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Digital Inclusion and Tribal Communities in India: Opportunities, Challenges, and Policy Implications

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Abstract:

Digital inclusion is essential for equitable socio-economic development. Yet, tribal communities in India continue to face a significant digital divide due to inadequate infrastructure, limited connectivity, low digital literacy, affordability issues, and socio-cultural barriers. This paper examines the opportunities, challenges, and policy implications of digital inclusion among tribal populations using a qualitative analysis of government reports, policy documents, and secondary literature. It highlights the transformative potential of initiatives such as Digital India, BharatNet, e-governance, digital education, and financial inclusion in improving access to education, healthcare, livelihoods, and public services. The study argues that meaningful digital inclusion requires more than connectivity; it demands digital literacy, multilingual content, community participation, and targeted policy interventions. Strengthening digital inclusion can empower tribal communities, reduce inequalities, and promote sustainable and inclusive development in India.

Keywords: *Digital Inclusion, Tribal Communities, Digital Divide, Digital Literacy.*

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Introduction:

Digital inclusion has become a fundamental prerequisite for achieving equitable socio-economic development in the twenty-first century. The rapid diffusion of Information and Communication Technologies (ICTs) has transformed education,

healthcare, governance, financial services, and employment, making digital access an essential component of inclusive development. However, access to these opportunities remains uneven, particularly among marginalized populations such as India's tribal communities. According to the Census



of India (2011), Scheduled Tribes (STs) constitute 8.6% of the country's population, amounting to approximately 104.3 million people, with a majority residing in geographically remote and economically disadvantaged regions.

In the Indian context, researchers such as Virginius Xaxa (2008) have emphasized that tribal communities continue to face structural inequalities arising from historical marginalization, inadequate infrastructure, limited educational opportunities, and socio-economic deprivation. These challenges often prevent tribal populations from fully benefiting from national digital initiatives such as Digital India and BharatNet.

Although government programmes have significantly expanded digital connectivity and e-governance services, substantial gaps remain in internet accessibility, digital literacy, language inclusivity, and digital affordability in tribal regions. This paper examines the opportunities and challenges associated with digital inclusion among tribal communities in India and evaluates the policy interventions necessary for bridging the digital divide. It argues that meaningful digital inclusion must integrate technological access with capacity building, culturally relevant digital content, and community participation to ensure sustainable and inclusive development. Several studies have examined the digital divide, rural connectivity, and tribal development independently, limited research has comprehensively analysed digital inclusion among tribal communities by integrating technological, socio-cultural, and policy dimensions within a single framework. This paper seeks to address this gap by examining the opportunities, challenges, and policy implications of digital inclusion through the combined perspectives of Digital Divide Theory, Social Inclusion Theory, and Verrier Elwin's integrationist approach.

Review of Literature:

The concept of digital inclusion has been extensively examined within the broader framework of the digital divide, emphasizing that meaningful participation in the digital society depends not only on access to technology but also on digital skills, affordability, and the ability to use digital resources effectively.

Mark Warschauer (2003) argues that social inclusion through technology requires the integration of physical infrastructure, digital literacy, human resources, and institutional support. Jan A. G. M. van Dijk (2020) conceptualizes the digital divide as a multidimensional phenomenon encompassing motivational, material, skills, and usage gaps, suggesting that digital inequalities mirror existing socio-economic disparities.

Virginius Xaxa (2011) highlights that tribal communities continue to experience historical marginalization characterized by inadequate educational opportunities, poor infrastructure, and limited access to public services. These structural disadvantages have significant implications for digital inclusion. Studies on marginalized communities further indicate that educational attainment, income, and geographical isolation are major determinants of digital access and digital skills, thereby reinforcing existing social inequalities.

Raile Rocky Ziipao (2023) demonstrates that inadequate digital infrastructure in North-East India has restricted tribal communities' access to e-governance, education, and welfare services, leading to new forms of social exclusion.

Verrier Elwin (1964) proposed an integrationist approach, advocating that tribal communities should be integrated into the national mainstream while preserving their cultural identity, traditions, and indigenous knowledge. Rejecting both isolation and forced assimilation, Elwin emphasized education,



healthcare, and community participation as key components of tribal development. His philosophy remains relevant in the digital era, suggesting that digital inclusion should promote culturally sensitive policies, multilingual digital platforms, and the preservation of indigenous knowledge.

Walter Fernandes (2006) highlights the issues of displacement, exclusion, and unequal access to development among tribal communities. He argues that development programmes often fail due to the limited participation of tribal people in planning and decision-making, underscoring the importance of community-centred approaches in digital governance.

