

Digital Divide And Inclusive Development: Implications For Education, Health, And Livelihoods

Ritika Agarwal, Jyoti Gogia

Research Scholar, Department Of Economics, Dayalbagh Educational Institute (Deemed To Be University), Dayalbagh, Agra, Uttar Pradesh, India

Professor, Department Of Economics, Dayalbagh Educational Institute (Deemed To Be University), Dayalbagh, Agra, Uttar Pradesh, India

Abstract:

Background: With the rapid rise of digital technology, countries have experienced remarkable growth across nearly all sectors. Use of digital resources across critical areas such as education, healthcare, job opportunities, and others has streamlined daily life and driven advancements, leading to improved growth and development metrics. However, since access to these digital advancements is not available to all, a divide emerges across genders, regions, and socio-economic groups, posing significant challenges to achieving inclusive development. A solution to the digital divide is vital for fostering inclusivity, ensuring sustainability, and promoting overall advancement. By addressing this gap, a more equitable society can be established where everyone has the opportunity to thrive.

Materials and Methods: This study explores the digital gap in Eastern Uttar Pradesh, India, and its potential effects on education, healthcare, and livelihoods. It uses averages, percentages, and a linear regression model to analyze the status and the effects of the digital divide on different services.

Results: There is a huge significant gap observed in the urban and rural residents. Alongside a significant negative impact of limited availability, access, and knowledge of digital technologies on educational outcomes, healthcare services, and individuals' ability to improve their livelihoods was observed.

Conclusion: The study advocates targeted efforts to minimize the digital gap. This can be achieved by first ensuring the necessary infrastructure and then implementing initiatives to boost digital literacy and skills.

Key Words: Digital Divide, Inclusive Development, Healthcare Services, Education, Livelihood

Date of Submission: 11-05-2026

Date of Acceptance: 21-05-2026

I. Introduction

The rapid expansion of digital technologies is reshaping economic functioning and driving societal progress globally. It facilitates novel communication methods, increases learning opportunities, enhances healthcare services, and generates employment. Digital transformation is acknowledged as a key driver of efficiency, innovation, and socio-economic progress (Oloyede et al., 2023), making it a practical approach to achieving sustainable and inclusive growth by addressing development inequalities (Timotheou et al., 2022).

However, despite significant progress, access to digital technologies and their effective use remain uneven both across and within nations, commonly termed the Digital Divide. These disparities raise pertinent questions regarding whether digital transformation can genuinely contribute to achieving equitable development outcomes (Dijk, 2020; Ghosh, 2021; ITU, 2022; World Bank, 2021). The advantages of digital techniques are accessible only to well-informed, highly equipped and knowledgeable societies.

The digital gap involves disparities not only in physical access to ICTs, but also in the skills required to use them and the benefits derived from their usage. Digital divide is a multidimensional phenomenon, encompassing inequalities at the levels of access (availability of devices and internet connectivity) (Afzal et al., 2023), usage (digital literacy and competencies), and efficient mobilization (the ability to translate digital access into socio-economic gains) (Dijk, 2020; Helsper, 2021). These disparities are often structured along existing socio-economic lines, including income, education, gender, and geographic location, thereby reinforcing persistent inequalities. Reports by institutions such as the International Telecommunication Union and the World Bank consistently highlight that a substantial chunk of the population, particularly in developing economies, remains digitally excluded or under-connected. Consequently, the digital divide is no longer viewed merely as a technological gap, but as a critical development challenge with far-reaching implications for equity, opportunity, and social inclusion (World Bank, 2021; ITU, 2022).

Figure 1 illustrates that the digital divide can be understood at three distinct levels. The first level pertains to the disparity between individuals who own and have access to digital devices and those who do not. The second

level highlights the gap between those who possess devices but lack the knowledge or skills to utilize them effectively. Finally, the third level addresses the divide between individuals who can mobilize resources—such as internet connectivity and digital literacy training—and those who cannot. Each of these levels contributes to the overall challenge of bridging the digital divide. It shows that access to technology is not sufficient; the use of skills and outcomes are essential for digital upliftment, ensuring meaningful engagement by people with digital resources and thereby promoting digital inclusion.



