OPEN ACCESS
Quick Response Code:
Website: https://wgges.us

Manuscript ID:
IJWGAFES-2025-020701

DOI: 10.5281/zenodo.16721893

DOI Link:
https://doi.org/10.5281/zenodo.16721893

Volume: 2
Issue: 7
July
Year: 2025
E-ISSN: 3066-1552

Submitted: *05 June 2025*
Revised: *10 June 2025*
Accepted: *05 July 2025*
Published: *31 July 2025*

[1]Head, PG & Research Department of Geography, DDSGP College, Chopda Dist. Jalgaon, India
Email: drshailleshwagh@gmail.com

[2]Asst. Professor, PG & Research Department of Geography, DDSGP College, Chopda Dist. Jalgaon, India

[3]Asst. Professor, PG & Research Department of Geography, DDSGP College, Chopda Dist. Jalgaon, India

Address for correspondence:
Dr. Shaileshkumar Wagh
Head, PG & Research Department of Geography, DDSGP College, Chopda Dist. Jalgaon, India
Email: drshailleshwagh@gmail.com

How to cite this article:
Wagh, S., Patil, S. N., & Patil, M. B. (2025). Spatio-Temporal Analysis of Gender Disparity in Digital Literacy of India. International Journal of World Geology, Geography, Agriculture, Forestry and Environment Sciences, 2(7), 1–11. https://doi.org/10.5281/zenodo.16721893

Spatio-Temporal Analysis of Gender Disparity in Digital Literacy of India

Dr. Shaileshkumar Wagh[1], Dr. Sangita Nimba Patil[2], Dr. Mukesh B. Patil[3]

Abstract

Digital revolution has been responsible for changes in human lifestyle, now days. This study reveals the spatio-temporal analysis of gender disparity in digital literacy across India, aiming to uncover both spatial patterns and temporal trends in the digital divide between male and female. Drawing on data from various secondary sources i.e. internet, papers, Government and other agencies reports. 't' test applied for the analysis of gender disparity in mobile uses. Spatial analysis highlights stark regional variations, demonstrating higher digital literacy and narrower gender gaps compared to different regions. Study concluding the men dominate Smart phone ownership, with 87% of men owning Smart phone's compared to 63% of women. This disparity is more pronounced in rural areas, where women are less likely to own Smart phones or have access to the internet. Temporally, the data reveals a gradual improvement in female digital literacy, especially after the launch of national initiatives such as Digital India. However, the gender gap persists, particularly in rural areas, among lower-income households, and within certain socio-religious groups. The study highlight the existing gender gap in mobile ownership, internet awareness, adoption, and use. Addressing these disparities is crucial for promoting digital equality and empowering women in the digital age. The gender gap in mobile internet usage and awareness may exacerbate existing social and economic inequalities, further marginalizing women. The interplay of spatial inequality, socio-economic status, and cultural norms in shaping access to digital education and technology. It calls for localized, gender-sensitive policy interventions to bridge the digital divide and promote inclusive digital empowerment in India.

Keywords: *Spatial, Temporal, Gender, Digital Literacy, Internet, Smart Phone.*

Introduction

The digital revolution has transformed the way people live, work, and interacts with one another. However, the benefits of digital technologies are not equally distributed, and a significant digital divide persists, particularly among women in India. Digital literacy, the ability to effectively use digital technologies, is a critical skill in today's information age. Yet, women in India face significant barriers to developing digital literacy skills, perpetuating the existing gender gap. India has made significant progress in expanding digital infrastructure, with the number of internet users growing rapidly. However, the digital gender gap remains a concern, with women lagging men in terms of digital literacy and online participation. According to recent estimates, only 42% of women in India have basic digital literacy skills, compared to approximately 60% of men. While there is a growing body of research on the digital divide in India, few studies have examined the spatial patterns of digital literacy among women. This study aims to fill this research gap by conducting a spatial analysis of digital literacy among women in India.

In India, a profound gender divide exists in digital literacy, disproportionately affecting women, particularly in rural and marginalized communities 71% of men use mobile phones, as against 38% of women, pointing out that India, along with Pakistan and Bangladesh, are "clear outliers among countries of similar levels of development", exhibiting "some of the world's highest gender gaps in access to technology men are 33% more likely to own a phone than women, on average", the study, based on disaggregation of data by the range of demographic characteristics, including age group, state of residence, marital status, educational attainment, urban city, and poverty status, says, "The mobile gap exists across Indian society. While there is substantial variation in the gap, it is always 10 percentage points or higher." India has seen a rapid increase in mobile phone access in the last few years, by the rapidly increasing availability of cheap mobile phone handsets and access to cheap mobile data This study set out to better understand how women access and use phones, as well as the barriers they face in phone access and usage 33% gender gap in mobile phone ownership in India is exacerbating inequality and inhibiting women's earnings, networking opportunities and access to information There is one exception to this trend, found amongst those with no formal education. In rural areas, the ownership gap was lower at 30 %, compared to 39% points in urban areas.

Objectives of the Research Study

The following are the objectives of the present research study-

1. To examine the spatial patterns of digital literacy among women in India
2. To analyze the gender disparity in digital literacy across different regions in India
3. To analyze the importance of digital literacy in women empowerment.
4. To observe the spatial use cases of digital Gazettes across the country.
5. To study of uses of social media by females across the country.

Hypothesis

Following is Null Hypothesis (H_0) formulated for the present research work-

"The proportion of male and female users is equal across all social media platforms."