Nandini Sundar (1997, 2016) emphasizes democratic governance, tribal rights, and community participation. She contends that development initiatives should strengthen local institutions and recognize indigenous knowledge systems.

B. K. Roy Burman (1994) also advocates culturally appropriate and decentralized development, arguing that tribal policies should respect cultural diversity while promoting socio-economic progress. Collectively, these scholars suggest that meaningful digital inclusion must extend beyond technological access to incorporate cultural preservation, participatory governance, and community empowerment, thereby ensuring that digital transformation contributes to sustainable and inclusive tribal development.

Bramhane (2024) argues that the digital divide extends beyond access to digital devices and encompasses disparities in ICT infrastructure, digital literacy, affordability, and effective utilization of digital technologies. These factors continue to affect marginalized communities, including tribal populations, limiting their participation in digital education and public services.

Collectively, the literature indicates that digital inclusion is a multidimensional process influenced by technological infrastructure, socio-economic inequalities, cultural diversity, and participatory governance. However, relatively few studies have examined these dimensions together in the specific context of tribal communities in India, thereby justifying the present study.

Theoretical Framework:

This study is guided by three complementary theoretical perspectives: Digital Divide Theory, Social Inclusion Theory, and Verrier Elwin's Integrationist Approach. Van Dijk's (2020) Digital Divide Theory explains that digital inequality extends beyond physical access to include disparities in motivation, skills, and effective use of technology, which are particularly relevant to tribal communities. Warschauer's (2003) Social Inclusion Theory argues that digital inclusion requires not only technological infrastructure but also education, institutional support, and digital literacy to promote socio-economic empowerment. Elwin's (1964) Integrationist Approach advocates integrating tribal communities into national development while preserving their cultural identity and indigenous knowledge. Together, these perspectives provide a holistic framework for analysing the opportunities, challenges, and policy implications of digital inclusion among tribal communities in India.

Research Methodology:

This study adopts a qualitative descriptive research design based exclusively on secondary data. The analysis draws upon published books, peer-reviewed journal articles, government reports, policy documents, Census of India data, reports from the Ministry of Tribal Affairs, and the Ministry of Electronics and Information Technology. A thematic content analysis was employed to examine



the opportunities, challenges, and policy implications of digital inclusion among tribal communities in India, enabling a comprehensive understanding of existing trends, issues, and policy interventions.

Digital Inclusion and Tribal Communities: Current Scenario:

Digital inclusion has become a central pillar of India's development agenda, particularly following the launch of the Digital India Mission in 2015. The programme aims to transform India into a digitally empowered society and knowledge economy by expanding digital infrastructure, promoting digital literacy, and ensuring the electronic delivery of public services. Complementary initiatives such as BharatNet, Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), Unified Payments Interface (UPI), and digital governance platforms have significantly enhanced digital connectivity across rural India. BharatNet, one of the world's largest rural broadband projects, has extended high-speed broadband infrastructure to Gram Panchayats, thereby improving access to e-governance, online education, telemedicine, and digital financial services in previously underserved areas. However, the benefits of these initiatives remain unevenly distributed, particularly in tribal regions characterized by geographical isolation and infrastructural deficits (Government of India, 2024).

According to the Census of India (2011), Scheduled Tribes comprise 8.6% of India's population (approximately 104.3 million people), with a majority residing in remote forested and hilly areas where digital infrastructure remains inadequate. Although mobile connectivity and internet penetration have improved substantially over the past decade, meaningful digital access continues to be constrained by poor network

coverage, unreliable electricity, low smartphone ownership, limited digital literacy, linguistic diversity, and affordability issues. Bramhane (2024) similarly observes that inadequate ICT infrastructure, poor internet connectivity, digital illiteracy, and limited access to quality digital resources continue to widen the digital divide in India, particularly affecting learners and marginalized communities in rural and tribal regions. These factors collectively reinforce the digital divide between tribal and non-tribal populations (Census of India, 2011; World Bank, 2016).

Indian scholars have also examined the uneven outcomes of Digital India in tribal regions. Xaxa (2011) argues that technological interventions alone cannot overcome historical socio-economic exclusion. Fernandes (2006) similarly observes that development programmes often fail because tribal communities are excluded from planning and implementation. Sundar (2016) further emphasizes that participatory governance is essential for ensuring that digital initiatives reflect local priorities and strengthen community institutions. In the Indian context, Virginius Xaxa (2011) contends that tribal exclusion is deeply rooted in historical socio-economic marginalization, making digital inclusion inseparable from broader questions of education, livelihood, and social justice. Recent empirical studies reinforce these observations. Raile Rocky Ziipao (2023) demonstrates that inadequate digital infrastructure in North-East India has limited tribal communities' access to online education, digital welfare schemes, and e-governance, thereby creating new forms of social exclusion. These findings indicate that while Digital India has substantially expanded digital infrastructure, its transformative impact on tribal communities remains constrained unless accompanied by targeted investments in digital literacy, local-language digital



content, affordable devices, and community-based capacity-building programmes. Therefore, the current scenario reflects a paradox: significant progress in digital expansion alongside persistent inequalities in meaningful and equitable digital participation, underscoring the need for more inclusive and context-specific policy interventions.

