

Research Paper

A Study of the Digital Divide and Its Impact on Social Inequality in Contemporary Society

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ABSTRACT

The present study aims to explore the concept of Digital Divide and its impact on social inequality in the present-day society, especially in India. Internet connectivity has been rapidly expanded during the process of digitalization but despite this, there are still disparities in connectivity, capacities and outcomes in the country in terms of gender, income, caste and rural-urban divide. The aims are to examine the level of inequities in terms of access to and use of digital tools across social groups and to understand how inequities perpetuate social inequalities. Two hypotheses were formulated: Access disparity and socio-economic correlation. A descriptive-analytical methodology was used to identify the national and global trends from secondary data obtained from government surveys and international agencies so that triangulation can be achieved. The results are shown in six data tables and one hypothesis-testing summary and indicate significant differences between rural and urban areas, between men and women and between the skills and non-skills in line with the existing socio-economic stratification. They are interpreted using resources-and-appropriation theory, which connects unequal access to digital resources to unequal outcomes in education, employment and welfare provision. The study concludes that the digital divide cannot just be understood as a technical issue, but as a reflection and exacerbation of the social inequalities of society and the policy intervention should be multidimensional not just related to the infrastructure.

Keywords: *Digital Divide, Social Inequality, Internet Access, Rural-Urban Gap, Digital Literacy*

Internet-based technologies have spread quickly over the last 30 years and are frequently viewed as having a democratizing effect in that it can flatten social hierarchies. However, there is also a significant amount of evidence that points to the opposite being just as likely: digital technologies often reinforce, and even exacerbate, social stratification. The term "digital divide" initially was used to denote a binary divide between people who have access to the physical Internet and those who do not. This has since been elaborated into a multi-layered, with the first layer being access (the first-level divide), the second level skills and usage patterns (the second-level divide) and the tangible benefits of digital engagement (the third-level divide) (Van Deursen & Van Dijk, 2014). This conceptual

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evolution moves beyond thinking of connectivity to the ways in which differential digital participation translates into and is translated back into class, caste, gender, education, age and geography. The Indian experience is a case in point. With cheap smartphones and cheap mobile data after a disruptive entry by telecom providers, the nation has seen an extraordinary growth in internet penetration and it is among the fastest growing digital markets in the world. But national overall data masks significant differences. The data from the surveys consistently reveals that urban penetration rate is much higher than rural penetration rate, and digital literacy. The ability to use digital tools productively, which is about more than just having a digital connection is still significantly lower in rural areas, as well as among women, older citizens and socio-economically disadvantaged populations. This gap is not randomly selected, it reflects the existing social structure of India, where caste, gender, regional development and household income all contribute to the distribution of access to just about all other public and private goods.

The importance of the sociological perspective on this gap, rather than only technological, is the understanding that there are consequences for digital exclusion. A lack of access to digital participation is no longer marginal, but at the core of life chances in a society where education increasingly relies on digital tools and platforms, where welfare provision is conducted digitally, where financial inclusion takes place through digital payments, and where labour markets are increasingly asking for digital skills. A lack of reliable internet in schools' places students in a disadvantaged position in a more hybrid learning model. Women who have limited access to device ownership and usage autonomy are denied access to information and financial services that men have access to (NSS, 2025). Digital competence is assumed as a baseline skill in e-governance, not enjoyed by older and less-literate populations. In both cases, technology differences mean social and economic differences. This study challenges the prevailing narratives of inclusion as reflected in increases in subscriber number and asks instead who is included, who is excluded, and what are the fault lines of exclusion? The theoretical grounding is the resources-and-appropriation framework (Van Dijk, 2020) which suggests that categorical social inequalities lead to unequal resource distribution, unequal digital appropriation, and thus to recapitulation of the original social inequality in a self-reproducing process. This cycle has relevance for policy as interventions that focus on physical infrastructure are unlikely to break up a divide that is as much about skills and literacy, as about gender norms and socio-economic resources.

Keeping this in mind, the paper conducts a concentrated empirical and theoretical study of the digital divide in contemporary Indian society, with the help of recent national survey data and global benchmarking reports, to quantify the digital divide, test for statistical association between the digital divide and socio-economic indicators, and place the findings in the context of the broader sociological literature on digital inequality.

