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Digitalisation and Indigenous Rights in India: Issues, Challenges and the Niyamgir Experience

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ABSTRACT

Digitalisation has become a central pillar of governance, service delivery, economic inclusion and social transformation in contemporary India. This paper explores the intersection of digitalisation and indigenous rights in India, focussing on how Digital transformation interacts with tribal communities' access to technology, governance and rights protection. While national initiatives such as Digital India and the expansion of digital public infrastructure (DPI) promise greater access to services, infrastructure, and markets, Indigenisation communities (Aadivasi) particularly those residing in remote regions like Odisha, face structural challenges, including digital exclusion, linguistic barriers, socio-economic stratification and threats to community rights. The Niyamgir movement in odisha illustrates these broader challenges. Although this case is primarily a land and cultural rights struggle, it highlights how marginalised communities can leverage participatory rights and how digital exclusion can compound broader injustice. This paper argues that for digitalisation to support indigenous rights, policies must prioritise inclusive infrastructure, Indigenous language content, digital literacy and community-based data governance framework.

***Keywords**: Economic Inclusion, Digital Literacy, Service Delivery, Indigenous Rights, Linguistic Barriers.*

Introduction

In the recent era, the advent of digital technology and drive toward digitalisation across various spheres - polity, economy, administration, civil society, citizen rights, social movements and social media, have profoundly reshaped almost every aspect of life worldwide and India is no exception. The process of digitalisation inIndia formally began with the launch of Digital India programme (2015), although several digital initiatives and supporting infrastructure had been introduced as early as the 2000s. The process of digitalisation under Digital India refers to the widespread adoptionof digital technologies across key sectors such as governance, e-governance, financial systems (Aadhar, communication infrastructure), and the expanding use of social media platforms. To deepen this process, the digital India initiative aims to expand digital infrastructure, enhance digital literacy and ensure nationwide access, with the objective of creating a digitally empowed society (PIB,2005). However, beyond urban and economically advantaged groups, digital transformation reveals deep inequalities, particularly in tribal regions, where connectivity, digital skills and culturally relevant digital content remain limited (Mallick, 2023). The indigenous rights movement in predating digital agendas highlights long standing struggles for land, cultural autonomy and self- determination. The Niyamgir case in odisha exemplifies tribal resistance to external resource extraction, governance and raises critical questions about representation, governance, and inclusion in the era of digitalisation.

Literature Review

The intersection of digitalisation and indigenous rights in India is an emerging area of scholarly inquiry that reflects the broader impacts of technological transformation on historically marginalised communities. Digitalisation—defined as the integration of digital technologies into daily life, governance, and economic systems—holds the potential to enhance access to services, preserve cultural heritage, and strengthen indigenous political engagement. However, the literature also highlights significant structural challenges that shape how indigenous communities experience digital change.

A central theme in the literature is the digital divide, which refers to unequal access to technology and internet connectivity. Multiple studies indicate that indigenous regions often lag behind in digital infrastructure, resulting in limited access to online services, education, and information (Mallick, 2022). This divide intersects with other socioeconomic disparities, such as poverty, low literacy rates, and geographical remoteness, compounding exclusion from digital benefits.

Beyond infrastructure, language and cultural accessibility emerge as critical concerns. Scholars argue that digital platforms predominantly designed in dominant languages disadvantage indigenous populations whose languages and knowledge systems are underrepresented in the digital sphere. The lack of culturally relevant content limits meaningful participation and reinforces patterns of marginalisation.

Another important strand of literature focuses on indigenous data sovereignty, a concept gaining attention in both global and Indian contexts. This scholarship emphasises community rights over data related to their culture, land, and knowledge systems, resisting unregulated data extraction by external entities. Without clear legal protections, digital documentation and data collection can lead to appropriation of indigenous knowledge and loss of community control.

Some authors highlight the empowering potential of digital tools for indigenous activism and cultural preservation. Digital platforms enable community-led documentation of oral histories, mapping of traditional lands, and dissemination of rights claims to broader audiences. Such digital activism aligns with broader movements for legal recognition and land rights, exemplified by landmark cases like the Niyamgiri struggle (Pati, 2014; Nielsen & Sundar, 2014). These tools have supported indigenous advocacy by facilitating networked communication and public awareness.

