

THE ILLITERATE CITIZEN IN A DIGITAL STATE:

Digital Exclusion and the Denial of Social Rights in Rural India

A Research Paper in Human Rights and Digital Literacy

GARV CHAUHAN

School of Cybersecurity and Digital Forensics

NFSU

New Delhi, India

Abstract

India's Digital India programme presents digital transformation as a great equaliser — a technological revolution that will democratise governance, deliver welfare, and unlock economic opportunity for every citizen regardless of geography or class. This paper argues that the opposite is often true. As the state rapidly digitises its essential public services — welfare distribution, healthcare, education, financial inclusion, and civic participation — it is simultaneously constructing a two-tier citizenship in which access to fundamental rights is conditioned on digital literacy that hundreds of millions of Indians, particularly in rural areas, do not possess.

Drawing on empirical data from India's National Sample Survey (NSS), the Periodic Labour Force Survey (PLFS 2023-24), the Telecom Regulatory Authority of India (TRAI), Access Now, the India Development Review (IDR), Down to Earth, and peer-reviewed academic research, this paper demonstrates that India's computer literacy rate stands at just 24.7 percent overall — with rural areas at a mere 18.1 percent compared to 39.6 percent in urban areas (NSS, 2024). Nearly 70 percent of the rural population remains excluded from digital services and public amenities. The digital divide tracks and amplifies existing inequalities of caste (only 4 percent of SC/ST students had computer and internet access during the pandemic), gender (internet browsing: 66% urban vs 31% rural; women 10+ percentage points below men at every skill level), geography (internet penetration: 67% urban vs 37% rural), and language.

The paper argues that this exclusion constitutes a violation of multiple economic, social, and cultural rights guaranteed under the International Covenant on Economic, Social and Cultural Rights (ICESCR) — including the right to education (Art. 13), the right to health (Art. 12), and the right to take part in cultural life (Art. 15) — as well as civil rights under the ICCPR. The paper critically evaluates India's flagship digital literacy programme (PMGDISHA), which trained 63.9 million individuals by March 2024 but whose 20-hour curriculum teaches only functional app use rather than critical digital agency. It concludes with a framework for rights-based digital literacy policy in India that treats digital access and capability as a prerequisite for, not an alternative to, the exercise of constitutional and human rights.

Keywords: *digital literacy, rural India, human rights, digital divide, PMGDISHA, caste, ICESCR, Digital India, social exclusion, right to education, welfare denial*

Table of Content

Abstract	2
1. Introduction	5
2. Conceptual Framework: Digital Literacy as a Human Rights Issue	6
3. The Scale of Exclusion: Data and Evidence	9
3.1 The Computer and Internet Literacy Gap	9
3.2 Caste, Class, and the Digital Wall	10
3.3 The Gender Dimension	11
3.4 Language as a Barrier	12
4. Rights Denied: Where Digital Exclusion Meets Lived Reality	14
4.1 The Right to Health: CoWIN and the Vaccine Divide	14
4.2 The Right to Education: COVID-19 and the Online Examination Crisis.....	15
4.3 The Right to Welfare: MGNREGA, Aadhaar, and Exclusion by Design	16
4.4 The Right to Economic Participation.....	17
5. PMGDISHA: A Critical Assessment of India's Digital Literacy Mission.....	19
5.1 What PMGDISHA Achieved.....	19
5.2 What PMGDISHA Did Not Do: A Rights-Based Critique	19
Depth: 20 Hours Cannot Build Digital Citizenship	20
Structural Exclusions: Who PMGDISHA Left Out.....	20
The Gap Between Skill and Agency	21
6. Why Governance Is Failing: Structural Analysis	22
6.1 Techno-Solutionism Without Social Analysis.....	22
6.2 Digital-First Without Digital-Equal	22
6.3 Absence of Accountability Mechanisms	23
6.4 The Measurement Problem: What Gets Counted Gets Fixed.....	23
7. Comparative Perspective: Lessons from Global Models.....	25
7.1 Estonia: Digital-by-Design with Universal Access	25
7.2 Kenya's Digital Literacy Programme.....	25
7.3 South Korea: Family-Level Digital Inclusion.....	25
7.4 Australia's NBN and Remote Area Connectivity	26
8. Recommendations: Toward a Rights-Based Digital Literacy Framework for India	27
8.1 Constitutional and Legal Recognition	27
8.2 Infrastructure and Access.....	27
8.3 Programme Design: Beyond PMGDISHA	28

8.4 Accountability and Measurement	28
9. Conclusion	30
10. References.....	32
Primary Data Sources and Reports	32
Academic Literature.....	32
Legal Instruments.....	32
Journalism, Civil Society and Policy Sources	33

1. Introduction

On 1 July 2015, Prime Minister Narendra Modi launched the Digital India programme with the promise of transforming India into a 'digitally empowered society and knowledge economy.' The campaign was premised on three pillars: digital infrastructure as a utility for every citizen, on-demand delivery of government services, and universal digital literacy. Ten years later, the programme's balance sheet is deeply contradictory. India now has approximately 954 million internet subscribers, the world's second-largest internet user base, and is ranked among the top four nations globally in AI vibrancy (Stanford AI Index, 2024). Yet the same country records the world's highest number of internet shutdowns for the seventh consecutive year, has a computer literacy rate of just 24.7 percent, and has seen digital welfare delivery systems exclude millions of the most vulnerable citizens from schemes designed specifically for their benefit.

The central paradox this paper addresses is what we call the 'digital substitution trap': as the Indian state increasingly delivers rights through digital channels — health registration, welfare disbursement, educational certification, employment scheme enrolment — it effectively conditions the exercise of constitutional rights on digital capability. For the hundreds of millions of citizens, particularly in rural India, who lack that capability, this is not an abstract policy failure. It means vaccines they could not access, jobs they could not apply for, rations they could not collect, and courts they could not petition.

