Journal of Advances and Scholarly Researches in Allied Education
Vol. 22, Issue No. 4, July-2025, ISSN 2230-7540

DOI: https://doi.org/10.29070/y2ymrv20

Check for updates

The Uneven Web: Digital Literacy, Access, and Exclusion in Marginalized India

Dr. Deepak Kem [1] *

1. Associate Professor, Dr. KRN Center for Dalit and Minority Studies, Jamia Millia Islamia (A Central University), New Delhi, India
dir.blahe@gmail.com

Abstract: Digital literacy is essential for social inclusion, economic advancement, and democratic engagement in contemporary society. Marginalised groups those hindered by poverty, location, gender, caste, handicap, or ethnicity continue to be disproportionately excluded from digital ecosystems. This research analyses digital literacy levels across marginalised areas, finds significant obstacles to digital inclusion, and evaluates current programs designed to close this gap. The research employs a mixed-methods approach, integrating a structured survey (n=400) with qualitative interviews and focus groups (n=50), revealing that digital exclusion is influenced by intersecting factors: economic limitations, infrastructural deficiencies, educational disparities, and gendered cultural norms. Despite the constraints of internet access, particularly among rural and low-income demographics, the lack of localised training and material is a significant impediment. The research underscores the significance of intersectional, community-oriented interventions and recommends particular governmental initiatives, such as investing in infrastructure, creating culturally appropriate training frameworks, and incorporating digital competencies into conventional schooling. Ultimately, digital literacy for marginalised populations is not a charitable endeavour but a structural need for fairness and inclusion in the digital age.

Keywords: Digital Literacy, Marginalized Groups, Digital Divide, Social Inclusion, Access Disparities, Inclusive Education, Socio-economic Empowerment, ICT Infrastructure, Digital Equity, Policy Intervention

X

INTRODUCTION

In contemporary society, digital literacy has evolved beyond a mere skill set, emerging as a fundamental necessity for participation in economic, social, educational, and civic life [1]. Defined broadly, digital literacy encompasses the ability to effectively find, evaluate, create, communicate, and use information through various digital technologies. As digital tools become increasingly integral to everyday activities, proficiency in digital literacy directly correlates with enhanced opportunities in employment, education, social networking, governance participation, and overall quality of life [2]. However, despite significant technological advancements and widespread adoption of digital solutions, a considerable segment of the population remains excluded notably marginalized groups who are often already socioeconomically disadvantaged[3].

Marginalized groups, characterized by limited access to essential resources, restricted social capital, and systemic inequalities, frequently experience compounded disadvantages when faced with digital transformations [4]. These groups include individuals living in poverty, rural inhabitants, ethnic minorities, and women in traditional patriarchal contexts, persons with disabilities, elderly populations, migrants, and other socially or economically disadvantaged communities. For these groups, the absence of digital literacy exacerbates existing disparities, leading to a form of double exclusion first from physical and social

resources, and subsequently from virtual and informational opportunities that define modern society [5].

The global community acknowledges digital inclusion as an essential component of sustainable development goals, explicitly recognizing that meaningful connectivity and digital skills are integral to achieving equitable development [6]. Despite such global acknowledgment, practical challenges remain pervasive, particularly in developing and underdeveloped regions. In nations like India, substantial digital divides are evident due to persistent inequalities shaped by geographic, infrastructural, gendered, and socio-cultural factors [7].

Recognizing this complexity, the current study aims to critically explore the intersection of digital literacy and marginalized populations, highlighting specific barriers, identifying existing gaps in policy and practice, and exploring effective strategies for inclusive digital literacy promotion. This research not only contributes to academic understanding but also supports policymakers, educators, and community developers in addressing digital exclusion comprehensively and pragmatically [8].

Conceptual Framework

Digital literacy extends beyond basic operational skills such as operating computers or smartphones; it embodies a multifaceted competence including cognitive, technical, social, and critical-thinking skills [9]. Digital literacy involves the capability to critically assess digital information, engage safely in digital communication, manage online identities responsibly, create digital content effectively, and utilize technology to solve real-world problems [10]. Understanding digital literacy from this holistic perspective emphasizes the importance of context-specific, culturally relevant, and practically applicable digital competencies.

Who Are the Marginalized?

Marginalization represents exclusion based on multiple intersecting factors such as socio-economic status, geographic isolation, ethnicity, gender, age, disability, or lack of education. Marginalized groups frequently encounter structural inequalities that systematically limit their access to essential resources, including digital infrastructure and education [11]. The resulting digital exclusion prevents marginalized populations from leveraging opportunities presented by digital technologies, thus perpetuating cycles of poverty, inequality, and disempowerment [12].

Factors Fuelling the Digital Divide

Several interrelated factors perpetuate the digital divide faced by marginalized communities:

- **Socio-Economic Barriers:** Economic status fundamentally impacts the affordability of digital devices, internet subscriptions, and training programs. Marginalized communities often find these expenses prohibitive, resulting in significantly lower digital literacy rates compared to economically stable populations.
- **Geographic and Infrastructural Challenges:** Individuals residing in rural or remote regions face inadequate or nonexistent infrastructure, limited internet coverage, unreliable connectivity, and lack of digital service providers. Such infrastructural deficits severely constrain digital literacy opportunities.