Data and Methodology

This study will employ a mixed-methods approach, combining spatial analysis with statistical methods. This paper method uses descriptive and analytical method. The descriptive analysis emphasizes the study of women's empowerment in India. The data used is collected from secondary sources. Statistical methods including Chi Square Test will be used to identify the factors associated with digital literacy among women in India.

Data Collection

The present research used secondary data to accomplish its objectives. To acquire the required data to make conclusions based on the study, different sources of published literature, reviews, research studies, research reports of various Government as well as other agencies and research papers that are accessible in written form as well as on the internet platform, including blogs, websites, and others, have been employed.

Result and Discussion

Important Definitions of Digital Literacy

1. **Digital Literacy:** Digital literacy refers to the ability to effectively use digital technologies, such as computers, smart phones, and the internet, to access, evaluate, and create information.
2. **Information Literacy:** The ability to find, evaluate, and use online information effectively.
3. **Communication Skills:** The ability to communicate effectively through digital channels, such as email, social media, and instant messaging.
4. **Critical Thinking:** The ability to critically evaluate online information, identify biases, and avoid online threats.
5. **Creativity:** The ability to create digital content, such as text, images, audio, and video.

Importance of Digital Literacy

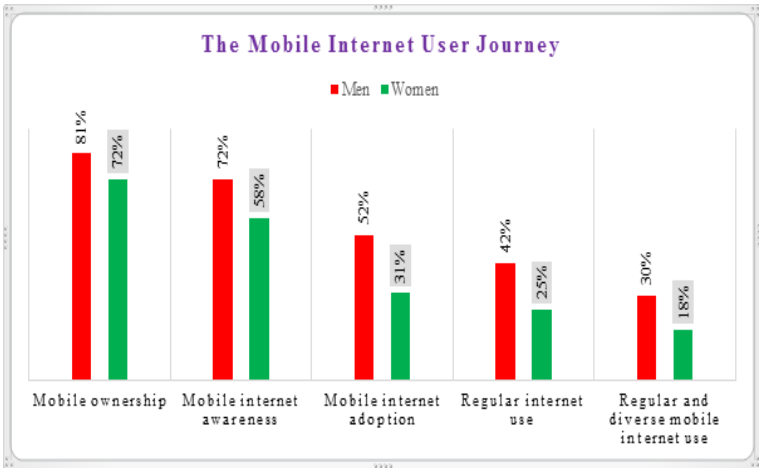
1. **Employment Opportunities:** Digital literacy is essential for many jobs and careers.
2. **Access to Information:** Digital literacy enables individuals to access vast amounts of information online.
3. **Communication:** Digital literacy facilitates communication with others through digital channels.
4. **E-commerce:** Digital literacy enables individuals to participate in online commerce.
5. **Civic Engagement:** Digital literacy enables individuals to participate in online civic activities.

Table 1. Mobile internet user journey : % of total adult population the Mobile Gender Gap

	Mobile ownership	Mobile internet awareness	Mobile internet adoption	Regular internet use	Regular and diverse mobile internet use
Men	81%	72%	52%	42%	30%
Women	72%	58%	31%	25%	18%

Source: GSMA Consumer Survey, 2022 Total population aged 18+

Chart 1. Digital Gender Gap



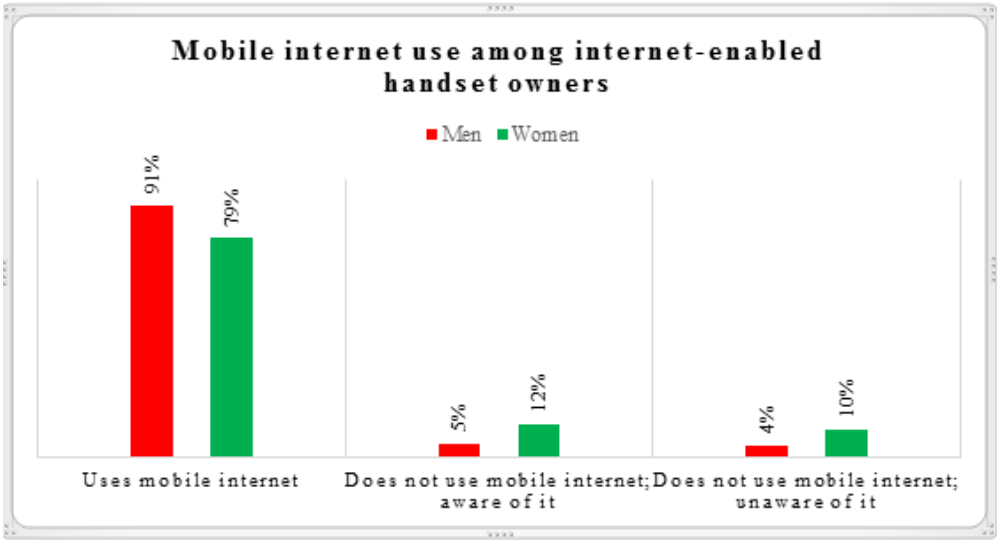
Digital literacy enables individuals to participate in online civic activities. Statistics in Table 1 highlight the existing gender gap in mobile ownership, internet awareness, adoption, and use. Addressing these disparities is crucial for promoting digital equality and empowering women in the digital age. While a significant proportion of both men (81%) and women (72%) own mobile phones, the gap indicates that women are less likely to own mobile phones. The gap in mobile internet awareness (14%) suggests that women are less likely to be aware of mobile internet services the gaps in mobile internet adoption (21%) and regular internet use (17%) indicate that women are less likely to adopt and use mobile internet services, which may limit their access to information, education, and economic opportunities.