This is not an accident or an oversight. It is, as digital rights scholars argue, a structural feature of how digitisation interacts with existing inequalities of caste, class, gender, geography, and language in India. The Digital India infrastructure — Aadhaar, CoWIN, MGNREGA online, DigiLocker — was designed with an implicit assumption of the user: connected, literate, urban, Hindi-speaking. The Dalit woman in rural Jharkhand, the Adivasi elder in Assam, the daily wage labourer in Bihar were not the imagined citizens of this digital state. When welfare systems fail to recognise them — literally, through biometric authentication failures, or figuratively, through interfaces they cannot navigate — the inequalities that Indian democracy was constitutionally designed to address are not only preserved but amplified.

This paper proceeds as follows. Section 2 develops the conceptual framework, situating digital literacy within international human rights law. Section 3 presents a granular empirical picture of digital exclusion in India along multiple axes. Section 4 traces how that exclusion translates into

the denial of specific rights in health, education, welfare, and economic participation. Section 5 critically evaluates PMGDISHA — India's flagship digital literacy programme — against rights-based standards. Section 6 analyses why governance is failing structurally. Section 7 draws comparative lessons from global models. Section 8 advances a rights-based policy framework. Section 9 concludes.

2. Conceptual Framework: Digital Literacy as a Human Rights Issue

Digital literacy — the ability to use, navigate, critically evaluate, and create information using digital technologies — has evolved in policy discourse from a desirable skill to a prerequisite for citizenship. As governments shift service delivery, political participation, economic transactions, and social communication onto digital platforms, the capacity to engage digitally is no longer merely an advantage: it is a condition of access to rights.

International human rights law did not anticipate this shift. The Universal Declaration of Human Rights (UDHR, 1948) and the International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966) were drafted for an analogue world. However, their guarantees are sufficiently broad to encompass digital access and literacy:

- The right to education (ICESCR Art. 13) — increasingly inaccessible without digital literacy as education systems move online, examinations go digital, and study materials migrate to platforms inaccessible without devices and connectivity
- The right to the highest attainable standard of health (ICESCR Art. 12) — compromised when healthcare registration, telemedicine, vaccine booking, and health records are digitised without equitable access
- The right to work and just conditions of employment (ICESCR Art. 6-7) — undermined when formal employment opportunities require digital skill and when welfare employment schemes require online registration
- The right to take part in cultural life and to benefit from scientific progress (ICESCR Art. 15) — denied when digital infrastructure excludes communities from the knowledge economy

- The right to equality and non-discrimination (UDHR Art. 7; ICCPR Art. 26) — violated when digital systems reproduce and amplify existing inequalities of caste, gender, and geography
- The right to political participation (ICCPR Art. 25) — constrained when democratic information, electoral registration, and civic complaint mechanisms migrate to digital channels without accessible alternatives

The UN Special Rapporteur on the Right to Education (2020) specifically identified digital literacy as integral to the right to education in the twenty-first century. UNESCO's Framework for Information Literacy for Lifelong Learning (2013, updated 2021) defines digital literacy not merely as technical capability but as the foundation of informed citizenship. The UN Human Rights Council Resolution 38/7 (2018) affirmed that 'the same rights that people have offline must also be protected online' — a principle that, read in reverse, implies that rights effectively exercised only online must be accompanied by the digital capability to do so.

India's constitutional framework provides additional domestic anchors. Article 21 (right to life and personal liberty) has been interpreted by the Supreme Court expansively to include the right to livelihood (Olga Tellis, 1985), the right to health (Paschim Banga, 1996), and the right to education (Mohini Jain, 1992). Article 21A guarantees free and compulsory education for children 6-14. Article 41 directs the state to make provision for securing the right to education and public assistance in cases of unemployment, old age, sickness, and disablement. Article 46 directs the state to promote educational and economic interests of Scheduled Castes and Scheduled Tribes. Each of these constitutional rights is increasingly exercised through digital channels — making digital exclusion a constitutional issue, not merely a policy inconvenience.

"First, it should begin with acknowledging that digital rights are human rights. Access to the internet, devices, and digital literacy must be treated as basic public goods." —
Development Policy and Practice Conference, Hyderabad, 2025

This paper adopts Amartya Sen's capabilities approach as an evaluative framework. Sen defines development not as income growth but as the expansion of substantive freedoms — the real abilities people have to lead lives they have reason to value. Digital literacy, in a digitised governance system, is a capability: its absence directly constrains the real freedoms people can exercise. When a Dalit woman in Bihar cannot enrol her children in school online, claim her

MGNREGA wages, or book a vaccine slot, her unfreedom is not merely a matter of missing a form — it is the denial of the substance of her constitutional rights.

3. The Scale of Exclusion: Data and Evidence

Before examining rights violations in specific domains, this section establishes the empirical baseline of digital exclusion in India across four intersecting axes: geography (rural-urban), caste, gender, and language. Together, the data reveal a pattern of compounded exclusion that maps almost precisely onto India's pre-existing social hierarchies.