- **Educational Inequalities:** Educational disparities, including limited access to formal education and absence of digital curricula, considerably hinder marginalized populations from developing critical digital skills. Traditional educational systems often lack inclusive frameworks tailored specifically to the unique contexts of marginalized learners.
- **Gender and Cultural Constraints:** In many societies, women and girls encounter gender-based cultural constraints limiting their digital access, exposure, and literacy. Cultural stereotypes, societal roles, and prevailing norms often restrict female participation in digital learning environments[13] [14].

Importance of Digital Literacy for Marginalized Groups

Enhancing digital literacy among marginalized communities is essential for promoting social inclusion, economic participation, and empowerment. Digital literacy facilitates employment opportunities, entrepreneurship, improved health care access, education, financial inclusion, and active civic engagement. Bridging the digital divide thus contributes directly to achieving broader socio-economic equity and sustainable development objectives [15].

Policy and Practical Interventions

To effectively promote digital inclusion, policymakers must prioritize targeted interventions, including subsidizing digital resources, expanding infrastructure to underserved regions, and integrating digital literacy into formal and informal education [16]. Community-based digital literacy programs, which involve collaboration among governments, NGOs, and private sector stakeholders, have demonstrated notable success in addressing contextual challenges and enhancing inclusivity.

Rationale of the Study

This research addresses the critical need to comprehensively understand barriers faced by marginalized groups in attaining digital literacy and to identify effective inclusion strategies. By examining the interplay of structural, socio-economic, educational, and cultural factors contributing to digital divides, this study provides actionable insights for stakeholders committed to fostering inclusive digital environments [17].

Objectives of the Study

- To evaluate the current status of digital literacy among marginalized groups.
- To analyze key barriers to digital literacy and inclusion for marginalized populations.
- To assess the effectiveness of existing digital literacy programs targeted at marginalized communities.
- To propose strategic recommendations for inclusive digital literacy policy and practice.

Significance of the Study

The significance of this research lies in its potential to influence policy formulation and program implementation aimed at reducing digital inequalities. By providing empirical insights and practical recommendations, this study aims to enhance the effectiveness of interventions directed toward marginalized populations, ultimately contributing to inclusive growth and sustainable social development [17].

REVIEW OF LITERATURE

Prasastiningtyas et al. (2024) by incorporating technology into their everyday lives, digital literacy programs play a critical role in strengthening underserved communities. This study looks at how well different digital literacy initiatives work to improve underserved populations' technology proficiency in order to foster inclusion and socioeconomic growth. This study uses a mixed-methods approach, combining qualitative interviews and quantitative surveys to evaluate how digital literacy efforts affect participants' socioeconomic position, abilities, and confidence. The results show notable gains in digital competences, which are linked to more job openings, improved service accessibility, and higher community involvement. The study also emphasizes the difficulties these projects confront, such as restricted access to resources, a lack of technology infrastructure, and opposition to change. In order to ensure that digital literacy initiatives are inclusive, durable, and successful in closing the digital gap, the research ends with suggestions for practitioners and policymakers. This study emphasizes the significance of digital literacy as a fundamental component for accomplishing more general socioeconomic objectives by concentrating on the transformative potential of technology integration [18].

Johnson et al. (2024) among populations that have historically been excluded from society, the purpose of this research is to analyze the role that digital literacy plays in increasing social inclusion among such communities. An examination of the many of ways in which digital skills have the potential to stimulate engagement in social, economic, and political issues is the objective of this study, which aims to give an analysis of these possible approaches. This purpose may be accomplished by the use of analysis by making use of elements such as access to technology, digital education programs, and online social networks. According to the findings, greater levels of digital literacy considerably increase the likelihood of social involvement. This is the case despite the fact that issues such as cost and availability continue to be important impediments [19].

Liotta (2023) specifically focusing on the implications of digitalization for social inclusion in the context of underprivileged communities, this paper investigates the ramifications of digitalization. The advancement of information technology has resulted in the creation of new possibilities; nevertheless, it has also contributed to the widening of the digital gap among persons and groups that are susceptible. Identifying effective ways for decreasing digital division is the goal of this research, which aims to assess the effects that digitalization has had on the access and participation of populations who are disadvantaged. In this article, we emphasize the obstacles, possibilities, and best practices that are involved in attempts to bridge the digital gap and improve social inclusion across a number of global settings. This is accomplished via a thorough literature analysis and case studies. The findings of this research provide a comprehensive analysis of the significance of addressing the needs of underprivileged communities in the modern era of technology [20].

Sharma et al. (2022) one of the most prominent characteristics of the fourth industrial revolution is the preponderance of information over other things. As a result of the fast development of information technology, the internet has become an essential medium for the interchange of both social and economic information. As a result of this, access to information and communication technologies is acknowledged as a fundamental right of every citizen, allowing for more effective and impactful engagement in

socioeconomic and political activities. The study on the digital gap in India is relatively new, and it began to get attention once the government began to show a greater interest in digital inclusion. An examination of the two aspects of digital inclusion in India, namely physical access and skill access, is presented in this article. In addition, the ways in which gender, space, caste, economic class, and religious groups are related with the two types of access to digital technology (the internet and computers). During the quantitative analysis phase of the study, the researchers used the second round of data obtained by the Indian Human Development Survey (IHDS-2, 2011-12) that was representative of the whole country. According to the data, there is a significant disparity in the level of computer expertise, computer and internet usage, and English language proficiency among those who have been marginalized in India on a social and economic level in the past. After adjusting for other factors, the level of digital knowledge and usage of the internet, as well as the complete capacity to communicate in English, is much lower among members of the SC and ST caste groups, Muslims, women, married people, illiterate people, and rural residents in India [21].

