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## **Understanding the Gender Digital Divide in South Asia: A Qualitative Meta-Synthesis**

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Abstract

This study examines the structural, socio-cultural, and economic factors that shape the gender digital divide across South Asia. Drawing on a qualitative meta-synthesis of regional reports, scholarly literature, and international organizational documents published between 2013 and 2025, the research highlights how patriarchal norms, mobility restrictions, unequal access to ICT resources, limited digital skills, and disparities in educational and economic opportunities collectively restrict women's participation in the digital environment. The findings reveal that digital inequality is not merely a technological issue but a reflection of deeper social and institutional barriers that marginalize women and impede their involvement in academic, economic, and online spaces. Although digital technologies hold significant potential to enhance women's empowerment, their benefits remain unevenly distributed due to cultural

constraints, limited infrastructure, and policy gaps. The study concludes that addressing the gender digital divide requires gender-responsive ICT policies, community-level awareness, equitable digital education, improved access to devices and internet services, and collaborative efforts among governments, educational institutions, and international organizations. Strengthening women's digital capabilities is essential to ensuring inclusive development and meaningful participation in the rapidly evolving digital economy.

Keywords: gender equality, digital divide, disabilities, patriarchy, South Asia

## Introduction

The gender digital divide refers to the differences in access to technology and technical skills among males and females (Acilar, & Sabo, 2023). It is a broad concept that affects people in various ways, including the emotional development of women, the constraining of critical thinking, the reduction of equity, and a negative impact on gender participation in the economy. The gender digital divide reflects societal norms, and many societies do not prioritize reducing this divide, despite its importance, as it is considered one of the most significant challenges for the globalized and technologically driven world (Hossain et al., 2023). The benefits of the digital era are not distributed equally, although many people believe that technology is one of the important aspects of development and empowerment (Balouei, 2022). Women in the global South, particularly in developing regions, have less access to resources than men. Additionally, marginalized groups suffer disproportionately in terms of access to the internet and digital skills (Ragnedda & Gladkova, 2020). This limits their full participation in technological benefits. These challenges not only affect their opportunities to participate but also increase inequalities, educational disparities, and socio-cultural restrictions. Factors, such as lack of physical access, male-dominant structures, and traditional norms related to gender, and family constraints, exclude females from contributing in the digital environment (Roy et al., 2024).

Gender differences in digital training exacerbate the existing gap. As a result, women are dependent on society and family members. During the COVID-19 pandemic, due to the gender digital divide and digital injustice, millions of females were left behind in online employment and education. Responding to the demand for addressing the gender digital divide, implementable policies, cultural awareness, a flexible mindset, and inclusive education are essential, rather than focusing solely on infrastructure (Memon & Memon, 2025).

Despite the importance of digital inclusion, many societies in South Asia fail to promote digital equality. Therefore, this study aims to explore the challenges that encourage the gender digital divide, compare technological availability between different countries, investigate how intersectionality hinders women's contribution in the digital environment, identify how educational and economic inequalities, and socio-cultural barriers limit women's participation, and suggest practical techniques to reduce the digital divide between genders in South Asia.

## Literature review

The gender digital divide can be defined as the gap in access to and use of information and communication technology (ICT) between men and women (Hendricks & Olawale, 2022).

The gender digital divide is a phenomenon where the difference between genders within communities and nations means that some people benefit from ICT, while others are left behind, and it is considered one of the inequalities that affects the digital revolution (Kerras, 2020). A researcher describes the gender digital divide (GDD) as a complex concept that can be understood in multiple ways. Four aspects can affect access to ICT, including mental (low interest or a negative perception of ICT), resources (a lack of devices and internet), potential (a lack of digital skills), and usage (a lack of opportunities to apply digital skills) (Santra, 2026). Reports indicate that the digital divide is widening due to a lack of digital skills and inadequate physical access to technology (James, 2021). Women in developing countries have fewer opportunities than men, and social restrictions further limit their access to digital and technical skills (Lopez 2020). According to a United Nations report, approximately half of the women's population is confined to the home without work due to traditional family restrictions, cultural norms, and a lack of digital literacy. Societal values and social media in rural areas set rules for women, discouraging them from achieving their goals and pursuing self-development (Zaidi, 2023). There is a significant difference between men and women in their internet usage. Gender digital divide is also visible in children below the age of 18 due to unequal treatment, societal norms, and family restrictions, which especially affect girls ' access to digital and quality education.