3.1 The Computer and Internet Literacy Gap

The most comprehensive national data on computer literacy comes from India's National Sample Survey (NSS), supplemented by the Periodic Labour Force Survey (PLFS). The findings are stark:

24.7%

Overall computer literacy rate in India among persons aged 15+ (NSS)
Source: NSS Survey / The Hindu, July 2024

18.1%

Computer literacy in rural areas — compared to 39.6% in urban areas
Source: NSS; Civildaily, 2024

70%

Share of rural population excluded from digital services and public amenities
Source: NSS / The Hindu, 2024

37%

Internet penetration in rural India vs. 67% in urban India (TRAI, 2023)
Source: TRAI Telecom Statistics 2023

954M

Total internet subscribers in India (March 2024) — but rural share lags severely
Source: Digital India Programme data

While the 2023 PLFS reports an overall literacy rate of 80.9 percent — an improvement — this masks severe regional disparities. Bihar, Madhya Pradesh, and Rajasthan fall significantly below the national average. Kerala leads at 72.7 percent computer literacy, while states like Assam and Bihar remain under 30 percent. Computer literacy peaks at 45.9 percent among the 20-24 age group, but drops to a devastating 4.4 percent for those aged 65-69. Even among working-age cohorts of 20-

39 years — the primary recipients of India's digital welfare systems — computer literacy averages only 34.8 percent.

It is important to distinguish between internet access and digital literacy. India's 954 million subscribers largely use smartphones for entertainment, messaging, and social media — not the complex navigation of government portals, form submission, biometric verification, and document upload that welfare access now requires. The digital literacy gap for functional civic participation is significantly wider than raw subscriber figures suggest. A person with a smartphone who watches YouTube but cannot fill an online form for MGNREGA wages is digitally present but civically excluded.

3.2 Caste, Class, and the Digital Wall

The digital divide in India does not operate independently of its social structure. It maps directly onto caste hierarchy, replicating and deepening pre-existing inequalities. The data from multiple sources paint a consistent picture of what the India Development Review has called a 'digital wall' between Scheduled Caste/Scheduled Tribe communities and the rest of Indian society.

4%

SC/ST students with access to computer and internet during COVID-19 pandemic

Source: IDR / NSSO 75th Round, 2017-18

23 / 100

Only 23 of 100 ST households with a graduate student had any internet access (2017-18)

Source: NSSO 75th Round Survey

2-4%

Female smartphone ownership among PVTG (Particularly Vulnerable Tribal Groups) households in four states

Source: Down to Earth / PRADAN, 2024

The IDR's analysis of the 'digital wall' documents that large disparities in internet access impact nearly every aspect of the public and private lives of individuals from SC and ST backgrounds — from communication and community-building to accessing relevant digital skills and employment opportunities. Critically, as an increasing number of welfare schemes require online

registration or verification, marginalised caste individuals in households without internet access risk being excluded from schemes created specifically for their benefit.

"The digital divide reinforces existing inequalities based on caste, class, and gender, creating a 'digital elite' while leaving others further behind." — **HubSociology, 2025**

The intersection of caste and geography creates compounding disadvantage. A Dalit household in rural Jharkhand does not merely face one barrier — it faces the combined effects of poor infrastructure, low income preventing device purchase, social norms restricting women's phone ownership, lack of Hindi/English literacy limiting interface navigation, and historical exclusion from educational institutions that might have provided digital skills. These barriers do not add arithmetically; they multiply. The result is what scholars term 'deep digital exclusion': a condition in which the digital system is not merely inconvenient but functionally inaccessible.

Class compounds caste. The average cost of EdTech products — instructional aids that became mandatory during COVID-19 school closures — is INR 20,000. The average annual income of the poorest 20 percent of Indian households is INR 25,825. For these families, purchasing a device for digital education was not a matter of priority but of impossibility. As a result, an estimated 247 million children were out of school during the pandemic, with those from SC/ST rural backgrounds disproportionately represented among the permanently lost.

3.3 The Gender Dimension

The digital divide in India has a pronounced and well-documented gender dimension. Women are systematically less likely to own devices, access the internet, and possess digital skills at every level of complexity — and this gap is substantially wider in rural contexts.

**66% vs
31%**

Urban vs. rural rate of internet browsing — with women 10+ points below men in each category
Source: ICRIER / Statista, 2023

6.7%

Gender gap in basic digital literacy skills — widens to 9.8% for advanced skills
Source: UNDP-ICRIER Policy Brief, 2025

A 2025 UNDP-ICRIER policy brief found that the gender gap for basic digital literacy skills is 6.7 percent, 7.4 percent for intermediate skills, and 9.8 percent for advanced skills — and that this gap is further widened in rural cohorts of the Indian economy. This means that as digital governance demands more sophisticated interactions — not just browsing but form submission, document upload, biometric verification, and digital payment — the gap becomes more consequential, not less.

Social norms and economic dependency compound the structural gap. Women in many rural Indian communities face family restrictions on smartphone ownership — devices are controlled by male household members, or women are discouraged from independent digital engagement due to concerns about safety, exposure to 'inappropriate content,' or loss of domestic focus. This means that even when internet connectivity exists in a household, women may not be able to access it independently. The GSMA Connected Women programme has documented this barrier across South and Southeast Asia, with India among the most affected countries.

The consequences are concrete. Women in rural India who cannot navigate digital health platforms independently may not be able to book prenatal care appointments. Women who cannot access MGNREGA online cannot claim wages for work already performed. Women who cannot use DigiLocker cannot access their own educational certificates for further study or employment. The digital gender gap is not a technology problem — it is a rights problem.

3.4 Language as a Barrier

India has 22 officially recognised languages and hundreds of dialects. Despite this linguistic diversity, the dominant assumption of India's digital infrastructure is Hindi or English literacy. Most government portals — UMANG, DigiLocker, CoWIN, MGNREGA online — were designed with Hindi/English as primary interfaces. Even where regional language options exist, they are often incomplete, poorly translated, or lack the vernacular terminology that less-educated rural users would naturally use.

This creates a third axis of exclusion for communities speaking tribal languages, dialects without formal writing systems, or regional languages underserved by digital content. A study by the Digital Empowerment Foundation found that the absence of locally relevant, culturally appropriate digital content in mother tongues was one of the primary barriers to digital adoption in tribal communities in northeast India, Jharkhand, Chhattisgarh, and Odisha. For these communities,

the challenge is not merely access to a device — it is encountering a digital world that does not speak their language, literally.