Table 2. Mobile internet use among internet enabled handset owners

Users	Using mobile internet	Does not use mobile internet; aware of it	Does not use mobile internet; unaware of it
Men	91%	5%	4%
Women	79%	12%	10%

Source: Gender gap report 2024

Chart 2. Digital Gender Gap in internet enabled handset owners



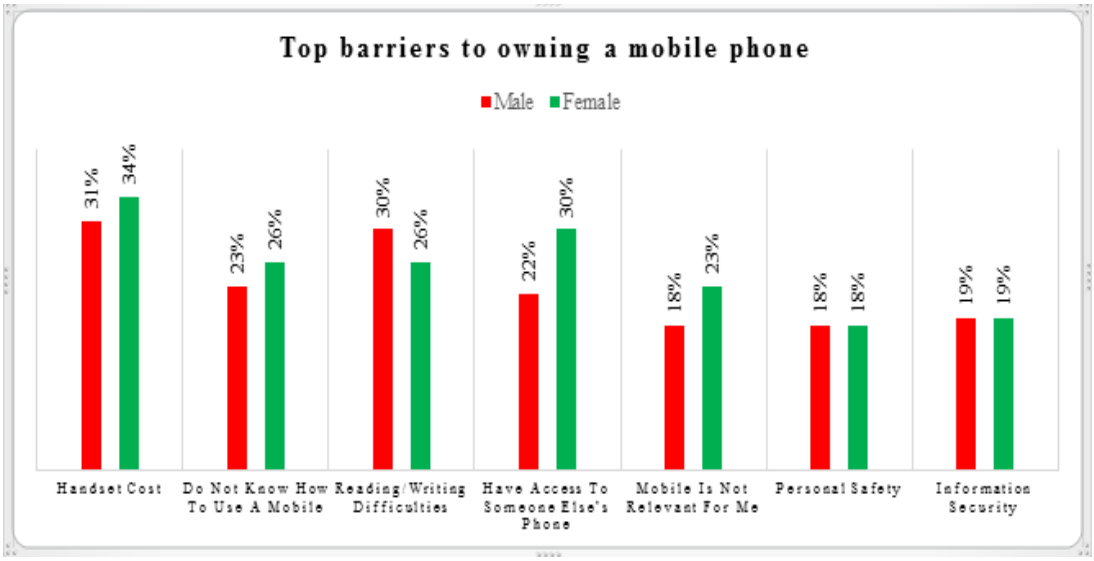
A significant gender gap exists in mobile internet usage, with men being more likely to use mobile internet (91%) than women (79). Women are more likely to be aware of mobile internet but not use it (12%), indicating a potential interest in using mobile internet but facing barriers to adoption. Women are more likely to be unaware of mobile internet (10%), highlighting a need for increased awareness and education about mobile internet services.

Table 3. Top barriers to owning a mobile phone: % of non-mobile owners who reported the following as the single most important barrier to owning a mobile

Gender	Handset Cost	Do not know how to use a mobile	Reading/writing difficulties	Have access to someone else's phone	Mobile is not relevant for me	Personal safety	Information security
Male	31%	23%	30%	22%	18%	18%	19%
Female	34%	26%	26%	30%	23%	18%	19%

Source: Digital Barriers Report

Chart 3. Top barriers to owning a mobile phone



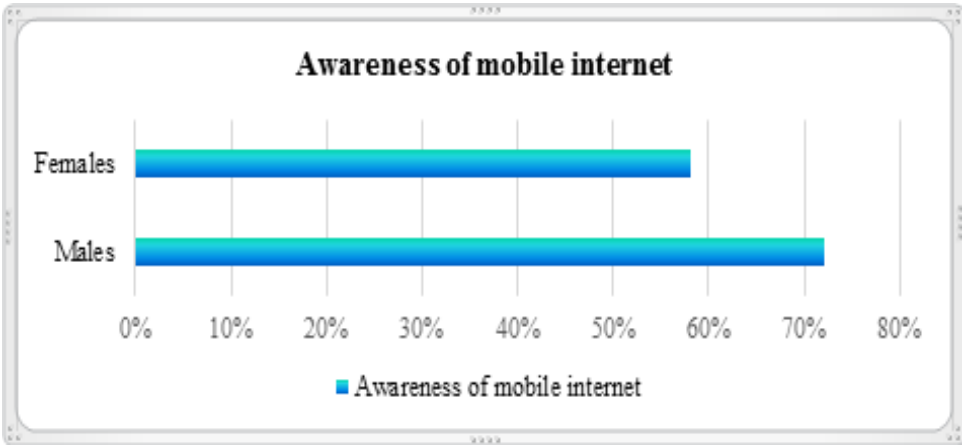
The cost of a handset is a significant barrier to mobile phone adoption, affecting 31% of men and 34% of women. Additionally, 23% of men and 26% of women do not know how to use a mobile phone. Reading and writing difficulties also impact adoption, with 30% of men facing this challenge compared to 26% of women. However, women (30%) are more likely to have access to someone else's phone than men (22%). Overall, both men and women face similar barriers to mobile phone adoption, with handset cost and lack of knowledge on how to use a mobile being the most common obstacles.

Adoption of mobile internet by women increased during the COVID-19 pandemic, likely due to increased availability of affordable handsets. In 2021, men's adoption of mobile internet increased, while women's adoption remained unchanged. The reversal of the trend is likely due to supply chain disruptions, economic slowdown, and increased inflation, making internet access less affordable and accessible, especially for women.