Additionally, during the COVID-19 pandemic, many countries offered online classes for students. Many students were excluded from virtual classes due to a lack of resources, internet access, and support. The decision to hold online classes has also impacted the right to education, further exposing the digital divide. Various studies have identified that COVID-19 has exacerbated existing inequities in our surroundings, especially in marginalized communities (Husain et al., 2023). Furthermore, developed countries took initiatives to reduce the gender digital divide through digital literacy programs. While developing countries are still struggling to provide equal opportunities for males and females. The government can also play a crucial role in promoting digital literacy in its country. E-government steps toward gender equality can help reduce the gender digital divide, which can be achieved by the government providing digital resources to citizens, raising awareness in society, and offering local support. The local people, especially parents, have a greater responsibility in shaping the societal digital mindset and utilizing technologies that help achieve digital inclusion (Warschauer & Tate, 2017). Researchers explain that societal norms are the root of the gender digital divide. Where people think that technology is totally linked with men, not women. As the world has been rapidly changing over the last few years, the digital divide is also discussed as it increases (Van & Hacker, 2003). However, there is a significant need for government support to provide resources for digital literacy and infrastructure for information and communication technology, thereby meeting the needs of citizens (Abdul et al., 2024). The digital gender divide refers to both access to information and communication technology, such as computer devices and digital labs, as well as the limited availability of ICT-related content in the curriculum and the need for digital skills to utilize them effectively. Both terms need to be prioritized while making decisions. However, the Integration of technology in societal activities and education can enhance cultural, individual, social, and economic development. The concept of gender digital divide refers to unfairness and injustice of society where Different genders, diversity, and disabled people do not have access to ICT. These terms were first highlighted in the 1990s, before industrial and technological advancements in the United States and Europe (Yeganehfar et al., 2023).

Technology integration in education can help reduce the digital gender divide. Various types of educational inequalities, including limited devices, a lack of digital skills, and societal norms, are major hindrances to women's participation. Reports show that the gender digital divide is a major factor of social discrimination (Raihan et al., 2025). Developed countries are continuously working on digital literacy. It is continuously increasing in developing countries where men are considered superior and have full access to technology, while women are left behind (Aslam et al., 2024). As a result, such countries still face difficulties in taking steps toward digitalization. One of the developing countries, Afghanistan, is working on it and taking steps, such as improving telecom and connectivity (Samandar, 2025). It is extremely challenging for those who are generally excluded from digital literacy in this modernized world to survive. However, a lack of proper rules, policies, and responsibilities can perpetuate the digital gender divide, causing injustice (Bolade et al., 2022). Technology has a high impact on education. During the COVID-19 pandemic, many institutions worldwide have transitioned to online classes, utilizing platforms such as Zoom, Meet, Teams, and Slack (Turnbull et al., 2021). At that time, many instructors and decision-makers understood the importance of technology and its application in education. However, in today's rapidly evolving digital landscape, there is a greater need for technology compared to previous eras. The United Nations agency has explored that women's access to education and technology makes them more independent and increases their chances for a career. Digital skills are essential for both genders, and policies should focus on lifelong skills without subjectivity to any gender (Wignall et al., 2024). Women living in developing countries should be connected to their surroundings through digital platforms. Overall, 26% of men have more mobile devices than women. While in South Asia and Africa, the ratios are lower, with an 11% gap between developed and developing countries. Technological advancements provide more opportunities for skilled men and women, but women are still struggling to avail themselves of these opportunities (Warren & Gibson, 2023). Therefore, the need to integrate technology into compulsory education has increased. The educational institutions need to focus on digital skills and prepare their pupils to compete and participate in the global market (Bhandari & Mohite, 2024). Reports indicate that women outperform men. Nevertheless, they have not achieved these goals due to a lack of digital literacy and societal restrictions. It appears that women are more aware of technology at an early age, and as they age, men are catching up to them. Many innovative people are hidden within social norms, socio-cultural restrictions, and values (Suseno & Abbott, 2021).

Digital inclusion plays a crucial role in empowering women politically, economically, and socially. Technological education is crucial in developing digital skills and providing practical experience. Information and communication technology can empower women to actively engage in educational, political, and societal matters (Fatima et al., 2025). Digital technology can also enhance the opportunity for women to participate in political discussion, human rights, and online business. Many platforms, such as Facebook, WhatsApp, Instagram, and Twitter, allow women to raise their voices about injustice and human rights violations. These platforms can also be used to empower women, thereby enhancing their chances of participation. Digital platforms offer a space where everyone, especially women, can participate in social affairs as valued citizens of a country (Saud et al., 2023). International agreements such as Sustainable Development Goal 5 endorse the idea of gender equality in digital access. In a highly globalized world, digital equality is essential for all genders. Evidence proves that the gender digital divide has become the key issue for every state and nation (Macaya et al., 2021). According to the United Nations, inequality in the physical world has surpassed that in the digital world. People think that digital development enhances opportunities for young