METHODOLOGY

The study adopted a mixed-methods research design, integrating both qualitative and quantitative approaches to comprehensively explore digital literacy levels, access disparities, barriers, and inclusion strategies among marginalized groups. A mixed-method approach was chosen to ensure depth, triangulation, validation, and holistic understanding of the complexities associated with digital literacy among marginalized populations [24].

Research Design

A concurrent mixed-method research design was employed, integrating cross-sectional surveys (quantitative) and semi-structured interviews and focus groups (qualitative) [23]. The quantitative component provided statistical data on the extent of digital literacy and access disparities, while the qualitative component allowed deeper exploration of contextual barriers, personal experiences, and effectiveness of interventions.

Study Population and Sample

The study population consisted of marginalized groups characterized by socio-economic disadvantage, geographic isolation, gender disparities, disability status, and ethnic minority backgrounds [25] [26]. Specific groups included economically disadvantaged households, rural communities, women and girls in patriarchal contexts, individuals with disabilities, elderly populations, migrants, and ethnic minority groups.

The sample was selected using purposive and stratified sampling methods:

- **Purposive Sampling**: Used to select specific marginalized groups based on predefined inclusion criteria (e.g., rural populations, women, economically disadvantaged).
- **Stratified Random Sampling:** Employed within each targeted marginalized group to ensure representativeness across age, gender, location, educational level, and economic status.

The total sample size for quantitative surveys was 400 respondents, representing diverse marginalized

demographics, while qualitative interviews and focus groups involved 50 participants [28].

Data Collection Instruments

Quantitative Instruments

Structured Survey Questionnaire: A structured questionnaire was developed consisting of closed-ended and Likert-scale items designed to assess:

- Digital literacy skills (basic operations, information evaluation, content creation, online safety, critical thinking).
- Frequency and quality of digital access.
- Perceived barriers (economic, infrastructural, educational, cultural, etc.).
- Awareness and utilization of digital literacy programs [32].

Qualitative Instruments

- **Semi-Structured Interview Schedule:** Interviews explored individual experiences, detailed insights into digital access issues, barriers encountered, and suggestions for inclusive strategies [31].
- **Focus Group Discussion (FGD) Guide:** FGDs facilitated interactive discussions among participants to identify shared perceptions, common challenges, community-specific experiences, and recommendations [33].

Data Collection Procedure

- **Quantitative Data Collection:** Surveys were administered directly by trained enumerators in person (for rural and semi-urban regions) and digitally via mobile or online platforms (where infrastructure allowed). The enumerators provided assistance when required, ensuring participants' comprehension.
- **Qualitative Data Collection:** Interviews and FGDs were conducted face-to-face and, when necessary, via digital conferencing tools. Each interview lasted approximately 30–45 minutes, while FGDs lasted 60–90 minutes. All qualitative interactions were audio-recorded with informed consent and transcribed verbatim for analysis.

Ethical Considerations

The study adhered strictly to ethical guidelines:

- Participants provided informed consent before participation.
- Confidentiality and anonymity of respondents were maintained.
- Participants had the right to withdraw at any stage without repercussions.
- Sensitive demographic and socio-economic factors were treated with discretion and confidentiality.

Data Analysis

- **Quantitative Data:** Data collected through surveys were analyzed using descriptive and inferential statistics in SPSS software (version 28). Descriptive statistics summarized demographic characteristics,

digital literacy levels, and identified barriers. Inferential statistics (Chi-square tests, correlation analyses) explored relationships between variables such as socio-economic status, gender, location, and digital literacy levels.

- **Qualitative Data:** Qualitative data from interviews and FGDs underwent thematic analysis using NVivo software. Initial coding identified recurring themes and subthemes related to barriers, experiences, inclusion challenges, and effective interventions. Cross-case analysis was employed to detect patterns and divergences among marginalized groups [34] [36].

Reliability and Validity

- **Reliability:** Reliability of quantitative instruments was ensured through pilot testing among 30 respondents prior to final data collection, achieving a Cronbach's alpha of 0.84. Enumerator training further standardized data collection procedures.
- **Validity:** Validity was addressed through methodological triangulation (integrating quantitative and qualitative findings), instrument validation by subject experts, and cross-verification of results with existing literature and empirical findings.

Through this robust methodological framework, the study sought to generate accurate, comprehensive, and actionable insights into digital literacy and inclusion for marginalized groups, providing a strong foundation for informed policy and practice recommendations [38] [39].

DATA ANALYSIS AND RESULTS

The data that was gathered via quantitative surveys, qualitative interviews, and focus group discussions (FGDs) is presented and interpreted in a methodical manner in this chapter. The data are organized in such a way as to provide a full knowledge of the levels of digital literacy, hurdles, accessibility, and inclusion difficulties that excluded groups are confronted with. Detailed statistical analysis, graphical representations, and theme qualitative insights are used to support the findings of the study.