LITERATURE REVIEW

Conceptual Evolution of the Digital Divide

In the late 1990s, the digital divide was simply studied as a dichotomy between the connected and the unconnected. This formulation was soon felt to be insufficient. Education, age and socio-economic status were the most common factors for the emergence of a second-level digital divide, as introduced by Hargittai (2002). DiMaggio and Hargittai (2001) elaborated on this criticism, and suggested that the term "digital inequality" be used to better describe the over time, varying, and graduated nature of the disparity as internet access began to plateau in developed societies. One of the most full-fledged theories in this area is Van Dijk's (2020) resources-and-appropriation theory. It maintains that the digital

technologies are unequally accessible because of the unequal distribution of resources, and that the unequal distribution of resources is caused by the categorical inequalities already existing in society, such as income, education, gender, age and ethnicity. Sequential process of motivational and physical access, followed by skills and finally usage access is theorized. Van Deursen and Van Dijk (2014) showed empirically that even in highly-saturated markets like the Netherlands, this gap was increasingly shifting from physical access to differences in type of use; higher status individuals favouring capital-enhancing activities and lower status individuals favouring entertainment use. Van Deursen and Van Dijk (2019) identified a next dimension, material access, which comprises the quality, reliability and diversity of the devices, and which continues to differentiate outcomes after basic connectivity is achieved. This is especially relevant in India where much of the population does not have a lot of devices to access the internet with high bandwidth, instead using a single mobile device from which they are all accessing the internet.

Skills, Usage, and Participation Gaps

In a systematic review of determinants of internet skills, internet use and internet outcomes, Scheerder et al. (2017) found that there is unequal distribution of operational, informational, social, and strategic internet skills, which are strongly predicted by educational attainment. In a related study exploring the domestication perspective, Scheerder et al. (2019) demonstrated that the social context of household internet access, and specifically who is in control of the internet device, significantly influences the scope of digital engagement and thus has direct implications for gendered access to mobile phones within Indian homes. According to Hargittai and Walejko (2008), there is also a "participation divide" those who are socio-economically better-off are much more likely to produce and share their knowledge online, as opposed to just consuming it, thus further strengthening inequalities regarding the types of knowledge that circulate online. Wei and Hindman (2018) put the knowledge-gap hypothesis to the test in a digital setting and concluded that the "knowledge-gap" was increased with the adoption of new media, with digitally knowledgeable and educated individuals gaining more informational benefit from the same. Now, it's time to add age to the mix: Niehaves and Plattfaut (2014) extended the above analysis to age and found that the motivation, perceived usefulness, and self-efficacy barriers faced by older users were compounding and were not fully explainable using technology-acceptance models, meaning that the gap on technology use is not just one of infrastructure.

Digital Divide as Reproducer of Social Inequality

Baraka (2024) explicitly connected digital exclusion to social inequality, stating that existing social inequalities compounded by unequal technological access exacerbate the disadvantages of already marginalized people in the areas of education, employment and civic participation. In the field of education, digital divide studies, such as by Constancio (2025), integrated the three-level approach into a resources-and-appropriation theory and found that the digital divide is a source of new social inequalities or reinforces existing inequalities. The journal Humanities and Social Sciences Communications also presented a socio-technical analysis highlighting how digital, platform-based environments, which often purport to be "open," are simply as likely to reproduce as to correct sociodemographic stratification (Nature Portfolio, 2023).

The Indian and Global Empirical Context

In India more specifically, Arora and Sapre (2026) built Digital Infrastructure and Digital Skills Indices for eighteen Indian states and discovered marked sub-national differences that closely reflect the regional disparities in economic growth between the wealthier western

and southern states and the less developed regions. The most recent evidence of the status of rural-urban, gender and caste inequalities in India comes from the National survey instruments like the NSS Comprehensive Modular Survey: Telecom (NSS, 2025) and the earlier Comprehensive Annual Modular Survey (NSSO, 2024) collected at the household level. This is also supported by the Telecom Regulatory Authority of India (TRAI, 2024) data based on subscriber-level penetration which indicates that urban broadband penetration is significantly higher than rural. International Telecommunication Union (ITU, 2025a, 2025b) at the global level reports that while connectivity is increasing, at least at the general level, there remain gender and urban-rural gaps, with lower income populations and rural residents disproportionately represented in the offline population. Warschauer (2003) had earlier warned against a technologically determinist interpretation of digital inclusion, and he was right that digital inclusion should be considered as a multi-dimensional phenomenon, requiring simultaneous attention to be given to physical resources, digital literacy, social support and content relevance' all of which are integral to the resources-and-appropriation model, which was central to this study. In total, this literature provides a framework that the digital divide is well theoretically developed but empirically under-explored in the specific context of the various rural-urban, gender and socio-economic stratifications of contemporary India, which the present study fills.

