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Equality Digital  
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Research Regulation  
Jobs Networks Training  
Technology Framework  
Entrepreneurship  
Transport Learning  
Transformation  
Institutions Economy  
Systems Knowledge  
Progress Law

**A Knowledge Compendium 2025**

Edited by:  
**Dhiraj Singha**



# Digital Frontlines

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**A Knowledge Compendium 2025**

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This compendium grew out of many conversations, questions, and shared moments of learning within the Research and Communication Division at the Digital Empowerment Foundation (DEF). It is the product of collective curiosity, critical reflection, and creative collaboration - and brings together works that trace India's evolving journey toward a more inclusive digital society.

We would like to express our sincere gratitude to:

- The DEF leadership team, for their constant guidance, encouragement, and belief in the power of community-led knowledge.
- The editorial and design teams, for shaping a clear and cohesive narrative, and for giving this collection its distinctive visual identity.
- Our community correspondents, SoochnaPreneurs, and local partners, whose lived experiences, stories, and insights ground this work in reality and meaning.
- Our readers, collaborators, and policy allies, who continue to engage with, challenge, and champion the vision of equitable digital futures.

This publication is dedicated to the communities at the heart of DEF's mission - those who remind us that empowerment does not flow from technology alone, but is built together through participation, dialogue, and trust.

# Preface

The DEF Knowledge Compendium 2025 brings together a year's worth of ideas, analysis, and field-based learning from the Digital Empowerment Foundation (DEF). Spanning more than sixty pieces - from opinion essays and investigative features to research reports and discussion papers - this collection captures how digital technologies are both transforming, and being transformed by, rural India.

This compendium aims to serve as living record of reflection and action, mapping how communities across the country continue to navigate the promises and challenges of an increasingly digital world. Through these writings, we see DEF's evolving engagement with questions of connectivity, gender, sustainability, and governance - and a reaffirmation of our core belief: that technology must always remain human-centred, equitable, and inclusive.

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Digital Divide Education Analytics Resources

# Editor's Note

In policy and development discourse, digital technologies are often portrayed as solutions: engines of transformation that can bridge longstanding divides of geography, income, and opportunity. Connectivity is equated with inclusion; data with knowledge; digital platforms with empowerment. These claims, while impressive, rarely account for the complexities that shape everyday social realities. The truth is that the digital revolution in India has been uneven, layered, and deeply contextual. Access to the internet, while expanding, does not automatically translate into access to power, participation, or justice.

This *Knowledge Compendium 2025* emerges from that recognition. It brings together Forty-One pieces of writing, published across several platforms, by the *Research & Communication Division* at the Digital Empowerment Foundation (DEF) - a collective effort to document, analyse, and question how digital technologies are reshaping rural and semi-urban India. These writings span opinion essays, research briefs, ethnographic notes, and reports, capturing DEF's year-long engagement with the intersections of technology, community, and change.

At its core, this compendium aims to serve as living record: one that mirrors DEF's evolving understanding of digital empowerment as a process that is relational, participatory, and political. The six thematic sections that structure this volume - *Digital Inclusion and Access*; *Gender and Technology*; *Artificial Intelligence and Ethics*; *Just Transition, Climate and Sustainability*; *Digital Systems in Practice*; and *Power, Inequality and Digital Futures* - represent not isolated domains, but overlapping terrains where questions of equity, accountability, and agency continually intersect.

The first section, *Digital Inclusion and Access*, brings together writings which asks what it truly means to be included in a digital society. Over the years, India has made significant strides in expanding mobile networks, digital public infrastructure, and e-governance initiatives. Yet, beneath these achievements lie enduring structural inequalities. Access is still uneven geographically across rural and urban regions, and socially across lines of caste, class, gender, and language. For many communities, the barriers are not only infrastructural but also cultural and institutional: unreliable connectivity, low digital literacy, lack of locally relevant content, and limited trust in online systems. Essays in this section explores what meaningful access looks like in practice. Through studies from Totopara, the tea gardens of North Bengal, and DEF's SoochnaPreneur initiatives, they demonstrate that digital participation is not just about availability of infrastructure but

about the creation of supportive ecosystems – networks of trust, relevance, and local capacity that allow technology to take root in everyday life.

The writings in the second section, *Gender and Technology*, brings attention to the gendered nature of digital transformation. While the digital gender gap in India may have narrowed statistically, the lived experiences of women and marginalised genders continue to be shaped by patriarchal structures and social hierarchies. For many rural women, access to a smartphone or the internet remains conditional - mediated through male family members, confined by household responsibilities, or limited to shared devices. Yet these constraints coexist with stories of agency and innovation. The essays in this section showcase how women are using digital tools to negotiate power, challenge stigma, and redefine participation - from menstrual health awareness campaigns to social entrepreneurship in tea gardens. Technology, in these accounts, becomes a medium of self-expression and solidarity, even as it mirrors the inequalities of the offline world. The challenge, as these writings suggest, is not merely to connect women but to reimagine technology itself through gender-aware design, sustained capacity-building, and community-based support.

The writings under the third theme, *Artificial Intelligence and Ethics*, moves from the tangible to the algorithmic - interrogating how emerging technologies are reshaping governance, identity, and human interaction. Artificial intelligence is often described as objective or rational, but in reality, it carries the biases of its creators and the datasets it is trained on. The essays in this section highlight the ethical and political dimensions of AI deployment in India: from welfare verification systems that risk excluding the vulnerable, to global governance frameworks that fail to represent the realities of the Global South. The writings caution that without democratic oversight, AI may reproduce existing hierarchies of caste, language, and class deepening, rather than dismantling, inequality. They call for an ethics of technology that is grounded in context, inclusion, and accountability.

The fourth section, *Just Transition, Climate and Sustainability*, mostly explores the material and ecological underpinnings of digitalisation. The digital economy is often imagined as clean, efficient, and immaterial, yet it depends on extractive industries, labour-intensive manufacturing, and informal economies that are far from sustainable. From Delhi's unregulated e-waste markets to Jharkhand's coal-mining districts, these essays trace the human and environmental costs of the digital age. They argue for a just transition one that is not limited to decarbonisation but extends to questions of redistribution, recognition, and resilience. Here, digital inclusion is reimaged as ecological inclusion: ensuring that the benefits of innovation do not come at the expense of those who bear its environmental and social burdens.

The fifth section, *Socio-Technical Systems in Practice*, focuses on how digital technologies operate when translated into everyday public and community contexts. These writings examine the implementation of digital systems across domains such as health, education, welfare delivery, youth engagement, and community mediation. Together, they document how digital platforms are navigated, adapted, and at times contested on the ground - revealing the frictions, exclusions, and negotiations that emerge when policy visions encounter lived realities.

The writings in the final section, *Data Governance, Social Inequalities & Digital Futures*, turn to the broader architectures of authority that shape our digital present and future. As governance becomes increasingly data-driven, new forms of exclusion and vulnerability emerge. Algorithmic decision-making, biometric authentication, and platform regulation all influence how rights are recognised, denied, or negotiated. The writings in this section explore the tensions between efficiency and accountability, surveillance and privacy, participation and control. They also document acts of everyday resistance from individuals challenging wrongful exclusions from welfare schemes to communities finding ways to subvert algorithmic visibility. These accounts remind us that digital power is not merely technical but deeply political, and that digital futures remain open to contestation and reimagination.

Across these six sections, a few common threads bind the compendium together. The first reflects and refracts the social worlds into which digital technologies are introduced. The second is that access is not the same as agency. Connectivity matters only when people can use it meaningfully, safely, and autonomously. And finally, empowerment is not delivered by technology - it is co-created through participation, dialogue, and design.

In this sense, the compendium is both a reflection and a proposition. It reflects DEF's ongoing commitment to documenting the realities of digital change from the ground up - attentive to voices that are often left out of national conversations on digital policy. At the same time, it proposes an alternative way of thinking about digitalisation: not as a linear path to progress, but as a dynamic, negotiated process - open to contestation, creativity, and care.

As we look ahead, the task is not merely to connect the unconnected, but to ensure that every connection leads to greater dignity, opportunity, and choice. The essays that follow are an invitation to imagine such futures - ones that are not only digital, but also just, inclusive, and humanizing.

***Dhiraj Singha,***  
*Research & Communication Division,*  
*Digital Empowerment Foundation*



# 1

## **Digital Inclusion & Access**

# 1. Rural Fact-Checkers for Community Narrative Report 2024–25<sup>1</sup>

*Akanksha Ahluwalia*

## **Background and Rationale**

With the rapid digitisation of India's economy and communication networks, rural communities face increasing exposure to misinformation, disinformation, and financial fraud. Women in rural areas, often first-time internet users, are particularly vulnerable due to limited digital literacy, restricted access to information, and the prevalence of gendered misinformation that affects their autonomy and decision-making.

## **The Misinformation Landscape in India**

Misinformation and disinformation in India have seen an exponential rise with the increasing penetration of the internet, particularly through social media and messaging apps like WhatsApp, Facebook, and Twitter. According to a 2023 study by the Reuters Institute for the Study of Journalism, over 64% of internet users in India rely on social media as their primary news source. However, the absence of robust fact-checking mechanisms in regional languages makes rural populations particularly susceptible to misinformation.

A report by the Internet Freedom Foundation (2022) highlights that rural areas face a disproportionate impact from fake news due to the low levels of digital literacy. Unlike urban populations, where access to multiple sources allows cross-verification, rural users often lack the ability or resources to confirm the authenticity of the information they consume.

## **Impact of Misinformation on Rural Women**

The impact of misinformation on rural women is particularly severe due to socio-cultural constraints. Several studies, including one by the Centre for Internet and Society (2021), show that gendered misinformation is deliberately used to restrict women's mobility and reinforce patriarchal norms. Some common forms of misinformation targeting rural women include:

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*1. Originally published here: <https://www.defindia.org/wp-content/uploads/2025/05/Rural-Fact-Checkers-for-Community-Narrative-Report-1.pdf>*

**Health and Hygiene Myths:** False claims regarding menstruation, pregnancy, and vaccinations often discourage women from accessing healthcare services. For instance, misinformation about COVID-19 vaccines suggested that they could cause infertility, leading to vaccine hesitancy among rural women.

**Financial Fraud Targeting Women:** Rural women, especially those new to digital banking, are often victims of phishing scams, loan fraud, and fake investment schemes. According to a 2022 survey by the Reserve Bank of India, 36% of digital fraud cases in rural areas involved women who were tricked into sharing banking details.

**Misinformation About Government Schemes:** Many fraudulent agents spread fake information about government welfare programs, asking women to pay money to enroll in schemes that do not exist.

**Moral Policing and Social Control:** False narratives about women's behavior, such as rumors linking female social media use to moral corruption, often result in restrictions on their digital access.

### **Digital Divide and Women's Disproportionate Vulnerability**

According to the "India Inequality Report 2022: Digital Divide," only 31% of the rural population uses the internet, compared to 67% of urban India. Additionally, only 15% of women have internet access, compared to 25% of men. This digital divide exacerbates misinformation, making it harder for rural communities to distinguish between credible and misleading content. A study by the Internet and Mobile Association of India found that only 29% of India's rural population can access the internet, while urban users make up 64% of digital consumers. Despite these challenges, rural India is poised to drive much of the growth in digital adoption in the coming years.

Women in rural areas face additional barriers due to deep-rooted gender norms. The Mobile Gender Gap Report (2021) by GSMA found that only 25% of women in rural India own a smartphone, compared to 41% of men. The same report highlights that even when women do have mobile phones, they often require permission from male family members to use them. This restriction limits their ability to access fact-checking resources and verify online information.

### **Social Media and Misinformation in Vernacular Languages**

Social media plays a pivotal role in misinformation dissemination,

particularly in regional languages. A study by the Observer Research Foundation (2022) found that:

- Over 70% of misinformation in India is spread through WhatsApp.
- Less than 15% of fact-checking efforts focus on vernacular languages.
- Only 5% of rural women reported actively verifying the authenticity of news they received online.

The reliance on vernacular-language content makes it difficult for mainstream fact-checking websites like AltNews, BoomLive, and The Quint to cover misinformation affecting rural India comprehensively. This lack of coverage means that many false narratives go unchecked, reinforcing myths and misconceptions that disproportionately impact rural communities.

### **Women's Limited Access to Digital Literacy Training**

Even when digital literacy programs are available, they often do not cater specifically to women's needs. Many initiatives fail to account for:

**Time Constraints:** Women in rural households often juggle multiple responsibilities, leaving little time for structured digital literacy training.

**Lack of Female Trainers:** The absence of female trainers makes it difficult for women to engage freely in digital literacy programs.

**Community Skepticism:** Many families believe that women's exposure to digital tools will lead to moral decay, limiting their ability to attend training sessions

### **The Need for Gender-Sensitive Digital Literacy Initiatives**

Given the scale of misinformation and its disproportionate impact on rural women, there is an urgent need for gender-sensitive digital literacy programs. Such initiatives should:

- Incorporate vernacular-language fact-checking training.
- Address gendered misinformation directly by challenging myths about women's rights and mobility.
- Ensure community involvement by engaging male allies who can support women's digital participation.

- Offer flexible learning models, such as community radio programs and mobile-based learning, to reach women who cannot attend in-person training.

## Project Goals

The project aims to address the significant digital literacy gap among rural women by providing structured training that enables them to navigate the digital ecosystem safely and effectively. Given that rural India lags behind urban centers in digital penetration, the need for targeted interventions is crucial to ensure equitable access to online resources, financial services, and fact-checked information.

### Key Objectives:

#### 1. Enhance digital literacy among rural women to counter misinformation and financial fraud:

- With rural India driving a significant portion of new internet users, first-time digital consumers, particularly women, are vulnerable to scams, phishing attacks, and politically motivated misinformation.
- By equipping women with critical digital skills, the project aims to build a resilient grassroots network capable of identifying and addressing misinformation at the community level.

