual usage. This perspective is important because the availability of a digital device does not automatically ensure that an individual can use it effectively. In the context of rural women, the digital divide can be understood through the following dimensions.

Access Divide: The access divide refers to differences in the availability and affordability of digital devices and internet connectivity. Many rural women do not own smartphones or computers personally. As a result, many women have to rely on mobile phones or other digital devices owned by their husbands, children or other family members. Such dependence can restrict privacy, independence and regular usage. Internet connectivity also remains a concern in geographically remote areas. Weak network signals, limited broadband infrastructure and unreliable electricity can make digital access difficult. Even where mobile networks are available, the cost of data services and smartphones may be unaffordable for economically weaker households.

Digital Skills Divide: Access to a smartphone does not necessarily mean that a person possesses the skills required to use it. Digital literacy includes the ability to operate devices, search for information, communicate online, use applications, complete digital transactions and identify unreliable information. Women with limited educational opportunities may experience difficulties in navigating digital platforms. Lack of confidence and limited opportunities for practical training can further discourage independent use.

Usage Divide: The usage divide concerns differences in how people use digital technologies. Some individuals use the internet for education, employment, financial management, professional development and accessing government services, while others may use it mainly for basic communication. For rural women, meaningful digital participation requires the ability to use technology according to their educational, social, economic and personal needs. Merely providing devices without developing relevant skills may not significantly reduce digital inequality.

Outcome Divide: The outcome divide refers to differences in the benefits individuals receive from digital technologies. People with better education, financial resources and digital skills are often in a stronger position to convert online opportunities into educational, economic and social advantages. For example, a woman who can independently access online employment information, digital banking and government services may benefit more than someone who has only limited access to a shared mobile phone. Therefore, digital inclusion should focus not only on connecting people to technology but also on ensuring that they can use it to improve their lives.

Review of Existing Literature

Existing research indicates that gender inequality remains an important dimension of digital exclusion in India. Singh et al. (2018) examined women's access to and perceptions of information and communication technologies in North India. Their study identified differences in ICT access and usage among women and highlighted socio-economic, structural, psychological and institutional barriers. The findings emphasise the importance of making digital technologies more accessible and affordable for women.

Soni and Mitchell (2022) examined women's experiences of digital government services through user-assisted service centres in rural India. Their research on e-Mitra kiosks in Rajasthan highlighted the role of assisted digital services in improving women's access to government facilities. The study suggests that local service centres can help women who may not possess the confidence or technical skills required to access government websites independently. The GSMA (2024) report on the mobile gender gap also identifies continuing differences in mobile internet access and usage between women and men in low- and middle-income countries. It highlights affordability, awareness, digital literacy and safety concerns as important barriers to women's adoption and use of mobile internet. Its findings reinforce the need to address social and economic factors alongside technological infrastructure. More recent evidence from Roy et al. (2026), based on data from 105,373 women aged 15–49 in India's National Family Health Survey-5, identifies household wealth, mobile phone ownership and educational attainment as important contributors to the rural–urban difference in women's internet usage. The study demonstrates that economic resources and education are closely associated with digital participation. Taken together, these studies suggest that women's digital exclusion is not caused by a single factor. It is shaped by the interaction of income, education, device ownership, social expectations, digital skills and the availability of supportive services. The literature also indicates that assisted access, community-level training and gender-sensitive digital policies can help address some of these challenges.

Major Barriers to Digital Inclusion among Rural Women

Despite the expansion of digital services, several barriers continue to affect rural women's ability to access and use technology effectively.

Economic Constraints and Affordability: Economic conditions play an important role in determining access to digital devices and services. Smartphones, computers, internet connections and regular data recharges involve expenses that may be difficult for low-income households to manage. Women who are financially dependent on other family members may have limited control over spending on digital devices or internet services. In some cases, household resources are prioritised for other needs, leaving women's digital requirements unaddressed. The problem is therefore not simply whether a device is available in the household, but whether women can access and use it independently and regularly.

Limited Educational Opportunities and Digital Literacy: Education is closely associated with the ability to use digital technologies. Women with limited formal education may face difficulties in understanding written instructions, navigating applications and completing online procedures. Digital literacy involves more than learning how to operate a smartphone. It includes searching for reliable information, understanding online forms, protecting personal information, recognising fraudulent messages and using digital services responsibly. Training programmes should therefore be practical, continuous and relevant to women's everyday needs.

Gender-Based Social and Cultural Barriers: Social expectations and traditional gender roles can influence women's access to technology. In certain households and communities, women may have less freedom to use mobile phones or access the internet independently. Household responsibilities, childcare, agricultural work and other unpaid activities can also limit the time available for digital learning. In addition, concerns about online communication and social media may lead families to restrict women's use of mobile devices. Such barriers indicate that digital inclusion is not only a technological issue but also a matter of gender equality and social participation.

Inadequate Digital Infrastructure: Reliable internet connectivity remains essential for meaningful digital participation. However, rural and remote communities may experience weak network coverage, slow internet speeds and interruptions in electricity supply.