4. Rights Denied: Where Digital Exclusion Meets Lived Reality

The data in Section 3 becomes morally urgent when we trace its consequences for specific rights. This section examines four domains — health, education, welfare, and economic participation — where the digitisation of service delivery has produced documented rights denials for digitally excluded populations.

4.1 The Right to Health: CoWIN and the Vaccine Divide

The Indian government's COVID-19 vaccination programme, administered through the CoWIN application, represents one of the clearest case studies in how digitalised health delivery can generate rights violations at scale. CoWIN required users to register online, book vaccination slots through the app or website, and download vaccination certificates digitally. The system presumed smartphone ownership, internet connectivity, and digital literacy — prerequisites that a majority of rural Indians did not meet.

30 vs 12.7

COVID vaccine doses per 100 persons: urban India vs. rural India (Oxfam, May 2021)

Source: Oxfam India Health Inequality Report, 2021

70%+

Share of India's population with poor or no connectivity to digital services

Source: IDR Digital Divide Analysis, 2023

The disparity is damning. While urban Indians — with smartphones, internet access, and digital literacy — received 30 doses per 100 persons by May 2021, rural Indians received only 12.7. The gap cannot be explained by vaccine supply alone: it was structurally produced by a digital-only registration system that excluded those without access. Health experts at the time stated that not having access to broadband internet had become 'an additional barrier to healthcare delivery' — a statement of extraordinary ethical significance given that access to vaccines during a pandemic is a matter of life and death.

The CoWIN case illustrates a phenomenon that scholars call 'digital-by-default exclusion': when a state makes a service digital-first without maintaining accessible analogue alternatives, it

does not merely inconvenience the digitally excluded — it effectively denies them the service. Under ICESCR Article 12, the right to the highest attainable standard of health requires states to ensure non-discriminatory access to health services. A vaccination programme that systematically reaches urban and upper-class citizens first, because its access mechanism requires digital literacy those citizens disproportionately possess, raises serious questions of ICESCR compliance.

The National Digital Health Mission (NDHM), launched during the pandemic and since renamed Ayushman Bharat Digital Mission, seeks to build a comprehensive digital health ecosystem including electronic health records, telemedicine, and digital health IDs. Health experts have raised concerns that unless digital literacy and infrastructure are significantly expanded, this mission risks replicating the CoWIN exclusion pattern at permanent scale — creating a health system accessible to the connected and inaccessible to those who need it most.

4.2 The Right to Education: COVID-19 and the Online Examination Crisis

The COVID-19 pandemic forced a rapid shift to online education across India, exposing the digital divide with devastating clarity. School closures affected an estimated 247-286 million children. For urban, connected students, online learning represented a disruption managed through EdTech platforms, video calls, and digital content. For rural, SC/ST, and low-income students, it represented effective educational exclusion.

When the University Grants Commission (UGC) mandated online examinations for university students during the pandemic, it triggered a crisis for Dalit and Adivasi students disproportionately enrolled in rural and state universities. As research by Tinanjali Dam and Soham Bhattacharya documented: of 100 Scheduled Tribe households with at least one graduate student enrolled in 2017-18, only 23 had any internet access. For Dalit (SC) households, the figure was 20. Mandatory online examinations thus imposed a 'casteist practice' — as the authors describe it — in which a merit evaluation was conducted through a mechanism that systematically advantaged students from higher-caste, wealthier, urban backgrounds.

"No matter how romantic the 'home-schooling' videos of celebrity kids might appear, to the biggest section of this country, they remain a portrayal of how the denial of their educational rights is being pursued in the guise of online education." — Dam & Bhattacharya, NewsClick, 2020

The right to education guaranteed under ICESCR Article 13 and India's own Right to Education Act (2009) requires states to ensure 'accessible' education for all — a standard that online-only delivery during periods of crisis fails to meet for the digitally excluded. The long-term consequences are significant: students who fell behind or dropped out during the pandemic years due to digital exclusion face compounded disadvantages in employment, further education, and civic participation.

The situation of children with disabilities is particularly severe. The Rehabilitation Council of India's 2020 survey found that 90 percent of children with disabilities reported being unable to continue education during school closures due to inaccessible digital formats, lack of assistive technologies, and absence of sign language content.

4.3 The Right to Welfare: MGNREGA, Aadhaar, and Exclusion by Design

India's Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of the world's largest social protection programmes, legally guaranteeing 100 days of paid employment per year to rural households. Its digital integration — through Aadhaar-linked biometric authentication, online job card registration, and digital wage disbursement — has been extensively documented as a source of systematic exclusion for the most vulnerable beneficiaries.

Aadhaar biometric authentication failures have been among the most extensively documented forms of digital exclusion in India. Manual labourers, the elderly, and those with skin conditions frequently fail fingerprint authentication — their fingerprints worn by a lifetime of physical work. Network outages at rural Common Service Centres (CSCs) mean that even those with Aadhaar and biometric integrity are denied verification. The consequence is direct: no authentication, no attendance recording; no attendance, no wage. For daily labourers surviving on MGNREGA income, a failed biometric scan does not mean administrative inconvenience — it means that day's food.

Researchers at LibTech India documented these failures systematically across Andhra Pradesh and Jharkhand. Their field research found that biometric authentication failures were most common among the oldest, most physically-worn, and most economically marginal workers — precisely those most dependent on MGNREGA wages. The system's design, optimised for technological efficiency, had not been tested against the lived reality of its intended beneficiaries.