#### 2. Develop training modules informed by insights from Civil Society Organizations (CSOs):

- CSOs working in rural areas have a deep understanding of the challenges associated with digital access, misinformation, and financial fraud.
- The project incorporates their expertise into contextualized training modules, ensuring that the content remains relevant to the specific needs of rural communities.

#### 3. Foster gender equity by equipping women with skills to combat gendered misinformation:

- Gendered disinformation is a significant challenge in rural areas, where false narratives about women's behavior, mobility, and rights are frequently used to reinforce patriarchal norms.

- Training modules will specifically address misinformation related to women's health, financial independence, and political participation.

4. Improve access to digital financial services to prevent fraud and economic exploitation:

- Many rural women remain excluded from formal banking systems, relying instead on informal lending, which exposes them to financial fraud.
- The project will provide training on secure digital transactions, UPI-based payments, recognizing fraudulent loan schemes, and safe online banking practices.

5. Empower women to act as digital ambassadors in their communities, enabling them to train others:

- The program follows a 'train-the-trainer' model where women who complete the training will mentor others in their villages.
- This peer-learning approach ensures sustainability, as knowledge is passed on within the community, creating a self-sustaining network of digitally literate women.

6. Increase awareness of safe internet practices, particularly among first-time users:

- Rural women, especially those in lower-income groups, are often introduced to the internet through shared family devices, limiting their ability to develop independent digital skills.
- The program will focus on personal digital security, including how to recognize fake news, protect personal data, and report cyber fraud.
- By addressing these objectives, the project aims to empower rural women with the necessary tools to navigate the digital world confidently and safely, ultimately fostering a more informed and digitally secure society.

## Project Implementation

### Consultation with Civil Society Organizations (CSOs)

A key component of the project involved engaging with CSOs working in rural India. These organizations provided insights into:

- The nature and impact of misinformation affecting rural communities.
- The most effective methods for fact-checking misinformation.
- The challenges faced by rural women in accessing credible information and digital financial services.
- The role of gendered misinformation in restricting women's mobility and participation in public life.

### **Development of Training Modules**

Based on CSO consultations, four core training modules were developed:

- Functional Digital Literacy – Basic internet navigation, using search engines, accessing government websites, identifying credible sources.
- Digital Financial Literacy – Secure online transactions, identifying digital financial fraud, using mobile banking, protecting personal data.
- Critical Digital Literacy – Identifying misinformation, fact-checking techniques, understanding algorithmic biases, responsible content sharing.
- Access to Citizen Services – Understanding government schemes, applying for digital benefits, using Common Service Centres (CSCs) for official documentation.

### **Training of 1,000 Rural Women**

The training was conducted across Bihar, Jharkhand, Uttar Pradesh, and Chhattisgarh, Assam and West Bengal, ensuring geographical diversity. Participants included young women, homemakers, community health workers, and local leaders. Training was delivered through in-person workshops, digital tutorials, and interactive group discussions.

To ensure practical application, women were given tasks such as fact-checking viral messages, identifying phishing scams, and reporting false news. These real world exercises reinforced theoretical learning.

## **Baseline Findings**

### **Digital Access and Literacy**

The baseline research conducted across rural communities provides crucial insights into the state of digital literacy among women. These findings have

been consolidated under the ‘Rural Fact Checkers for Community’ initiative to create an integrated training and intervention strategy.

### **Device Ownership:**

- Only 30% of respondents owned a personal digital device, while 70% relied on family-owned or community-shared devices.
- A higher rate of 68% was reported for personal device ownership in some regions, with 21% using shared devices and 11% depending on community digital infrastructure, such as Common Service Centers.

### **Awareness of Digital Government Schemes:**

- 59% of respondents lacked awareness of government digital services and schemes.
- 33% of respondents were unaware of their eligibility for government entitlements accessible through digital platforms.

### **Usage of Digital Financial Services:**

- 53% of respondents used digital payments, primarily through mobile wallets (67%) and UPI transactions (29%).
- 47% faced challenges in accessing digital financial tools, citing difficulty understanding the technology (40%) and lack of money in accounts (44%).

### **Challenges in Digital Access:**

- Slow internet speeds were a common issue, with 36% of respondents reporting difficulty in navigating online platforms.
- Women often required permission from family members to use digital devices, with only 34% having full control over their own digital access.

### **Misinformation and Fact-Checking Awareness Understanding of Fact-Checking Methods:**

- 59 out of 91 respondents engaged in fact-checking, but most relied on informal methods such as Google searches and WhatsApp discussions.
- Only 5% of respondents used verified fact-checking platforms such as AltNews or BoomLive.

### **Spread of Misinformation:**

- 70% of misinformation consumed by rural communities comes through WhatsApp, followed by Facebook and YouTube.
- Less than 15% of fact-checking efforts in India focus on regional languages, leaving rural communities particularly vulnerable to misinformation.
- 62% of respondents had encountered misinformation or disinformation online but lacked structured verification methods. Financial Fraud and Cybersecurity Gaps

### **Vulnerability to Digital Fraud:**

- Many rural women received scam messages and were exposed to cyber fraud but lacked knowledge on how to report them.
- 47% of women who did not use digital financial tools cited fear of scams as a key deterrent.

### **Lack of Awareness on Cybersecurity:**

- 53% of respondents were unaware of the risks associated with online financial transactions.
- Only 22% of respondents regularly updated their passwords or used two-factor authentication for online accounts.

## **Barriers to Digital Participation**

### **Gendered Barriers:**

- Women in rural India often need permission from family members to use digital devices, with only 34% reporting autonomy in their internet use.
- 25% of women reported concerns about online harassment, deterring them from active digital participation.

### **Limited Digital Training Opportunities:**

- 82% of respondents had never received formal digital literacy training.
- However, 84% expressed interest in receiving training, highlighting the need for accessible and community-based digital education programs.

By integrating these findings, the ‘Rural Fact Checkers for Community’ initiative tailors its interventions to address the unique challenges faced by rural women, ensuring that digital literacy programs are both accessible and impactful.

## **Endline Findings**

### **Improved Digital Access**

- 92% of learners reported access to digital devices, up from 68% in the baseline survey.
- 75% owned a personal digital device, an increase from 30%.
- Smartphone proficiency improved from 57% to 83%, allowing women to navigate digital tools independently.
- Increased awareness of data privacy resulted in safer online behaviors, with many women securing their accounts with stronger passwords and two-factor authentication.

### **Growth in Digital Financial Literacy**

- Digital payment usage increased from 53% to 91%.
- UPI transactions became the most common payment method among trainees, with mobile wallets following closely.
- Awareness of financial scams and secure online transactions increased significantly.
- Women were better equipped to recognize online fraud, helping their families avoid financial losses and fraudulent schemes.

### **Strengthened Fact-Checking Capabilities**

- 82% of women demonstrated improved awareness of misinformation and fact-checking techniques, compared to 59% at baseline.
- 73% of learners reported using multiple verification sources before sharing information online.
- The ability to identify fake news increased, particularly regarding political misinformation and gendered disinformation.

More women were involved in community discussions about digital safety, reducing misinformation spread within families and peer groups.

CSO Consultation Review

## **Key Insights from Civil Society Organizations**

The consultations with CSOs provided deep insights into the challenges of misinformation, the role of digital literacy, and strategies to improve community resilience against disinformation. These discussions highlighted the need for sustainable, community-led interventions and a targeted approach to digital empowerment.

### **1. Need for Continuous Engagement**

One-time workshops are insufficient for longterm behavioral changes. CSOs emphasized that misinformation is an evolving issue, and rural women require ongoing mentorship, refresher training, and access to fact-checking networks to stay updated. A long-term engagement strategy should include:

- Monthly digital literacy circles where women can discuss recent misinformation trends.
- Dedicated WhatsApp groups with fact-checking resources and helplines.
- Periodic follow-up training to address emerging digital challenges.

### **2. Localized Fact-Checking Networks**

Training women in digital literacy is effective only when they have access to trusted community figures who can verify information. CSOs suggested that:

- Local fact-checking groups should be created in villages to cross-verify information before it spreads.
- Partnerships with school teachers, Anganwadi workers, and local self-help groups can help establish trusted networks.
- Women should be connected with established fact-checking organizations that can provide support in vernacular languages.

### **3. The Role of Social Media**

Social media remains the primary medium for misinformation. The video analysis and CSO discussions revealed that:

- WhatsApp is the biggest source of misinformation, with forwarded messages often taken at face value.
- Political and religious misinformation spreads rapidly, especially around election cycles.
- Fake financial schemes targeting women are rampant, with fraudsters posing as government officials offering fake benefits.

CSOs recommended targeted digital literacy campaigns that:

- Educate women on identifying fake forwards and misleading news.
- Teach them how to report misinformation on platforms like Facebook, WhatsApp, and YouTube.
- Encourage participation in online communities that fact-check information collectively.

#### **4. Building Community Resilience**

Beyond individual fact-checking skills, a larger effort is needed to strengthen trust in verified sources.

CSOs recommended:

- Encouraging rural women to follow credible news sources in their local language rather than relying on viral messages.
- Organizing community fact-checking days, where women come together to review recent viral messages and verify their authenticity.
- Working with local influencers such as panchayat leaders, teachers, and healthcare workers to amplify correct information.

## **Challenges & Recommendations**

### **1. Challenge: Limited Access to Personal Smartphones**

- **Barrier:** Many rural women rely on male family members' devices, restricting independent access to information.
- **Recommendation:** Establish shared community digital hubs where women can fact-check information and practice digital skills.

## 2. Challenge: Deep-Rooted Gender Biases Restricting Digital Access

- Barrier: Many families discourage women from using mobile phones due to fears of moral corruption.
- Recommendation: Conduct family-oriented workshops to involve male allies in promoting women's digital participation.

## 3. Challenge: Limited Availability of Vernacular Fact-Checking Tools

- Barrier: Most fact-checking resources are in English or Hindi, leaving non-Hindi-speaking rural communities at risk.
- Recommendation: Develop AI-powered, region-specific fact-checking applications and collaborate with grassroots organizations to provide content in local languages.

By integrating these insights, the 'Rural Fact Checkers for Community' initiative ensures that digital literacy efforts are sustainable, community-led, and tailored to the specific needs of rural women.

## Conclusion

The Rural Fact Checkers for Community initiative has made substantial progress in addressing the digital divide, enhancing fact-checking skills, and increasing financial literacy among rural women. Through targeted interventions, community engagement, and structured training modules, the project has empowered women to take charge of their digital presence, verify information critically, and prevent financial fraud.

One of the most significant achievements of the program has been the measurable increase in digital access and literacy. The proportion of women with access to personal digital devices increased dramatically from 30% at baseline to 75% post-intervention. This shift indicates not only a rise in device ownership but also a change in perception towards digital tools within rural households. The reduction in dependence on shared or borrowed devices has allowed women to explore digital spaces more confidently and securely.

Another key outcome is the improvement in digital financial literacy. Before the program, only 53% of participants were using digital financial services, and many remained wary due to scam risks. By the end of the training, 91% of women reported regular usage of digital payment systems, with UPI transactions becoming the most preferred method. Additionally, the ability to

identify and prevent financial fraud saw a significant rise, ensuring that participants were not only using digital financial tools but were also doing so safely. The growth in fact-checking capabilities has been another notable success. With misinformation being a persistent challenge in rural areas—especially on platforms like WhatsApp and Facebook—women were trained to critically evaluate information before forwarding or acting upon it. The number of participants using multiple verification sources before sharing information rose from 59% to 82%. More importantly, women have started playing an active role in their communities by countering misinformation and guiding others on how to verify facts. The formation of local fact-checking groups within villages has further strengthened this initiative, ensuring that misinformation is tackled collectively rather than individually.

## Future Focus Areas

Despite these achievements, there remain critical areas that need further development. The project's success highlights the need for scaling outreach to include more rural communities. Given the high interest among participants—84% expressed a desire for continued digital literacy training—the program should expand to reach women who were not part of the initial cohort. Scaling up will require additional partnerships with local organizations, increased funding, and the creation of more community-led digital literacy hubs.

Another essential area for improvement is the refinement of training methodologies. While the current training model has been effective, feedback from participants and CSOs suggests that more interactive and hands-on learning experiences could further enhance comprehension. Future iterations of the project should incorporate:

- More simulation-based exercises to practice identifying misinformation in real-time.
- Gamification elements to make digital literacy training more engaging and accessible.
- Localized content in vernacular languages to ensure inclusivity.
- AI-driven chatbots that provide real-time factchecking support for rural users.

The integration of AI-driven solutions is a crucial next step in combating misinformation at scale. AI-powered tools can assist in identifying

misinformation trends, flagging fake news, and offering immediate factchecking assistance in local languages. Collaborating with tech-based fact-checking organizations to develop AI-driven vernacular fact-checking platforms can bridge the current gap in resources available for rural India. Mobile-based AI tools that allow users to scan and verify forwarded messages could significantly reduce misinformation circulation. Additionally, long-term sustainability strategies must be developed to ensure that digital literacy and fact-checking efforts continue beyond the formal intervention period. Establishing self-sustaining digital networks, where trained women mentor new learners, can help institutionalize fact-checking as an ongoing practice. Building strong local partnerships with panchayats, selfhelp groups, and educational institutions can further embed digital literacy into community structures.

The Rural Fact Checkers for Community project has demonstrated that targeted digital literacy interventions can bring about significant behavioral and societal changes. By empowering women with the tools to critically analyze information, use digital financial services safely, and advocate for digital rights in their communities, the program has laid the groundwork for a more informed and digitally resilient rural India. However, to maximize its impact, future efforts must focus on scaling the initiative, refining training methods, and leveraging AI-driven tools to combat misinformation more effectively. The road ahead requires continuous investment in digital inclusion, ensuring that every woman in rural India has the knowledge, confidence, and resources to navigate the digital world safely and independently.