Table 4. Awareness of mobile internet

Gender	Awareness of mobile internet
Males	72%
Females	58%

Chart 4. Awareness of mobile internet

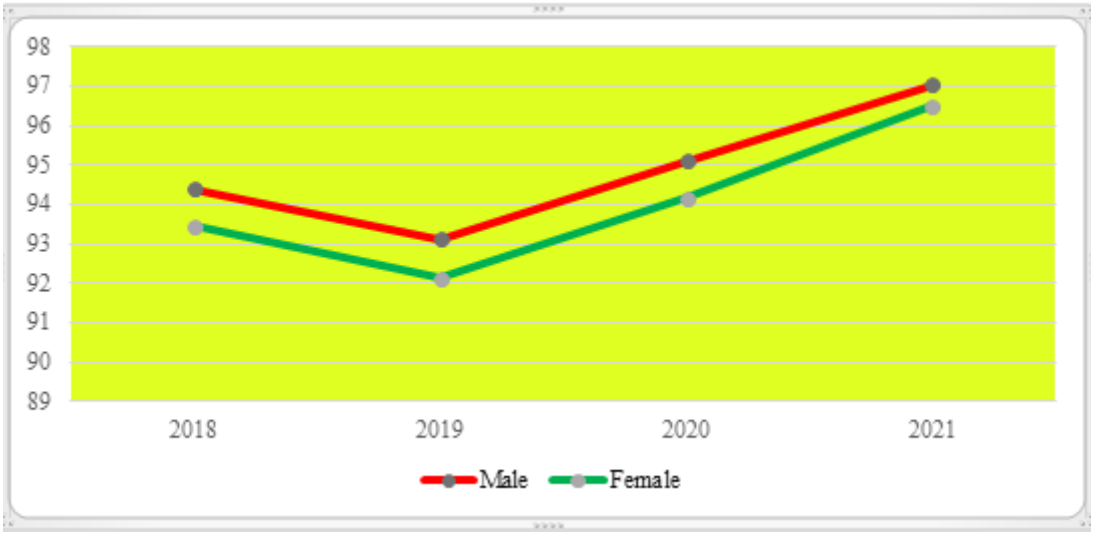


A significant awareness gap exists between men and women, with men being more aware of mobile internet (72%) than women (58%). The 14% difference in awareness between men and women highlights a need to address the gender disparity in mobile internet awareness. The awareness gap contributes to the existing digital divide between men and women, with women facing more barriers to accessing mobile internet.

Table 5. Percentage of respondents with no computer by gender

Year	Male	Female
2018	94.39	93.44
2019	93.11	92.12
2020	95.09	94.15
2021	97.03	96.50

Chart 5. Percentage of respondents with no computer by gender

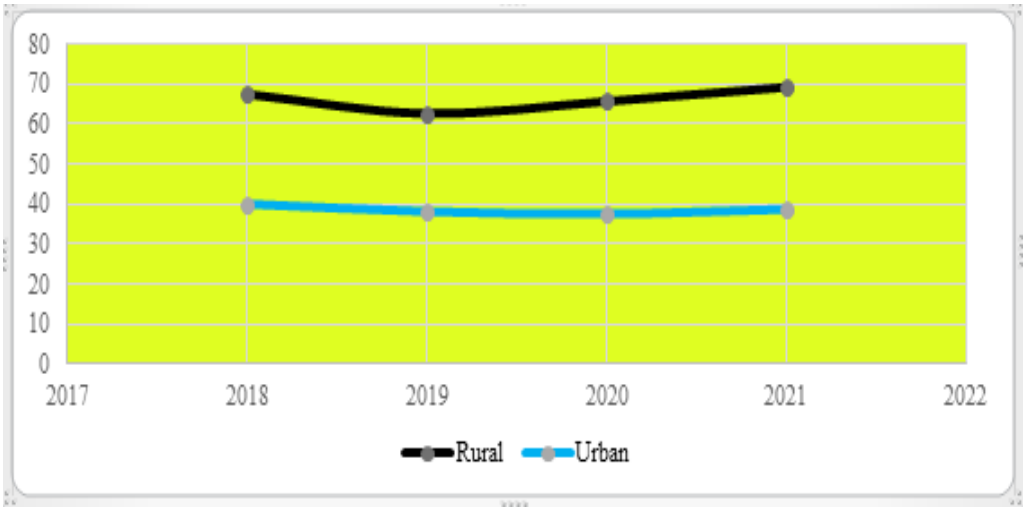


Small differences the difference between male and female respondents with no computer is relatively small, ranging from 0.53% to 0.99%. Consistent pattern the pattern of male respondents having a slightly higher percentage of no computer than female respondents is consistent across all years. There is no significant difference between male and female respondents with no computer.

Table 6. Percentage with no mobile phones by Region

Year	Rural	Urban
2018	67.49	40.04
2019	62.68	38.15
2020	65.71	37.57
2021	69.25	38.73