Opportunities of Digital Inclusion:

Digital inclusion presents significant opportunities for improving the socio-economic conditions of tribal communities in India by enhancing access to education, healthcare, financial services, markets, and public welfare. The expansion of digital infrastructure through initiatives such as Digital India, BharatNet, and the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) has enabled many rural and tribal households to connect with essential digital services. Access to online educational platforms, digital classrooms, and e-learning resources has expanded learning opportunities for tribal students, particularly in geographically isolated areas where educational infrastructure is limited (Ministry of Electronics and Information Technology [MeitY], 2024).

Digital technologies have also strengthened healthcare delivery through telemedicine and digital health platforms, enabling remote consultations and improving access to medical services in underserved tribal regions. Similarly, digital financial services, including the Unified Payments Interface (UPI), Aadhaar-enabled Payment System (AePS), and Jan Dhan Yojana, have promoted financial inclusion by facilitating secure banking, direct benefit transfers (DBT), and cashless transactions, thereby reducing dependence on intermediaries and enhancing transparency (World Bank, 2016). Elwin's integrationist philosophy is particularly relevant in understanding the developmental potential of digital

technologies. Digital platforms can support tribal languages, preserve oral traditions, document indigenous ecological knowledge, and promote cultural tourism, thereby facilitating modernization without cultural assimilation (Elwin, 1964).

Furthermore, digital platforms enable tribal artisans, farmers, and entrepreneurs to access wider markets through e-commerce, digital marketing, and online skill development programmes, increasing income-generating opportunities and preserving indigenous knowledge. E-governance portals have also improved access to welfare schemes, land records, scholarships, and grievance redressal mechanisms, fostering greater administrative transparency and citizen participation. Therefore, when supported by adequate infrastructure, digital literacy, and localized digital content, digital inclusion can catalyze tribal empowerment, socio-economic empowerment, and inclusive development.

Challenges and Barriers:

Despite considerable progress under initiatives such as Digital India, BharatNet, and the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), tribal communities in India continue to face significant barriers to meaningful digital inclusion. One of the primary challenges is the inadequate availability of digital infrastructure in remote and forested regions. Many tribal settlements experience unreliable internet connectivity, poor mobile network coverage, and irregular electricity supply, limiting access to digital services despite ongoing investments in rural broadband infrastructure (Ministry of Electronics and Information Technology [MeitY], 2024). Another major constraint is the low level of digital literacy among tribal populations. While internet connectivity has expanded, many individuals lack the knowledge and skills required to use



smartphones, digital payment systems, e-governance portals, and online educational resources effectively. Roy Burman (1994) cautions that development programmes often overlook tribal cultural diversity. Similarly, digital platforms designed primarily for urban populations may unintentionally marginalize indigenous languages and knowledge systems, thereby creating new forms of exclusion. Bramhane (2024) identifies several barriers to digital inclusion, including poor ICT infrastructure, inadequate internet bandwidth, limited availability of digital devices, language-related challenges, lack of quality digital content, cybersecurity concerns, and unequal digital competencies. These challenges are particularly pronounced in tribal areas, where geographical isolation and socio-economic disadvantages further restrict meaningful participation in digital education and e-governance.

Socio-economic inequalities further exacerbate digital exclusion. High levels of poverty, limited smartphone ownership, and the cost of internet services make digital technologies unaffordable for many tribal households. In addition, linguistic diversity presents a significant challenge, as most digital platforms and government applications are designed primarily in English or dominant regional languages, reducing accessibility for tribal communities that rely on indigenous languages. Xaxa (2011) contends that historical marginalization, inadequate educational opportunities, and geographical isolation continue to impede the social and economic advancement of tribal populations, including their participation in the digital economy.

Gender disparities also influence digital inclusion. Tribal women often have less access to digital devices, lower digital literacy, and fewer opportunities to benefit from online education, financial services, and employment than men. Furthermore, concerns regarding cyber fraud, digital

privacy, misinformation, and the lack of trust in digital platforms discourage wider adoption of digital technologies. Ziipao (2023) observes that inadequate infrastructure and institutional support have created new forms of digital exclusion among tribal communities in North-East India, limiting access to education, welfare programmes, and e-governance services.