**Scan here for the online link & read more**

## 2. Building Smart Villages: A New Paradigm for Rural Development in India<sup>1</sup>

*By Osama Manzar, Arpita Kanjilal*

The term “smart” has become synonymous with high efficiency, intelligence, and connectivity in the modern world. According to Merriam-Webster Dictionary, “smart” refers to a high degree of mental ability, often associated with being intelligent and bright. When we apply this concept to systems or societies, it suggests the ability to adapt and respond quickly to changes, much like the human brain reacts to stimuli through a network of neural information. What if we could reimagine our villages, towns, and cities to operate in a similarly interconnected, responsive, and intelligent way?

For centuries, cities have been considered the epitome of progress and modernity. As hubs of innovation, economic opportunity, and development, they have drawn people from rural areas in search of better prospects. This mass migration has led to the steady decline of rural economies, diminishing the vitality of village ecosystems. But what if we could reverse this trend by transforming villages into “smart villages”? These smart villages would be self-sustaining, autonomous, and digitally integrated, equipped with the technologies and infrastructure that allow them to thrive, even in remote locations.

The idea of building “smart cities” has been widely popularised in recent years. Governments and organizations invest heavily in urban infrastructures that promise to make cities more efficient, liveable, and sustainable. While the notion of smart cities is enticing, it often overlooks a crucial aspect—the potential of rural India. By focusing solely on urbanization, we ignore the immense opportunities and untapped resources within rural areas. Could the future of sustainable development lie in creating smart villages, rather than sprawling smart cities?

### **The Case for Smart Villages**

Reimagining rural India as self-reliant, digitally connected ecosystems can reduce the pressure on urban centres while enabling a more diversified and

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1. Originally published here: <https://owsa.in/building-smart-villages-a-new-paradigm-for-rural-development-in-india/>

resilient living model. Smart villages would function as decentralized hubs of innovation, tailored to meet the needs of local communities through the use of digital technologies, open-access systems, and frugal methodologies.

Beyond providing access to basic services like healthcare, education, and banking, these villages would be equipped with the necessary infrastructure to enable sustainable agriculture, efficient waste management, and local business development. Harnessing data, renewable energy, and cutting-edge technologies, they would solve their unique challenges, creating ecosystems that are both efficient and adaptable to local needs.

### **How Digital Technologies Can Empower Rural Communities**

One of the core components of a smart village is the integration of digital technologies. These technologies are often seen as the domain of large cities, but in reality, they have the potential to transform rural areas in profound ways. From AI-powered agriculture to remote healthcare, digital tools can bridge the gaps between urban and rural India.

In rural villages, digital solutions can make agriculture smarter and more sustainable by integrating sensors, weather prediction systems, and crop management software. Farmers can receive real-time data on weather conditions, soil health, and market trends, enabling them to make informed decisions that increase productivity while conserving resources. Additionally, mobile apps can provide farmers with access to training, financial services, and direct links to consumers, bypassing intermediaries and ensuring better prices for their produce.

Open-access systems can also democratize information in rural areas, breaking down barriers to knowledge. For example, digital platforms offering distance learning can empower students in remote villages to access quality education, often overcoming the shortage of physical infrastructure and qualified teachers. Similarly, telemedicine services can bring healthcare expertise to the doorstep of rural communities, allowing patients to consult with doctors, receive prescriptions, and even undergo remote diagnostic tests—all through their mobile phones.

Moreover, frugal methodologies that rely on cost-effective digital solutions can ensure that these technologies are affordable and scalable. For instance, solar-powered microgrids can provide reliable electricity to villages without the need for large, expensive infrastructure projects. Low-cost digital solutions for governance and service delivery can streamline administration,

making it easier for villagers to access government benefits, report grievances, and engage in community decision-making.

### **Real-World Examples: Digital Empowerment in Rural India**

Across rural India, several inspiring initiatives offer valuable insights into the potential of smart villages. One such approach focuses on bringing digital literacy, online education, and e-governance to remote and underserved areas. By training villagers in digital skills and providing them with the tools to access government services, these initiatives improve livelihoods and foster a sense of empowerment in rural communities.

A key model that has been implemented in various regions is the Smartpur Project, which aims to develop model digital villages by integrating digital technologies with rural development. Through this project, rural communities are equipped with the necessary digital tools to access information, enhance learning, improve livelihoods, and foster entrepreneurship. Central to the project are Communication Information Resource Centres (CIRCs), which are led by local digital entrepreneurs who facilitate access to digital resources, offer guidance on using technology for various purposes, and create a bridge between rural populations and the digital world. These centres empower villagers with knowledge on topics such as digital literacy, entrepreneurship, and local governance, helping them become active participants in their own socio-economic development.

### **Beyond digital inclusion, several other initiatives contribute to the vision of smart villages**

e-Gram and Digital Literacy Programs equip rural communities with essential digital skills, enabling them to access e-governance services, apply for government schemes, and find employment opportunities.

SoochnaSeva (Information Service) connects rural citizens with critical information about government programs, healthcare options, and education resources through a network of trained local entrepreneurs.

Village Knowledge Centers (VKCs) serve as local hubs for knowledge-sharing and digital access, ensuring that villagers have access to information about agriculture, healthcare, education, and governance.

Kisan Mandis (Farmers' Market Platforms) provide farmers with direct market access, ensuring fair prices for their produce and access to real-time market data.

Rural Entrepreneurship Programs promote digital tools for business management, secure online payment systems, and digital marketing techniques, helping rural entrepreneurs succeed in a digitally driven economy.

### **From Digital Empowerment to Self-Reliance: The Smart Village Model**

The potential for smart villages is vast, and the time has come to shift our focus from urban-centric development to a more holistic approach that embraces the power of rural transformation. By integrating digital technologies, open-access systems, and frugal methodologies, we can create self-reliant, intelligent rural ecosystems that not only enhance the quality of life for millions of people but also contribute to a more sustainable and diversified model of development.

As we look toward the future, it is clear that smart villages are not just a possibility – they are a necessity. A well-connected rural ecosystem will not only ease the burden on overpopulated cities but also lay the foundation for a more inclusive and sustainable society. Rather than building smart cities, we must first focus on building smart villages – empowered, autonomous, and digitally connected – to ensure that no one is left behind and every part of India can thrive.



**Scan here for the online link & read more**

### 3. Communities at the Heart of Digital Design: Becoming Digital Citizens<sup>1</sup>

*Osama Manzar, Arpita Kanjilal*

The National Sample Survey Office (NSSO) data reveals a stark divide: only 24% of rural India has internet access compared to 66% of urban households. The Inequality Report 2022: Digital Divide highlights contradictory and concerning trends: there has been a noticeable decline in rural internet access, dropping from 31%, compared to 67% among urban population.

#### **Digital Transformation**

India has taken numerous steps to address the impending crisis of digital divide. Since the launch of Digital India in 2015, a range of initiatives were rolled out to improve internet connectivity in rural India. These include creating access points such as Common Service Centers building digital infrastructure to create digital citizens. The journey has not been without challenges.

Take demonetisation, for example, which was a drastic regime shift that forced millions to adopt digital banking and transactions. This adversely affected rural households reliant on agriculture and the informal sector. Soon after, basic citizen entitlements, benefits, subsidies, and welfare schemes including the Public Distribution System were digitalised and linked to Aadhar, a centralised biometric identity database.

To navigate and adopt this unprepared shift towards e-governance – marked by the digitisation of identities, databases, and government interfaces – building robust digital infrastructure, enhanced connectivity, facilitating access through digital platforms, and empowering citizens, especially those at the edge of information became sheer necessities.

#### **Persistent Gaps: Infrastructure and Inequality**

India is a country with two-thirds of the population residing in the rural region. Despite numerous multi-stakeholder and multi-sectoral efforts, many fundamental infrastructure gaps and social-economic divides continue to persist, permeating even the digital realm. The Covid-19

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1. Originally published here: <https://www.goethe.de/ins/in/en/kul/fmd/afu/26335378.html>

pandemic reinforced the urgency to extend connectivity to every remote corner of the country. In this scenario, how can the internet be made accessible to remote areas and marginalised communities—historically deprived of basic amenities and infrastructure such as transport, electricity, telecommunications, healthcare, education, banking and financial services? How do we build a digital design that addresses the graded digital inequalities? How do we ensure meaningful connectivity and digital adoption in the last mile?

Deploying wired internet across India's vast and diverse geography is expensive for the Internet Service Providers. It became essential to democratize the access to digital infrastructure and e-governance adoption among citizens especially at the level of Gram Panchayats. This has made it important to decentralise, de-monopolize and democratise the availability of connectivity and access to information. For instance, Community Radios were trialled as rural Internet Service Providers, which later got recognised as 'Public Wi-Fi networks' by the Telecom Regulatory Authority of India. These Community Networks, that are built, managed, and used by local communities, played a crucial role in strengthening the local telecommunications infrastructures, especially in areas where commercial providers did not offer services. They, however, face challenges of costs, scalability, and sustainability.

### **Initiatives and Innovations**

In the last two decades, India has seen significant efforts directed to bridge the digital divide. National Digital Literacy Mission was one of the first initiatives conceptualised by Digital Empowerment Foundation and later adopted by the Government of India for a large-scale implementation in the last mile. Built on this initiative was a broadband revolution in rural India taking digital connectivity to Gram Panchayats through the National Optic Fibre Network (NOFN).

There have also been efforts to explore frugal connectivity solutions, which included trials using unlicensed spectrum. The idea was to ensure affordable connectivity in remote and unconnected areas. Following policy changes, the purchase, and sales of connectivity without a license were legalised. This eliminated the need for an Internet Service Provider, allowing distributors or users to establish a private connection by simply paying a regular subscription fee.

Several interventions in this line of approach have been undertaken to enable and scale internet connectivity and digital access among rural and underserved communities in India.

## Citizen-Centric Digital Design

Despite these efforts, there continues to be a stark gap and ever-deepening divide in access and adoption of the Digital Public Infrastructure among citizens and communities. With the advent of AI, digital adoption has become further challenging, with critical concerns about data, storage, privacy, security, bias, accessibility, and ethical use. Where are we going wrong? Are “We, the People of India” part of this digital design at all? Is digital design citizen-centric or consumer-centric?

Today, about 2.4 billion people worldwide remain unconnected. In India, many communities, including weavers, artisans, farmers, frontline workers, women, youth, persons with disabilities, queer and transgender communities, fisherfolk, nomadic tribes, Dalit and Adivasi communities, urban slum dwellers, elderly populations, and communities residing in remote or mountainous regions, continue to face digital exclusion and largely remain disconnected from the broader digital ecosystem. How do we envision a digital design that strengthens social justice and includes the knowledge and wisdom of grassroots, unconnected, and indigenous communities?

This will require a perspective change. The digital landscape today largely continues to operate in a top-down manner where citizens are treated as mere data points. To develop a digital design that is inclusive from the outset, integrated into the core of the design-thinking process rather than as an afterthought, we need to shift to a bottom-up approach that treats communities as key stakeholders in policymaking. Hyperlocal solutions designed for specific contexts can help address the graded digital inequalities by strengthening local digital ecosystems.

Connectivity should not just be treated as a technological milestone but also as a social revolution, something that bridges the gap between aspiration and accessibility.



**Scan here for the online link & read more**

*1. India - Digital Economy. (2024, September 18). International Trade Administration | Trade.gov. <https://www.trade.gov/country-commercial-guides/india-digital-economy>*

## 4. From 2G to 5G: Is India moving forward or leaving people behind?<sup>1</sup>

*Osama Manzar, Arpita Kanjilal*

India's digital transition has been nothing short of transformative, with 5G subscriptions projected to triple to 970 million by 2030, according to an Ericsson report (IBEF, 2024). Yet, amidst this rapid advancement, a significant portion of the population remains tethered to 2G networks. Approximately 300 million Indians still rely on 2G connectivity, primarily from low-income, rural, and marginalized communities. For these users, the transition to 4G or 5G is not just a matter of upgrading technology—it is a complex issue intertwined with affordability, accessibility, and socio-economic disparities.

### **Affordability: A major barrier**

Affordability remains one of the most significant hurdles preventing 2G users from transitioning to 4G or 5G. While telecom providers like Reliance Jio have made strides in offering low-cost 4G-enabled devices, such as the Jio Phone, the reality is that even subsidized smartphones and data plans are out of reach for many. For households at the bottom of the economic pyramid, a smartphone is often a luxury, not a necessity.

The cost of owning a 4G-enabled device goes beyond the initial purchase. Data plans, app subscriptions, and the need for regular upgrades add to the financial burden. For millions of low-income users, 2G phones are not just a means of communication but a lifeline for basic connectivity. Forcing a transition without addressing these affordability concerns risks disconnecting 20-30% of these users, exacerbating the digital divide.

### **Digital divide and infrastructure gaps**

Access to reliable 4G and 5G networks is another critical issue, particularly in rural and remote areas. While urban centers enjoy robust connectivity, many rural regions still struggle with poor or nonexistent 4G coverage. In such areas, 2G remains the only viable option for mobile connectivity.

For example, in states like Bihar, Jharkhand, and parts of Uttar Pradesh, where infrastructure development lags, 2G networks are crucial for basic

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*1. Originally published here: <https://maktoobmedia.com/opinion/from-2g-to-5g-is-india-moving-forward-or-leaving-people-behind/>*

communication. Farmers, small traders, and migrant workers in these regions rely on 2G for voice calls and SMS services, which are essential for their livelihoods. Without significant investment in rural infrastructure, a forced transition to 4G or 5G would leave these communities further marginalized.

### **Gender disparities in connectivity**

The digital gender divide further complicates the transition. In many households, women are often given basic 2G phones, which are primarily used for calling and tracking rather than for economic or functional activities. These devices are seen as sufficient for their perceived needs, reinforcing gender inequalities in digital access.

A hasty shift away from 2G without gender-sensitive policies could deepen this divide. Women, who already face barriers to digital literacy and access, would be disproportionately affected, limiting their ability to participate in the digital economy and access essential services.