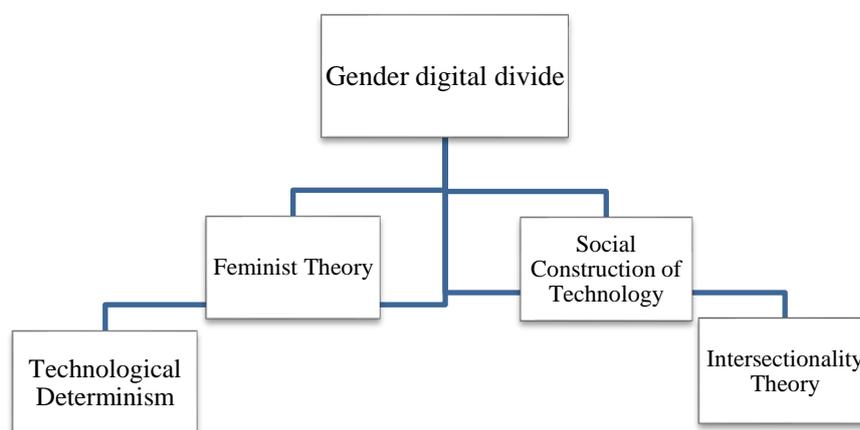
people and skilled individuals. In contrast, organizations worldwide are working on this and monitoring progress annually (Cortesi et al., 2020). The technological advancement decreases the issues related to the internet and education, but the divide between males and females makes it a controversial topic (Jamil, 2021). As developing countries also began taking steps toward digitalization, the entire pattern shifted. The world began to examine the pros and cons of the digital gender divide. The concept has also shifted from access to skills. Digital skills were considered essential for both job applications and admission to higher education (Goulart et al., 2022).

Overall, the literature illustrates that socio-cultural values, economic discrimination, educational exclusion, and lack of opportunities for skills development are contributing to promoting the gender digital divide. A collaborative effort among educational institutions, community engagement, policies, and digital resources is vital to addressing this issue and ensuring women's participation in the digital age.

### **Limitations of the study**

This research has multiple constraints that need to be recognized before explaining the findings. First of all, this research totally depends on the published data, which lowers the independent contextual awareness in South Asian communities, especially the marginalized. Secondly, there is a lack of availability of accurate and gender-differentiated data, which hinders direct comparison across regions. Third, data regarding the inclusive digital divide is available only in English, which limits the understanding of this issue. However, research in the local language should be beneficial for the local community to understand the problem easily. Moreover, the Global South experiences significant variations in cultural, financial, and academic institutions, which means we cannot apply results from one community to another. Last but not least, as a qualitative Analysis using conceptual analysis, this research may be influenced by the researcher's point of view regarding the gender digital divide during data interpretation. Along with these challenges, this literature provides impactful data that highlights and shapes the gender digital divide.

### **Theoretical Framework**



This study is grounded in four interrelated theoretical perspectives that help explain the structural and social factors shaping the gender digital divide:

#### **1. Feminist Theory**

This theory delves deeply into how Power is imbalanced between males and females, with male dominance, and women are bound to learn advanced digital education, acquire online and offline skills, and seek different opportunities to achieve financial and social independence.

This literature highlights social norms and the effects of injustices on women's roles in the digital globe.

## 2. Social Construction of Technology (SCOT)

This theory posits that societal values, cultural norms, and ethics hinder the advancement of technology. This theory clearly elaborates how gender participation, culture, and Collective practices influence the community that acquires the Right to use digital tools and those who do not.

## 3. Technological Determinism

This theory suggests that technological advancement may impact Societal frameworks, financial growth, and the balance of power. This research also highlights the Adverse impact of Unfair access to digital technology, which may give birth to a gender digital divide.

## 4. Intersectionality Theory

This theory highlights the multifaceted nature of identities, which have faced numerous challenges. In this theory, we can gain a deeper insight into understanding the reasons behind digital Discrimination of marginalized groups and women compared to other genders.

Collectively, these ideas provide a holistic perspective from which the research evaluates the grassroots of digital injustice and the phenomena that support the gender digital divide.

## **Method and material**

A meta-synthesis underpins this research, drawing on existing information from the regional report. This methodology aims to find out, choose, and analyze the prior research on the gender inequalities in underdeveloped regions (South Asia and the Global South). The primary objective of this analysis is to promote fair access to digital tools, enhance digital literacy, adopt an inclusive approach to education, and raise awareness about women's empowerment. To evaluate existing research, reports, And Established evidence for the gender digital divide, a qualitative literature Review is used without any primary information. The researcher prefers to analyze existing knowledge, rather than recollecting data from the targeted region. Specific articles related to the gender digital divide, women's empowerment, and inclusive digital education were compiled from international, reputable journals, including those from the United Nations, UNESCO, and ITO. All the information regarding regional research articles was collected through conferences on the gender divide, educational inequalities, and ICT access. During the systematic evaluation, high-impact digital platforms were utilized, including ResearchGate, Google Scholar, IEEE Xplore, ERIH+, and Superlink, to make clear and precise measurements on all these issues. Some information and articles were included due to their interconnectedness with the digital gender divide, highlighting digital illiteracy in South Asia, and all were published between 2013 and 2025. In comparison, all those documents were removed from the project due to their irrelevance, which was related to health, physical appearance, or a lack of relevance to ICT and digital inclusive literacy. All the selected data was through thematic analysis. During the systematic study, Various problems were identified, including behavioral issues, male dominance, financial difficulties, unequal approaches to education, biased attitudes towards rural areas, and many more complexities. To enhance and support the creation of awareness regarding digital access for gender, secondary Sources were analyzed properly. During the evaluation process, the examination relies entirely on secondary sources; all the information was collected from available sources.