1. Demographic Characteristics of Respondents

The study starts with a thorough investigation of demographic characteristics, including gender, age cohort, geographic region, educational attainment, and socio-economic status (SES). These characteristics substantially affect digital literacy and access habits.

Table 1: Demographic Profile of Respondents *(N=400)*

Demographic Variables	Category	Frequency *(N)*	Percentage (%)
Gender	Male	180	45%
	Female	220	55%
	18–30 Years	160	40%

Age Group	31–50 Years	140	35%
	Above 50 Years	100	25%
Location	Urban	150	37.5%
	Rural	250	62.5%
Educational Level	No formal education	110	27.5%
	Primary education	140	35%
	Secondary education	90	22.5%
	Higher education	60	15%
Socio-economic Status	Low income	280	70%
	Middle income	120	30%

The majority (55%) of respondents were females, indicating a higher representation of women from marginalized backgrounds in the study. Furthermore, the respondents were predominantly from rural areas (62.5%) and belonged mostly to low-income groups (70%), underscoring significant economic and geographic marginalization within the sampled population. Additionally, educational attainment among respondents was generally low, with 62.5% having either primary education or no formal education at all. This suggests considerable educational disadvantage alongside the economic and geographic challenges identified.

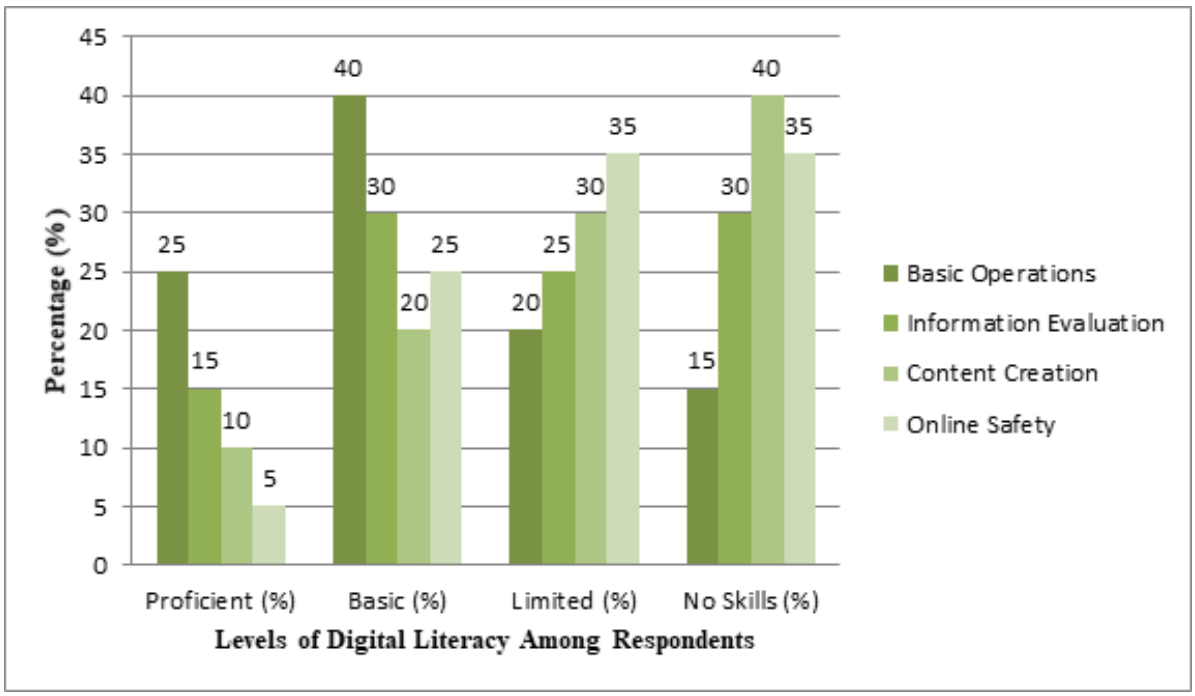
2. Digital Literacy Levels

Respondents' digital literacy levels were categorized into four skill groups: Basic Operations, Information Evaluation, Content Creation, and Online Safety.

Table 2: Levels of Digital Literacy among Respondents *(N=400)*

Digital Literacy Skills	Proficient (%)	Basic (%)	Limited (%)	No skills (%)

Basic Operations	25%	40%	20%	15%
Information Evaluation	15%	30%	25%	30%
Content Creation	10%	20%	30%	40%
Online Safety	5%	25%	35%	35%



Graph 1: Levels of Digital Literacy Among Respondents (N=400)