These difficulties are particularly relevant in hilly and geographically isolated areas, where establishing and maintaining digital infrastructure can be challenging. Poor connectivity can discourage women from using online educational platforms, digital payment systems and government services. Even when individuals possess digital skills, inadequate infrastructure can prevent them from applying those skills effectively.

Language Barriers: Language is another important factor influencing digital inclusion. Many digital platforms provide information primarily in English or Hindi, which may not be easily understood by women who are more comfortable communicating in local or indigenous languages. The absence of locally relevant content can discourage women from using

online services. Digital literacy programmes and public service platforms should therefore consider regional languages and local communication practices.

Online Safety and Privacy Concerns: Concerns regarding cyber fraud, identity theft, online harassment, misinformation and misuse of personal information can discourage women from participating in digital spaces. Women who are unfamiliar with privacy settings, password protection and secure online transactions may be particularly vulnerable to digital risks.

Digital literacy programmes should include awareness of cyber safety, responsible internet use, online privacy and methods of reporting cybercrime. Building confidence in safe digital practices is essential for meaningful inclusion.

Digital Technology and Women's Empowerment

Digital technology can contribute to women's empowerment by improving access to information, education, economic opportunities and public services. However, these benefits depend on women's ability to access and use digital platforms independently.

Educational Empowerment: Digital platforms provide opportunities for women to access online courses, educational videos, digital libraries, examination materials and skill-development programmes. Women who cannot regularly attend educational institutions may use digital resources to continue learning. For rural women and girls, access to educational information can support academic achievement, lifelong learning and professional development. Digital platforms can also help women prepare for competitive examinations and obtain information about scholarships and educational opportunities. However, the educational benefits of technology depend on device availability, internet affordability, digital skills and the quality of learning resources.

Economic Empowerment: Digital technologies can create new economic opportunities for rural women. Online platforms can help women entrepreneurs promote locally produced goods, connect with customers, obtain market information and participate in digital financial transactions. Women engaged in weaving, handicrafts, food processing, agriculture and other small-scale activities may use digital platforms to expand their businesses beyond local markets. Digital banking and mobile payment services can also improve financial convenience. However, women require sufficient knowledge to understand digital transactions, manage accounts independently and protect themselves from financial fraud.

Access to Health Information: Digital platforms can improve access to information related to maternal health, nutrition, reproductive health, sanitation, childcare and preventive healthcare. Mobile-based health information and teleconsultation services may be particularly useful for women living in remote villages where healthcare facilities are difficult to reach. Nevertheless, digital health services should supplement rather than replace accessible and reliable healthcare facilities. Information must also be available in languages that women understand.

Access to Government Services: Digital government platforms allow citizens to obtain information about welfare schemes, submit applications, access certificates and use public services. Such services can reduce travel time and administrative difficulties for rural residents. For women, independent access to information about government programmes can strengthen awareness of their rights and entitlements. However, women who lack digital skills may remain dependent on intermediaries. Soni and Mitchell (2022) demonstrate how user-assisted service centres can help rural women access digital government services. Such centres can serve as important links between technology and communities that have limited digital capabilities.

Social Participation and Information Access: Digital communication platforms can connect women with educational networks, community organisations, self-help groups and support services. Access to reliable information can help women participate in discussions about education, health, agriculture, local governance and community development. Digital participation may also provide opportunities for women to share experiences, express concerns and develop networks beyond their immediate communities.

Government Initiatives for Digital Inclusion in India

The Government of India has introduced several initiatives to expand digital infrastructure, promote digital literacy and improve access to online services. These programmes provide an important foundation for reducing digital exclusion in rural communities.

Digital India Programme: The Digital India programme was launched in 2015 with the broad objective of transforming India into a digitally empowered society and knowledge economy. The programme focuses on digital infrastructure, electronic delivery of government services and digital empowerment of citizens. It seeks to improve access to online information and public services through technology. For rural women, digital government services can create opportunities to obtain information and access public facilities. However, the effectiveness of these services depends on digital literacy, affordability, connectivity and the availability of local assistance.

Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA): The Pradhan Mantri Gramin Digital Saksharta Abhiyan was introduced to promote digital literacy among rural households. The programme aimed to provide basic digital skills to individuals who had limited or no experience using digital devices. According to the Ministry of Electronics and Information Technology, approximately 7.35 crore candidates were enrolled under the programme, 6.39 crore were trained and 4.78 crore were certified, as reported in July 2024 (Press Information Bureau, 2024). The scheme included training in operating digital devices, using the internet, communicating online and accessing digital services. Its training content was made available in scheduled Indian languages and English. The programme represents an important effort towards expanding digital literacy in rural India. However, digital literacy initiatives need continued support, practical learning opportunities and follow-up assistance to ensure that participants can apply their skills in everyday life.

Common Service Centres: Common Service Centres (CSCs) provide access to a range of digital and government services at the local level. They are particularly important for individuals who lack the skills, devices or connectivity required to access online services independently. CSC operators can assist rural women with applications, digital payments, documentation and other online procedures. The importance of assisted digital services is also reflected in the research of Soni and Mitchell (2022), which highlights how local service centres can help women overcome difficulties in accessing digital government services. To strengthen their contribution to women's empowerment, CSCs should provide accessible services, transparent charges, safe assistance and opportunities for women to develop independent digital skills.