However, the literature consistently emphasises that the promise of digital inclusion depends on policy frameworks and governance practices. National digital policies, such as Digital India, have yet to systematically integrate indigenous perspectives or address unique barriers faced by tribal communities. Scholars advocate for policy interventions that promote digital literacy, develop indigenous language content, and uphold principles of free, prior, and informed consent in digital data practices.

The existing literature on digitalisation and indigenous rights in India highlights a dual narrative: while digital technologies hold the potential to expand access and amplify indigenous voices, persistent digital divides, cultural barriers, and governance gaps limit these benefits. Future research in this area is likely to focus on community-driven digital initiatives and policy reforms that centre indigenous agency in the digital age.

Objectives

The Study has the following objectives

- Explore the concept of digitalisation, Indigenous rights, and their interrelationship.
- Analyse the emerging issues and Challenges of digitalisation at the interface of Indigenous rights focusing on Niyamgiri case, Odisha.
- Suggest measures to enable Indigenous communities to leverage digitalisation for protecting their traditional rights and culture

Methodology

The study employs the descriptive and analytical research approach, leveraging secondary literature analysis, with a focus on digital inclusion research in India's tribal regions.

Conceptual Framework: Digitalisation and Indigenous rights

Digitalisation refers to the use of digital technologies to transform processes, services, and governance systems in order to improve efficiency, transparency, accessibility, and responsiveness. The conceptual framework of digitalisation explains how digital inputs are converted into meaningful

outcomes through structured processes and enabling conditions. At the input level, digitalisation begins with digital infrastructure and resources. This includes information and communication technologies (ICTs), internet connectivity, hardware and software, digital platforms, databases, and skilled human resources. Supportive policies, legal frameworks, and political commitment also form critical inputs for successful digitalisation.

The process level focuses on the application of digital tools in organizational and governance activities. This includes digitisation of records, automation of workflows, use of e-governance platforms, data analytics, artificial intelligence, cloud computing, and mobile technologies. At this stage, traditional manual processes are redesigned into digital processes, enabling faster decision-making, coordination, and service delivery. Capacity building, change management, and digital literacy are essential supporting processes. The output level represents the immediate results of digitalisation. These include improved service delivery, reduced transaction costs, faster processing time, better data management, enhanced transparency, and improved communication between institutions and citizens. Digital platforms enable real-time access to information and services. At the outcome and impact level, digitalisation leads to broader goals such as good governance, inclusive development, accountability, citizen empowerment, and innovation-driven growth. In the public sector, it strengthens participatory governance and trust, while in the economy it promotes efficiency and competitiveness.

The framework also recognizes the importance of the external environment, including socio-economic conditions, digital divide, cybersecurity concerns, and ethical issues. Continuous feedback and evaluation help refine digital systems. Thus, the conceptual framework of digitalisation presents digital transformation as a systematic, multi-level process linking technology with governance, institutions, and society.

Indigenous Rights in Global Perspective

Indigenous rights in a global perspective refer to the recognition, protection, and promotion of the distinct cultural identities, lands, resources, and self-governance systems of Indigenous peoples worldwide. Indigenous communities, estimated at over 476 million people across more than 90 countries, have historically faced marginalization, dispossession of land, cultural erosion, and social exclusion due to colonialism, forced assimilation, and modern development projects. In response, the international community has increasingly acknowledged Indigenous rights as an essential component of human rights. The adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in 2007 marked a significant milestone, affirming rights related to self-determination, cultural preservation, language, education, health, and control over traditional lands and natural resources. Instruments such as ILO Convention No. 169 further emphasize free, prior, and informed consent (FPIC) in development activities affecting Indigenous territories. Globally, Indigenous movements have played a crucial role in environmental conservation, sustainable development, and climate change mitigation, as their traditional knowledge systems promote ecological balance. However, despite international norms, the implementation of Indigenous rights remains uneven, with many communities continuing to face displacement, economic exploitation, and political exclusion. Strengthening legal frameworks, inclusive governance, and respect for Indigenous knowledge is vital for achieving social justice and sustainable development worldwide.