"When welfare services — like food rations or pensions — are tied to biometric verification or OTP-based systems, even a small technological failure can mean denied entitlements and increased uncertainty." — The Siasat Daily, April 2025

The economist Nancy Fraser's concept of 'participatory parity' — the ability to participate in social life as a peer — provides the theoretical frame for understanding this failure. Eco-Business (2025) applies it directly to India's digital welfare systems: this is 'the inequality of legibility, akin to a lack of participation parity — not income or consumption inequality, but the inequality that emerges when systems fail to recognise people or when digital divides shut out millions.'

The Public Distribution System (PDS) — India's food security programme covering approximately 800 million beneficiaries — has undergone similar digitalisation. Ration cards have been linked to Aadhaar. In states like Rajasthan and Jharkhand, civil society documentation has recorded cases of families being denied food rations due to failed biometric authentication, mismatched Aadhaar details, or lack of internet connectivity at the point of service. In several documented cases, families went without food for days as a result. The Supreme Court of India's order in the Right to Food case (PUCL v. Union of India) explicitly recognised starvation as a rights violation — yet the digital infrastructure designed to deliver food security has itself become a source of food insecurity for those without reliable biometric access.

4.4 The Right to Economic Participation

The digital economy's expansion creates opportunities — but those opportunities are increasingly concentrated in the hands of those with digital literacy, device access, and connectivity. For rural India, the shift to digital financial services, online markets, and platform-based employment represents not opportunity but further marginalisation.

The Jan Dhan Yojana financial inclusion programme has opened hundreds of millions of bank accounts — but research documents that many rural account holders lack the digital literacy to operate their accounts independently, use UPI payment systems, or navigate banking apps. They remain dependent on intermediaries — often fee-charging cyber cafe operators or relatives — to access their own funds. This dependency creates opportunities for exploitation and data breach, and means that the formal financial inclusion achieved by account opening is not matched by substantive financial agency.

The rise of platform-based gig economy work — food delivery, logistics, freelancing — requires digital literacy for registration, operation, and payment. Rural workers without smartphones or digital skill are entirely excluded from this growing sector. Meanwhile, the formalisation of agricultural market linkages through e-NAM (the National Agriculture Market platform) requires farmers to interact digitally to access price discovery and inter-state trading — a requirement that excludes smallholders without the necessary skills.

5. PMGDISHA: A Critical Assessment of India's Digital Literacy Mission

The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) is India's primary policy response to the rural digital literacy gap. Launched in February 2017 under the Ministry of Electronics and Information Technology (MeitY), it aimed to provide basic digital literacy training to one member of each of 60 million rural households. As of March 31, 2024, it officially concluded having trained 63.9 million individuals — exceeding its numerical target.

5.1 What PMGDISHA Achieved

PMGDISHA's numerical achievement is significant and should not be dismissed. Training was delivered across all Indian states and union territories, including geographically remote and historically underserved regions. The programme operated through local training centres, used regional languages, and in many instances mobilised women and SC/ST community members as trainers — creating local capacity with multiplier effects. The involvement of Common Service Centres (CSCs) and local implementation agencies extended reach to areas where no digital training had previously existed.

63.9M

Individuals trained under PMGDISHA by March 31, 2024 — exceeding the 60M target

Source: MeitY / PIB Press Release, 2024

₹2,351 Cr

Budget outlay for PMGDISHA scheme over its operational period

Source: Digital India / Wikipedia

The training covered fundamental skills: operating computers/smartphones, sending and receiving emails, browsing the internet, accessing government services, searching for information, and conducting cashless transactions. The use of local languages and the engagement of local institutions — including rural schools and Panchayati Raj bodies — was a positive design feature. The inclusion of cybersecurity awareness in the curriculum, while basic, addressed a real risk faced by newly digitised users.

5.2 What PMGDISHA Did Not Do: A Rights-Based Critique

Despite its numerical success, PMGDISHA falls significantly short when evaluated against the rights-based standard this paper advances. The critique operates at three levels: depth of training, structural exclusions, and the gap between skill and agency.

Depth: 20 Hours Cannot Build Digital Citizenship

PMGDISHA's curriculum consists of 20 hours of instructor-led training, to be completed within 10 to 30 days. This is sufficient to teach someone to perform specific, pre-defined digital tasks — booking a ticket, sending a message, checking a bank balance. It is not sufficient to develop the critical digital literacy that rights-based participation in a digital state requires: the ability to evaluate information, understand data rights, navigate unfamiliar government portals, challenge algorithmic decisions, or recognise online fraud and phishing.

The distinction between 'functional digital literacy' (can perform specific tasks) and 'critical digital literacy' (can engage as an informed, autonomous digital citizen) is fundamental in the academic literature on digital rights. PMGDISHA targets the former exclusively. Participants who complete the programme and receive their NIELIT certificate can press buttons on a smartphone. They are not equipped to contest a denied welfare application, understand why their biometric authentication failed, or seek redress when a digital service excludes them.

Structural Exclusions: Who PMGDISHA Left Out

The programme's design — one person per household — was politically inclusive by aspiration but structurally insufficient. Training one adult per household does not create household digital capability; it creates a single digital access point, which in practice often means the household becomes dependent on that one person. When the trained individual is a man (which structural gender biases in training centre attendance suggest is frequently the case), women in the household may gain no independent digital capability at all.

The programme's reliance on Common Service Centres and registered training centres meant that communities in areas without such infrastructure — many of the most marginalised tribal regions, remote mountain districts, and conflict-affected areas — were effectively unreachable. No robust data exists on the caste composition of PMGDISHA trainees — an accountability gap that makes it impossible to assess whether the programme reached SC/ST communities proportionately or concentrated its reach in more accessible populations.

The Gap Between Skill and Agency

The most fundamental limitation of PMGDISHA is that it addresses skill in isolation from the structural conditions that determine whether skill translates into agency. A woman trained to use a smartphone but without independent access to one cannot exercise her digital literacy. A tribal elder trained to navigate a government portal in Hindi but whose mother tongue is Santali faces a practical barrier the training did not address. A MGNREGA worker trained to access his wage account online but living in an area with no mobile network connectivity cannot use that skill for the purpose for which it was taught.