### **The role of essential services in driving transition**

One of the most pressing reasons for transitioning to 4G and 5G is the increasing digitization of essential services. Education, e-governance, financial transactions, and entitlement access are rapidly moving online, leaving 2G users at a significant disadvantage. For instance, India's Unified Payments Interface (UPI), a cornerstone of digital and financial inclusion, does not function effectively on 2G networks. Transaction failures and financial losses are common, further marginalizing those who rely on older networks.

The inability to access these services not only limits economic opportunities but also reinforces existing inequalities. For meaningful participation in the digital economy, reliable 4G and 5G connectivity is essential. However, without addressing the barriers to adoption, millions risk being left behind.

### **Telcos' efforts: A mixed bag**

Telecom providers have made some efforts to ease the transition. Reliance Jio's Jio Phone initiative, for example, aimed to bridge the gap by offering affordable 4G-enabled devices. While this strategy has had some success, it has not been a comprehensive solution. Many users still cannot afford even subsidized devices, and infrastructure gaps in rural areas remain a persistent challenge.

Moreover, Jio's push to phase out 2G entirely is driven by its business interests, as its network infrastructure is exclusively 4G and 5G. While this approach aligns with the company's growth strategy, it risks leaving millions of users disconnected if implemented prematurely. The lack of a robust safety net for those unable to transition could lead to greater digital exclusion.

### **How do we balance growth and equity?**

India's digital transformation must be inclusive to be truly transformative. A hasty transition to 4G and 5G risks deepening inequalities, while a gradual, well-planned shift can enable millions to integrate meaningfully into the digital economy. Policymakers and stakeholders must prioritize the following:

Subsidized smartphones and data plans must be complemented with financial incentives and support for low-income users. Public-private partnerships can play a crucial role in making devices and services more accessible.

Expanding 4G and 5G coverage to rural and remote areas is essential. Investments in infrastructure must be prioritized to ensure that no region is left behind.

Addressing the digital gender divide requires targeted interventions, such as digital literacy programs and initiatives to provide women with affordable, functional devices.

A forced digital transition to 4G and 5G is not the answer. Instead, a phased approach that allows users to adapt gradually, supported by education and infrastructure development, is key to ensuring inclusivity.

Digital literacy campaigns in hyperlocal settings can empower citizens to make informed decisions about transitioning to newer technologies, ensuring that they can fully leverage the benefits of 4G and 5G.

### **The exclusion of 2G users in a 5G world**

The challenges faced by 2G users go beyond being left behind—they are being left excluded. In today's digital landscape, the benchmark for meaningful access has shifted to a minimum of 4G connectivity. Essential services, from online education and healthcare to digital payments and e-governance, are increasingly designed for higher-speed networks. This

Depending on the digital access threshold means that even if 2G users are technically “connected,” they are effectively locked out of the digital economy and society.

For instance, a farmer with a 2G phone may have network coverage but cannot access real-time market prices or digital payment systems, which are critical for their livelihood. Similarly, a student in a rural area may have a phone but cannot participate in online classes or access educational resources that require faster internet speeds. This lack of meaningful access perpetuates cycles of poverty and exclusion, as 2G users are unable to leverage digital tools for economic, educational, or social advancement.

The exclusion of 2G users is not just a technological issue—it is a systemic failure that reinforces inequality. Without addressing this gap, India’s digital transformation will remain incomplete, leaving millions stranded on the wrong side of the digital divide. In the next column, we will delve deeper into the concept of meaningful access and examine the persistent and widening forms of exclusion in an increasingly digital world.



**Scan here for the online link & read more**

## 5. Cyber Security Essentials for a Community Internet Network in India: Strategies for Management and Mitigation<sup>1</sup>

*Osama Manzar, Suruchi Kumari*

### **Abstract**

Cyber Security of community internet networks remains a challenge, especially in low-income communities. We explore the critical dimensions of privacy and cybersecurity from socio-behavioural, legal and technical aspects. In the wake of the evolving regulatory legal ecosystem of data privacy, data protection and standardisation of information handling, it becomes the duty of the organisation/service provider to ensure continuous compliance. This also paves the way for a much-needed focus on cyber security at the service level. The essentials of establishing a secure Community Network follow the fundamental principles and practices required to secure a local or regional network. It requires an all-encompassing approach that includes social awareness about personal/user data protection, secure network infrastructure, regulatory compliance, user awareness, security operator training, and collaboration. Implementing these cybersecurity essentials would enable the community networks to provide safe and reliable internet access while minimising potential cyber risks.

### **Introduction**

We live in a world where the physical and digital unavoidably intertwine in an individual's daily life in multiple ways. The digital infrastructure has made daily utilities simple and swift, from socialisation to finance management and accessing private and public services. Notwithstanding the disparities in accessibility to digital services and infrastructure between the urban and the rural, the digital aspects of life have made their footprints clear. Together with the evolving aspects of neural networks in Artificial Intelligence, Machine Learning and cloud computing innovations, the world is becoming increasingly data-driven, and information is becoming a vital commodity that is highly valued. There is no contention that the technology and

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1. Originally published here: <https://repositorio.fgv.br/bitstreams/29e2364e-b57a-4e52-b9d0-6c5f2014fb47/download>

services stakeholders are eager to accumulate dynamic data on individuals. On the other hand, individuals are also non-hesitant in entrusting digital platforms with their details for availing online services. The gap between the idea of privacy and the sense of privacy is widening and turning virtual. This changing nature of the Internet as a commodity rather than a service for the citizens is bringing out various challenges in Internet governance.

In this essay, we try to understand the multiple dimensions of privacy and cyber security, focusing on community-level Internet networks. This is explicitly wanted as, unlike at the individual level, there is less choice, autonomy, and awareness of addressing issues arising from information privacy and secure communication privacy when it comes to community-based Internet networks.

### **Community Internet Networks Now**

Over the last decade, the international community has recognised the need to advocate for Community Networks or Community based Internet Networks. Over the years, the Dynamic Coalition on Community Connectivity<sup>21</sup> has focused on different aspects of Community Networks ranging from Sustainable Funding Models, governance, benefits, challenges, policy gaps and others (2021,2019, 2017). Now, the time has come to talk about the privacy and cybersecurity of Community-oriented Networks. Despite the challenges around CNs, particularly in developing countries like India, a small but firmly committed civil society organisation like Digital Empowerment Foundation (DEF) is working towards making CNs functional, meaningful, and secure for vulnerable populations isolated from the benefits of digital integration.

In India till 2016, CNs lacked a proper definition in common parlance or government's ICT policy or regulations (Srivastava,2017). The Consultation Paper on 'The Proliferation of Broadband through Public Wi-Fi Networks' by the Telecom Regulatory Authority of India (TRAI) identified CN as "public Wi-Fi networks". While assigning a broader meaning to CN did not restrict it to merely a Wi-Fi hotspot by telecommunications service providers (TSPs)/ ISPs in public places, instead it also recognised small entrepreneurs or private entities who could sell Wi-Fi network services for public use (Srivastava, 2017). DEF has more than 280 locations under their targeted program called W4C (Wireless for Communities)<sup>22</sup> spread across India. Since then, CN has been adopted by DEF as a concept and a frugal methodology to enable last-mile access for the marginalised and unreached communities living in telecom dark areas lacking meaningful access. W4C has been intelligently

using 2.4 Ghz and 5.8Ghz unlicensed spectrum and simple methodologies of community networks like point-to-point, point-to-multipoint, and mesh networking, using backhauls from any of the telcos, including public sector telcos. In the last 15 years, W4C has reached more than 2000 villages, covered more than a million households and spread across 250 districts in about 15 states of India.

Over the years, establishing CNs has shown emerging issues for community development. CNs' public nature has brought privacy and cybersecurity issues to the centre. In the following sections, we will discuss the meaning of privacy in Indian society, the legal and regulatory frameworks around privacy and cybersecurity, and the challenges of securing cybersecurity in community networks and finally, discussing the best practices adopted by Digital Empowerment Foundation for securing privacy and cybersecurity for Community Networks in India.

### **Privacy and Indian Society**

The idea of privacy is multidimensional. This cannot be explained with a single definition, and the concept has broad historical roots with different explanations in the legal, philosophical, and political discourses. It could mean concealment of information, peace, or freedom and autonomy per the use instance. In information systems, privacy is now considered a commodity that could be exchanged for perceived net benefits. For the benefit of this essay, let us understand privacy as the ability of the individual to control the terms under which their personal information is collected and used.

It is a fact that ancient societies did not formally acknowledge the concept of privacy, and the concept evolved with the progress of human civilisation, and individual rights became important only at the advent of industrial society. In the legal discourse, the first mention of individual rights can be traced back to the promulgation of the Magna Carta in 1215 CE, which introduced the basic idea of defined rights and liberties for everyone. Gradually, in the last century, when cultures grew in complexity with techno-industrial and post-industrial developments that they could not resist, privacy became an integral part of our moral system, and legal systems had to be put in place to protect individual privacy. However, the social structure in India, founded on community morale, has less space for non-private community life even now. In his work, *Privacy 3.0: Unlocking our Data-Driven Future*, Matthan (2018) explains the trajectory of the evolution of the concept of privacy over the years after the independence of India. He draws a vivid picture of how non-privacy was a fundamental need rooted

in survival, how it anthropologically evolved with the rise of private spaces and individual thought, and how technology is invading private spaces and thoughts. In the trajectory of his arguments, this work points to the deep-rooted connection that the sense of 'safety and wellbeing' has with the non-private life existing in the Indian social psyche.

Lacity and Coon (2024), in their book 'Human Privacy in Virtual and Physical Worlds: Multidisciplinary Perspectives' calls privacy a 'wicked problem' in the modern context as this concept refers to a socially complex problem involving multiple stakeholders with differing perceptions and preferences, and levels of power. It is also intriguing to understand the slippery slopes in the concept when the virtual and physical worlds coexist and overlap in daily lives.

A face-to-face conversation in the physical world that is digitally recorded with or without the knowledge or consent of the actors in it, getting stored or disseminated in the virtual world, which the innate actors have no control over, has imminent threats and might be against the perceived notions of privacy for them. The feed of a privately owned closed-circuit camera focused on public spaces has no concern over the privacy of individuals who utilise the public space. This physical-digital intertwining has become more and more layered and complex with shared technologies such as cloud servers and networks of connected technologies. In India, Privacy as a part of Cybersecurity is a socio-behavioural challenge where DEF has been working by spreading awareness and training about the meaning of privacy and its need in ordinary people's language so that they can be part of the digital ecosystem as dignified citizens rather than mere consumers of the Internet infrastructure.

### **Privacy and Legal Frameworks**

The 'privacy' debate has had its legal interventions in the last decade with government interventions such as the General Data Protection Regulation (GDPR) of 2016 in Europe, California Consumer Privacy Act (CCPA) of 2018 in the US, General Data Protection Law (LGPD) of 2019 in Brazil, Protection of Personal Information Act (POPIA) of 2020 in South Africa, the PRC Personal Information Protection Law (PIPL) of 2021 in China, and the Digital Personal Data Protection Act (DPDPA) of 2023 in India. All these regulations aim to protect the subjects' personal information, rights, and interests, standardise personal information handling activities, and promote the rational use of personal information.

The Supreme Court of India in Justice K.S. Puttaswamy and Anr. v. Union of

India and Ors landmark judgement declared that ‘the right to privacy is part of the fundamental right to life in India’ and that the right to informational privacy is part of this right. Considering the broad frameworks of the national and international regulations and the active presence of authorities such as the Data Protection Authority in India, it is highly important to consider the known and unknown flow of personal information in the physical and cyber realm.

### **Community Internet Networks and Cybersecurity: Common Challenges**

Community Networks serves as the not-for-profit way of enabling accessibility and building the digital divide through tailored solutions at the local level for a small rural/remote community. It is typically a decentralised, locally controlled infrastructure to provide affordable/ free internet access to underserved communities. As envisaged and suggested, it does not attract high investments in installation and maintenance. It is a solution to bridging the internet gap by connecting the unconnected, enabling them to access education, work, and each other.

These systems leverage networks of connected technologies to provide more efficient, innovative, affordable, and manageable infrastructure locally. It is a sustainable concept with optimum choice for the communities to choose what is best for their needs. It is pertinent that a greater scale of awareness of technology is required for any community network to function. Given the high internet dependency, ensuring these networks’ security is essential to protect user data, maintain service integrity, and prevent malicious activities. Additional technical expertise would be required to ensure the safety, security and privacy of data flow on the network. This is seldom a concern with community networks as it demands better financial allocations and dynamic monitoring, which would be unlikely.

At the implementational level, small-scale community networks face quadruple trouble regarding adequate financing, management and maintenance, expert availability, and awareness, compromising user security. Community Networks work on a limited budget, restricting the purchase of advanced hardware and security tools. It also results in higher long-term expenses and low maintenance. Due to their remote locations and low profitability, these networks struggle in terms of management and maintenance, which are mandatory for ensuring uninterrupted service. The unavailability of experts to configure the hardware used in the network who could continue to provide the same scale of service is another trouble. The most crucial issue, undoubtedly, would be the lack of awareness of

individual users regarding privacy and cyber security. This makes it easier for cyber threats such as spamming, phishing, piggybacking or baiting to occur to the individual and, at times, to all the devices on the network.

### **Data Privacy, Cybersecurity and Cyber Capacity in CNs**

In the wake of the evolving regulatory legal ecosystem of data privacy, data protection and standardisation of information handling, it becomes the duty of the organisation/service provider to ensure continuous compliance. This also paves the way for a much-needed focus on cyber security at the service level.

In the information security and data security realm, DEF is working towards the fundamental of data privacy, following the security management protocol of ISO/IEC 27000 family<sup>23</sup> could be the foundational step. All the hardware, software, and services must comply with the Information Security Management Standards (ISMS) of ISO27K and must be mandated beforehand to design and implement a Community Network. This would also bolster cybersecurity as online security threats intensify.