## **Result**

## Socio-cultural barrier.

Unequal participation of men and women in ICT demonstrates socio-cultural barriers. This is caused by societal norms, values, restrictions, and traditions that do not allow women to participate fully in society (Elnaggar, 2008). Cultural norms dictate that women should conform to and fulfill the expectations of their culture. Limited participation in IT-related competitions, visiting laboratories, and a lack of digital skills are hindering women's advancement in society (Khan & Mazhar, 2017). In developing countries, women face more socio-cultural barriers compared to men. Society allows women to use technology, which is often reserved for females, and it should be a culturally supportive internet space (Antonio & Tuffley, 2014; Saman et al., 2023). However, these barriers can be reduced through educational awareness, promoting women's participation in digital activities, and educating the broader society (Khaliqi et al., 2024). Social media can also play a significant role in reducing social restrictions when used positively (Hwan & Kwon, 2025). Technology enables individuals to raise their voice, express themselves, and promote their potential.

Education is now focusing on reducing socio-economic barriers, which are important aspects of a country's development. This hurdle can be minimized when the nation plays its role in promoting gender equality (Iqbal et al., 2025). Many researchers share the idea that educational institutions should equip children with the skills, knowledge, and values necessary to contribute to the digital world and reduce inequalities (Imran, 2023; Tan et al., 2021). Eliminating cultural and social restrictions is therefore essential to provide full access to technology to both genders, as the entire nation and economy depend on women's participation (Ahmed, 2022). If there is equal participation without gender discrimination, the country will develop quickly (Kabeer, 2021). Females face more difficulties in education, especially at the tertiary level, due to socio-cultural values and restrictions, mostly in developing countries (Khan et al., 2020). In South Asian societies, women are considered inferior and expected to focus on household duties, despite wasting time on learning inclusive education and modern technologies (Islam et al., 2023). For instance, in a marginalized community, girls were prohibited from using mobiles due to fear of misuse; however, it is freely available and encouraged by elders to use it and explore tech, knowing the consequences are the same for both genders.

## Patriarchy and mobility restrictions.

Religion and culture are powerful socio-cultural forces; they contribute more to peace, but they often cause conflict and gender digital exclusion. It also increased poverty and unacceptance among citizens (Tsuria, 2020). The majority of society is male-dominant. Males ruled over women. Societies where patriarchy is promoted cannot be developed, as compared to those societies where both men and women are equal (Krishnan et al., 2020). Patriarchy is used to describe a man's position of superiority in a family. However, it is now also used everywhere, men rule women, and women are considered subordinate in multiple ways (Sultana, 2010; Ade, 2021). The social connection between males and females is referred to as patriarchy. According to the Oxford Dictionary, patriarchy is a set of rules in society or a state where older male members of the family are considered superior to their female counterparts (Rahman, 2021; Cremer, 2021; Agha & Agha, 2021). Patriarchy relies on various factors, including region, family, society, and nation. Patriarchy increases inequality within a family, society, and a nation, promoting a gender digital divide (Simon & Hasan, 2025). A system where men are always considered rulers and women are expected to obey their orders can hinder female participation

in ICT and the digital world (Senshaw & Twinomurizi, 2024). Patriarchy exists all over the world, but in Pakistan, it exists as a nation as a whole. In comparison, it varies from region to region. Similarly, in Sawat, during operations, the taliban try to impose their rules and violate women's right to education and technical activities (Zulfiqar, 2022). However, poverty and lack of access to education increase such violations and digital inequality within society. These factors need to be addressed, providing opportunities for women to fully contribute in a digital space (Helsper, 2021).

On the other hand, mobility restriction refers to the limitation or prevention of physical movement either in a controlled environment or by armed force. These limitations disproportionately affect human rights, particularly those of women and girls. When these restrictions become widespread in a society, they can never achieve the objective of promoting digital inclusion (Sanders, & Scanlon, 2021). During the COVID-19 pandemic, inadequate enforcement of mobility restrictions and non-compliance with rules contributed to millions of deaths (Shodunke, 2022). Since the World Bank introduced this metric in 1961, the COVID-19 pandemic and the global mobility restrictions imposed by governments have resulted in the largest annual decrease in global GDP (Gössling et al., 2020). A well-known metric for measuring the degree of mobility limitations imposed by government policy is the "stringency index," derived from the Oxford COVID-19 Government Response Tracker. However, mobility restrictions not only affect societal development but also violate basic digital rights (Almgren & Holmberg, 2021). In rural areas, especially in Pakistan and Afghanistan, evidence shows that women need the approval of their male family members to acquire technical education (Ali et al., 2021). Consequently, due to the lack of availability of ICT resources, women are unable to attend the class because of movement limitations imposed by masculine-centered norms.