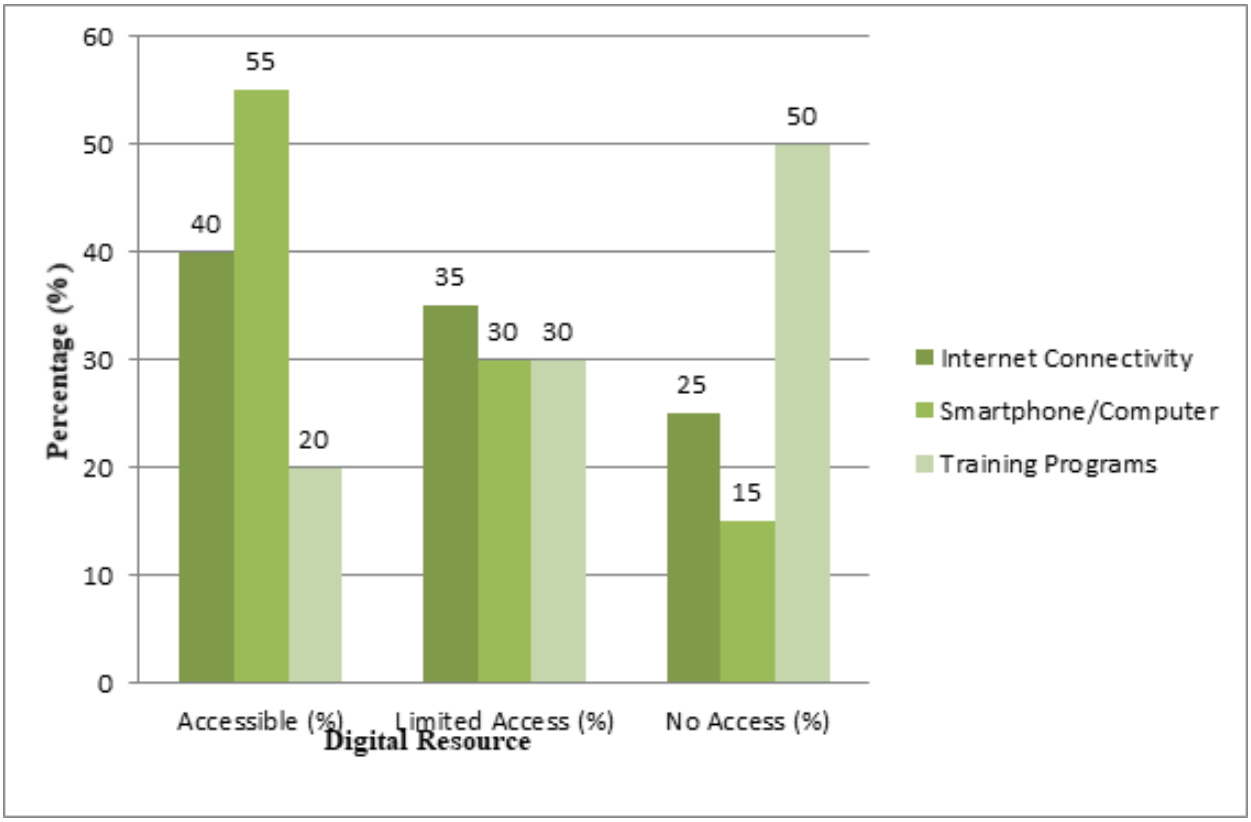
The analysis of digital literacy levels among respondents reveals significant skill gaps across all key areas. While 25% of participants were proficient in basic digital operations and 40% had basic skills, a notable 35% had limited or no skills, indicating that a substantial portion struggles with fundamental digital tasks. The ability to evaluate online information was even more limited, with only 15% proficient and 30% at a basic level, while 55% had limited or no ability to assess the credibility of digital content. Content creation skills were particularly lacking, with just 10% proficient and 20% possessing basic knowledge, while a majority of 70% reported limited or no skills. Online safety emerged as the most critical concern, with only 5% of respondents proficient and a combined 70% lacking sufficient understanding of privacy and cyber-risks. Overall, these findings highlight a stark digital divide, where a large proportion of marginalized individuals remain digitally disadvantaged, limiting their ability to participate meaningfully in an increasingly digital society.

3. Access to Digital Resources

Respondents' accessibility to essential digital resources such as internet connectivity, smartphones/computers, and training opportunities were analyzed.

Table 3: Respondents' Access to Digital Resources *(N=400)*

Access to Resources	Accessible (%)	Limited Access (%)	No Access (%)
Internet Connectivity	40%	35%	25%
Smartphone/Computer	55%	30%	15%
Training Programs	20%	30%	50%



Graph 2: Access to Digital Resources among Respondents (N=400)

The analysis of access to digital resources among respondents highlights significant disparities. Internet connectivity remains a challenge, with only 40% of respondents having regular access, while 35% have limited access and 25% have no access at all. Access to digital devices like smartphones or computers is comparatively better, with 55% of respondents having access and 30% with limited access; however, 15% still report no access to any such device. The most concerning finding is related to digital training