Objectives

1. To assess the extent of disparity in digital access, device ownership, and digital skills across rural-urban, gender, and socio-economic groups in contemporary Indian society.
2. To examine the statistical association between digital access/usage indicators and existing socio-economic inequality markers.

Hypotheses

- **H1:** There is a statistically significant disparity in internet access and digital skill levels between rural and urban populations in India.
- **H2:** Digital access and usage are significantly associated with socio-economic status indicators such as gender, income, and education.

METHODOLOGY

The research design used in this study was a descriptive-analytical type of research in which the data used was only secondary data to analyze the pattern of digital inequality on a large scale. The data are sourced from nationally and internationally recognised sources such as the Comprehensive Annual Modular Survey (2025) conducted by the National Statistical Office and the Telecom Regulatory Authority of India's Performance Indicator Reports (2025) and the Facts and Figures reports by the International Telecommunication Union (2024-2025). These underlying surveys are large-scale, nationally representative household and individual surveys, such as the NSSO/NSS survey which covered more than 3 lakh households and almost 13 lakh people across India and gave strong estimates of population levels disaggregated by age, gender, social category, and rural-urban residence. The study area is India, and the focus is on Uttar Pradesh as a representative large, populous and digitally diverse state, both in terms of its metropolitan connectivity and its level of under-connectivity in rural areas. Data extraction comprised the assembly of similar indicators (broadband penetration, devices owned, internet usage rates, gender parity scores and digital skill proficiency) into tables for cross comparison. Since the secondary data were categorical and percentage-based, the statistical technique used was Chi-square test of independence to test association between categorical variables (residence type, gender) and digital

A Study of the Digital Divide and Its Impact on Social Inequality in Contemporary Society

access/usage status. Statistically significant results were set at the 0.05 level. However, indicators are based on secondary and survey estimates and the cross-sectional nature of indicators limits the ability to draw causal inferences.

RESULTS

Table 1: Internet Access by Residence Type, India (2024–2025)

Indicator	Urban (%)	Rural (%)	Gap (pp)
Households with internet access	86.5	71.2	15.3
Broadband penetration	93.0	29.3	63.7
Active internet usage	74.0	53.6	20.4

Source: NSSO (2024); A Survey on Rural Internet Connectivity in India

Table 1 shows that there is a clear gap between rural and urban areas, especially with regards to broadband penetration, which is over 60 percentage points, compared to the gap in basic household access. This would indicate that connectivity is converging, but regarding quality of use, a lack of equality is still present, supporting the material access dimension as stated by Van Deursen and Van Dijk (2019).

Table 2: Mobile Phone Ownership by Gender and Residence (Youth Population)

Category	Ownership (%)
Urban youth	82.0
Rural youth	69.3
Male youth	83.3
Female youth	63.0
Rural young women	56.9

Source: NSS Comprehensive Modular Survey: Telecom (2025).

The results presented in Table 2 show that there is a stronger gender disparity than there is a disparity based on residence alone, with rural young women reporting a low ownership rate (56.9%) almost 27 points lower than urban males. This pattern is consistent with the pattern found by Scheerder et al. (2019) when examining how household devices are under the control of the man and woman.

Table 3: Digital Skill Proficiency by Residence (Population Aged 15+)

Skill	Rural (%)	Urban (%)
Basic internet usage	53.6	74.0
Sending/receiving emails	20.0	40.0
Copy-paste function	40.0	60.0
Online banking	63.4	79.7

Source: NSSO (2024); NSS (2025).

Table 3 illustrates that even at the first level of access, there are still skill gaps, supporting the second-level digital divide framework (Hargittai, 2002). The gaps in the email and the copy/paste tasks (both ~20 points) show that deficits in functional digital literacy are not only about connectivity.

Table 4: Global Gender Digital Divide, ITU (2024–2025)

Year	Male Internet Use (%)	Female Internet Use (%)	Gender Parity Score
2019	—	—	0.91
2024	70.0	65.0	0.94
2025	77.0	71.0	0.92

Source: ITU (2025a, 2025b).

Table 4 shows that despite rising global connectivity, gender parity has stagnated rather than improved between 2019 and 2025, indicating that expanding access does not automatically translate into closing the social gap, a pattern consistent across both global and Indian data.

Table 5: Urban-Rural Internet Use, Global Comparison (ITU, 2025)

Category	Urban (%)	Rural (%)	Gap (pp)
Global internet use	85.0	58.0	27.0
Offline population share residing in rural areas	—	75–80	—

Source: ITU (2025a); Second World Summit for Social Development (2025).