Figure 1: Levels of Digital Divide
Source: Authors' Compilation

Inclusive development embraces the equitable distribution of opportunities, resources, and benefits of growth across all segments of society. People may have improved access to learning, healthcare services, and employment through digital resources. For instance, digital applications and different platforms can assist remote learning, telemedicine, and participation in digital labour markets, thereby reducing spatial and socio-economic barriers. However, the persistence of the digital divide poses a critical challenge to achieving these inclusive outcomes. Inequitable access to digital infrastructure, varying levels of digital skills and differences in technology use can hinder the participation of marginalized groups in the technology-driven economy. This disparity limits their ability to fully engage in economic opportunities and benefits offered by technological advancements. Digitalization, rather than serving as a determinant for inclusion, may inadvertently exacerbate exclusion if underlying inequalities remain unaddressed. This underscores the need to integrate digitalization with development strategies, ensuring that the benefits of technological advancement are distributed more equitably (OECD, 2020; UNDP, 2021; World Bank, 2021).

The Indian economy has experienced a remarkable surge in digital accessibility and internet penetration and is becoming one of the fastest-growing digital economies (Bajpai et al., 2025). Technological advancements have not only fuelled growth but also spurred social development across the country. The nation continues to pursue a robust digital landscape, it has opened new economic opportunities, boosted participation in economic activities, improved utility services, and expanded access to information. Despite these advances, however, gaps in digital penetration remain (Pelser and Gaffley, 2020). The Indian government is committed to addressing various challenges related to digital enhancement, such as the availability, affordability, and accessibility of digital tools. This is being achieved through initiatives like the Digital India campaign and the National Digital Literacy Mission. These comprehensive programs aim to promote digital empowerment and inclusion (Haldankar, 2018). Table 1 highlights a significant divide between regions regarding telecom and internet access, as outlined by the TRAI for the 2024-25 period.

The total number of telecom subscribers reaches 1,200.80 million, revealing a difference of about 131.42 million between these regions. Specifically, the gap in wireless subscribers is 101.39 million, while the gap in wireline subscribers is 30.04 million. These indicators clearly show a significant imbalance in connectivity across the country, indicating disparity in access to mobile phones and the internet. The overall tele-density, indicating connections per 100 individuals, is currently 85.04 per cent.

The digital disparity is a significant issue influenced by various socio-economic factors, including income, education, age, geographic location and gender. Barriers create challenges for rural populations, women, low-income groups, the elderly and the less educated, who often struggle to access and afford digital technologies. Inability to access digital tools may adversely affect these groups. Therefore, to enhance digital inclusion, it is imperative to examine the challenges and consequences of digital disparities

Table 1: Performance Indicators of Telecom and Internet Penetration
(In million)

Performance Indicators	Urban	Rural	Total	Gap (U-R)
Telecom Subscribers	666.11	534.69	1200.80	131.42
Telecom Tele-density (%)	131.45	59.06	85.04	72.39
Wireless Subscribers	632.57	531.18	1163.76	101.39
Wireline Subscribers	33.54	3.50	37.04	30.04
Internet Subscribers	561.42	407.69	969.10	153.73

Source: TRAI Report, 2024-25

Theoretical framework

The present study is anchored in the digital divide theory, which provides a comprehensive lens for understanding imbalance in the utilization of digital technologies and their implications for socio-economic outcomes. Traditionally, the digital divide was conceptualized as a binary difference between individuals with and without access to technology. However, contemporary literature has transformed the concept into a multidimensional framework, recognizing that digital inequality operates at multiple levels, including access, usage, and outcomes (Dijk, 2020; Helsper, 2021; Martini and Sgambato, 2025).

At the foundational level, often referred to as the access divide, disparities arise in the availability and affordability of digital infrastructure such as smartphones, computers/laptops, and internet connectivity. These inequalities are majorly noticed across various socio-economic groups (Siriginidi, 2005; Lythreathis et al., 2022).