Indigenous Rights and Legal Framework in India

Indigenous peoples in India, commonly referred to as Adivasis, are protected through constitutional safeguards, the Forest Rights Act (FRA), 2006, and other laws that recognize their rights over land, forests, culture, and livelihood; however, the implementation of these legal protections remains uneven due to bureaucratic inertia, commercial interests, and weak enforcement. Key challenges include the inadequate application of Free, Prior, and Informed Consent (FPIC), where procedures often lack independent verification and tend to favour state and corporate actors, as well as conflicts arising from resource-intensive development projects such as mining, dams, and industrial corridors that proceed without meaningful community participation. Long-standing structural exclusion, reflected in poor infrastructure, limited access to public services, and technological marginalisation, further deepens indigenous vulnerability. Scholars also emphasize the need to integrate indigenous knowledge systems and worldviews into legal and governance frameworks to bridge the gap between modern law and indigenous epistemologies. These issues are clearly illustrated in the Niyamgiri case in Odisha, where the Dongria Kondh, a Particularly Vulnerable Tribal Group, successfully resisted a proposed bauxite mining project. In its landmark 2013 judgment, the Supreme Court empowered Gram Sabhas to

determine whether mining would violate cultural, religious, and livelihood rights under the FRA, making community consent legally decisive; the unanimous rejection by twelve Gram Sabhas led to the denial of forest clearance in 2014. Scholarly analyses of Niyamgiri highlight the role of indigenous religiosity, identity, and collective resistance, demonstrating both the transformative potential and the continuing limitations of legal mechanisms in protecting indigenous rights in India.

Case Study: The Niyamgiri Movement

The Niyamgiri movement in Odisha represents a landmark struggle of the Dongria Kondh, a Particularly Vulnerable Tribal Group (PVTG), against proposed bauxite mining by Vedanta and the Odisha Mining Corporation. While the movement is primarily known for its legal and cultural dimensions, it also reveals the complex role of digitalisation in indigenous rights protection.

Digitalisation contributed positively by enabling information dissemination, advocacy, and networking. Civil society groups, researchers, and activists used digital platforms, social media, online reports, and satellite mapping to document environmental impacts, highlight violations of the Forest Rights Act (FRA), 2006, and internationalise the issue. Digital tools helped amplify indigenous voices beyond geographically isolated regions, bringing national and global attention to the Dongria Kondh's claims. Digitised legal documents and online media coverage also supported transparency in judicial and administrative processes, culminating in the 2013 Supreme Court judgment, which empowered Gram Sabhas to decide on mining in their sacred hills.

However, the case also exposes significant challenges of digitalisation. Indigenous communities faced a digital divide, marked by limited access to internet connectivity, devices, and digital literacy. As a result, much of the digital advocacy was mediated by external actors, raising concerns about representation and agency. Moreover, digital governance systems often prioritise technocratic data over indigenous knowledge systems, which are oral, spiritual, and community-based. Digitisation of land records and forest data, when poorly designed, can marginalise customary rights and sacred landscapes.

Thus, the Niyamgiri movement demonstrates that while digitalisation can strengthen visibility, mobilisation, and accountability, it must be inclusive, culturally sensitive, and community-controlled to genuinely advance indigenous rights. The case underscores the need to integrate digital governance with FPIC, local knowledge, and constitutional protections.

Digitalisation and Indigenous rights: Opportunities & Challenges

Opportunities

Digital Technology offers several opportunities for indigenous communities to realise their traditional rights and culture. These are:

- **Amplifying voices:** Social media and online platforms help indigenous communities raise awareness about their struggle and harness their international support.
- **Access to information:** Digital tools provide access to information about rights laws and government policies, thus empowering the indigenous communities to make informed decisions.
- **Documentation and mapping;** Technologies like GIS mapping and digital archives help document indigenous lands, cultures and histories.
- **E- participation:** Digital tools enable indigenous communities to participate in the decision - making process and hold governments accountable .

Challenges

- **Digital Exclusion and Participation**

While the Niyamgiri case predates widespread digital mobilisation, its lessons are relevant: meaningful inclusion and decision-making depend on equitable access to information and communication channels. Digital exclusion can silence tribal voices in participatory processes, including consultations about infrastructure, environmental impact assessments, and governance reforms.

- **Land Rights**

Digitalisation of land records often ignores Indigenous customary ownership and collective tenure systems. Inaccurate digital mapping and exclusion from e-governance processes increase land disputes, weaken free, prior and informed consent, and facilitate state or corporate land acquisition.

- **Digital Divide**

Indigenous communities face limited internet access, poor digital infrastructure, low digital literacy, and language barriers. As welfare, education, and governance shift online, this digital divide deepens exclusion and restricts Indigenous participation in decision-making processes.

- **Online Harassment**

Digital platforms expose Indigenous activists and communities to online harassment, hate speech, and misinformation. Cultural symbols and traditional knowledge are misused without consent, while weak legal protection makes digital spaces unsafe for Indigenous expression and rights advocacy.