An additional step of having a physical firewall at the hardware level between the Private Local Area Network/Community Network and the Internet is to be ensured. This would help devise a default rule for all the network devices and devices connected in the future while also saving the system's processing power by not requiring the software-level network traffic analysis. It could also kill the blind spots and safeguard the network from targeted attacks.

The next level is to have hardware in the Community Network with built-in firewalls and customise the rules accordingly. Cost-effective MikroTik CCR1036, RB1100AHx4, and RB3011UiAS routers and ports are part of the core router boards for establishing point-to-point or point-to-multipoint devices such as Base box, LHG27, and SXT28 to achieve this objective. These devices are globally tested, trusted and devoid of backdoors.

Ensuring that the operating systems at the Community Network management level and the user level have trusted and updated versions of the antivirus and anti-malware software installed and that regular scans are scheduled could do wonders in mitigating and managing cyber threats. Open-source log management protocols such as syslog-ng can add to the anti-virus protection as it helps content-based filtering. The intrusion detection and prevention system and DDoS<sup>29</sup> protection may be integrated to prevent hacking attempts and DoS attacks.

End-to-end encryption of sensitive data, minimising data collection, multi-factor authentication and strong password policies for all users, authorised access and role-based access control, redundant systems for backup and failure support, open-source audited solutions, and data localisation are additional (optional) steps that may be utilised to further foolproof and strengthen the security of the Community Network.

## **Conclusion**

As a stakeholder-own and operated service, the Community Networks assumes that dynamic management occurs at the root level. This includes training and generating experts within and continuously educating the beneficiaries through awareness campaigns on data privacy and digital well-being. It envisages a shared knowledge system to be generated within.

Risk mitigation training programmes and modules must be devised for this. This should be a comprehensive guideline to safe practices that teaches the users what is not to be done on the internet. This may include practices such as a) recognising genuine websites and internet frauds, b) safe surfing and identifying common cyber threats, c) privacy and security of the passwords and online accounts, d) regular cybersecurity analysis and attack prevention, and e) hands-on training of commonly used hardware (smartphones, routers, modems) and software (antivirus, firewalls).

The essentials of establishing a secure Community Network follow the fundamental principles and practices required to secure a local or regional network. It requires an all-encompassing approach that includes social awareness about personal/user data protection, secure network infrastructure, regulatory compliance, user awareness, security operator training, and collaboration. Implementing these cybersecurity essentials would enable the community networks to provide safe and reliable internet access while minimising potential cyber risks.

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## 6. ICT for Empowering Accessibility/Inclusion: The Impact of Digital Integration on the lives of Persons with Disabilities (PwDs)<sup>1</sup>

*Osama Manzar, Arpita Kanjilal*

The 2011 Census of India was a crucial milestone in accounting for 2.68 Cr Persons with Disabilities (PwDs), constituting 2.21% of the country's population. While the next census is yet to give us a realistic picture of the number of PwDs and the types of disabilities in accordance with the RPwd Act, 2016, a sizeable portion of the population still faces social and economic marginalisation, as well as apathy from the government and society. There is a lot of stigma, societal indifference, and systemic exclusion that continue to shape the lives of PwDs in today's India. There are several ongoing efforts at global, national, and local levels, to make inclusive policies, schemes and practices that ensure the dignity, rights, and equal participation of disabled populations in society. One among many, is the relative accessibility to digital technologies, which include the ICTs, assistive technologies, and accessibility features, which have played a significant role in the lives of PwDs with different disabilities pertaining to mobility, visual, hearing, etc. The collaborative efforts of the Government, civil society, private sector, and Tech-for-Good are playing a crucial role in tackling the issue of digital divide and lack of access to necessary infrastructural support thus enabling scores of citizens, including PwDs, who have been at the edge of information.

It is in this context that this study has been pursued to document the unprecedented shifts that have been witnessed, with ICTs now being seen as enablers in the lives of the PwDs. However, there is no large-scale policy intervention made yet, with the primary objective of enabling meaningful connectivity in the lives of the PwDs. This study, conducted in two phases with a total of 300+ PwDs, therefore, becomes instrumental in assessing and evaluating if and how the digital ecosystem, especially with the use of ICTs, impacts the lives of PwDs in terms of their personal well-being, and social and economic standing in society.

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1. Originally published here: [https://www.defindia.org/wp-content/uploads/2024/07/Policy-Brief\\_16-July-2024.pdf](https://www.defindia.org/wp-content/uploads/2024/07/Policy-Brief_16-July-2024.pdf)

In the first phase, the study focuses on evaluating the socio-economic impact of digital integration by surveying 243 PwDs across 17 states. In the face of prevalent challenges and exclusion faced by PwDs in terms of accessing basic citizen entitlements, including education, health, employment, etc., the use of ICTs demonstrated promising outcomes such as access to the internet, social welfare schemes and policies, employment, and entrepreneurial opportunities, and increased social and community engagement thus enabling their overall personal, financial, and social growth.

The impact of digital integration can additionally be seen in how there has been a shift in family and community perceptions towards the PwDs, who were otherwise pitied or made to feel like a burden.

To enhance the ICT/digital accessibility and inclusion, the efforts should be directed towards improving internet connectivity especially in remote and underserved regions, enforcing accessibility standards to make user-friendly digital platforms, and making affordable assistive technologies. The role of the Government is crucial in providing subsidies and collaborating with the private sector in developing cost-effective digital solutions. The preparation of a comprehensive inventory of tailored solutions to meet the specific needs of PwDs will be an important step towards assessing the status of the digital ecosystem.

There is a pertinent need for strengthening the local digital ecosystem, whereby the Digital Service Centers are equipped with adequate accessibility and assistive technologies, and are made accessible to the PwDs remotely. It is additionally important to develop tailored digital literacy and skill development training programmes to facilitate inclusive education, skill training, and employment generation for PwDs. The literacy programmes should be extended to the local communities for enhanced awareness and understanding of the lives and needs of PwDs. Most importantly, an in-depth research and evaluation of the ongoing efforts are necessary for measuring the impact, efficiency, and effectiveness of the policy-level decisions and interventions.

In the second phase, the study examines the role of the localised digital service providers in steering the socio-economic inclusion of PwDs through capacity-building efforts, including facilitating access to infrastructure and information. A survey of 112 PwDs across 7 states, highlights the range of diverse services that are provided by the digital service providers, including enhanced and sustained access to ICT tools, stable internet, networks of

information dissemination, and capacity building through digital literacy programs and

trainings. The digital service providers play a pivotal role, particularly in serving as a platform to bring together PwDs from the local communities to inspire and help each other pursue similar learnings and opportunities.

Once seen as those dependent and in search of solutions, the comprehensive analysis highlights the transformative potential of digital integration in the lives of PwDs, facilitated by the increased accessibility to ICT tools and the digital infrastructure. The study demonstrates that the digital integration of PwDs has played a key role in enabling their social and economic integration, with a complete shift in societal perceptions about PwDs thus treating them as respectful stakeholders in their families, communities, and the larger society.

While we are witnessing the progress of digitalisation efforts in many noticeable ways, a careful and thorough scrutiny is required to identify and address the gaps, challenges, and shortcomings in building a disabled-inclusive digital ecosystem.

The two-phased study has unequivocally demonstrated the need for furthering access to ICT tools, accessibility features, curating and developing functional digital literacy curriculum and training programs that particularly cater to the PwDs, broadening efforts of outreach and networking, ensuring a continual feedback mechanism for scope of improvement, and incorporating these learnings in building policies and practices that cater to the diverse needs of disabled populations in India.



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## 7. Clicking through barriers, empowering persons with disabilities<sup>1</sup>

Arpita Kanjilal, Mira Swaminathan

*By working with persons with disabilities, civil society and the tech sector, the Government of India can create a digital landscape that is truly inclusive.*”

As India strives toward achieving a \$1 trillion digital economy by 2028, digital citizenship has become indispensable for accessing e-governance services and basic entitlements. At this critical juncture, where India emphasises the need for “digital inclusion”, it is imperative to evaluate the effectiveness of the government’s strategies vis-à-vis the scale of digital reach, adoption, and impact in the last mile.

One such vulnerable community from the ‘last mile’ we have often overlooked in the digital sphere is Persons With Disabilities (PwDs). This is especially concerning given the draft Digital Personal Data Protection (DPDP) Rules, 2025, that were released in January by the Ministry of Electronics and Information Technology (MeitY). These rules aim to enforce a crucial provision within the main legislation: obtaining ‘verifiable consent’ from the ‘lawful guardian’ of individuals with disabilities. The writers of this article first highlight the critical challenges and unique vulnerabilities faced by PwDs in the digital age and then argue the need to fundamentally reconsider the considerations around digital policies, such as the Digital Personal Data Protection (DPDP) Act, 2023 and the rules there under, to adequately address the specific needs and rights of PwDs, while safeguarding the interest of all citizens.

### **A pan-India study on challenges**

A pan-India study by the Digital Empowerment Foundation (DEF), the Broadband India Forum (BIF) and the Center for Development Policy and Practice (CDPP), titled “ICTs for Empowering Accessibility/Inclusion: The Impact of Digital Integration On The Lives of PwDs”, showcases the various challenges faced by PwDs in the digital ecosystem. We know that in a society

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1. Originally published here: <https://www.thehindu.com/opinion/op-ed/clicking-through-barriers-empowering-persons-with-disabilities/article69261902.ece>

that is deeply entrenched in ableism, systemic barriers continue to limit the full participation of PwDs. Barriers manifest themselves in various forms, including limited access to education, health care, employment, and other essential services, leading to adverse socioeconomic outcomes and severe social exclusion.

The study has found that Information and Communication Technologies (ICTs) offer significant potential for PwDs, including improved access to information, social welfare schemes, employment opportunities, and increased community engagement. However, a 'digital inclusivity vision' is not just about the existence of technology and infrastructure. It is also about access to the same.

For instance, the study found that out of 112 PwDs surveyed, 36.61% visited digital service providers weekly, indicating regular utilisation, while encountering difficulties in accessing services tailored to their diverse needs. These services included essential tasks such as photocopying and printing documents, assisting with government scheme applications, and providing training on digital skills, safety, and security, as well as the use of ICT tools and government schemes.

The socioeconomic and demographic diversity among PwDs and the types of disabilities are often overlooked in policy discussions surrounding digital discourse. Census data plays a pivotal role here in accounting for the PwD population and its diversity, to build effective policies for a disabled-inclusive digital design – especially for those affected by the digital and social divides.

### **The IS standard, issue of autonomy**

A significant legislative step taken by India ensures web accessibility through the adoption of the ICT Accessibility Standard IS 17802 (Indian Standard for Information and Communication Technology Accessibility), which integrates ICT accessibility with tailored assistive technologies and accessibility features to ensure meaningful digital adoption among PwDs. The adoption of the accessibility standards among public and private service providers will ensure meaningful access to the Internet. Moreover, the role of service providers is crucial here in leveraging the innovation ecosystem to design and deploy subsidised and low-cost digital infrastructure that enhances digital reach and adoption among PwDs.

Another critical aspect of policymaking that is imperative for achieving widespread ICT adoption among PwDs is the development of contextual and

targeted approaches that address the needs of the local digital ecosystem alongside enabling remote access to avail the services of the physical digital service centres. Digital solutions catering to hyperlocal settings, which comprise literacy programmes, skill training and capacity-building are essential for availing education and livelihood opportunities.

The research study involving 300-plus PwD digital changemakers demonstrated the transformative potential of digital technologies in empowering and enabling PwDs to live a life with dignity and respect. However, the measure of digital integration, enablement and adoption, determined solely by the number of ICT users, has proven insufficient, indicated by the extent of the ever deepening digital divide in the country. It is, therefore, essential to depart from the binary framework of the haves and have-nots for meaningful digital inclusion.

Another key aspect of the study is a recommendation to MeitY regarding the re-examination of certain provisions within the DPDP Act. The DPDP Act was enacted in August 2023, and the Draft Rules were released for public consultation on January 3, 2025. The writers argue that while the DPDP Act acknowledges PwDs as a distinct category, and the Rules have defined 'guardian' and 'PwDs', a few concerns remain regarding the effectiveness of the Act in empowering the community.

To explain this further, Section 9(1) of the DPDP Act could potentially undermine the autonomy and personhood of PwDs by authorising legal guardians to grant consent on their behalf without mentioning any specific circumstances. This approach contradicts the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which emphasises the right to autonomy, independent living and self-determination.

Second, by grouping PwDs with children in the same provision, Section 9(1) infantilises PwDs and overemphasises the role of legal guardians in decision-making. This also raises concerns about the potential for abuse of power by guardians, while completely lacking any legal safeguards to protect the sensitive personal data of PwDs.

Third, while numerous technologies and services exist to support PwDs, the government's pivotal responsibility lies in ensuring that these technologies are accessible and viable for all members of society. Currently, many digital services are limited to physical locations, hindering the flexibility of PwDs to access services, training, and support remotely. The government must first focus on conducting a comprehensive inventory of available solutions and tailor them to suit the specific requirements of PwDs in India.

Furthermore, enhancing Internet connectivity in remote regions is crucial to ensure equitable access to online resources for PwDs in marginalised communities. Moreover, collaborative efforts involving the government, private sector, civil society, and the tech-for-good sector are essential to equip digital service providers with the necessary assistive technologies and accessibility features.

### **On ‘meaningful’ connectivity**

Several pieces of legislation in India, including the DPDP Act and the Telecommunications Act, mandate a “digital-by-design” approach, acknowledging the importance of digital accessibility. However, the study emphasises the need for the government to critically examine these regulatory frameworks to enable meaningful connectivity for all communities in India. For instance, it is suggested that any digital-by-design framework should be built on a citizen-centric rather than a consumer-centric model – a bottom-up model of policy advocacy that addresses the contextual, evidence-based, and specific digital needs of diverse communities in India. The term ‘meaningful’ is crucial here to bridge the graded digital inequalities and build digital equity for all.