The second level, known as the usage divide, concerns differences in digital literacy and skills to use technologies effectively. Even in the presence of tools, individuals may lack the competencies needed to use them productively, such as for online learning, accessing health services, or engaging in digital work (Hernandez et al., 2020).

The third level, or the outcome divide, focuses on the differential benefits derived from digital technology. Individuals with greater access and higher digital skills leverage digital technologies to improve educational attainment, access healthcare services, and enhance employment opportunities. In contrast, digitally excluded populations often experience limited or no gains, resulting in unequal socio-economic outcomes. It examines how disparities in digital access and usage translate into differences in the levels of education, health, and livelihood outcomes (Pukdeewut et al., 2024).

The framework also draws upon the broader concept of inclusive development, which emphasizes equitable access to opportunities and the fair distribution of the benefits of economic growth. Digital technologies have the potential for inclusion by reducing information asymmetries, lowering transaction costs, and expanding access to essential services (Kukreja et al., 2022). However, when access to these technologies is uneven, digitalization can reinforce existing socio-economic inequalities rather than mitigate them. Reports by the World Bank and the UNDP highlight that digital exclusion can limit participation in education, healthcare systems, and labour markets, thereby constraining inclusive development.

Within this theoretical context, the study conceptualizes the digital divide as an independent construct comprising indicators of digital access, digital capability, and digital engagement. These dimensions are hypothesized to influence key development outcomes, namely educational continuity, access to healthcare services, and livelihood opportunities. Socio-economic characteristics such as income, education, gender, and location are treated as underlying determinants that shape both the digital gap and its impact on outcomes.

Thus, the theoretical framework posits a causal pathway in which socio-economic factors influence digital availability and know-how (Baraka, 2024), which, in turn, determine the advantages to individuals from digital technologies, ultimately affecting their educational, health, and employment outcomes. By empirically examining these relationships, the study analyses how digital inequality shapes inclusive development in contemporary contexts.

Objectives of the study

The study has undertaken the following objectives:

1. To examine the extent of the digital divide.
2. To analyze the impact of digital access and digital skills on educational outcomes, health information and services, and livelihood.

Hypotheses

The hypotheses for the study are as follows:

- **H₀₁**: The digital divide is not significant between urban and rural people.
- **H₁₁**: The digital divide is significant between urban and rural people.
- **H₀₂**: Digital access and digital skills have no significant impact on educational outcomes, access to health information and services, and livelihood.
- **H₁₂**: Digital access and digital skills have a significant impact on educational outcomes, access to health information and services, and livelihood.

II. Material And Methods

The study is based on the primary and secondary data sources. A self-structured questionnaire/schedule was administered to collect data from individuals. Additionally, interviews were conducted to gain deeper insights. Relevant books, government documents, magazines, journals, and other related literature were used for extracting secondary data.

A study was conducted with a sample of 115 respondents from Gorakhpur District in Eastern Uttar Pradesh. Of these, 22 were from the urban area and 93 from the rural area. This region holds great importance for assessing India’s digital inclusion policies, as it has a large population facing notable socio-economic challenges. Therefore, Eastern Uttar Pradesh was purposively selected as the focus for this research.

To reflect the status of the digital gap, averages and percentages are considered. Further, a linear regression model is used to estimate the association between the variables (education, healthcare, and livelihood) and people’s ownership and/or access to digital technologies, and their knowledge of how to use them.

III. Results And Discussion

This segment analyzes the digital divide and its prospective implications for education, health, and livelihoods. The findings (Table 3) reveal a notable disparity between urban and rural residents in terms of their ownership and access to digital devices and internet services. In urban areas, approximately 27 per cent of individuals have personal computers, and they use them on a shared basis, whereas none of the rural individuals has personal computers. Besides the personal computers, laptops, and tablets also show a huge gap. While 95.45 per cent of families in urban areas own a laptop or tablet, none of their rural counterparts does. About 59 per cent of them own laptops/tablets, while the remaining 36.36 per cent share them with family members.