Policy Implications and Recommendations:

1. Strengthening Digital Infrastructure: The Government should prioritize expanding reliable broadband connectivity, mobile network coverage, and electricity in remote tribal regions through programmes such as BharatNet and the Digital India Mission. Improved infrastructure is the foundation of digital inclusion and enables tribal communities to access education, healthcare, e-governance, and digital financial services (Ministry of Electronics and Information Technology [MeitY], 2024).

2. Enhancing Digital Literacy and Skills: Digital literacy programmes should be tailored to the socio-cultural context of tribal communities. Training modules should be developed in local and tribal languages and implemented through schools, community centres, and tribal hostels. As Warschauer (2003) argues, technology contributes to social inclusion only when accompanied by education and institutional support.

3. Promoting Affordable Digital Access: Affordable smartphones, subsidized internet services, and community digital resource centres should be provided to economically disadvantaged tribal households. Reducing the financial burden of technology adoption will encourage greater participation in digital governance, online education, and digital banking (World Bank, 2016).

4. Encouraging Community Participation and Localized Content: Digital policies should actively involve tribal communities in planning and



implementation to ensure that digital platforms reflect local needs, languages, and cultural practices. Xaxa (2011) emphasizes that inclusive development must recognize tribal identities and encourage participatory decision-making. Locally relevant digital content will increase technology adoption and preserve indigenous knowledge.

5. Strengthening Digital Governance and Cybersecurity: Government agencies should improve awareness regarding cyber safety, digital privacy, and online fraud while ensuring that e-governance services remain simple, transparent, and accessible. Strengthening cyber awareness and digital trust is essential for increasing the adoption of e-governance services among tribal communities. A people-centred and culturally sensitive digital policy framework can significantly reduce inequalities and empower tribal communities to participate effectively in India's digital economy.

6. Community-owned Digital Resource Centres: Consistent with Elwin's integrationist philosophy, digital resource centres should be managed through Gram Sabhas, tribal schools, or local community organizations. Such institutions can provide digital literacy training, preserve indigenous knowledge digitally, and facilitate access to government services while ensuring community ownership and cultural sensitivity (Elwin, 1964; Sundar, 2016).

Conclusion:

Digital inclusion has emerged as a crucial driver of socio-economic development and social justice in India. Although initiatives such as Digital India, BharatNet, and PMGDISHA have significantly expanded digital infrastructure and access to public services, tribal communities continue to face challenges related to connectivity, affordability, digital literacy, language barriers, and socio-economic inequalities. The study demonstrates that digital inclusion can become an

effective instrument of tribal empowerment only when technological advancement is accompanied by culturally sensitive policies, community participation, digital literacy, and equitable access to digital resources. Integrating digital development with the preservation of tribal identities, as envisioned in Verrier Elwin's integrationist approach, offers a sustainable pathway towards inclusive development. The study contributes to the growing discourse on digital inclusion by demonstrating that technological advancement alone is insufficient unless accompanied by culturally responsive governance, institutional support, and community participation.

Reference:

1. Bramhane, A. S. (2024, November). *Digital education and digital divide: Concept, issues and challenges*. Paper presented at the Conference on Responsibilities of All the Actors in the Field of Higher Education in Context with NEP 2020, Indian Institute of Education, Pune.
2. Census of India. (2011). *Primary Census abstract for Scheduled Tribes*. Office of the Registrar General & Census Commissioner, Government of India.
3. Elwin, V. (1964). *The tribal world of Verrier Elwin: An autobiography*. Oxford University Press.
4. Fernandes, W. (2006). *Development-induced displacement and tribal women*. Indian Social Institute.
5. Ministry of Electronics and Information Technology. (2024). *Annual report 2023–24*. Government of India.
6. Ministry of Tribal Affairs. (2023). *Annual report 2022–23*. Government of India.



7. Roy Burman, B. K. (2002). *Tribal development in India: The contemporary debate*. Institute of Social Sciences.
8. Sundar, N. (1997). *Subalterns and sovereigns: An anthropological history of Bastar, 1854–1996*. Oxford University Press.
9. Sundar, N. (2016). *The burning forest: India's war in Bastar*. Juggernaut Books.
10. van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.
11. Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.
12. World Bank. (2016). *World development report 2016: Digital dividends*. World Bank.
13. Xaxa, V. (2008). *State, society, and tribes: Issues in post-colonial India*. Pearson Education India.
14. Ziipao, R. R. (2023). Out of coverage area: Tribes and digital exclusion in North-East India. *Journal of Development Policy and Practice*, 8(2), 141–163. <https://doi.org/10.1177/24551333231163930>