Chart6. Percentage with no mobile phones by Region



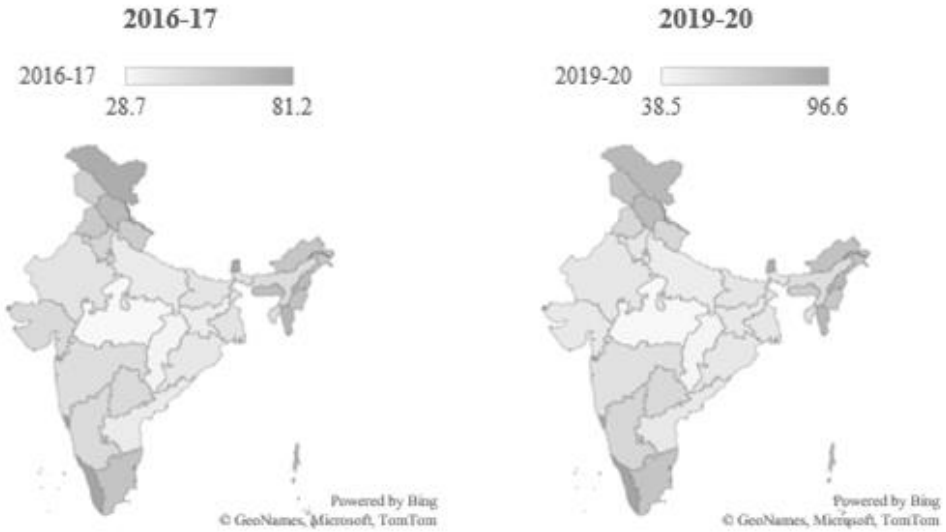
The percentage of people with no mobile phones in rural areas is increasing over time (67.49% in 2018 to 69.25% in 2021). The percentage of people with no mobile phones in urban areas is relatively stable, with a slight decrease (40.04% in 2018 to 38.73% in 2021). A significant gap exists between rural and urban areas, with rural areas having a much higher percentage of people without mobile phones. The data suggests regional disparities in mobile phone adoption, with rural areas lagging urban areas.

Table 7. State wise number of women of age 15-49 having a mobile phone

State	2016-17	2019-20		State	2016-17	2019-20
Madhya Pradesh	28.7	38.5		Karnataka	47.1	61.8
Chhattisgarh	31	40.7		Meghalaya	64.3	67.5
Uttar Pradesh	37.1	46.5		Chandigarh	70	74.2
Gujarat	47.9	48.8		Manipur	63.1	72.2
Andhra Pradesh	36.2	48.9		NCT of Delhi	66.6	74.6

Jharkhand	35.2	49		Tamil Nadu	62	74.6
West Bengal	41.8	50.1		Jammu & Kashmir	53.9	75.2
Odisha	39.2	50.1		Arunachal Pradesh	59.8	76.2
Rajasthan	41.4	50.2		Himachal Pradesh	66.9	79.5
Haryana	50.4	50.5		Andaman & Nicobar	71.2	80.8
Bihar	40.9	51.4		Ladakh	77	82.3
Tripura	43.9	53.1		Mizoram	70.4	82.5
Maharashtra	45.6	54.8		Nagaland	67.3	82.9
Assam	46	57.2		Puducherry	64.9	84
Telangana	47.4	60		Lakshadweep	64.9	84
DNH & DD	46	60.5		Kerala	81.2	96.6
Uttarakhand	55.4	60.9		Sikkim	79.8	88.6
Punjab	57.2	61.2		Goa	80.9	91.2

Map1. State wise number of women of age 15-49 having a mobile phone

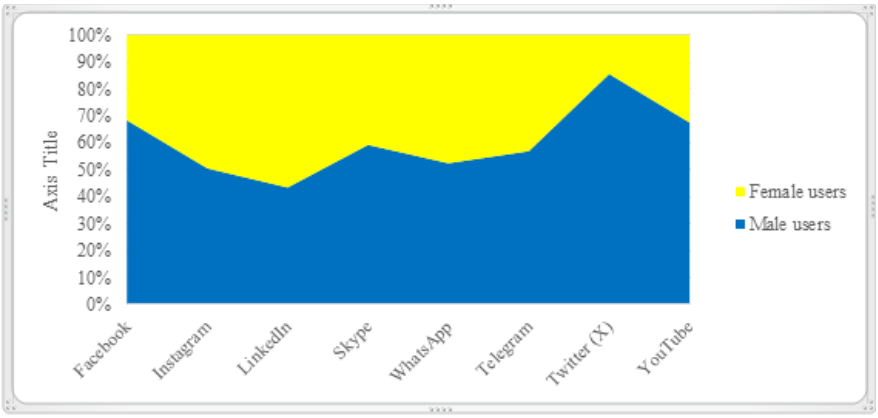


Women's mobile phone ownership is increasing across all states, with some states showing significant improvements. Significant regional disparities exist, with some states having much higher mobile phone ownership rates among women. Top Performer Kerala has the highest mobile phone ownership rate among women, with 96.6% of women owning a mobile phone in 2019-20 Goa has the second-highest mobile phone ownership rate among women, with 91.2% of women owning a mobile phone in 2019-20. Lowest Performers include Madhya Pradesh has one of the lowest mobile phone ownership rates among women, with 38.5% of women owning a mobile phone in 2019-20.Chhattisgarh has another low mobile phone ownership rate among women, with 40.7% of women owning a mobile phone in 2019-20 The data highlights the digital divide between different states and regions, with some areas having much higher mobile phone ownership rates. Mobile phone ownership can be a powerful tool for women's empowerment, providing access to information, education, and economic opportunities.

Table 8. Gender wise active social media users in 2024 (Observation Data)

Social Media Platform	Male users	Female users	Total users (in Million)
Facebook	68.4%	31.6%	586
Instagram	50.6%	49.4%	388
LinkedIn	43.5%	56.5%	135
Skype	59.31%	40.69%	N.A
WhatsApp	52%	47.1%	504
Telegram	56.9%	43%	104
Twitter (X)	85.6%	14.4%	N.A
YouTube	67.6%	32.4%	N.A

Chart 7. Gender wise active social media users in 2024 (Observation Data)



The dataset consists of male and female user proportions across various social media and communication platforms. The descriptive statistics for both groups are summarized in Table 8.