Table 3: Ownership and Shared Access to Digital Devices
(In Percentage)

Digital Device	Particulars	Urban N = 22	Rural N = 93	Gap (U-R)	
Personal Computer	Owned by the family	27.27	00.00	+27.27*	
	Personal Owned	00.00	00.00	00.00	
	Shared Access	27.27	00.00	+27.27*	
Laptop/Tablet	Owned by the family	95.45	00.00	+95.45*	
	Personal Owned	59.09	00.00	+59.09*	
	Shared Access	36.36	00.00	+36.36*	
Smartphone	Owned by the family	100.0	86.02	+13.98	
	Personal Owned	81.82	35.48	+46.34*	
	Shared Access	18.18	50.54	-32.36*	

Source: Authors’ Calculations (based on survey data)

Note: * indicates statistical significance at 5% level ($p < 0.05$) (based on Z-test statistics)

Furthermore, smartphone ownership shows a considerable 13.98 percentage-point gap, indicating uneven usage. Smartphones play a crucial role in communication and connectivity today. In urban families, a significant 81.82 per cent of respondents own a smartphone they use around the clock, while only 18.18 per cent share their devices. In contrast, rural areas show higher shared access than individual ownership, suggesting that owning separate digital devices is often out of reach. Rejection of the null hypothesis confirms a clear divide in access to and ownership of digital technology between urban and rural regions.

Table 4 depicts internet penetration in both urban and rural areas. Broadband facilities (40.91 per cent) and wireless networks (27.27 per cent) are prevalent in urban areas, while rural families are inclined towards mobile data plans. All urban households have a mobile data plan, compared to 86.02 per cent of families in rural areas. Shared access is more common in rural than in urban regions. The hypothesis that there is no significant difference in both the ownership of and access to internet facilities has been rejected. The data indicate a substantial disparity in internet access between urban and rural populations, except for having a mobile data plan in the family.

Table 4: Ownership and Shared Access to Internet Facility
(In Percentage)

Internet Facility	Particulars	Urban N = 22	Rural N = 93	Gap (U-R)	
Broadband Facility	Owned by the family	40.91	00.00	+40.91*	
	Shared Access	40.91	00.00	+40.91*	
Mobile Data Plan	Owned by the family	100.00	86.02	+13.98	
	Personal Owned	77.27	34.41	+42.86*	
	Shared Access	22.73	51.61	-28.88*	
Wireless Network	Owned by the family	27.27	00.00	+27.27*	
	Shared Access	27.27	00.00	+27.27*	

Source: Authors’ Calculations (based on survey data)

Note: * indicates statistical significance at 5% level ($p < 0.05$) (based on Z-test statistics)

Access to the internet is just as important for digital inclusion as having a digital device. Regions with limited internet coverage or costly internet packages lack essential resources for education, healthcare, and livelihoods. Consequently, individuals in these areas can face adverse impacts in several critical aspects of their lives.

In this analysis, three key aspects (dependent variables) are illustrated to show the impact of the digital divide on individuals, as shown in Table 5. To conduct this impact analysis, two independent variables that relate to the digital divide are examined and are as follows:

1. The extent to which people possess and/or have access to digital resources.
2. The skill-level, knowledge and proficiency individuals have in utilizing digital resources effectively.

Table 5: Dependent Variables

Variables	Sub-indicators
Education	Irregularity Limited academic knowledge Low academic performance Dropout
Healthcare	Delayed medical assistance Mental health Casualty
Livelihood	Limited communication Irregularity in work Low productivity Limited employment opportunities Missed better opportunities Inability to work remotely Hampered career development Technological unemployment

Source: Authors' Compilation

1. Education

The effects of the digital gap on education are adverse. Inaccessibility to digital tools and techniques can reduce individuals' ability to excel academically. Table 6 depicts the regression coefficients for the consequences of the digital divide on education.