Rights-based approaches to development — drawing on Sen's capabilities framework — distinguish between formal capability (being trained to do something) and substantive capability (being able to actually do it, given one's real circumstances). PMGDISHA has done significant work on the former. The structural conditions for the latter — device access, affordable connectivity, vernacular content, women's safety and autonomy in digital spaces, non-digital fallback options for welfare access — remain largely unaddressed by the programme or its successors.

6. Why Governance Is Failing: Structural Analysis

Having documented both the scale of exclusion and the limitations of India's primary policy response, this section identifies four structural reasons why digital literacy governance in India is failing to meet a rights-based standard.

6.1 Techno-Solutionism Without Social Analysis

India's digital governance strategy — Digital India, PMGDISHA, Aadhaar, CoWIN — shares a common underlying assumption: that technology, deployed at scale, will solve problems that are fundamentally social in nature. This is what scholars term 'techno-solutionism' — the belief that complex, historically produced inequalities of caste, gender, and class can be dissolved by giving everyone a smartphone and a login.

The empirical record refutes this assumption. As Osama Manzar, founder of the Digital Empowerment Foundation, argued at the 2025 Development Policy and Practice conference in Hyderabad: 'the digital push has not only left behind large sections of the population, it has also deepened existing inequities.' Digital systems designed without participatory input from marginalised communities, and deployed without accompanying social support structures, tend to replicate existing power relations in digital form — not dissolve them. The algorithm that denies a MGNREGA wage because a fingerprint scan failed does not know or care about the constitutional right to livelihood. The welfare portal that works only in Hindi does not know or care about the linguistic rights of Adivasi communities.

6.2 Digital-First Without Digital-Equal

A second structural failure is the state's decision to move services to digital-first delivery without ensuring equitable digital access as a precondition, or maintaining robust non-digital alternatives. This is the 'digital substitution trap' identified in the introduction: when the state substitutes digital delivery for physical delivery without bridging the access gap, it does not improve delivery — it relocates exclusion from one mechanism to another.

The CoWIN vaccination system is the clearest example, but the pattern recurs across domains. The shift to digital MGNREGA wage disbursement was intended to reduce corruption by eliminating middlemen — and evidence suggests it succeeded in this goal. But it simultaneously created a new form of exclusion: those whose biometrics fail or who lack network access cannot

access wages they have legally earned. The anti-corruption benefit of digital payments accrued disproportionately to the administrative system; the new exclusion burden fell disproportionately on the most marginalised workers.

6.3 Absence of Accountability Mechanisms

Rights violations require remedy. India's digital governance architecture lacks robust mechanisms for citizens to challenge exclusions produced by digital systems. A rural worker denied MGNREGA wages due to biometric failure has no simple, accessible, non-digital complaint mechanism. A student whose exam result is lost in a technical failure of the digital system has no guaranteed redress. A ration card holder denied food due to Aadhaar mismatch faces administrative processes that are themselves increasingly digitised.

The Digital Personal Data Protection Act (DPDPA, 2023) — India's first comprehensive data protection legislation — grants individuals certain rights over their data, but its sweeping exemptions for government processing and national security mean that the citizens most exposed to data-driven exclusion (those whose data is processed by welfare, employment, and health systems) have the weakest protections. Civil society organisations have documented that its 'consent framework is not designed for populations with low digital literacy' — meaning that informed consent to data processing is illusory for those who cannot read and understand the terms they are agreeing to.

6.4 The Measurement Problem: What Gets Counted Gets Fixed

Finally, India's governance of digital literacy suffers from a measurement problem that produces systematic underestimation of the problem. PMGDISHA counts training completions and certificates issued — not outcomes, not capability retention, and not the translation of skill into rights exercise. A beneficiary who completed 20 hours of training in 2018, received a certificate, and has had no digital engagement since (because she has no device and no connectivity) is counted as 'digitally literate' in the programme's statistics.

The NSS computer literacy measure (24.7 percent) measures self-reported ability to use a computer — not the ability to navigate government portals, contest digital decisions, or protect one's own data rights. Internet subscriber figures count SIM cards and data connections — not meaningful digital engagement. The absence of rights-outcomes-based digital literacy measurement means that

policymakers are making decisions based on data that systematically flatters programme performance while obscuring the extent of substantive exclusion.

7. Comparative Perspective: Lessons from Global Models

India is not the only country to have grappled with the challenge of equitable digital inclusion. Several international models offer instructive lessons, while also illustrating the limits of direct transplantation into India's vastly more complex socio-structural context.

7.1 Estonia: Digital-by-Design with Universal Access

Estonia is often cited as the world's most digitally advanced governance model. Since the late 1990s, Estonia has built a comprehensive digital public infrastructure (X-Road), moved virtually all government services online, and achieved near-universal digital literacy. Critical to its success was that the transition to digital governance was accompanied by investment in universal digital infrastructure (free public internet, subsidised devices), comprehensive digital literacy education from primary school onwards (the Tiger Leap programme), and the maintenance of digital identity as a universal right rather than a prerequisite for rights.

The lesson for India is not that it should replicate Estonia's model — a country of 1.3 million has fundamentally different governance challenges than a country of 1.4 billion with extreme inequality and diversity. The lesson is the sequencing: Estonia built digital access first, then moved services digital. India has largely done the reverse. As the TRAI data shows, 37 percent of rural India has internet access. Moving government services fully digital before that number approaches universality structurally excludes the 63 percent who do not.