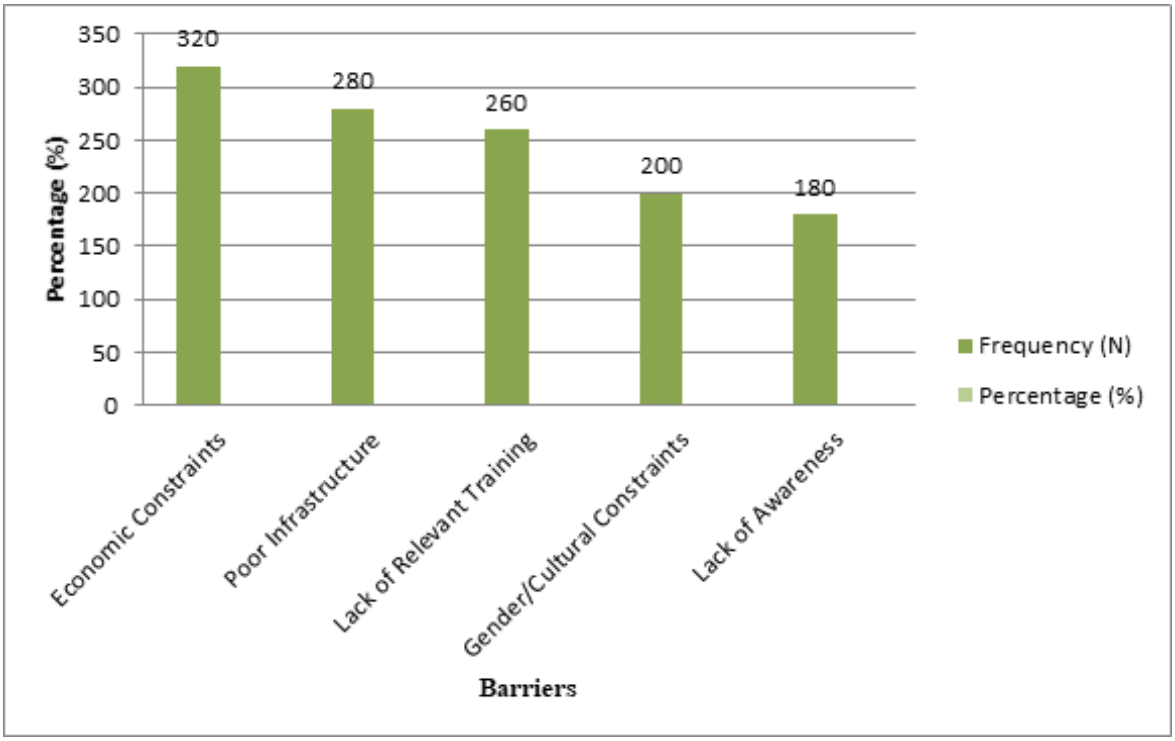
opportunities only 20% of the respondents had access to training programs, while 30% had limited exposure and a staggering 50% had no access at all. These findings indicate that beyond infrastructure, the lack of digital literacy training further compounds digital exclusion among marginalized groups.

4. Barriers to Digital Literacy among Marginalized Groups

Respondents identified multiple barriers that hinder their digital literacy development.

Table 4: Identified Barriers to Digital Literacy *(Multiple Responses Allowed, N=400)*

Barriers	Frequency *(N)*	Percentage (%)
Economic Constraints	320	80%
Poor Infrastructure	280	70%
Lack of Relevant Training	260	65%
Gender/Cultural Constraints	200	50%
Lack of Awareness	180	45%



Graph 3: Barriers to Digital Literacy among Marginalized Groups (N=400)

The data on barriers to digital literacy among marginalized groups reveals a complex web of socio-economic and structural challenges. The most prominent barrier identified was economic constraints, reported by 80% of respondents, reflecting the affordability gap in accessing digital devices and internet services. This is closely followed by poor infrastructure (70%), which includes issues like unreliable electricity and lack of internet coverage, especially in rural areas. Lack of relevant training was cited by 65% of participants, underlining the need for structured and contextual digital education programs. Gender and cultural constraints, affecting half of the respondents (50%), highlight how social norms and traditional roles can restrict access to technology, particularly for women and girls. Additionally, lack of awareness about the benefits and opportunities of digital engagement was reported by 45% of respondents. These findings demonstrate that digital exclusion is not merely a matter of device or connectivity, but a result of intersecting economic, educational, and socio-cultural barriers that need to be addressed through inclusive and targeted policy interventions.

5. Statistical Correlation Analysis (Chi-Square Test)

The Chi-square test examined the association between demographic variables and digital literacy.

Table 5: Chi-Square Analysis between Demographic Variables and Digital Literacy Level

Variables	Chi-square Value (χ^2)	df	p-value	Significance
Gender	18.42	3	0.001	Significant
Age Group	25.60	6	0.002	Significant
Location (Rural/Urban)	30.55	3	0.000	Significant
Educational Level	55.90	9	0.000	Significant
Socio-economic Status	48.75	3	0.000	Significant

The study found significant associations between demographic variables and digital literacy levels among respondents. Gender was found to be a significant factor, suggesting disparities in digital competence between male and female participants. Age group also showed a significant correlation, with younger individuals potentially showing greater proficiency. The location of respondents (rural vs. urban) was another key determinant, reflecting the urban-rural digital divide. Educational level was the strongest association, highlighting the importance of formal education in building digital skills. Socio-economic status was also significantly linked with digital literacy, highlighting the influence of economic capability on access to digital tools and learning opportunities. These results suggest that digital literacy is influenced

by multiple demographic factors, necessitating intersectional strategies to address digital inequality.

Qualitative Findings: Thematic Interpretation

The qualitative component of the study, derived from in-depth interviews and focus group discussions, revealed a spectrum of recurring patterns and narratives. Through thematic analysis, five dominant themes were identified, providing nuanced insights into the barriers and potential solutions for promoting digital literacy among marginalized groups.

Theme 1: Financial Hardship as a Deterrent

Economic constraints emerged as a critical impediment to digital access. Respondents highlighted that the high costs of digital devices, internet subscriptions, and maintenance expenses remain out of reach for low-income households. For many, choosing between daily necessities and investing in technology was not a viable option, further widening the digital divide.