Table 6: Regression Coefficients for Educational Outcomes

Educational Outcomes	Access to Digital Device (Ownership/Use)	Digital Device Skills (Knowledge)
Irregularity	-1.088*	-0.813*
Limited Academic Knowledge	-0.942*	-0.721*
Low Academic Performance	-1.006*	-0.706*
Dropout	-0.199*	-0.126

Source: Authors' Calculations (based on survey data)

*Note: * indicates statistical significance at 5% level (p < 0.05)*

The analysis reveals that the regression coefficients for the four sub-categories of educational outcomes are inversely linked to ownership/accessibility and knowledge of digital techniques. The negative coefficients for both access to and knowledge of digital devices suggest that greater digital inclusion is associated with reduced negative outcomes, such as irregularity, limited academic knowledge, and low academic performance. Specifically, access to a digital device shows a stronger effect than digital skills. The consequence of irregularity indicates that digitally included people find it easy to complete their academic work regularly and to engage academically.

The Internet, as a global network, enhances critical thinking and deepens understanding across various subjects. Access to digital devices, coupled with internet connectivity, enables individuals to gain knowledge effectively. Those with digital accessibility and the skills to utilize them can readily gather information and manage their daily tasks more efficiently (Haleem et al., 2021).

One significant educational impact of the digital gap is its correlation with low academic performance. Individuals without digital devices encounter challenges that can negatively affect their grades and hinder their overall content knowledge. In today's educational landscape, digital devices facilitate the search for and access to a wealth of academic information (Miah, 2024). Without these resources, students may struggle to keep up with their peers, ultimately leading to low academic performance.

Dropout rates are influenced by various socio-economic factors, including income and family issues (Barragan and Rincon, 2025). Many students who lack digital resources also tend to drop out of the education system. This issue became particularly evident during COVID-19, when dropout rates rose significantly due to a

shortage of digital resources and insufficient knowledge for online learning (Khan and Ahmed, 2021). While dropping out is a serious concern, it may not be as severe as other consequences of educational inequality.

A higher level of ownership or access implies better positioning of the individuals to utilize these devices to achieve positive outcomes. Consequently, the digital divide poses challenges to education; thus, it is vital to improve digital infrastructure to foster greater literacy and educational opportunities.

2. Healthcare

Digital techniques play a crucial role in alleviating and addressing various health-related challenges. The ability of individuals to access medications, receive treatments, and obtain consultations can be significantly influenced by digital technologies. These advancements not only enhance the convenience and availability of healthcare services but also help bridge gaps in access to timely medication. By leveraging digital resources, patients can navigate their healthcare journeys more effectively, leading to improved health outcomes. Table 7 presents the regression coefficients for the impact of the digital divide on access to healthcare information and services.

Table 7: Regression Coefficients for Health Information and Services

Impact on Health Information and Services	Access to Digital Device (Ownership/Use)	Digital Device Skills (Knowledge)
Delayed Medical Assistance	-0.642*	-0.427*
Mental Stress/Anxiety	-0.288*	-0.271
Casualty	-0.089	-0.196*

Source: Authors' Calculations (based on survey data)

*Note: * indicates statistical significance at 5% level (p < 0.05)*

Research indicates that limited access to digital tools hinders the timely receipt of medical assistance, mental stress, anxiety, and casualties. Without adequate resources and knowledge, individuals often face delays in obtaining necessary medical help. Improving digital inclusion could greatly enhance access to timely medical care, especially in emergencies. Therefore, being able to utilize digital tools can provide essential support, such as acquiring information about medications and illnesses and enabling online consultations with doctors to address health needs promptly. The stronger influence of device access suggests that while knowledge is certainly important, having a device is even more crucial. Digital exclusion may lead to unfavourable effects on mental health, contributing to issues such as psychological stress, anxiety, and depression, particularly when individuals face health-related challenges without timely assistance (Oliver et al., 2024).