## Gender Roles and Control Over Digital Devices

Gender roles and control over digital devices can be altered if individuals receive a quality education. Education prepares an individual and teaches them about the aims and objectives of life (Russell, 2023). It is crucial for both males and females. Developed and developing countries focus on educational institutions and update their education systems by integrating technology (Onyema, 2020). However, Pakistan is also one of the countries struggling with many issues, but Article 25-A focuses on providing free and quality education from the age of 5 to 16, regardless of gender (Hassan & Khan, 2024). This emphasized that education is a fundamental right of every citizen. Integrating technology into tertiary education is essential for promoting digital inclusion and fostering development (Olawale, 2024). Focusing on women's higher education and digital skills is crucial for social and economic development. Pakistan has more digital gender inequality, especially in rural areas. They focus on men and educate them, while women always face major hurdles in terms of tech-based education, online or onsite jobs, and digital participation due to socio-cultural barriers (Zubairi et al., 2022). Despite the importance of technical education and the right to education, many societies restrict women's participation in the digital world. However, a country cannot develop when it ignores women's participation and violates their rights. As the 21st century demands digital skills, nations need to educate their citizens, enabling them to participate in strengthening the digitalized world and acknowledge their responsibilities. Western countries focus on women's contribution to technology and their safe mobility (Khan, 2025). Research from India and Bangladesh indicates that men receive more digital training at the workplace or through

informal learning from peers. In contrast, women primarily rely on formal classes, which they often cannot attend due to household duties. This widens the gap in digital confidence and competence.

### Perceptions about women's use of technology

When a woman starts working online or doing a tech-based job, problems arise from different sides. It increases the burden on women, especially mothers. These issues can cause conflict within the family in the form of misbehavior, anxiety, stress, and mismanagement. As a result, women are often discouraged from pursuing their careers using digital tools (Mweta et al., 2025). Women's participation in the digital workforce increases their opportunities and contributes to economic development (Tunçsiper, 2025). Approximately 50% of women worldwide are in the labor force. In contrast, the majority of women are left behind in a digitalized world. Many working women often work on weekends as well, such as attending to medical appointments, family gatherings, and participating in other social activities (Murad & Versey, 2021). Socio-cultural barriers not only affect individual behavior but also cause mental health issues by limiting physical activities (Pedersen et al., 2021). Factors, including religious, cultural, social, family, and ethnic, push an individual towards drugs, and they could also affect the treatment process (Razaghi et al., 2023). A social mindset toward a better future could enhance the equal participation in ICT of both men and women. Psychologists believe that a mindset shaped by societal norms can rule and decide the society's future. Societal values have a profound impact on an individual's mindset, shaping their thoughts and perspectives (Kozlova et al., 2024). In many areas, especially in marginalized communities, females who use digital tools are not considered a good sign for families. They believe using digital instruments may harm girls'/women's dignity, and boys have no obligations.

### Economic and Educational gaps.

A phenomenon known as economic and educational inequality is prevalent in many nations, where disparities in the local economy result in substantial inequities among men and women (Shang, 2022; Farquharson et al., 2024). This economic imbalance is the result of a lack of digital advancement. In addition to several other issues, these include limited remote employment opportunities, low technical education, a lack of digital skills, and inadequate digital infrastructure. However, in the education field, various students feel excluded due to linguistic diversity. The language gap encompasses disparities in language proficiency that may impact access to information, education, and job prospects (Robertson & Graven, 2020). In contrast, integrating technology in education can create more inclusive policies to address the problems facing our society if stakeholders understand the connection between education and technology (Uygur et al., 2020; Ullah & Samad, 2026). In marginalized societies, especially in South Asia, boys have been given more favors by their elders to acquire education and learn advanced technological courses. At the same time, women were considered to be in a limited field. Numerous studies have shown that women are often underrepresented in learning digital skills. Apart from that, one of the main purposes of education is to equip graduates with the digital and soft skills that employers require, which might help the nation's economy flourish (Ebom, 2025). The large number of job seekers suggests that people's training and experience do not match what is needed to fill available opportunities. One of the factors that has exacerbated the skills gap, an issue affecting both developed and underdeveloped countries