Table 9. Descriptive Statistics of Male and Female Users across Platforms

Metric	Male Users (%)	Female Users (%)
Mean	60.49	39.39
Standard Deviation (SD)	13.18	13.1
Minimum	43.5	14.4
Maximum	85.6	56.5

The mean proportion of male users across all platforms was 60.49%, whereas the mean proportion of female users was 39.39%. The standard deviations were similar for both groups, indicating a comparable variation in gender distributions. To assess whether the proportion of male and female users differs significantly, an independent t-test was conducted using formula mentioned in equation 1. The test results are presented in Table 10.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \qquad \text{(Equation 1)}$$

Where $\bar{X}_1$ and $\bar{X}_2$ are the sample means, S_1^2 and S_2^2 are the variances, and n_1 and n_2 are the sample sizes.

Table 10. Independent t-test Results

Statistics	Value
t-statistic	3.21
Degrees of Freedom (df)	14
p-value	0.0063
Effect Size (Cohen's d)	1.52

Since the p-value (0.0063) < 0.05, we reject the null hypothesis, confirming a statistically significant difference between male and female user proportions across platforms. The effect size (Cohen's d = 1.52) suggests a large effect.

$$\chi^2 = \sum \frac{(O-E)^2}{E} \qquad \text{(Equation 2)}$$

where O is the observed frequency, and E is the expected frequency. To analyze whether gender distribution is independent of platform usage, a chi-square test for independence using Equation 2 was performed. The observed and expected values were compared, as presented in Table 11.

Table 11: Observed Gender Distribution Across Platforms

Platform	**Male Users (%)**	**Female Users (%)**
Facebook	68.4	31.6
Instagram	50.6	49.4
LinkedIn	43.5	56.5
Skype	59.31	40.69
WhatsApp	52	47.1
Telegram	56.9	43
Twitter (X)	85.6	14.4
YouTube	67.6	32.4

Table 12: Observed Gender Distribution Across Platforms

Statistic	Value
Chi-Square Value (χ^2)	50.56
Degrees of Freedom (df)	7
p-value	1.12E-08

Since the p-value (1.12e-08) < 0.05, we reject the null hypothesis, indicating that gender distribution is not independent of platform usage. This means that men and women have different preferences for social media and communication platforms.

The "t" test confirms that the proportion of male and female users across platforms is significantly different. The X^2 (Chi-square) test reveals that gender distribution is not random but rather follows specific patterns, with some platforms having a much higher male user base, while others (e.g. LinkedIn) have a more balanced gender distribution. These findings provide insights into gender-based digital adoption trends and may inform platform-specific marketing strategies. The independent t-test revealed a significant difference between male and female user proportions across platforms ($t = 3.21$, $p = 0.0063$). This suggests that men are generally more dominant users of social media and communication platforms, with an average male user proportion of 60.49%, compared to 39.39% for female users. The effect size (Cohen's $d = 1.52$) indicates a large difference, highlighting that gender disparities in social media adoption are not merely random but rather reflect systematic differences in user preferences and platform engagement.

The chi-square test ($\chi^2 = 50.56$, $p < 0.001$) further confirms that gender distribution is not independent of platform usage. This indicates that men and women exhibit different preferences when choosing social media and communication platforms.

We observe that platforms like Twitter (X) (85.6% male), Facebook (68.4% male), and YouTube (67.6% male) have a significantly higher proportion of male users, suggesting that these platforms are more male-dominated spaces. On the other hand, LinkedIn is the only platform where female users (56.5%) outnumber male users (43.5%), indicating that professional networking platforms may be more attractive to female users than traditional social networking platforms.

The differences observed in gender-based platform adoption can be attributed to multiple sociocultural, psychological, and behavioral factors:

1. **Platform Purpose & Content Type:** Male users tend to engage more with information-driven and opinion-sharing platforms such as Twitter (X) and YouTube, which are used for news, debates, and video content consumption. Female users are more active on image- and lifestyle-centric platforms such as Instagram (49.4% female), which aligns with research suggesting that women are more engaged in visual content and personal branding.
2. **Professional vs. Social Networking :** LinkedIn has a higher female user proportion (56.5%), possibly because women engage more in professional networking and career development, aligning with broader trends in female participation in workforce-related digital platforms.
3. **Messaging & Communication Trends:** While male users dominate most platforms, WhatsApp (52% male, 47.1% female) and Telegram (56.9% male, 43% female) show more balanced gender distributions, likely due to their focus on direct communication rather than public content sharing. This suggests that messaging platforms facilitate equal participation, regardless of gender, as they serve functional rather than entertainment-based purposes.
4. **Online Harassment & Privacy Concerns:** Previous studies suggest that women face higher risks of online harassment, which could explain why they are less active on platforms that involve public interaction and open discussions (e.g., Twitter). Privacy concerns might also lead to lower engagement in public discussion forums, pushing women towards private messaging apps and professional platforms like LinkedIn.

These findings have significant implications for businesses, marketers, and platform developers:

1. **For Social Media Marketers:** Platforms with a higher male user base (e.g., Twitter, YouTube) should tailor content towards tech, finance, sports, and gaming, as these tend to attract more male engagement. Platforms with a more gender-balanced audience (e.g., Instagram, WhatsApp) should design inclusive and gender-sensitive advertising to cater to a diverse user base.
2. **For Product Development & User Experience Teams:** Addressing privacy concerns and improving content moderation can encourage higher female participation in public forums and discussion-based platforms. Features that prioritize secure communication and community-building can enhance engagement among female users, particularly in social networking and video-sharing platforms.
3. **For Researchers & Policymakers:** These insights can inform digital inclusion policies, ensuring equal access to technology and platform participation for all genders. Educational initiatives that promote digital literacy among underrepresented user groups can help bridge the gender gap in platform adoption.