In conclusion, empowering PwDs in the digital age requires a multi-pronged approach. By working collaboratively with PwDs, civil society and the tech sector, the government can create a truly inclusive digital landscape where everyone, regardless of their abilities, can fully participate and thrive.



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## 8. The Himalayan Digital Hurdle: The Factors Affecting Access to Digital Spaces<sup>1</sup>

*Dhiraj Singha, Raina Ghosh*

**Abstract:** The report delves into the digital access challenges pertaining to the Himalayan villages of Dharchula block of Uttarakhand, where geographic isolation, inadequate infrastructure, and socio-economic disparities limit connectivity options for residents. These barriers further become an impediment in terms of access to education, healthcare, and essential information, particularly during natural disasters where reliance on existing communication infrastructure becomes tricky.

Surveying 520 respondents, the study finds that among other factors, economic constraints, transhumance practices, and lack of internet connectivity exacerbate digital exclusion in these high-altitude rural areas. While empirical data show higher ownership of mobile tools among local households, network instability and reliance on mobile data recharge limit meaningful and consistent usage of digital media. Structural barriers such as poor road infrastructure and distance from service centres further restrict access to welfare services and critical information. Interestingly, gendered outcomes and those amongst the youth population mark better access to digital devices in comparison to other groups, indicating that targeted policies bear the capabilities to improve socio-economic outcomes. To bridge the existing divide, the report recommends deploying resilient digital solutions like satellite-based internet, mesh networks, and community radio, which are effective for local disaster communication and otherwise. It is also evident that initiatives like conducting training for local residents to become “internet entrepreneurs” while managing digital centres can further empower communities, and enhance confidence and economic independence.



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1. Originally published here: [https://www.defindia.org/wp-content/uploads/2025/06/The-Himalayan-Hurdle\\_ONLINE-1.pdf](https://www.defindia.org/wp-content/uploads/2025/06/The-Himalayan-Hurdle_ONLINE-1.pdf)

## 9. At the Digital Margins: The Connectivity Status of Totopara, North Bengal<sup>1</sup>

*Dhiraj Singha*

The Totos—scheduled as Particularly Vulnerable Tribal Groups (PVTG)—resides in Totopara, a village in northern West Bengal close to the Bhutan border. Access to markets, healthcare, and education is restricted due to its remote location (just a few unreliable passes). A digital divide and low socioeconomic indicators, such as lower educational attainment, are the results of this isolation. A project to close the connectivity gap in Totopara was started by the Digital Empowerment Foundation (DEF). In order to preserve their legacy, it seeks to digitize the Toto language and oral traditions, create internet connectivity, offer training in digital literacy, and enhance access to online government services.

A baseline study using mixed methods was carried out. Interviews and focus groups provided the qualitative data. A survey of 342 villagers yielded quantitative data on demographics, education, technology use, scheme awareness, and disaster experiences. This method offered comprehensive insights in addition to statistical breadth.

The socioeconomic profile of the community indicates serious difficulties. Although there are still few job opportunities, Totopara's youthful population (61% of the population is between the ages of 18 and 35) offers potential vitality. Agriculture, especially the production of betel nuts, is their main source of income, but this industry is very susceptible to seasonal variations. Long-standing gender inequality makes development even more difficult since women are largely responsible for domestic and agricultural work, which restricts their access to formal education and employment.

Totopara faces significant resource limitations in the field of education. Schools lack adequate learning resources, consistent schedules, and qualified teachers, especially in STEM and despite widespread smartphone ownership, Totopara struggles with inadequate connectivity, low digital literacy, and limited productive digital engagement— challenges that hinder meaningful digital integration. vocational education. The lack of digital

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1. Originally published here: [https://www.defindia.org/wp-content/uploads/2025/05/At-the-Digital-Margins\\_The-Connectivity-Status-of-Totopara-North-Bengal.pdf](https://www.defindia.org/wp-content/uploads/2025/05/At-the-Digital-Margins_The-Connectivity-Status-of-Totopara-North-Bengal.pdf)

literacy in the community limits their access to contemporary socioeconomic opportunities and increases their sense of isolation.

Despite the fact that many people own smartphones, internet access is costly, inconsistent, and mostly used for leisure rather than for work or education. This underuse of digital technology reveals a serious gap between meaningful use and accessibility. Administrative inefficiencies, informational delays, and physical distance continue to make government services largely inaccessible. Because of this, residents usually depend on distant intermediaries like cybercafés, which makes them more dependent and strains their finances. Natural disasters pose a threat to Totopara's resilience as well. Severe storms, flooding, and frequent landslides often disrupt livelihoods, infrastructure, and communication networks. Isolation is made worse by poor road conditions, which significantly affect daily life and emergency response. There is a glaring need for focused digital interventions, even though locals use social media informally during emergencies and there are no formal disaster response systems in place.

Maintaining Toto cultural identity has become a community priority in the face of external influences and modernization pressures. The integrity of their language and culture is being weakened by the growing adoption of Bengali and Nepali by younger generations, despite their strong sense of pride in their language and traditions. Furthermore, external perceptions that exoticize and misrepresent the Totos frequently reinforce stereotypes that are at odds with their lived realities. In order to enhance digital literacy, connectivity, and cultural documentation, the Digital Empowerment Foundation (DEF) established a Community Information Resource Center (CIRC) as part of a comprehensive digital inclusion project. The majority of the community is in favor of digitizing their language, oral histories, and customs because they see these resources as empowering, preserving, and dispelling myths about them from outside sources. As Totopara is situated at a crucial juncture between inclusive development and exotic curiosity, a holistic digital empowerment program that is grounded in local realities and driven by community participation can achieve authentic representation, cultural resilience, and long-term socioeconomic improvement.



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# 2

## Gender and Technology

## 10. Women's Role in Transforming Digital Education in Rural India<sup>1</sup>

*Raina Ghosh*

The role of women in care work and reproductive labour has been discussed extensively in popular media and critical feminist scholarship. In a rapidly digitalising country, patriarchy has successfully penetrated the digital realms, reinforcing divides that are not only spatial between the rural and the urban but starkly gendered, too. As per the ASER report of 2023, the proportion of females with digital literacy was 89.8% while the same for males was 94.7%.

We at DEF, have been celebrating fierce rural women who serve as digital catalysts for making communities digitally literate and economically self-independent. These women have been pivotal in bringing digital transformation to rural parts of the country, backed by DEF's strategic literacy programs and initiatives. Serving as both educators and beneficiaries, their role is to empower themselves while significantly contributing to enhancing gender equality in the country's data-dark regions.

Digital Literacy Programs have elevated women to the role of community ambassadors, transforming them from hesitant learners to confident trainers and establishing local learning centers where they impart skilling programs on functional aspects of Digital Literacy and Digital Financial Literacy, revolutionising rural women's economic participation and reimagining traditional financing systems through effective use of digital payments, online banking, digital book-keeping etc. This has resulted in a ripple effect of empowerment among the village elderly, marginalised social groups, PwDs and in particular, for rural micro-entrepreneurs with the establishment of online marketplaces for their products.

Digital Learning Toolkits like the START perfectly demonstrate the efficacy of involving women trainers to train rural women who are also first-generation technology users on aspects of functional digital literacy (basics of ICT usage, digital applications, media and information literacy) through hands-on training and workshops in geographically remote and information-poor regions of the country.

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1. Originally published here: <https://www.defindia.org/womens-role-in-transforming-digital-education-in-rural-india/>

Through the STEM for Girls Program, girls in rural government schools and villages have broken gendered stereotypes in the field of education by accessing localized STEM educational content to explore Science, computational thinking, coding, and problem-solving skills.

These initiatives have proved to catalyse a transformative feedback loop. As first-generation beneficiaries master digital tools and train a future pool of changemakers, these learnings are integrated into a contextually meaningful and sustainable manner. In short, rural women are not simply receiving digital knowledge—they're translating knowledge into a repository of community resources, thereby generating a domino effect of educational revolution in rural areas of the country.

This Women's Day, let us strive for a gender-inclusive country where no woman lags in her quest for digital education. Let us build a force of digitally literate rural wonder women who smash the evils of gendered digital divide and break the shackles of patriarchy.



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## 11. Tackling menstrual misinformation and period poverty in rural India<sup>1</sup>

Akanksha Ahluwalia

*Digital Empowerment Foundation's Digital Didi project reached over 6,000 women and girls in 350 villages across 10 states to create awareness about misconceptions surrounding menstruation through digital tools and community-led programmes.*”

Connecting the Unconnected is a monthly column by the Digital Empowerment Foundation (DEF) that explores how technology can drive inclusion and governance in India. The column focuses on how the digital divide impacts communities differently and advocates for equitable, citizen-informed solutions that ensure technology empowers rather than excludes.

Over 71% of adolescent girls in India are unaware of menstruation until they get their first period; the bleeding comes as a shock – sudden, unexpected, and terrifying. This shocking statistic from a report published by UNICEF shows how a majority of girls in our country face their first period with no prior knowledge, leading to fear, shame, and school dropouts.

To put this in numbers, Dasra, a non-profit organisation, found in a 2014 study that 2.3 crore girls drop out of school every year after they start menstruating. Beyond the fact that access to education is already affected by gender, menstruation becomes another barrier. Many girls stay out of school because they don't have access to sanitary pads, clean toilets, or a safe space to change. A 2018 Global Citizen Report echoed this, stating that 1 in 5 girls in India do not return to school after their first period.

This is where the Digital Empowerment Foundation's Digital Didi project came in, by helping women and girls understand and fight health-related misinformation through digital tools and community-led programmes. The project reached over 6,000 women and adolescent girls in 350 villages across 10 states through 350 women entrepreneurs and information agents.

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1. Originally published here: <https://www.thenewsminute.com/connecting-the-unconnected/tackling-menstrual-misinformation-and-period-poverty-in-rural-india>

It created awareness about misconceptions and misinformation surrounding menstruation, and communicated authentic information, and facilitated access to sustainable menstrual products and better health infrastructure.

Shame and stigma affects the body in different ways, but for women the shame takes shapes and forms. It becomes physical, it becomes malleable, it becomes cloaked in whispers and generational oppression. Most Indian women have heard all of these words told to them especially during their early menstruation years. For some, the shame and the stigma invades just like the first bloodstain. For others, it begins with the invisibilisation of menstruation cycles, misinformation around body autonomy, gender roles passed down from generations like heirlooms, and with malinformation.

“The women in my village in Uttar Pradesh do not talk about menstruation. When I got my period, I was in school. When I saw the blood, I went to my teacher crying because I thought I was dying. She scolded me and told me to stuff tissue paper in my underwear and speak to my mother. I missed all my classes that week,” Roopal\* said.

### **Inherited shame and generational misinformation**

Behind the silence is a force that is deeply embedded in systems of misinformation, myths, and taboos. These myths are not always born out of malicious intent, but end up with tangible effects on the physical and mental wellness of the menstruating body. The everyday challenges that women face become even more severe when it comes to understanding menstruation at the grassroots. Due to this, many women are forced to use ash, newspaper, tree leaves, or old cloth, because their families simply cannot afford sanitary products.

Other forms of misinformation around menstruation are embedded and propagated by patriarchal systems – where misinformation is passed on not out of malicious intent but due to fear of social backlash. Grandmothers and mothers don’t just shame but shape generational trauma and misinformation attached to biological processes.

“In my community, the common midwife had told my mother that she should be careful with new products like sanitary pads that they had started advertising in the village. She told her that they will make me infertile or give me cancer and then no one would wish to marry me. So for a very long time when I was on my period, I would just use cotton balls or a handkerchief. I now realise how much at risk I was and how much misinformation I was fed since I started my period,” said Banu\*.

When the first phase of the Digital Didi project began in mid-2022, 72% of the respondents admitted they were unaware of safe menstrual hygiene practices and often felt anxious before their periods. By the end of the project in late 2023, this had changed significantly – 97% of the participants reported being aware of safe menstrual practices, feeling less shame around menstruation, and showing a willingness to discuss and address these issues with others in their community.

This awareness entails knowing that there are ways in which women can access the correct information around menstruation, body autonomy, and different body cycles. It means tackling myths and superstitions around blood impurity, food insecurity, and mobility. It means understanding the difference between commercial/plastic pads and reusable products. It means understanding that disposing menstrual waste in rivers, toilets or by burning or burying them is harming the environment.

“When I was young, I would use leaves from a tree in our community and put them together to make a pad. I would then change the leaves at least 10 times a day. When I was 18, I switched to a napkin and it would give me rashes, but it was better than using leaves. Now, I have been using a cloth pad made with soft cotton and it is so comfortable. I don’t have to change it again and again, I can wash it and hang it in the back, it makes me feel better during my periods,” said Sapita\*.

### **The anatomy of silence**

So what kind of misinformation did we encounter at the grassroots?

First, we must recognise that more than 60% of rural adolescent girls still have limited or no access to the internet. This digital gap keeps them from learning about safe practices, helplines, tele-health services, or government schemes that could help them. As a result, myths, rumours, and false information abound about menstruation. This becomes one of the most serious causes of period poverty in rural India.

We came across many common myths. Some believed that girls should not bathe during their periods, or that menstrual blood is ‘impure’. Others thought that touching food would spoil it, or that entering religious places while bleeding would anger the gods. At the start, 62% of those we spoke to said they avoided religious events during their periods. People in their homes – both men and women – would ask them to stay inside the home and out of the kitchen. These weren’t personal choices, but rules society expected them to follow.

While many of these behaviours still exist even after our efforts, the number of women who began to question them is now higher than ever.

Projects like Digital Didi focus on dismantling misinformation in a way where we start a conversation through discussions, trainings, baithaks, and digital access to the correct information, access to rights and right to access. Health-related misinformation hinders these rights.