7.2 Kenya's Digital Literacy Programme

Kenya's national Digital Literacy Programme (DLP) distributed laptops and trained teachers in rural schools, with over 1.2 million students benefiting, with significant improvements in digital literacy outcomes. The key lesson from Kenya — applicable to India — is that device distribution must be accompanied by teacher training for sustainable impact. Training students without trained teachers, or providing devices without connectivity, produces short-term outputs (trained individuals) without long-term capability development.

7.3 South Korea: Family-Level Digital Inclusion

South Korea's government provided direct-to-family subsidies for internet and device access, ensuring that digital capability was built at the household level rather than through one designated

'literate' member per family. This approach is particularly instructive for India's PMGDISHA model, which trained one person per household — a design that may have created household digital dependency rather than household digital capability, particularly where the trained member is male in a setting of restricted women's autonomy.

7.4 Australia's NBN and Remote Area Connectivity

Australia's National Broadband Network (NBN) prioritised connectivity for remote and rural communities, enabling distance learning, telehealth, and digital government services in areas that had previously been isolated. The lesson for India — where BharatNet aims to connect all gram panchayats — is that the infrastructure rollout must be completed, sustained, and accompanied by locally relevant content and support structures. BharatNet has faced significant implementation delays; as of 2024, connectivity quality in many connected villages remains too poor for the government portals and services that rural citizens are expected to use.

8. Recommendations: Toward a Rights-Based Digital Literacy Framework for India

The following recommendations are grounded in the rights-based framework developed in Section 2 and responsive to the specific failures identified in Sections 3-6. They are organised across four levels: constitutional/legal, policy infrastructure, programme design, and accountability.

8.1 Constitutional and Legal Recognition

- Recognise digital access as a fundamental right: The Supreme Court should be petitioned — and Parliament should legislate — to establish that access to digital infrastructure sufficient to exercise constitutional rights (Art. 14, 19, 21, 21A, 41) constitutes a part of those rights. The right to life cannot be conditioned on internet access without the state ensuring that access.
- Mandate non-digital alternatives: All essential government services — welfare registration, healthcare booking, educational examination, employment scheme enrolment — must by law maintain accessible, free, non-digital alternatives. Digital delivery should be optional and convenient, not compulsory and exclusionary.
- Reform the DPDPA: Strengthen the Digital Personal Data Protection Act to remove blanket government exemptions, ensure that consent mechanisms are accessible to low-literacy users, and create an independent Digital Rights Ombudsman with jurisdiction over welfare denial cases linked to digital failures.

8.2 Infrastructure and Access

- Complete and sustain BharatNet: Prioritise the completion of high-quality (not just nominal) broadband connectivity to all gram panchayats, with quality-of-service standards that make government portals functionally usable. Benchmark success against actual portal usability in rural areas, not kilometre of fibre laid.
- Subsidised device access: Establish a national device subsidy programme for households below the poverty line, Scheduled Caste/Scheduled Tribe households, and single-woman households — targeting those for whom the cost of a device is the binding constraint, not skill.
- Expand community access points: Where household device ownership is not yet achievable, invest in free, accessible, staffed community digital access points at the

panchayat level — a modern successor to the cyber café model, publicly funded and rights-oriented.

8.3 Programme Design: Beyond PMGDISHA

- Develop a critical digital literacy curriculum: Replace the 20-hour functional skills model with a tiered curriculum that progresses from basic device use through government service navigation, data rights awareness, online safety, and critical evaluation of digital information — modelled on UNESCO's digital literacy competency framework
- Gender-transformative digital literacy: Design programmes specifically for women that address not only skill but the social conditions of digital access — device ownership, family permission, online safety, and economic empowerment through digital skills
- Vernacular-first content: Mandate that all government digital platforms provide full functionality in all 22 Scheduled languages and prioritise oral and visual interfaces for low-literacy users
- Integrate digital literacy into school curriculum: Implement mandatory digital literacy education from primary school, with trained teachers, functional devices, and connected classrooms — following the Estonian Tiger Leap model adapted to Indian scale
- Community digital health workers: Deploy trained digital literacy facilitators at the panchayat level — similar to ASHA workers in health — who can assist community members in accessing digital services, with explicit mandate to reach Dalit, Adivasi, and women beneficiaries

8.4 Accountability and Measurement

- Rights-outcomes measurement: Shift the performance metric for digital literacy programmes from training completions to rights-outcomes: can trained individuals independently access welfare services? Can they submit government forms without assistance? Can they protect themselves from online fraud?
- Mandatory caste and gender disaggregation: All digital literacy and digital access data must be disaggregated by caste, gender, geography, age, and disability — making invisible exclusions visible and actionable
- Parliamentary oversight: Establish a Joint Parliamentary Committee on Digital Rights with a mandate to annually review the human rights impacts of India's digital governance systems, hear petitions from digitally excluded communities, and recommend legislative remedy

- Civil society inclusion: Fund and protect independent civil society monitoring of digital exclusion — including the work of organisations like LibTech India, the Digital Empowerment Foundation, and India Development Review — whose field documentation is essential to understanding where systems fail

9. Conclusion

This paper has argued that India's digital governance trajectory is creating a two-tier citizenship — one in which the rights guaranteed by the Constitution and international human rights law are increasingly accessible only to those with the digital literacy, devices, and connectivity to exercise them through digital channels. This is not the intended consequence of Digital India. It is, however, a predictable consequence of deploying digital delivery systems into a profoundly unequal society without ensuring that equitable access precedes — rather than eventually follows — digitised rights delivery.

The data are unambiguous in their direction. A computer literacy rate of 24.7 percent nationally, 18.1 percent in rural areas. Internet penetration of 37 percent in rural India against 67 percent in urban areas. Only 4 percent of SC/ST students with computer and internet access during the pandemic. A gender gap in digital literacy that widens with every level of skill complexity. A vaccine distribution system that delivered 30 doses per 100 urban persons against 12.7 per 100 rural persons — a gap partly produced by digital-only registration. MGNREGA workers losing legally earned wages to biometric authentication failures. CoWIN certificates inaccessible to those who needed them most.