- **Representation in Digital Governance**

Digital services often replicate mainstream cultural norms and dominant languages, marginalising tribal languages and knowledge systems. Without culturally adapted digital content and interfaces, indigenous peoples struggle to engage with digital government services and advocacy platforms. This reinforces wider patterns of exclusion and hinders political participation.

- **Intersection of Rights, Data, and Digital Tools**

As governments increasingly deploy digital land records, biometric systems, and e-governance platforms, questions arise about indigenous data sovereignty and privacy. Without explicit protections for collective tribal rights over data, these systems can inadvertently undermine community autonomy (Roberts & Montoya, 2023).

Despite rapid digital growth across India, significant statistical disparities persist for tribal and indigenous communities, showing how digitalisation intersects with rights and equity. National surveys reveal that only about 24 % of rural households have internet access, compared with 66 % in urban areas, highlighting the rural-urban digital divide that disproportionately affects tribal populations who predominantly live in remote regions with lower infrastructure penetration. Menare nearly twice as likely as women to use the internet (49 % vs. 25 %), exacerbating a gendered digital gap within already marginalised groups. In tribal districts of Jharkhand and Odisha, only around 73–74 % of Adivasi villages have access to at least one mobile network, substantially lower than non-Adivasi village connectivity in the same states, and smartphone ownership is skewed with only 17 % of women owning a mobile compared to 39 % of men. Nation-wide, India's Scheduled Tribes numbered about 10.4 crore (8.6 % of the population**)** according to the most recent comprehensive data, yet digital inclusion lags behind in education, services, and economic participation. Government efforts show some uptake—UPI transactions in rural areas have surged and smartphone adoption crosses 60 % in broader rural households—but tribal areas with poor literacy and linguistic barriers see limited benefits. For example, in Odisha's Niyamgiri hills — home to approximately 8,000-15,000 Dongria Kondh tribal people across some 160 villages — the focus on digital tools for rights advocacy and community mobilisation remains constrained by basic access and culturally relevant content deficits. The landmark Niyamgiri case itself reflects more legal-political struggle than digital empowerment, underscoring how the absence of accessible digital participation can compound struggles for land and cultural rights.

Digitalisation has the potential to enhance inclusion, improve access to government schemes, and amplify indigenous voices. Yet, realising these benefits requires addressing the digital divide in tribal areas and aligning digital policies with indigenous rights frameworks. The Niyamgiri case underscores the importance of community control over decisions impacting their land and livelihoods, whether those decisions involve mining projects or digital governance design.

Conclusion and Suggestions

Digitalisation has a dual impact on India's indigenous communities – it offers opportunities like improved access to education, services, income, and welfare schemes through inclusive technologies, but also poses risks like infrastructure gaps, language barriers, and digital literacy issues, disproportionately affecting these communities. The Niyamgiri experience shows indigenous movements can effectively use digital platforms for advocacy, yet persistent access and control gaps underscore the unfinished nature of digital inclusion..The study suggests several measures to enable India's indigenous communities to access and actively shape digitalisation while safeguarding their rights, culture, and livelihoods.

- Policy makers should design and implement targeted policies and programmes to expand digital infrastructure in remote and tribal regions, including reliable internet connectivity, electricity supply, and community digital centres. Strengthening such infrastructure is essential for ensuring equitable access to digital opportunities.

- Culturally sensitive digital literacy programmes should be introduced in local and indigenous languages to enhance participation in e-governance, education, and welfare services. These programmes should be community-based and inclusive, with special attention to women and youth.
- Efforts should be made to promote indigenous languages in digital platforms by developing culturally relevant digital content, interfaces, and tools that support language preservation and knowledge sharing. This would help protect indigenous cultural heritage while encouraging meaningful digital engagement.
- policy makers, civil society organisations, and other stakeholders should collaborate to support community-led digital initiatives that strengthen indigenous rights, improve access to information, and enhance local capacity building.
- Inclusive digital policies should be formulated through active indigenous participation and sustained collaboration with civil society, ensuring that digital governance frameworks respect principles of free, prior, and informed consent.
- Finally future empirical research should focus on how indigenous communities use digital technologies for mobilisation, cultural transmission, and legal advocacy. Further studies are also needed to evaluate digital literacy programmes, examine tribal participation in digital governance initiatives, and undertake comparative analyses linking Indian indigenous data sovereignty debates with global indigenous frameworks.

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