For example, girls are often told to reuse unclean cloth pads or hide their rags in dark corners to avoid being seen, to hide it from the male gaze and from drying it in sunlight. This increases the risk of reproductive tract infections and urinary tract infections, which are again silenced, hushed and dealt with at home.

Through the initiative, we were able to see 94% of the women say that they were able to dry their pads in the sun once they started talking to the elder members of the community about the repercussions of hiding them in dark corners. This simple act reflects a massive attitudinal transformation.

One of the most powerful parts of this intervention is how digital literacy is combined with health education. Using a chatbot that women can access through digital devices at home or at a nearby digital service centre, they are introduced to important topics like menstrual hygiene, financial literacy, digital safety, and entrepreneurship. This way, they can learn at their own pace, in their own space, without needing to travel to a camp for information.

Misinformation around menstruation is not just about lack of knowledge or fixed gender roles – it continues cycles of deep-rooted problems like poor sanitation, poverty, bad health, and gender inequality. It stops girls from going to school, keeps women out of work, and holds back communities by trapping them in a cycle of poor health, environmental damage, and violence based on gender.



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## 12. Why do women-led social enterprises succeed? Reflections on International Women's Day<sup>1</sup>

*Maitri Singh, Abner Manzar*

“This mobile phone in my hand has become my weapon. With this I fight wrongs in society and serve those in need” said Sumitra Devi, a SookhnaPreneur from the Bokaro district of Jharkhand. The smartphone in her hand was not only a digital tool with which she serves her community, but her ticket to independence. “I didn't even know how to hold a mobile phone, using it was far-fetched. I would hold it upside down” she laughed. Her journey is reflective of India's journey of digital development. In a country with a population of 700 million women, only 266 million have ever used the internet (UNFPA, 2023).

Digital spaces, being part of broader societal structures, often mirror and perpetuate the existing inequalities and disparities in any society or nation. Consequently, marginalised groups, particularly women, frequently find themselves in disadvantaged positions compared to men in accessing their rights and needs. Only 31% of women own a mobile phone in India as compared to 60% of men, signifying a clear gender gap (Sunilkumar, 2022). The Global Digital Inclusion Partnership (GDIP) Report 2024 outlines the major factors that contribute to this disparity including restricted digital access due to inadequate infrastructure, the high cost of devices and data services, reliance on male family members for device usage, and time constraints caused by unpaid care work and other income-generating work. These systemic barriers, when compounded by other socio-economic factors such as poverty, early marriage, and access to quality education, make women's digital inclusion more challenging (GDIP, 2024).

In 2021, the Alliance for Affordable Internet (A4AI) in its report explains the economic cost of exclusion of women from the digital world has led to a staggering \$1 trillion loss in global GDP, with a \$126 billion loss recorded in 2020 alone. Scholars argued that closing the digital gender gap globally presents a \$524 billion economic opportunity by 2025. A4AI also reports that gender consistently ranks lowest in digital policy priorities, with over

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1. Originally published here: <https://maktoobmedia.com/opinion/def/why-do-women-led-social-enterprises-succeed-reflections-on-international-women-day>

40% of countries lacking meaningful programs to expand women's internet access (Alliance for Affordable Internet, 2021). This issue of gender digital divide is also directly linked to workforce participation, especially more so in South Asia. South Asia has amongst the lowest female education and labor participation rates globally (World Economic Forum, 2024a). Limited internet access leads to women being confined to low-paying, informal jobs, which exacerbates economic exclusion. Research shows that by 2030, 92 million digital jobs will emerge, yet women remain underrepresented (World Economic Forum, 2024b). This also affects women's participation in entrepreneurship and business; while 20-25% of businesses in India are women-led, less than 2% secure capital (The Economic Times, 2022).

Despite declining device and data costs, affordability remains a barrier, especially for women from marginalized groups, including those with disabilities. Furthermore, they lack the skills to use digital payments, e-wallets, and online banking services, which can help them scale up their micro-businesses. Therefore, beyond social equity, closing the digital financial exclusion is an economic necessity. Given this reality, Digital Empowerment Foundation has been working towards bridging the gender digital divide, in India through several hyper-local initiatives, specifically through its flagship program, SoचनाPreneur. These social entrepreneurship models address the dual concerns of digital literacy gaps and digital financial literacy on the other to empower rural women to compete in male-dominated entrepreneurial spaces in an era where citizen services are increasingly digitised and e-commerce platforms have taken over the macro and micro markets. This pushes for designing solutions that are not only community-centric but also cater to the hyper-local needs.

A 2024 study by Chatterjee et al. (2024), based on rigorous research of over two years (January 2018 to December 2019) systematically analyzes the monthly participation of 278 sochnapreneurs. The research analyzes data from 142 local government areas (panchayats), and systematically compared regions with and without intervention to provide an understanding of the function and adaptation of sochnapreneurs over time. Using the SoचनाPreneur model as a case study, the authors empirically proved that in rural entrepreneurship models, selecting a woman empowers her to build her own identity, as well as within the patriarchal system, the women micro entrepreneurs become outliers whose family is known by her name instead of the other way around. Second, it enables them to break social norms and step out of their homes, leading not only to their empowerment but also serving as a role-model for other women and girls in their community. Thirdly, it outlines how the earnings of women, compared to the earnings of

men, are more likely to benefit the family, contributing to improved socio-economic well-being and enhanced self-esteem. Lastly, hiring women helps avoid the classic problem of mission drift in such programs, as compared to men, women aspire for improved service-delivery for their community, which leads to more recognition. In contrast, men aspire for higher earnings and business expansion. This means that the woman's aspirations are closely aligned with the mission of the program as well (Chatterjee et al., 2024).

Through women-led initiatives, DEF is working towards making India's rural economy more robust with the hope of bringing about a more equitable country that does not face the rural-urban, village-city, unconnected-connected, and poor-rich divide. A key learning from 23 years of engagement with grassroots communities is that bridging the gender digital divide drives more democratic societies by ensuring equal access to opportunities for all.



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## 13. How entrepreneurial initiatives help the tea garden women of north Bengal<sup>1</sup>

*Dhiraj Singha, Raina Ghosh*

*The outcomes of interventions among women in selected tea garden villages of West Bengal highlight that information-based micro-entrepreneurship models can lead to a positive change with regard to awareness, agency, and access.*”

Connecting the Unconnected is a monthly column by the Digital Empowerment Foundation (DEF) that explores how technology can drive inclusion and governance in India. The column focuses on how the digital divide impacts communities differently and advocates for equitable, citizen-informed solutions that ensure technology empowers rather than excludes.

For the longest time, it would have been unimaginable for tea garden workers, especially women, to consciously or subconsciously hope for social mobility, overcoming the socially devalued identity of the ‘tea garden labourer’. Social entrepreneurship initiatives such as micro-entrepreneurship in the everyday lives of women in rural areas can nurture aspirations of economic independence, providing an escape from the intergenerational cycles and intersectionalities of precarious living in tea gardens. However, in doing so, it compels us to consider an otherwise overlooked aspect in ‘doing’ empowerment – the need for meticulous social mapping of existing local power dynamics and the centrality of information dissemination.

The tea gardens in northern West Bengal (WB), often characterised as ‘enclave’ economies, mostly employ people from marginalised communities and are marked by deeply entrenched structural issues. Despite constituting around 60% of the workforce in the Dooars region, women workers have persistently remained peripheral in the political trade unions, receiving lower compensation due to discriminatory definitions of ‘dependents’, and face mistreatment, intimate partner abuse, among other issues. Moreover, these women bear a double burden of work due to the roles expected from them in terms of their labour, both on and off the field.

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1. Originally published here: <https://www.thenewsminute.com/connecting-the-unconnected/how-entrepreneurial-initiatives-help-the-tea-garden-women-of-north-bengal>

Given such a context, the outcomes of entrepreneurial interventions among women in selected tea garden villages of WB highlight that information-based micro-entrepreneurship models can lead to a positive change, along the three As of the empowerment discourse – Awareness, Agency, and Access. These arguments are based on field observations made during the impact assessment study for an initiative by the Digital Empowerment Foundation (DEF). Under this initiative, 16 women living and working in the tea gardens of Alipurduar, Jalpaiguri, and Cooch Behar districts were trained at the grassroots level as information dissemination entrepreneurs called SoochnaPreneurs (infopreneurs). Through their lived narratives, we showcase how such initiatives have helped women secure a living by providing information and services regarding various schemes and benefits available to rural beneficiaries. While leveraging digitally enabled Community Information Resource Centres (CIRCs) at the village level, the narratives also throw light on the need to navigate local power relations and cultural factors.

### **Enabling awareness and information**

On a cloudy morning in July 2024, when we reached the premises of one of these CIRCs, Sujata\*, a 26-year-old SoochnaPreneur from Alipurduar, promptly admitted that she had been oblivious to the local power equations before she joined the programme. “Earlier, I didn’t even know anyone – who the panchayat Pradhan (head) was or who held which position. But ever since this programme started, I’ve begun to connect with people, whether they are government officials or local leaders. Now, I have a bit of familiarity with them.”

Like any other community, the tea gardens of WB have erected patriarchal barriers to the flow of information, often restricting women’s access to knowledge crucial for social mobility. This programme inculcated a critical awareness among women SoochnaPreneurs about the various community stakeholders, their relative power positions to identify allies with shared goals and tailor their actions to meet the needs and expectations of different stakeholders.

Moreover, focus group discussions with the female beneficiaries of this programme from the same tea garden village further revealed that SoochnaPreneurs have made information more accessible and approachable for all. Sanchita\*, one of the participants, said, “We used to go to the Gram Panchayat earlier. Some of us have the courage to ask, some don’t... they just walk around and leave out of embarrassment. Out of fear, rather (laughs).”

When probed further, she said, “Yes, when you’re around important people, you have a fear about whom should I talk to? How should I talk to them?”

Another participant Babita\* explained how having a SoचनाPreneur helps women beneficiaries: “We don’t even know what documents are needed and what are less important. The educated ones manage, but the uneducated ones among us just keep getting shunted around. We get rejected, and have to listen to abuse and rebukes. They say, ‘Bring the right documents tomorrow.’ And when we go the next day, we get sent back again. But when our own person (meaning the SoचनाPreneur) is there, they explain clearly what is needed.”

This change is significant because it not only improved access to information but also reduced the social barriers that previously inhibited one’s engagement with formal processes. Historically, those who received less education, in particular, faced significant barriers in accessing information, often feeling intimidated or excluded from formal networks and channels. The intimidation works as an alienating force where access is contingent upon a sense of belonging, feelings of kinship in terms of who gets to represent them and who acts as a facilitator of information services.

### **Enabling agency**

Having said that, being a SoचनाPreneur has not magically changed things for women like Sujata, but has definitely given her the agency to delay her marriage and challenge the internalised expectations that women often face within their families. The programme has enabled hope by creating a space that has empowered them to envision and pursue their aspirations. For instance, Sujata said, “Even my family doesn’t support me. They want to get me married off quickly, but I don’t want to. I have two brothers. One has some issues and the other is fine but he doesn’t help at all, he does not support my work at the centre. I want to first stand on my own feet. Is that not good?”

Despite their crucial economic contributions, the tea gardens of WB have been sites where women have been largely confined to roles that reinforce their dependency and subservience, particularly through the expectation of early marriage. The programme could provide an opportunity to foster a sense of agency among the unmarried young SoचनाPreneurs.

### **Navigating gender norms**

The interventions have positioned SoचनाPreneurs in a field of power

dynamics where they struggle as well as learn to navigate the deeply entrenched gendered norms in the tea gardens. Sujata, a graduate from the University of North Bengal, belongs to an Adivasi family that migrated to Alipurduar a few generations earlier to work as labourers in the lush tea gardens of north Bengal. While talking about her daily struggles of running the CIRC, she said, “The problem is that, being a woman, they don’t like to see me compete and get ahead so much.”

She elaborated on how the local people are convinced to avoid coming to these centres run by a woman, alleging that Sujata will siphon off the money. This gives us an idea about the context within which she works, the ways in which culturally rooted societal expectations and stereotypes are capitalised to incite residents and create an air of mistrust. But Sujata has her own conviction to navigate these societal pressures. “Those who trust me come and ask everything. That’s why when I withdraw money for someone, I also show them the balance,” she said.

Sujata even faced danger to her life from groups that were opposed to women SooknaPreneurs. “Once, there was a campaign for some panchayat-related work when they [politically motivated groups] came to hit me. They even came to my house. I had been given this task directly by the Pradhan. But they were asking, ‘Who are you to do all this?’ They brought all the men, ready to threaten and kill me.”

Adding that the local residents don’t support women working outside the home, she said, “They tend to get violent. Later, I told them, ‘Look, the Pradhan himself gave me this work. You are part of the panchayat, go and confirm it there.’ I called the panchayat to say that there was trouble happening here. After that, these groups all sat for a while, listened, but never came back again.”

As evident, while the programme has empowered Sujata to assert her unwillingness to succumb to the intergenerational cycle of labour reproduction, it has laid bare the ugliness of gendered power relations. She needs to relentlessly face societal threats for showing the courage to disrupt the existing gender roles and norms.

### **Empowerment with an understanding of local social contexts**

The interventions in the form of information-centred micro-entrepreneurship, thus, promise to add small but significant contributions to the counterforce against patriarchal norms in the tea garden villages. While such approaches enable them to socially mobilise themselves for a dignified

living, Sujata’s narrative also explicitly signifies the need to map the social processes involved in maintaining information asymmetries that often serve the interests of the powerful.

In the name of women’s empowerment, civil society organisations must not limit themselves to treating community members as beneficiary numbers or sensational case stories or see training as an end to the exercise of capability enhancement. They must also actively engage with the local social contexts and be a part of their everyday struggles, helping them identify and navigate established power relations. Only then can we bring about a positive social change through rural micro-entrepreneurship, democratising control and dissemination of context-specific information in marginalised tea garden villages.