worldwide, is unequal access of men and women to ICT and tech-based education (Singh et al., 2025). Nonetheless, the continuing and widening disparity in access to technology has been exacerbated by the poor quality of educational institutions, the unequal distribution of digital resources, and the lack of teacher competence in developing countries (Dlamini, 2022). The study of education in e-commerce provides a strong foundation for understanding how various policies can address these issues, reduce digital skill disparity, and enhance the development of human capital in the industrialized world (Ahi et al., 2023). It is therefore frequently seen as a connection between the economy and education. Since science and technology are developing rapidly and educational outputs are not keeping up with the demands of the expanding market, this area of economics may have a major influence on lowering digital skill levels (Zemtsov, 2020). Therefore, men and women do not equally participate in the globalized world. Two nations that exemplify the benefits of integrating lifelong learning, practical, and digital skills into school curricula are Finland and Japan. By applying similar techniques and tailoring them to local conditions, nations can develop a competent workforce that promotes long-term economic growth and social progress (Bykova et al., 2024). In a patriarchal home, a special lower class where only one smartphone or computer is available, men have the authority to use the mobile either for educational purposes or for something else (Scott et al., 2021). Women and girls were not allowed to use laptops and Digital platforms, which lowers the rate of awareness. In Pakistan, Nepal, India, and Bangladesh, families that live below the poverty line follow the same norms and behave towards females.

#### School and college-level tech education disparities.

In the digital age, vocational training in conjunction with new technology provides not just a route to work but also a doorway to opportunity, self-respect, and creativity (Eubanks, 2012). Multilateral organizations and international development agencies are helping to scale effective practices, especially in underdeveloped nations, where a lack of digital resources can exacerbate the gender digital divide (Adeola, 2020). Civil society organizations and communities need to assist outreach to underrepresented groups, such as women, rural populations, and people with disabilities, encourage fair access to digital vocational training, and promote inclusion (Harness, 2016). While many nations are working to increase gender equality in all courses offered, women are still underrepresented in the engineering department, and men are underrepresented in the departments of cosmetology and clothing (Levy, 2024). Additionally, researchers discovered that despite having policies in place to address gender equality, countries in South Asia seemed to have less success with them. This led these researchers to examine the obstacles that Technical and Vocational Education faces in achieving gender equality, as well as the challenges that Vocational Education encounters in doing so (Matenda, 2019). Girls and women were marginalized from the technical and vocational education system because traditionally, girls' education concentrated on developing skills that reinforced their socialized role, such as secretarial and clothing skills. At the same time, boys took science and technology courses at the college and school levels. Despite the implementation of gender policies to support equal access to education, prejudices and socialized roles continue to slowly alter people's perspectives. This still places a higher priority on male education than female education (Cole, 2022). This has an impact on the nation's socioeconomic development. Preparing technical and vocational teachers for elementary and secondary education so that kids are aware of the abundance of digital opportunities early on.

## Gender Gap, Income, and Access to ICT.

The relationship between ICT development and the advancement of gender equality is characterized by a significant positive correlation between these two factors. Since the 1990s, ICT development has made a greater contribution to gender equality in middle and low-income countries than in high-income ones. One explanation might be that as more individuals utilize information and communication technologies; the gender gap is narrowing (Ahmad et al., 2022). Furthermore, this can be explained by the fact that the advancement of ICT has improved information transmission by expanding the audience for messages as well as the speed and efficiency of information interchange (Lombardi et al., 2021). Therefore, ICT progress can increase the flow of information about any advocacy or awareness movement for gender equality; it can transfer ideas about the importance of gender equality from developed to developing countries (Olayemi & Olayemi, 2024). Which can inspire individuals throughout developing nations to take action to close the gender gap and promote gender equality; it can also enable women to receive technical education and employment needs to ensure better living conditions (Odera & Mulusa, 2020). It gives women the opportunity to enter the global market by improving their digital skills, giving them digital devices, and offering training to help them learn how to make the most of these tools (Anzak et al., 2023). Researchers have discovered that ICT development data have increased over time, while gender equality data have declined. Thus, in addition to ICT, other elements that impact gender equality include politics, religion, culture, and custom (Shah & Krishnan, 2024).

## Impact on employability in the digital economy.

The term "future of work" refers to the type of work that is anticipated to evolve in response to the Fourth Industrial Revolution and digitalized globe, a continuous and dynamic process of shifting job requirements and skill sets (Williams, 2021). As technology, innovation, and changing workforce expectations transform the meaning of work and how it is accomplished, businesses and the economy will undergo significant and exponential change (Lim, 2023). Despite new occupations and overall job growth, middle-wage positions are already being lost in global contexts, such as the United States. The expansion of high-paying jobs is only possible if individuals can acquire the digital skills and tech-based expertise. Maintaining a middle-class society will require creating professional pathways to enable individuals to acquire advanced digital skills and identifying potential online sources for future employment opportunities (Yamada, 2024). All things considered, employability skills in a global setting comprise a blend of abilities, competencies, values, and mindset. Communication skills, digital skills, managerial skills, entrepreneurial abilities, problem-solving, professional etiquette, and teamwork are among the primary competencies (Jardim, 2021). Therefore, depending on specific circumstances, there is a chance that some talents will overlap in the pursuit of future-ready digital skills. There is a great need to prepare graduates for the future workforce. Females with great digital expertise (E-commerce, freelancing) can compete with the rest of the world. Still, women in South Asia, and particularly in rural areas, remained sidelined in a digitalized society (Chintu & Rathod, 2024).