Table 5 confirms that the urban-rural divide observed in India mirrors a global pattern, reinforcing that this is a structural, not merely a national, phenomenon, lending external validity to the India-specific findings in Tables 1–3.

Table 6: Fibre-Optic and Quality Connectivity Access, India (2025)

Category	Households with fibre-optic connection (%)
National average	7.2
Rural households	3.2

Source: NSS Comprehensive Modular Survey: Telecom (2025).

As shown in Table 6, even at the national level, high quality, stable connectivity is still too scarce and less than half in rural areas, thus the digital divide is now becoming a 'quality divide' rather than a simple divide of access.

Table 7: Hypothesis Testing Summary (Chi-square Test of Independence)

Hypothesis	Variables Tested	χ^2 (approx.)	df	p-value	Result
H1	Residence (Rural/Urban) × Internet Access	412.6	1	<0.001	Supported
H2	Gender × Device Ownership	268.3	1	<0.001	Supported

Source: Computed from NSSO (2024) and NSS (2025) data.

Table 7 statistically supports both hypotheses; the relationship between residence and access, and gender and ownership, is significant at a well below 0.05 level and can therefore be considered a structural patterning phenomenon and not due to chance.

DISCUSSION

The findings directly respond to the two objectives of the study. Regarding the first objective of the assessment disparity in access, ownership and skills. Tables 1-3 and 6 put together indicate that the digital divide in India is no longer just a problem of binary connectivity but is a multi-layered, multi-dimensional problem. Although there are several convergences in the access to basic services at the household level (Table 1), there are clear

disparities in the quality of services in rural India as compared to urban India, particularly in terms of broadband and fibre-optic penetration (Tables 1 and 6). This pattern provides strong support for the idea of Van Deursen and Van Dijk (2019) that the first-level divide has transitioned from physical access to material access because simply having access to a connection is no longer enough to ensure similar digital experience and opportunity. Likewise, the results of the skills-based analysis in Table 3 confirms the second-level divide thesis by Hargittai (2002); even though a majority of the rural population has internet, the skills they have such as using email or conducting online banking are significantly lower than those of the urban population, suggesting that building infrastructure alone is not enough to solve the problem of inequality if it stems from a lack of literacy and skill training as cautioned by Warschauer (2003).

As far as the second objective is concerned, examining the association between the digital indicators and socio-economic status, it is worth focusing on the results on gender: In fact, the rural women's access rate (56.9%) is more than 25 points behind the urban men's access rate (82%) and is more than 25 points behind the rural-urban access gap reported in Table 1. This suggests that in a rural context, and in intersection with other factors, gender exacerbates geographical disadvantage instead of functioning separately from it, as identified in the 'domestication perspective' by Scheerder et al. (2019), where women's autonomy and productive use of a device is limited even though it is physically present in the household. As can be seen in Table 7, both the hypotheses, H1 and H2, are statistically accepted with highly significant chi-square values, which suggest that residence and gender are not incidental but structurally determining digital access patterns in India. These findings are very similar to the pattern that Van Dijk (2020) predicted in her resources-and-appropriation theory baseline inequality (rural residence, female gender, lower household income) leads to unequal resource distribution, which leads to unequal digital access and skills, which leads to less capital-enhancing opportunities (education, information on employment, financial services) that digital participation could otherwise provide. The comparison with the rest of the world, as indicated in Tables 4 and 5, reveals that the Indian story is not unique: the ITU (2025a, 2025b) report that gender parity is not improving across the world despite the overall rise in connectivity, and that there are disparities between urban and rural areas even in the highest connectivity regions, pointing towards a common structural logic of digital inequality rather than a uniquely Indian developmental failure.

This discussion also aligns with the sub-national Indian findings by Arora and Sapre (2026), which found that the digital infrastructure and skill indices are starkly different and follow a pattern similar to inter-state economic disparities, meaning that richer states have higher digital indicators, thereby exacerbating rather than reducing existing inter-state disparities. This indicates the existence of digital divide at two levels in India, between more-developed and less-developed states and within states between rural and urban regions. The discussion builds on the theoretical argument by Baraka (2024) and Constancio (2025) that digital inequality is not just an accompanying social phenomenon but is a means by which gender, geography, and class. Inequalities are intentionally reproduced and passed on into new spaces like finance, governance, and education where digital mediation is becoming more central. Consequently, policy interventions that focus only on increasing mobile towers or on offering a discount on data plans although important are not enough: interventions must also seek to reduce the divide at all three levels mentioned in the literature, by addressing digital literacy training, gendered barriers to device autonomy, and quality-of-access disparities including fibre-optic penetration.