BharatNet

BharatNet is an important national initiative intended to expand broadband connectivity to rural areas through the development of digital infrastructure.

Improved broadband connectivity can support online education, healthcare information, digital governance and economic activities. For rural women, reliable internet access can reduce geographical barriers and create opportunities to participate in digital services. However, connectivity alone cannot guarantee digital inclusion. Along with improving digital infrastructure, it is equally important to make devices affordable, provide basic digital skills training and ensure that online information and learning materials are easy for everyone to acess.

Self-Help Groups and Community-Based Initiatives: Self-help groups have an important role in rural women's economic and social participation. Digital training through self-help groups can help women understand mobile banking, online payments, digital communication and access to government information. Community-based learning is particularly useful because women may feel more comfortable learning in familiar environments with the support of other women.

Linking digital literacy with existing community institutions can make training more practical, locally relevant and sustainable.

Role of Educational Institutions in Promoting Digital Literacy

Educational institutions can contribute significantly to reducing the gender digital divide. Schools, colleges, universities and community learning centres can provide opportunities for women and girls to develop digital skills.

The following measures may strengthen their contribution:

Digital literacy programmes: Educational institutions should provide hands-on training to help women use smartphones, browse the internet, send email, fill out online forms and make digital payments.

Community-based learning: Colleges and schools can organise digital awareness programmes in nearby villages, particularly targeting women who have limited access to formal training.

Access to digital resources: Libraries and computer laboratories can provide opportunities for women to use computers, educational platforms and online information services.

Awareness of cyber safety: Digital education should include online privacy, password security, cyber fraud prevention, responsible social media use and misinformation awareness.

Local-language learning materials: Educational institutions can develop or support the use of digital learning resources in regional and indigenous languages.

Student and community participation: Students, teachers and community organisations can work together to organise workshops and digital literacy campaigns.

Educational institutions should view digital literacy as an important component of inclusive education and lifelong learning. Their involvement can help connect technological development with the educational and social needs of rural communities.

Suggestions for Strengthening Digital Inclusion among Rural Women

The review highlights the need for joint efforts by government agencies, educational institutions, community organisations and technology providers to improve women's access to and use of digital technology.

The following suggestions may be considered:

Improve Affordable Access to Digital Devices: Women from economically weaker households should be supported through affordable smartphone programmes, access to community digital facilities and suitable financial assistance. Device ownership and independent access should receive particular attention.

Strengthen Digital Literacy Training: Digital training should be practical and connected with women's everyday requirements. Training should cover basic internet use online learning, digital banking, access to government services, online communication and safe internet practices.

Expand Reliable Rural Connectivity: Improving mobile network coverage, broadband facilities and electricity supply is essential, particularly in geographically remote and underserved communities.

Promote Digital Content in Local Languages: Government departments and educational institutions should make digital information available in regional and indigenous languages so that rural women can understand and use it more easily.

Encourage Women's Independent Use of Technology: Digital inclusion programmes should promote women's ability to access devices and services independently. Community awareness activities can help address restrictive attitudes towards women's use of technology.

Strengthen Community-Based Digital Support: Self-help groups, women's organisations, educational institutions and Common Service Centres can provide local support and practical learning opportunities. Women-led digital support groups may also encourage confidence and peer learning.
Improve Online Safety Awareness: Women should receive information about cybercrime, online harassment, privacy protection, fraudulent messages and secure financial transactions. Digital inclusion must be accompanied by a safe online environment.
Monitor Gender-Based Digital Inequality: Government programmes should regularly collect and review data on woman's access to digital devices, internet use, digital skills and online services to identify and address gender gaps.

Conclusion

Digital technology has created significant opportunities for improving access to information, education, healthcare, financial services and government programmes. However, the benefits of digital transformation cannot be fully realised when large sections of society continue to experience unequal access and limited opportunities to participate.
Rural women in India face several interconnected barriers, including economic limitations, inadequate digital literacy, poor connectivity, language difficulties, gender-based social expectations and concerns about online safety. These challenges demonstrate that the digital divide is not simply a technological problem; it is also connected with broader issues of education, gender equality and social development. Government initiatives such as Digital India, PMGDISHA, BharatNet and Common Service Centres have contributed to expanding digital infrastructure and access to services. Nevertheless, the effectiveness of these initiatives depends on whether women can use digital technologies independently and meaningfully. The availability of internet connections and digital platforms must therefore be accompanied by affordable devices, practical training, accessible content and community-level support. Ultimately, bridging the digital divide requires a shift from providing access to ensuring meaningful digital participation. Women should not be viewed merely as beneficiaries of digital programmes but as active users, learners, entrepreneurs and participants in the digital society. Strengthening their digital capabilities can contribute to greater educational opportunities, economic independence, informed decision-making and inclusive rural development.

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