The issues mentioned earlier came to the forefront during the COVID-19 pandemic, which posed considerable challenges for individuals seeking to address urgent healthcare needs. The rapid digital transformation during this period underscored the importance of acquiring digital resources (De et al., 2020). Insufficient and incorrect information throughout the pandemic, coupled with inaccessibility to essential services, contributed to numerous preventable casualties.

3. Livelihood

Workplaces have begun relying on digital technology to increase efficiency and deliver high-quality, fast work to clients. Individuals with access to digital technologies can participate in several tasks, whereas their counterparts face barriers. The drawbacks can hamper professional development, lead to irregularity in work, limit communication, and more. Table 8 illustrates the link between digital accessibility and knowledge and how these affect individuals' livelihoods.

Table 8: Regression Coefficients for Livelihood

Impact on Livelihood	Access to Digital Device (Ownership/Use)	Digital Device Skills (Knowledge)
Limited communication	-0.668*	-0.229
Irregularity in work	-1.374*	-0.729*
Low productivity	-0.609*	-0.188*
Limited employment opportunities	-0.629*	-0.202
Missed better opportunities	-0.570*	-0.160
Inability to work remotely	-0.508*	-0.860*
Hampered career development	-0.726*	-0.342*
Technological unemployment	-0.875*	-0.485*

Source: Authors' Calculations (based on survey data)

*Note: * indicates statistical significance at 5% level (p < 0.05)*

The findings underscore the vital connection between access to digital tools and economic well-being. Those who lack essential digital resources frequently encounter challenges that hinder their livelihoods, such as

restricted job opportunities and difficulties in navigating today's employment market. Access to digital devices is essential, as it enables individuals to apply for jobs, participate in remote work, and communicate effectively in today's digitally driven economy.

Bridging the gap between high skill levels and the means to utilize them is crucial. Enhancements in digital tools and skills can significantly boost productivity and work efficiency (Sartika et al., 2023). Digital resources not only promote consistent work but also support overall well-being. They improve productivity and enable better work-life balance through flexible remote work options. Therefore, addressing work irregularities can be achieved by fostering a sense of digital belonging.

People with digital tools and knowledge are better equipped to adapt their work activities and embrace technological advancements, thereby reducing the risk of technological unemployment due to insufficient digital skills (Tee et al., 2024). This supports the hypothesis that digital access and skills significantly influence educational outcomes, healthcare access, and livelihoods.

IV. Policy Implications

The research findings highlight the significant impact of the digital divide on education, health, and livelihoods, presenting a concerning scenario. Policy interventions must be implemented to ensure equitable access to the benefits of the digital landscape for all individuals. Addressing the digital divide is crucial for fostering a technologically proficient environment within our country.

Enhancing digital penetration in underserved areas and among marginalized groups can significantly boost the economy. Despite the notable rise in the digital landscape, infrastructure has yet to reach all corners. Thus, ensuring access to appropriate devices and reliable internet for certain groups remains a pressing concern that can be tackled through thoughtful government policies. The Indian government can drive internet penetration forward, which would help educate individuals, safeguard their health, and enable them to earn a steady livelihood.

Targeted efforts toward digital literacy and skills development are essential. It's not sufficient for people to own devices or have internet access; they should also be digitally literate to harness these tools effectively. To address this issue, the government should prioritize group training, campaigns, and courses tailored for marginalized communities and rural residents. Establishing learning centres and programs can empower individuals with the digital skills they need to succeed.

Ultimately, the primary focus should be on digital inclusion. Digital services must reach people at the grassroots level. Digital inclusion stands as a key indicator of growth, and the government must make it a top priority. By using digital resources in educational activities, healthcare, and livelihoods, we can drive social and economic improvements. The emphasis should be on tackling digital inclusion challenges and benefitting vulnerable populations.

V. Conclusion

In conclusion, it's essential to recognize the problem and make meaningful changes to promote digital inclusion in the economy. Policymakers must prioritize disadvantaged communities by crafting strategies that foster a nurturing digital landscape. This includes enhancing access, improving digital literacy, and ensuring inclusivity in all digital services. By doing so, we can empower these areas and create a more equitable digital future for everyone. This focused support and assistance will help address the educational, health, and livelihood challenges faced by marginalized communities.