Theme 2: Infrastructural Deficits in Marginalized Settings

Respondents from rural and semi-urban locations consistently pointed to the lack of digital infrastructure such as weak network signals, erratic electricity supply, and absence of community digital centers as a major hurdle. These infrastructural shortcomings created a significant barrier to consistent digital engagement and literacy development.

Theme 3: Insufficient Educational Exposure to Technology

Participants emphasized the absence of structured digital education, both within formal schooling and adult literacy programs. Many expressed unfamiliarity with even basic digital tools, attributing this to a lack of training programs tailored to their social and educational background. This void has left entire communities technologically disconnected and unprepared for the demands of the digital age.

Theme 4: Cultural and Social Restrictions

Deep-seated socio-cultural norms, especially in patriarchal and conservative communities, were identified as suppressing digital exposure particularly among women, the elderly, and marginalized ethnic groups. Participants shared that societal expectations and fears around moral corruption or cultural erosion often discouraged or outright banned digital use within households.

Theme 5: Call for Context-Sensitive Digital Literacy Initiatives

Despite the challenges, participants expressed willingness and interest in acquiring digital skills if provided with accessible and relevant programs. They strongly advocated for localized, language-inclusive, community-led training sessions, mobile-based learning modules, and government-supported digital outreach initiatives. These insights point toward a community-centric model of inclusion rather than a one-size-fits-all approach.

Consolidated Summary of Key Findings

The integrated analysis of quantitative and qualitative data yielded the following significant conclusions:

- **Widespread Deficiency in Digital Competence:** A substantial proportion of individuals from marginalized groups possess only rudimentary or no digital literacy skills, with content creation and online safety being the most deficient areas.
- **Multidimensional Barriers to Inclusion:** Access to digital technology is hindered by overlapping economic, infrastructural, educational, and cultural barriers. These challenges are not isolated but interact cumulatively to reinforce exclusion.
- **Demographic Influences on Literacy Levels:** Statistical tests revealed strong and significant associations between digital literacy levels and demographic variables such as gender, education level, geographical location (rural vs urban), and socio-economic status.
- **Urgent Need for Tailored Interventions:** There is a clear need for structured, inclusive, and context-specific digital literacy programs that account for local realities, cultural sensitivities, and affordability concerns. Both survey responses and participant narratives emphasized the transformative potential of well-designed community-based digital learning initiatives.
- **Intersectional Approach is Crucial:** Addressing digital exclusion effectively requires a holistic approach that not only focuses on skill development but also dismantles structural inequalities rooted in poverty, gender bias, and social marginalization.

CONCLUSION

In conclusion, this study has underscored the critical importance of digital literacy as a foundational skill for meaningful participation in today's increasingly digitized world, while simultaneously exposing the deep and persistent inequalities that continue to marginalize vulnerable populations. The findings reveal that marginalized groups such as rural dwellers, low-income families, women in patriarchal settings, the elderly, and persons with disabilities face a confluence of economic, infrastructural, educational, and socio-cultural barriers that severely limit their access to digital technologies and opportunities. Quantitative data shows that a majority of respondents possess only basic or limited digital skills, with notable deficiencies in key areas such as content creation, online safety, and information evaluation. Furthermore, demographic factors such as socio-economic status, gender, location, and education significantly influence an individual's ability to engage with digital tools. Qualitative insights from interviews and focus group discussions revealed that beyond material limitations, cultural perceptions, lack of localized training, and societal attitudes also contribute to digital exclusion. Despite these challenges, participants expressed a strong willingness to learn and adapt if provided with the right resources and support, emphasizing the need for tailored, inclusive, and community-driven digital literacy programs. Therefore, addressing digital inequality requires a multifaceted and intersectional approach that not only expands infrastructure and affordability but also embeds digital education within formal and informal settings, recognizes cultural diversity, and empowers marginalized voices. Ensuring digital inclusion is not just a matter of providing access to technology it is a broader issue of social justice, equity, and human rights. For any nation aspiring towards inclusive development, bridging the digital divide must be a strategic priority, ensuring that no one is left behind in the digital transformation of society.