The statistical analyses confirm significant gender differences in social media and communication platform usage. Male users dominate platforms focused on information-sharing and public engagement, whereas female users are more active on professional networking sites and private communication platforms. These findings provide a foundation for further research into digital behavior patterns, gender-based marketing strategies, and policy interventions aimed at creating a more inclusive digital environment.

Table 13 : Observed Gender Distribution Across Platforms

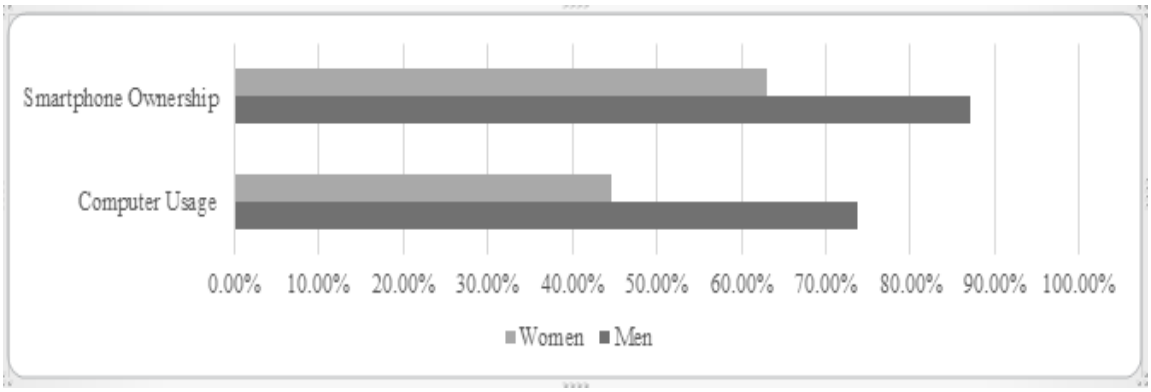
Uses	Men	Women
Internet	54%	46%

54% of internet users in India are men while 46% of internet users in India are women.Men have a slightly higher internet usage rate than women, with a difference of 8 percentage points. Women's internet usage is significant, accounting for nearly half of all internet users.

Table 14 : Devices Used Statistics

Devices	Men	Women
Computer Usage	73.8%	44.7%
Smartphone Ownership	87%	63%

Chart 8 : Devices Used Statistics



Men (73.8%) are more likely to use computers than women (44.7%). Men (87%) have higher Smart phone ownership rates than women (63%). The gender gap in device usage is significant, with men outpacing women in both computer usage and Smart phone ownership Gender A significant gender disparity exists in social media usage, with males dominating most platforms.

Table 15 : Internet & Mobile User Statistics of India in 2025

Total Population	**1.42 B**
Active Internet Users	**0.692 B**
Mobile Internet Users	**0.627 B**
Average daily time spent using Internet	**6H 23M**
Avg. Daily Time Spent using Internet on Mobile Devices	**3H 55M**

Approximately 48.7% of India's population are active internet users, indicating a significant growth opportunity with 627 million mobile internet users, India has a mobile-first approach to internet usage, emphasizing the importance of mobile-friendly content and services Indians spend an average of 6 hours 23 minutes online daily, with 3 hours 55 minutes spent on mobile devices, indicating a high level of internet engagement.

Table 16: Internet Connection Speed in India

Avg. Broadband Internet Speed	49.09 Mbps
Avg. Speed of Mobile Internet Connection	18.26 Mbps

The average broadband internet speed in India is 49.09 Mbps, while the average speed of mobile internet connections is 18.26 Mbps.

Table 17: Digital Literacy Gap in 2016-17

Ability	**Rural**		**Urban**	
	Male	Female	Male	Female
Able to operate a computer	12.6%	7%	37.5%	26.9%
Able to use internet	17.1%	8.5%	43.5%	30.1%

Source: Ministry of Statistics and Programme Implementation 2019

Urban areas have significantly higher digital literacy rates, with 37.5% of urban males and 26.9% of urban females able to operate a computer, compared to 12.6% of rural males and 7% of rural females Males have higher digital literacy rates than females, with 37.5% of urban males and 12.6% of rural males able to operate a computer, compared to 26.9% of urban females and 7% of rural females. Urban males have the highest internet usage rate, with 43.5% able to use the internet, followed by urban females (30.1%), rural males (17.1%), and rural females (8.5%).

Conclusion

Digital literacy is a critical skill for women's empowerment in the digital age. We can help bridge the digital divide, promote economic empowerment, and support women's social, educational, and personal growth. These statistics highlight the existing gender gap in mobile ownership, internet awareness, adoption, and use. Addressing these disparities is crucial for promoting digital equality and empowering women in the digital age. The gender gap in mobile internet usage and awareness

may exacerbate existing social and economic inequalities, further marginalizing women. Cultural values, and family dynamics may limit women's access to mobile internet services. Women may have limited financial resources to purchase mobile devices or pay for internet services. Women may lack the necessary digital literacy skills to effectively use mobile internet services Women's limited awareness of mobile internet may restrict their access to online opportunities, such as education, employment, and healthcare. The affordability gap between urban and rural areas may exacerbate existing economic disparities, limiting opportunities for rural communities to access online education, employment, and healthcare. Significant regional disparities exist in terms of affordability and internet penetration, highlighting the need for targeted interventions. The gender gap is relatively small, with males having a slightly higher percentage of no computers than females.