References

- [1]. Afzal, A., Khan, S., Daud, S., Ahmed, Z., Butt, A. (2023). Addressing the Digital Divide: Access and Use of Technology in Education. *Journal of Social Sciences Review*. Retrieved from <https://doi.org/10.54183/jssr.v3i2.326>.
- [2]. Bajpai, A., Verma, M., Katdare, S. (2025). Digitalizing India: The ascendance of e-commerce and its global economic impact. *A Global Journal of Humanities*. Retrieved from https://www.researchgate.net/publication/391127130_DIGITALIZING_INDIA_THE_ASCENDANCE_OF_E_COMMERCE_ITS_GLOBAL_ECONOMIC_IMPACT.
- [3]. Barragan, S. P. and Rincon, A. G. (2025). Digital divide as an explanatory variable for dropout in higher education. *International Journal of Educational Technology in Higher Education*. Retrieved from <https://doi.org/10.1186/s41239-025-00550-0>.
- [4]. Baraka, K. (2024). Digital Divide and Social Inequality. *International Journal of Humanity and Social Sciences*. Retrieved from <https://doi.org/10.47941/ijhss.2083>.
- [5]. Bondanini, G., Giovanelli, C., Mucci, N., Giorgi, G. (2025). The dual impact of digital connectivity: Balancing productivity and well-being in the modern workplace. *International Journal of Environmental Research and Public Health*. Retrieved from <https://doi.org/10.3390/ijerph22060845>.
- [6]. De, R., Pandey, N., Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management*. Retrieved from <https://doi.org/10.1016/j.ijinfomgt.2020.102171>.
- [7]. Dijk, J. V. (2020). The Digital Divide. *Polity*. Retrieved from <https://www.jstor.org/stable/10.13169/prometheus.37.2.0198>.
- [8]. Ghosh, N. (2021). Is increasing wealth inequality coming in the way of economic growth in India? *Observer Research Foundation*. Retrieved from <https://www.orfonline.org/expert-speak/is-increasing-wealth-inequality-coming-in-the-way-of-economic-growth-in-india>.
- [9]. Haldankar, G. (2018). Digital India: A key to transform India. *International Journal of Creative Research Thoughts*. Retrieved from https://www.researchgate.net/publication/351942005_DIGITAL_INDIA_-_A_KEY_TO_TRANSFORM_INDIA.
- [10]. Haleem, A., Qadri, M., Suman, R., Javaid, M. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*. Retrieved from <https://doi.org/10.1016/j.susoc.2022.05.004>.