References

1. Rillera Marzo R. Bridging the Gap: Understanding and Fostering Intergenerational Communication in the Digital Age. In: Intechopen; 2024.
2. Rana DK. Quality Education for Underrepresented Groups: Bridging the Gap. IJELS. 2024;9(1):212-219.
3. Adeleye O, Eden C, Adeniyi I. Educational technology and the digital divide: A conceptual framework for technical literacy inclusion. Int J Sci Res Arch. 2024;12(1):150-156.
4. Uddin E. Enhancing the School Environment for Underprivileged Minority Children through Social Identity, Cultural Capital, and Preparedness. In: Igi Global; 2023:182-195.
5. Mishra V, Almohtadi A, Seyedzenouzi G, et al. Health Inequalities During COVID-19 and Their Effects on Morbidity and Mortality. JHL. 2021;13(10232):19-26.
6. Mistry SK, Shaw M, Raffan F, et al. Inequity in Access and Delivery of Virtual Care Interventions: A Scoping Review. IJERPH. 2022;19(15):9411.
7. Junaedi AT, Yovita I, Veronica K, Panjaitan HP, Jahrizal J, Renaldo N. Advancing Digital and Technology Literacy through Qualitative Studies to Bridging the Skills Gap in the Digital Age. JABT. 2024;5(2):123-133.
8. Kärnä E, Aavikko L, Rohner R, et al. A Multilevel Model of Older Adults' Appropriation of ICT and Acquisition of Digital Literacy. IJERPH. 2022;19(23):15714.
9. Eden C, Adeniyi I, Chisom O. promoting digital literacy and social equity in education: lessons from successful initiatives. Int j manag entrep res. 2024;6(3):687-696.
10. Fujii DEM. Developing a cultural context for conducting a neuropsychological evaluation with a culturally diverse client: the ECLECTIC framework. The Clinical Neuropsychologist. 2018;32(8):1356-1392.
11. Chetty K, Gcora N, Josie J, Mishra V, Aneja U. Bridging the digital divide in the G20: skills for the new age. Economics. 2018;12(1). doi:10.5018/economics-ejournal.ja.2018-24
12. Cheshmehzangi A, Zou T, Su Z, Tang T. The growing digital divide in education among primary and secondary children during the COVID-19 pandemic: An overview of social exclusion and education equality issues. Journal of Human Behavior in the Social Environment. 2022;33(3):434-449.
13. Wang K, Chen XS, Gu D, Smith BD, Dong Y, Peet JZ. Examining First- and Second-Level Digital Divide at the Intersection of Race/Ethnicity, Gender, and Socioeconomic Status: An Analysis of the National Health and Aging Trends Study. The Gerontologist. 2024;64(9). doi:10.1093/geront/gnae079
14. Singh S. Digital Divide in India. International Journal of Innovation in the Digital Economy. 2010;1(2):1-24.
15. Mishra D, Kandpal V, Agarwal N, Srivastava B. Financial Inclusion and Its Ripple Effects on Socio-

Economic Development: A Comprehensive Review. JRFM. 2024;17(3):105.

16. Junaedi AT, Yovita I, Veronica K, Panjaitan HP, Jahrizal J, Renaldo N. Advancing Digital and Technology Literacy through Qualitative Studies to Bridging the Skills Gap in the Digital Age. JABT. 2024;5(2):123-133.

17. Bansal N, Choudhary H. Fostering digital equity: evaluating impact of digital literacy training on internet outcomes in rural marginalised communities in India. International Journal of Lifelong Education. 2024;43(5):473-493.

18. Prasastiningtyas, Y., Raharjo, W., & Setiawan, A. (2024). Enhancing inclusion through digital literacy: Impact and challenges among underserved communities. Journal of Socio-Digital Studies, 16(1), 21–39.

19. Johnson, A., Taylor, R., & Gomez, P. (2024). Digital literacy and social inclusion: Bridging gaps among excluded communities. Journal of Digital Society Studies, 15(2), 55–78.

20. Liotta, S. (2023). Digitalization and social inclusion: Assessing access for underprivileged communities. International Journal of Digital Development, 9(1), 25–46.

21. Sharma, R., Singh, V., & Arora, T. (2022). Digital inclusion in India: Analyzing physical and skill-based access across marginalized communities. Indian Journal of Digital Equity, 8(4), 45–67.

22. Norris, P. (2001). Digital divide: Civic engagement, information poverty, and the Internet worldwide. Cambridge University Press.

23. Park, S. (2017). Digital inequalities in rural India: A gendered perspective. Information Technologies & International Development, 13, 1–15.

24. Reisdorf, B. C., & Groselj, D. (2017). Internet use and social capital: A cross-cultural comparison. Information, Communication & Society, 20(4), 540–556.

25. Robinson, L., Cotton, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., ... & Stern, M. J. (2015). Digital inequalities and why they matter. Information, Communication & Society, 18(5), 569–582.

26. Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. New Media & Society, 6(3), 341–362.

27. Sharma, R., Singh, V., & Arora, T. (2022). Digital inclusion in India: Analyzing physical and skill-based access across marginalized communities. Indian Journal of Digital Equity, 8(4), 45–67.

28. Singh, S., & Dey, D. (2021). Gender and digital divide in India: A socio-economic perspective. Social Change, 51(3), 339–356.

29. Srivastava, R. (2019). ICT and rural development in India: Challenges and opportunities. Journal of Development Policy and Practice, 4(2), 145–165.

30. Subramanian, A. (2020). Bridging the digital divide in South Asia: Education, infrastructure, and inclusion. South Asian Journal of Policy and Development, 6(1), 23–40.

31. Tella, A., & Mutula, S. M. (2008). Digital literacy and academic performance: A study of students in Botswana. Information Development, 24(1), 26–34.

32. Unesco. (2018). A global framework of reference on digital literacy skills for indicator 4.4.2. UNESCO Publishing. https://unesdoc.unesco.org

33. van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. New Media & Society, 16(3), 507–526.

34. Warschauer, M. (2003). Technology and social inclusion: Rethinking the digital divide. MIT Press.

35. Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. Review of Research in Education, 34(1), 179–225.

36. Wei, L., & Hindman, D. B. (2011). Does the digital divide matter more? Comparing the effects of new media and old media use on the education-based knowledge gap. Mass Communication and Society, 14(2), 216–235.

37. Wilson, M. (2006). Digital literacy and the digital society. Information Society, 22(1), 1–8.

38. World Bank. (2021). Digital development report: Inclusion and transformation. https://www.worldbank.org

39. Zillien, N., & Hargittai, E. (2009). Digital distinction: Status-specific types of Internet usage. Social Science Quarterly, 90(2), 274–291.