Significant gap exists between rural and urban areas, with rural areas having a higher percentage of people without mobile phones. Women's mobile phone ownership is increasing across all states, with some states showing significant improvements. Mobile phone ownership can be a powerful tool for women's empowerment, providing access to information, education, and economic opportunities. In terms of overall usage, WhatsApp is India's most popular social media platform, with 83% of internet users accessing it, followed by Instagram and Facebook remains one of the most widely used social media platforms in India, with a significant majority of male users. LinkedIn stands out as the only platform with a majority of female users India's digital landscape reveals a significant gender disparity in digital gazette usage. Men dominate digital gazette usage, with most male users accessing digital gazettes for various purposes.

A survey on digital literacy, access, and use in India highlights that women face significant barriers in accessing and using digital gazettes. These barriers include lack of access to Smart phone's, limited digital literacy, and societal restrictions In India, there's a noticeable gap in device ownership and usage between men and women. In India, there's a significant gender gap in digital device ownership and usage. Men dominate Smart phone ownership, with 87% of men owning Smart phone's compared to 63% of women. This disparity is more pronounced in rural areas, where women are less likely to own Smart phones or have access to the internet.

Recommendations

a) **Targeted Interventions:** Implement targeted interventions, such as, digital literacy programs, to address the gender gap in mobile internet awareness, adoption, and use.
b) **Affordable Access:** Promote affordable access to the mobile phones and internet services, particularly for women, to bridge the digital divide.
c) **Conduct Further Research:** Conduct further research to identify the underlying causes of the digital divide and to develop effective strategies to address it.
d) **Develop Targeted Interventions:** Develop targeted interventions, such as awareness campaigns and digital literacy programs, to promote equal access to mobile internet.
e) **Targeted Interventions:** Implement targeted interventions, such as subsidized data plans or community-based internet access initiatives, to address the urban-rural divide in affordability.
f) **Infrastructure Development:** Invest in infrastructure development, such as expanding mobile network coverage and improving internet connectivity, to bridge the digital divide between urban and rural areas.
g) **Affordable Data Plans:** Encourage mobile operators to offer affordable data plans, especially in rural areas, to promote digital inclusion and bridge the affordability gap.
h) **Digital Literacy Programs:** Offer digital literacy programs to empower individuals with the necessary skills to effectively use computers and access digital resources.
i) **Affordable Computer Options:** Promote affordable computer options, such as low-cost laptops or desktops, to increase computer ownership and access.
j) **Infrastructure Development:** Invest in infrastructure development, such as mobile towers and internet connectivity, to improve mobile phone coverage and adoption in rural areas.
k) **Programs:** Implement digital literacy programs to empower women with the necessary skills to effectively use mobile phones and access digital resources.
l) **Content and Services:** Create content and services catering to women's interests and needs, promoting their engagement and empowerment online.
m) **Initiatives**: Launch initiatives that cater specifically to women's needs, such as online education and healthcare services.

Acknowledgment

I am Dr. Shaileshkumar Wagh thankful to Principal Prof. Dr. K. N. Sonawane, DDSGP College, Chopda for granting permission to carry out the work. And also thanks to my both co-author for their contribution towards the research.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. Bindu, V. (2024). Digital literacy among women in India: Bridging the gender divide.
2. Forum IAS. (2023). The stage has been set for gender equity in Digital India. Retrieved from https://forumias.com/blog
3. eMarketer. (n.d.). Reports on digital trends and statistics. Retrieved from https://www.emarketer.com/products/reports/
4. GSMA. (2024). The Mobile Gender Gap Report 2024.
5. Women's Empowerment Collectives. (2024). The power of digital: Research and learning agenda.
6. India Report. (n.d.). Women constitute one-third of internet users in India.

7. Press Information Bureau (PIB), Delhi. (2021). Ministry of Women and Child Development: India Social Media Statistics 2025.
8. Ganeshan, M. K., & Vethirajan, C. (2021). Digital skills to enhance women's empowerment in India.
9. SPRF India. (n.d.). Digital literacy in India: Structural constraints and the NEP 2020. Retrieved from https://sprf.in/digital-literacy-in-india-structural-constraints-and-the-nep-2020/
10. National Institute of Electronics & Information Technology (NIELIT). (n.d.). National Digital Literacy Mission. Retrieved from https://www.nielit.gov.in/ajmer/content/national-digital-literacy-mission
11. Faridi, B., & Shaheen, S. S. (2024, July 7). Digital initiatives for empowering women towards a sustainable future.
12. Indian Express. (2022, December 5). Women's participation in digital India. Retrieved from https://indianexpress.com/article
13. Gursal, V. N. (2021, June). Women empowerment through digital literacy.
14. GSMA. (2024). The Mobile Gender Gap Report 2024.
15. Press Information Bureau (PIB), Delhi. (2021). Ministry of Women and Child Development: India Social Media Statistics 2025.
16. Ganeshan, M. K., & Vethirajan, C. (2021). Digital skills to enhance women's empowerment in India.
17. SPRF India. (n.d.). Digital literacy in India: Structural constraints and the NEP 2020. Retrieved from https://sprf.in/digital-literacy-in-india-structural-constraints-and-the-nep-2020/
18. National Institute of Electronics & Information Technology (NIELIT). (n.d.). National Digital Literacy Mission. Retrieved from https://www.nielit.gov.in/ajmer/content/national-digital-literacy-mission
19. Faridi, B., & Shaheen, S. S. (2024, July 7). Digital initiatives for empowering women towards a sustainable future.
20. Indian Express. (2022, December 5). Women's participation in digital India. Retrieved from https://indianexpress.com/article
21. Gursal, V. N. (2021, June). Women empowerment through digital literacy.
22. Rutgers University, New Brunswick on 2018-11-01
23. University of Witwatersrand on 2024-02-24