- [11]. Helsper, E. (2021). The digital disconnect: The social causes and consequences of digital inequalities. *SAGE Publication*. Retrieved from <https://doi.org/10.4135/9781526492982>.
- [12]. Hernandez, S. M., Earle, C. B., Fredlund, L. A. (2020). A methodology for addressing the second-level digital divide. *Responsible Design, Implementation and Use of Information and Communication Technology*. Retrieved from https://doi.org/10.1007/978-3-030-45002-1_28.
- [13]. ITU. (2022). Measuring digital development: Facts and figures. *International Telecommunication Union*. Retrieved from https://www.itu.int/dms_pub/itu-d/opb/ind/d-ind-ict_mdd-2022-pdf-e.pdf.
- [14]. Khan, M. J. and Ahmed, J. (2021). Child education in the time of pandemic: Learning loss and dropout. *Children and Youth Services Review*. Retrieved from <https://doi.org/10.1016/j.childyouth.2021.106065>.
- [15]. Kukreja, A., Agarwal, R., Gogia, J. (2022). Digital Collaborative Consumption: A techno-conscious approach for sharing resources. *International Journal of Advanced Research*. Retrieved from <https://doi.org/10.21474/IJAR01/15107>.
- [16]. Lythreathis, S., Singh, S. K., El-Kassar, A. N. (2022). The digital divide: A review and future research agenda. *Technological Forecasting and Social Change*. Retrieved from <https://doi.org/10.1016/j.techfore.2021.121359>.
- [17]. Martini, E. and Sgambato, M. C. (2025). Digital Inequalities and Access to Technology: Analyzing how digital tools can exacerbate or mitigate social inequalities. *Societies*. Retrieved from <https://doi.org/10.3390/soc15110318>.
- [18]. Miah, M. (2024). Digital Inequality: The Digital Divide and Educational Outcomes. *Tennessee State University*. Retrieved from https://www.researchgate.net/publication/379258768_Digital_Inequality_The_Digital_Divide_and_Educational_Outcomes.
- [19]. OECD. (2020). OECD Digital Economic Outlook 2020. *OECD*. Retrieved from https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/11/oecd-digital-economy-outlook-2020_3f7b7e58/bb167041-en.pdf.
- [20]. Oliver, A., Chandler, E. and Gillard, J. A. (2024). Impact of digital inclusion initiative to facilitate access to mental health services: Service user interview study. *JMIR Mental Health*. Retrieved from <https://doi.org/10.2196/51315>.
- [21]. Oloyede, A. A., Faruk, N., Noma, N., Tebepah, E., Nwaulune, A. K. (2023). Measuring the impact of the digital economy in developing countries: A systematic review and meta-analysis. *Heliyon*. Retrieved from <https://doi.org/10.1016/j.heliyon.2023.e17654>.
- [22]. Pelser, T. and Gaffley, G. (2020). Implications of digital transformation on the strategy development process for business leaders. *ResearchGate*. Retrieved from <https://doi.org/10.4018/978-1-7998-4882-0.ch001>.
- [23]. Pukdeewut, A. and Sethasuravich, P. (2024). Bridging the third-level digital divide: Socio-demographic determinants of the digital outcomes in Thailand. *FWU Journal of Social Sciences*. Retrieved from <https://doi.org/10.51709/19951272/Winter2024/2>.
- [24]. Raihan, M. M. H., Subroto, S., Chowdhury, N., Koch, K., Ruttan, E., Turin, T. C. (2024). Dimensions and barriers for digital (in)equity and digital divide: a systematic integrative review. *Digital Transformation and Society*. Retrieved from <https://doi.org/10.1108/DTS-04-2024-0054>.
- [25]. Sartika, M., Astuti, S. D., Chasanah, A. N., Riyanto, F. (2023). Digital skills to improve work performance. *International Journal of Accounting Management and Economics Research*. Retrieved from <https://doi.org/10.56696/ijamer.v1i2.14>.
- [26]. Siriginidi, S. R. (2005). Bridging Digital Divide: Efforts in India. *Telematics and Informatics*. Retrieved from <https://doi.org/10.1016/j.tele.2005.01.007>.
- [27]. Tee, P. K., Wong, L. C., Dada, M., Song, B. L., Ng, C. P. (2024). Demand for digital skills, skill gaps, and graduate employability: Evidence from employers in Malaysia. *F1000 Research*. Retrieved from <https://doi.org/10.12688/f1000research.148514.1>.
- [28]. TRAI. (2024). TRAI Annual Report 2024-25. *Telecom Regulatory Authority of India*. Retrieved from https://www.trai.gov.in/sites/default/files/2026-01/Annual_Report_06012026.pdf.
- [29]. Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Mones, A. M., Loannou, A. (2022). Impact of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*. Retrieved from <https://link.springer.com/article/10.1007/s10639-022-11431-8>.
- [30]. UNDP. (2024). From Access to Empowerment: Digital Inclusion in a Dynamic World. *UNDP Policy Centre*. Retrieved from https://www.undp.org/sites/g/files/zskgke326/files/2024-05/undp_digital_inclusion_in_a_dynamic_world.pdf.
- [31]. World Bank. (2021). Data for Better Lives. *World Bank*. Retrieved from <https://www.worldbank.org/en/publication/wdr2021>.