PMGDISHA trained 63.9 million people — a genuine achievement of scale. But training people to use smartphones does not, by itself, constitute rights fulfillment. The woman who completed her 20 hours, passed her NIELIT exam, and returned to a village without a signal, a device, or a Hindi-language workaround for the government portal she needs to claim her rations — her certificate is a document of aspiration, not of achieved capability.

The path toward genuine digital inclusion in India requires acknowledging three foundational truths. First, that digital access and digital literacy are not luxuries or development add-ons — they are, in a digitised governance system, prerequisites for the exercise of constitutional rights. Second, that the digital divide does not operate independently of caste, gender, class, and geography — it runs precisely along those lines, and can only be bridged by policies that take those structural inequalities seriously. Third, that governance that creates exclusion in the process of delivering inclusion has failed, regardless of how impressive its headline numbers appear.

India has the ambition, the technical capacity, and the constitutional commitment to build a digital future that serves all of its citizens. What it needs is the political will to treat that future as a

rights obligation — not a growth dividend — and to invest accordingly in the infrastructure, programmes, and accountability mechanisms that a rights-based digital India requires.

10. References

Primary Data Sources and Reports

1. National Sample Survey (NSS). (2024). Computer Literacy and Internet Use in India. Ministry of Statistics and Programme Implementation, Government of India.
2. Periodic Labour Force Survey (PLFS). (2024). Annual Report 2023-24. National Sample Survey Office, Ministry of Statistics.
3. TRAI. (2023). Telecom Statistics of India. Telecom Regulatory Authority of India. www.trai.gov.in
4. Ministry of Electronics and Information Technology (MeitY). (2024). PMGDISHA Achievement Report: 6.39 Crore Trained. PIB Press Release, Government of India.
5. Oxfam India. (2021). India Supplement: The Inequality Virus. Oxfam India Health Inequality Report.
6. ICRIER. (2023). Urban-Rural Gaps in Digital Literacy in India by Type of Internet Activity. Indian Council for Research on International Economic Relations. Published via Statista.
7. UNDP-ICRIER. (2025). Digital Literacy and Women's Economic Empowerment in India. Policy Brief No. 31. UNDP India / ICRIER.

Academic Literature

8. Dam, T. & Bhattacharya, S. (2020). India's Digital Divide: Who Faces It and How Wide Is It? NewsClick. Available at newsclick.in
9. Sen, A. (1999). Development as Freedom. Oxford University Press.
10. Zuboff, S. (2019). The Age of Surveillance Capitalism. Routledge.
11. Eubanks, V. (2018). Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor. St. Martin's Press.
12. Bhukya, B. (2008). The Mapping of the Adivasi Social: Colonial Anthropology and Adivasis. Economic and Political Weekly, 43(27), 103-109.
13. Park, S. & Humphry, J. (2019). Exclusion by Design: Intersections of Social, Digital and Data Exclusion. Information, Communication & Society, 22(7), 934-953.
14. Ragnedda, M. (2017). The Third Digital Divide: A Weberian Approach to Digital Inequalities. Routledge.
15. Gogoi, A. et al. (2025). Digital Literacy Programs and Their Transformational Impact on Teenage Females in Rural India. Published in IRJMETS, Volume 8, Issue 4.

Legal Instruments

16. International Covenant on Economic, Social and Cultural Rights (ICESCR). (1966). United Nations Treaty Series, vol. 993.
17. International Covenant on Civil and Political Rights (ICCPR). (1966). United Nations Treaty Series, vol. 999.

18. UN Human Rights Council Resolution 38/7 (2018). The Promotion, Protection and Enjoyment of Human Rights on the Internet.
19. Right to Education Act (RTE Act). (2009). No. 35 of 2009. Government of India.
20. Digital Personal Data Protection Act (DPDPA). (2023). No. 22 of 2023. Government of India.
21. Constitution of India (1949). Articles 14, 19, 21, 21A, 41, 46. Government of India.
22. Supreme Court of India. Olga Tellis v. Bombay Municipal Corporation (1985) 3 SCC 545.
23. Supreme Court of India. Paschim Banga Khet Mazdoor Samity v. State of West Bengal (1996) 4 SCC 37.

Journalism, Civil Society and Policy Sources

24. India Development Review (IDR). (2023). India's Digital Divide: From Bad to Worse? idronline.org
25. IDR. (2025). The Digital Wall: How Caste Shapes Access to Technology in India. idronline.org
26. Down to Earth / PRADAN. (2024). Overcoming Digital Divide: Key to Achieving Digital India Goal. downtoearth.org.in
27. The Siasat Daily. (2025). The Other Side of Digital India: Exclusion, Inequality and Politics of Access. siasat.com
28. Eco-Business. (2025). India's Digital Divide and the Consequent Welfare Bias. eco-business.com
29. Civilsdaily. (2024, July 5). The Hindu Op-Ed: Computer Literacy in India Needs a Reboot. civilsdaily.com
30. Amulyacharan. (2024). The Digital Divide in Education: Bridging the Urban-Rural Gap. amulyacharan.com
31. HubSociology. (2025). Digital Divide in India: Sociological Analysis. hubsociology.com
32. Digital Empowerment Foundation (DEF). Annual Reports 2022-2024. defindia.org
33. UNESCO. (2021). Framework for Information Literacy for Lifelong Learning (updated). UNESCO. Paris.
34. Academia.edu / Bodhi, S.R. (2023). Out of Coverage Area: Tribes and Digital Exclusion in North-East India.

Word count: approximately 10,500 words | Estimated 25-30 pages with formatting, tables, and references