## Gender Divide in Rural Areas

The widespread differences in gender, health, urban-rural areas, and the digital divide. When it comes to internet access and use, women and those living in rural areas are particularly susceptible. Gender disparities exacerbate the problems caused by the digital gap (Boateng et al., 2023). Among the challenges women face are declining technical education and digital skills. A way of life without digital devices and internet facilities in rural areas frequently makes women feel more isolated and excluded from society (Nirman, 2025). Consequently, training in digital literacy and skills should encompass a person's entire life. It can also create a digitally inclusive atmosphere to lessen the negative effects of the digital divide on senior citizens. Governments, social groups, and communities must collaborate to bridge the digital divide among the elderly (Zhang et al., 2025). Reports indicate that the ongoing methods of education, entertainment, and information exchange employed in societies influenced by external factors, such as Western culture, have not undergone significant changes (Levin & Mamlok, 2021). Because more than 70% of the population resides in rural regions with limited internet connectivity, other digital resources are unable to engage with people worldwide. However, the social connection and roles between men and women in a culture where women have been relegated are represented by the societal construct of gender. Gender issues have had a significant impact on women's empowerment and economic growth (Adhikari & Sigdel, 2024). As a gender, women face significant barriers to economic and sociopolitical empowerment. Due to gender inequality, women are underrepresented in almost every aspect of national life in the majority of emerging South Asian countries (Bag & Barman, 2022). In cities, women are more diverse and equipped with digitalized knowledge due to internet availability, digital learning environment, ICT-related academic system as compared to rural poor people, where women, due to lack of awareness, opportunity for technical literacy, digital skills, building programs and lack of roads for transportation, make life much harder and one step back towards a digitalized community (Upadhyaya, 2024).

## Discussion

This study shows that the issue of gender digital divide is multidimensional. The dimensions include patriarchal mindset, social expectation, cultural norms, limitation on access to the internet, Unequal access to quality education for women and girls, and financial instability. These major elements combine to limit women to specific areas and restrict their access to inclusive digital education, thereby reducing the possibilities for women's participation in society's development. In South Asia, women's prestige is often tied to obeying patriarchal men, which impacts family-bound women's movements and allocates different duties that limit their mindset to a certain extent, creating difficulties for accessing digital education and its beneficial impacts.

Several factors give directions for women towards digital education, like diversity based on society, financial, and an inclusive educational system. Due to a patriarchal mindset, the male-dominated societies in underdeveloped areas bind women to equip themselves with advanced digital education and to compete with the new generation (Reyes, 2023). Apart from that, there are core elements such as financial instability, Low Digital competencies, and a poor literacy ratio, which lower the chance of survival in a modernized society. A further central variation based on area exacerbates the unfairness in the state; urban residents have limited access to digital tools and organizational assistance compared to those in rural areas. In Asia, these critical factors, as mentioned above, create hindrances that constrain the gender-inclusive

digital divide and digital opportunities. This structure highlights that inclusive digital education can only be achieved when these issues are addressed in national forums and at institutional policy levels. At the peak of the COVID-19 pandemic, every educational institute, both theoretical and Digital, transitioned to online learning platforms. Many female students in rural areas have left their schools, colleges, and universities due to the unavailability of essential tools, internet services, and facilities. Mothers and older females often bear the responsibilities of family, children, and household work, which limits their time for inclusive digital learning.

Academic resources indicate that women, due to societal norms, conventional beliefs, religious Influences, and household responsibilities, did not perceive digital education or remote work as viable options (Mathrani et al., 2022). In China and Sub-Saharan Africa, a similar culture was observed, where women's development is based solely on their income and national-level opportunities announced for women; this is the only way. This evidence highlights that the gender divides in academic development and the Digital world is not only evident in developing countries, but also in developed countries, due to high labor demand or regulatory constraints imposed by authorities. Regardless of circumstances, digital inequality in digital literacy harms financial development, societal collaboration, and Inclusive advancement.