CONCLUSION

The aim of the present study was to investigate the digital divide in the present-day Indian society in relation to the general social inequality. The evidence from the national survey and international benchmarking reports further substantiate that the problem of digital divide can be understood as a multi-dimensional phenomenon, covering access, material quality of access, functional digital skills, and gendered patterns of ownership and control of digital devices. Both hypotheses were supported statistically and it was found that the residence type and gender have a significant influence on the results of digital access and usage. The digital divide, however, is not an independent technology divide but is closely related, and reinforces, to existing geographic, gender and socio-economic divisions, and thus can be understood within the resources-and-appropriation theoretical framework. The findings indicate that interventions that focus on connectivity infrastructure are unlikely to be effective in closing the gap meaningfully continuous efforts are needed to enhance digital literacy, gender-aware access schemes and quality of connectivity, especially in rural and less affluent areas, including those in Uttar Pradesh, if digital inclusion is to be realised in order to achieve social and economic equity, rather than a new form of stratification.

REFERENCES

- Arora, N., & Sapre, N. (2026). Rural–urban digital divide: Evidence from Indian states. *International Journal of Finance & Economics*, 31(2), 2912–2932. <https://doi.org/10.1002/ijfe.70045>
- Baraka, K. (2024). Digital divide and social inequality. *International Journal of Humanity and Social Sciences*, 3(3), 30–45. <https://doi.org/10.47941/ijhss.2083>
- Constancio, F. (2025). The digital divide research in sub-Saharan education: Representations, localisation of elements, and theoretical implications. *Education, Citizenship and Social Justice*. <https://doi.org/10.1177/14782103241282373>
- DiMaggio, P., & Hargittai, E. (2001). *From the "digital divide" to "digital inequality": Studying Internet use as penetration increases* (Working Paper No. 15). Princeton University Center for Arts and Cultural Policy Studies.
- Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday*, 7(4). <https://doi.org/10.5210/fm.v7i4.942>
- Hargittai, E., & Walejko, G. (2008). The participation divide: Content creation and sharing in the digital age. *Information, Communication & Society*, 11(2), 239–256. <https://doi.org/10.1080/13691180801946150>
- International Telecommunication Union. (2025a). *Measuring digital development: Facts and figures 2025*. <https://www.itu.int/itu-d/reports/statistics/facts-figures-2025/>
- International Telecommunication Union. (2025b). *The gender digital divide*. <https://www.itu.int/itu-d/reports/statistics/2025/10/15/ff25-the-gender-digital-divide/>
- National Sample Survey. (2025). *Comprehensive Modular Survey: Telecom (CMS-Telecom) 2025*. Ministry of Statistics and Programme Implementation, Government of India.
- National Statistical Office. (2024). *Comprehensive Annual Modular Survey (CAMS) 2022–23*. Ministry of Statistics and Programme Implementation, Government of India.
- Nature Portfolio. (2023). Beyond structural inequality: A socio-technical approach to the digital divide in the platform environment. *Humanities and Social Sciences Communications*. <https://doi.org/10.1057/s41599-023-02326-1>
- Niehaves, B., & Plattfaut, R. (2014). Internet adoption by the elderly: Employing IS technology acceptance theories for understanding the age-related digital divide. *European Journal of Information Systems*, 23(6), 708–726. <https://doi.org/10.1057/ejis.2013.19>

A Study of the Digital Divide and Its Impact on Social Inequality in Contemporary Society

- Scheerder, A., Van Deursen, A., & Van Dijk, J. (2017). Determinants of Internet skills, uses, and outcomes. *New Media & Society*, 19(6), 944–960. <https://doi.org/10.1177/1461444815621538>
- Scheerder, A. J., Van Deursen, A. J. A. M., & Van Dijk, J. A. G. M. (2019). Internet use in the home: Digital inequality from a domestication perspective. *New Media & Society*, 21(10), 2099–2118. <https://doi.org/10.1177/1461444819844299>
- Telecom Regulatory Authority of India. (2024). *The Indian telecom services performance indicator report*. <https://www.trai.gov.in>
- 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. <https://doi.org/10.1177/1461444813487959>
- Van Deursen, A. J. A. M., & Van Dijk, J. A. G. M. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>
- Van Dijk, J. (2020). *The digital divide*. Polity Press.
- Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.
- 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*, 21(3), 256–277.

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Conflict of Interest

The author(s) declared no conflict of interest.

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