Different national and international organizations have announced various digital programs to digitalize women's. However, these objectives have not yet been achieved. This literature highlights a pressing need for research on digital advancements to address these critical issues, not only in South Asia but also globally (Das, 2025). We use evidence-based review and a pilot project to evaluate the implications of smartphones and Digital tools on women's access and development in digital education. Nevertheless, there is no doubt that digital technology can enhance women's approach to digital information and their interaction with society, and provide a new way of development for them. However, we cannot eliminate current disparities if cultural values, financial dependency, and institutional policies are not adapted to meet the needs of modern society. Otherwise, it will be reinforced. Technology can bring a negative impact on inclusiveness when women are excluded from achieving digital knowledge and advancement. This emphasizes the crucial need for gender based flexible Digital policies, inclusive academic reforms, and grassroots-level approaches. Socially disabled women face many challenges; they cannot even move and have not been given equal access to digital media. Another sector in this community is minorities, who have to face challenges and obstacles during digital learning classes, resulting in unemployment and making life much harder.

The results indicate that the main reason behind the gender digital divide is socio-cultural barriers, patriarchy, mobility restrictions, educational and economic gaps, rural-urban differences, a lack of tech education, and gender differences. However, women's status in South Asian countries has rarely approached that of men. There are social and economic disparities as a result of long-standing male-dominated systems that still limit women's roles and economic opportunities, examining the link between national growth and educational inequality, using gender differences as an example. Even in modern countries that actively support gender equality in terms of digital and physical, the long-standing impact of patriarchy prevents women from having equal tech-based educational rights on a global scale.

## **Conclusion**

In conclusion, the gender digital divide serves as a technological hurdle, but in reality, it is a practical example of social injustice and reflects the inequalities that exist in society. It also explains how economic, social, and educational challenges limited women's access to technologies and work opportunities. However, there are no valid and reliable reports regarding

the gender digital divide in South Asian countries. At the same time, there are differences between men and women in access to ICT and digital skills. In contrast, mobility restrictions hinder people in a globalized digital world. Nowadays, mobility restrictions are imposed on women by society, which denies them access to technical education, digital resources, and ICT.

The results of this study show that gender-inclusive digital inequality is not only a technological disparity but also a result of Intrinsic socio-cultural, financial, and academic inequalities that span generations, suppressing women's access to digitalization, specifically across South Asia and the Global South. Restrictive male superiority rules, prohibition on movement, injustice, not permitting education, unequal distribution of facilities, and relegating them to the walls. However, digital knowledge is the only weapon that enhances understanding of financial participation, academic development, and societal advancement, although women remain underdeveloped due to limited access to digital tools and societal behaviors that affect women's education in this digitalized world.

The finding shows that to bring gender equality and equity, gender tech is not enough; it requires fundamental changes in society, changing their mindset, bringing educational policies, inclusive digital rules, and digital and other skills based on the requirements of the specific area. To address these issues, governmental institutions, educational institutions, and NGOs must collaborate to create awareness through targeted campaigns, academic initiatives, and community-level outreach, as well as digital skills training for women. These institutions need to play a vital role in finding and raising their problems through digital platforms and institutions to facilitate and empower them, and ensure their presence in every aspect of their surroundings. In this way, we must be able to demolish the gender digital divide and create equality, promote advancement, and ensure that each person participates in this modernized digital sphere. This could be achieved with the help of inclusive digital knowledge.

### **Recommendations and future research**

Based on the findings, it is recommended that the government introduce a gender-inclusive ICT program, particularly in rural areas, in coordination with local bodies to establish an effective monitoring system. Basic digital facilities should be in place, including internet access, low-cost digital devices, and ICT infrastructure, with a particular focus on women. ICT and digital skills should be integrated into the school and college-level curriculum with vocational training. Apart from that, it is essential to organize awareness programs for local societies to raise awareness among citizens about the rapidly changing digital world. Digital employment should prioritize women, as they often face challenges with mobility, and provide them with online training to enable them to work effectively. It should be mandatory to make ICT users aware of cybersecurity and how to protect their selves from online theft. Moreover, it is crucial for developing countries in South Asia to collaborate with international organizations, such as the UN, UNESCO, and ITU, to strengthen this process globally. To produce impactful research, researchers should incorporate self-collected data, such as self-reported Data, to accurately reflect women's actual Experiences with technological access, particularly in rural and underdeveloped areas. Comparative analysis is required to determine the impactful regulation based on the needs of society. Furthermore, urgent and impactful research is necessary to highlight the importance of new digital technologies, such as AI, digital work platforms, and learning tools, as well as the roles of women in advancing the digital economy. Like in developed society, strong policies are required to digitize the socially disabled women's, financially unstable households. Moreover, subordinate Groups need a deeper understanding of the digital world. Comparative studies complement each other to provide direction for the government to develop policies regarding digital education, particularly for

marginalized communities, over time, to mitigate the impact of the gender digital divide within these communities.

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### **Authors' contributions**

Azmat Ullah and Muhammad Shafqat Ali Shah contributed equally to this work. Both authors conceptualized the study, designed the research methodology, collected and analyzed the data, and jointly drafted and revised the manuscript.

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The authors declare that they have no competing interests.

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