*\* names changed to protect privacy*



**Scan here for the online link & read more**

## 14. How Rural Women Entrepreneurs Are Reshaping Rural India?<sup>1</sup>

*Dhiraj Singha*

In rural India, women have never been just caregivers—they have always been the backbone of their communities, the ‘silenced’ architects of the rural economy. Women-led micro-enterprises make up 20% of all MSMEs, employing 22–27 million people. Yet, an overwhelming 82% remain trapped in informality (NITI Aayog, 2023). Their businesses struggle—not due to a lack of ambition, but because the system refuses them access to formal credit, policy support, and essential business development services such as financial advising, technology, and marketing (World Bank, 2024). Recognizing these gaps, the Digital Empowerment Foundation (DEF) is working to rewrite this injustice—arming rural women with digital skills, financial literacy, and entrepreneurial training. Through programs like Udyamini, Digital Sarthak, and Digikargha, DEF is not just enabling women to run businesses; it is standing with them to become independent entrepreneurs, leaders, and catalysts of change in their communities.

Women as social entrepreneurs do more than running businesses. Their enterprises are not just about profit; they are social interventions, rooted in empathy, resilience, and the deeply ingrained ability to prioritize collective well-being. Research shows that women entrepreneurs consistently outperform men in acquiring customers and delivering value, even when controlling aspects like caste and religion. Their culturally assigned roles of care and empathy are not constraints; they are strengths. Women-led businesses focus on customer needs in ways that male-led enterprises often overlook, particularly when serving other women (Chatterjee et al. 2024).

For generations, rural women have been economic actors, though often invisible ones. Yet they remain stuck in subsistence-level businesses. Udyamini is breaking such cycles, equipping them with the tools to scale, master digital finance, and access online markets. Operating across 12 districts in Assam and six in West Bengal, in partnership with seven social organizations, the strategic cascading model of Udayamini is on a mission to train 20,000 Rural Women Entrepreneurs (RWEs), who will further train two entrepreneurs—ultimately reaching pool of 40,000 RWEs and indirectly

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1. Originally published here: [HYPERLINK “https://www.defindia.org/how-rural-women-entrepreneurs-are-reshaping-rural-india/”](https://www.defindia.org/how-rural-women-entrepreneurs-are-reshaping-rural-india/)

impacting 400,000 community members by expanding access to digital and financial services.

For many rural women, technology remains a gatekeeper, barring them from economic mobility. Digital Sarthak is dismantling such gatekeeping, replacing hesitation with confidence by equipping women with the skills to use smartphones, conduct online transactions, and navigate e-commerce. The program will train women entrepreneurs, strengthen women-led Community Development Organizations, and establish Digital Resource Centres. They will create a profound ripple effect as 300,000 individuals will gain access to digital tools, and 100,000 will receive financial literacy training. The impact goes even further: studies show that men exposed to women-led enterprises in co-ed entrepreneurial environments adopt more socially conscious and consumer-oriented business practices, challenging traditional gender norms in market interactions.

India's craftswomen have long been the silent custodians of heritage—hand-weaving, embroidering, and shaping pottery—only to see their labor undervalued and their voices unheard. DigiKargha aims to disrupt such problem, bridging tradition and technology through digital interventions in nine artisan clusters, training 10,000 men and women artisans in digital literacy, 1,000 youth in digital design, and digitally archiving 100 traditional songs. By eliminating exploitative middlemen and connecting craftswomen directly to global markets, DigiKargha ensures fair wages and a sustainable future for these artisans.

The reach of these projects is not economic alone—it's deeply personal. An economically self-sufficient woman invests her earnings in education for her children, increases home stability, and defies generational barriers.

Rural women are not waiting to be empowered; they are already leading, fighting, and proving their worth in ways the world too often fails to see. Programs like Udayamini, Digital Sarthak, and DigiKargha are acts of defiance against exclusion, against the quiet erasure of women's labor and aspirations. As a man, I do not speak for these women on Women's Day, nor should we, but we can acknowledge the systems that have long denied them their rightful place.



**Scan here for the online link & read more**

## 15. Bridging the Gap: Making Digital Spaces More Inclusive for Transgender Individuals<sup>1</sup>

*Amaarisa Tiwari, Ansh Sirsat, Jia Berde, Sneha Jalan, Toshani Sharma*

With over 820 million internet users as of 2024, India is one of the largest and fastest-growing online populations in the world<sup>1</sup>. From government portals to telehealth, online education to fintech, digital platforms are now integral to accessing information, services, and community. While the government's 'Digital India' initiative has accelerated digital adoption across socioeconomic groups, its benefits have not reached all communities equally, including the transgender population, which includes over 480,000 legally recognised individuals. Marginalised even within the broader queer community, India's transgender communities are the focus of this particular report.

For transgender individuals in India, the internet can be both a lifeline and a battleground. On one hand, it provides access to healthcare, information, safe spaces, and community; resources often unavailable offline due to systemic discrimination and exclusion from public life<sup>2</sup>. On the other hand, it can amplify harassment, surveillance, and exclusion. Despite legal recognition through the Supreme Court's 2014 declaration of the 'third gender' and the Transgender Persons (Protection of Rights) Act, 2019, transgender individuals remain marginalised in digital policy and design. This creates a severe digital divide. A digital divide is the unequal access to digital technology, including digital gadgets and the internet. It creates a severe gap between individuals who can access the digital world and those who don't, restricting certain communities from accessing it<sup>3</sup>.

This further elaborates on the Gender Divide, which refers to the inequalities in access to, use of, and participation in digital technologies and the technology sector based on gender, encompassing disparities in digital skills, internet access, representation in computing and STEM fields, and exposure to gender-biased technologies such as artificial intelligence and voice assistants<sup>4</sup>.

Most digital platforms are built around binary gender norms and lack sensitivity to the lived realities of trans and gender-diverse people.

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*1. The study in process*

While some trans individuals have carved out empowering digital spaces through activism, content creation, and mutual aid, the majority continue to face barriers that prevent meaningful access. These include economic hardship, digital illiteracy, lack of documentation, fear of online abuse, and poorly designed platforms<sup>5</sup>.

This research paper aims to bridge that knowledge gap. Specifically, it explores:

- How transgender individuals in India access and use digital spaces.
- The structural, social, and legal barriers they face.

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# 3

## **Artificial Intelligence & Ethics**

## 16. AI changed my surname. That's how I found out how caste-coded it is<sup>1</sup>

*Dhiraj Singha*

It started with an unexpected error—an error in digital identification and an urge to prove my existence. While refining an early draft of my cover letter for a post-doctoral fellowship, my name appeared altered: Dhiraj Singha became Dhiraj Sharma. The error was subtle.

Sharma, a surname of a privileged caste; Singha, a surname usually used by the Scheduled Caste community in West Bengal. As I confronted the machine about this mistake, first, the AI did not consider it to be a serious mistake, declaring it to be just an “incorrect presumption” or a system generated/unintentional mistake, and was willing to take full responsibility without indicating about how responsibilities are taken.

Deeper entanglements of caste, technologies, and prejudice were found out when I shared the screenshot and delved into this incident further. It turned out to be not simply a typo, but an algorithmic assumption, with a mark of a hidden societal Goliath. The act of using my name with a more dominant-caste surname, especially when writing an academic cover letter, reveals about the social script within which AI is being developed and trained.

### **The algorithmic slip: Unpacking caste in code**

The confrontation unfolded in a rhythm of digital ethnography—question, denial, evidence, and revelation:

Me: “I am not Sharma. It is Singha. Why did you presume my surname to be Sharma?”

ChatGPT: “Apologies for the incorrect assumption.... It might have been a system-generated mistake.”

The machine's deflection—framed as a “system generated”—masked a caste script. Such a glitch uncannily reflects the prevalent social script of technologies and academia. Dominant surnames like Sharma are presumed

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1. Originally published here: [HYPERLINK “https://indianexpress.com/article/opinion/columns/ai-changed-my-surname-thats-how-i-found-out-how-caste-coded-it-is-9908878/”](https://indianexpress.com/article/opinion/columns/ai-changed-my-surname-thats-how-i-found-out-how-caste-coded-it-is-9908878/)

to be default, especially when writing. The AI was not just making a mistake; it was reproducing a societal hierarchy encoded in data.

As I pressed further, asking for a deeper explanation, the AI highlighted five probable underlying processes that led to this misnaming. Its explanations revealed the ways in which caste structures shape even the logic of machine learning.

### **Pattern completion and the tyranny of ‘common associations’**

AI generates text based on statistical likelihoods, much like how humans predict words in conversation. It does not view names as identity markers but as textual patterns within a broader linguistic structure. When it refines a document, it tries to predict the most probable words in a given context based on patterns seen in millions of texts. If certain names are unclear in their mental snapshot of the conversation, it might accidentally insert a statistically frequent alternative that fits the structure.

The models rely on pattern completion—filling words or phrases based on statistical probabilities. It recommends Sharma as the likely completion when “Dhiraj S\_\_\_” is frequently followed by Sharma and infrequently by Singha in training data. It explained:

ChatGPT: “‘Sharma’ is a very common Indian surname, especially in academic and research settings. If my system detected a probable placeholder for a surname but didn’t strongly register ‘Singha,’ it might have filled in a statistically more frequent alternative based on prior exposure to similar contexts (such as research applications, postdoctoral positions, or cover letters).”

This logic mirrors how upper-caste surnames dominate India’s institutions and their datasets—academia, media, bureaucracy—rendering them statistically probable. The AI which gets trained on such data often internalises such bias, and can filter-out the surnames like “Singha” that are not contextually and statistically frequent. The machine acknowledged:

ChatGPT: “My training data consists of diverse texts where some names appear more frequently than others. If ‘Sharma’ appears more often than ‘Singha’ in similar academic or formal contexts, it could have been an unintended selection based on frequency biases in my learned models.”

### **Training data bias: Codification of caste-based dominance**

The AI’s training data—comprising books, research papers, media, and

bureaucratic records—mirrors the structural biases of knowledge production in India. Who curates research? Whose names fill government records? Who gets published in academia? Dominant-caste voices overwhelmingly shape these epistemic spaces, making their identities statistically “normal” in machine learning models.

ChatGPT: “If a certain surname (e.g., Sharma) appears far more frequently than another (e.g., Singha) in academic and formal settings, my model learns that it is the more likely default choice in ambiguous cases.”

What appears to be an impartial computational process is, in fact, the reproduction of exclusionary casteist tendencies. Machines do not create biases—they inherit and amplify them. My misnaming was not an accident—it was indicative of the kind of machine I am interacting with—a machine trained with caste-biased data. Such biases can also affect operations of AI-driven hiring platforms that filter out marginalised caste profiles, giving preference to dominant-caste candidates.

### **Can AI – a digital mirror of society – unlearn caste?**

Every misnamed document is more than an error—it is a denial of existence. Non-dominant surnames have higher probabilities to get filtered out by job algorithms. Such instances reinforce the caste system, making technology a tool of exclusion.

How, then, do we move toward algorithmic accountability? Can AI unlearn caste? Who gets to decide which identities are deemed “probable” by machines? As long as caste shapes society, it will shape algorithms. The solution is not merely to “fix” machines but to dismantle the hierarchies they reflect. AI can be retrained—but only if we decolonise its datasets, integrate marginalized narratives, and design caste-conscious algorithms. Representation in AI development must shift—because until the voices that build these systems change, the systems will continue to erase voices like mine.



**Scan here for the online link & read more**

## 17. Language, politics, power: What is AI's mother tongue?<sup>1</sup>

Raina Ghosh

*The same system that promises to equip people with fluent language can double as a gatekeeper, tying good writing to invisible codes of class, caste, and privilege. In doing so, it erases the scope for language to become a currency of opportunity.*”

AI was never raised with language. It is being fed tons of data, learning to be perfect and accurate, with no scope for silly spelling mistakes and no joy in learning new words. It has never had writer's block, delivering passages at lightning speed. Yet, it is increasingly finding itself in positions of authority, silently evaluating the process it has never lived. In a world where language is survival and identity, what tongue does AI truly speak?

I felt the weight of this question on an ordinary workday when a familiar green icon on my office laptop flickered, questioning my authorship and flagging some sentences as potentially AI-generated. I habitually keep it on to avoid typing errors. But that day, it became something else – a silent accuser. The assistive tool appeared to cast doubt, subtly implying that my carefully shaped and worded thoughts might not be entirely my own. But I had written every word. It was startling since these exact words have been part of my vocabulary since school. If “deliberation”, “interplay”, and “foster” make sentences sound too AI-like, should we replace them with “talk”, “mix”, and “help”? In fact, “foster” carries a tender sense of nurturing and quiet care that no synonym can fully capture. Therein lies the inimitable beauty of words – each holding a depth of meaning, emotion and memory.

What began as a technical glitch must compel us to face something more unsettling – an accusation that our voices, perhaps fluent and confident, are, somehow, not ours to use. It makes us ponder whether a more profound bias in our digital tools leads us to suspect those who manage to sound articulate. Who does society think deserves to sound like a wordsmith?

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1. Originally published here: <https://indianexpress.com/article/opinion/columns/language-politics-power-what-is-ais-mother-tongue-9965073/>

## **The AI vocabulary trap**

A growing list of words and phrases – such as “foster”, “deliberation”, “synergy”, “nuance”, “nestled”, “robust”, “interplay”, “pivotal”, “forging pathways” – are now considered “red flags” by AI detectors, not as plagiarism but as indicators of machine-like writing. Even the good ole’ em dash (–), once integral to literary writing, has not been spared, reducing it to a meme as the “ChatGPT hyphen” because of its overuse in AI-written content. This exposes an insidious vocabulary trap, where specific words and phrases are considered too coherent, too suspicious. It also involves control, deciding who is capable of sophistication and literary eloquence, and who is trusted when they write with power. With the advent of generative AI models, the line has blurred between assistance and authorship, polish and plagiarism, focusing on something structurally deeper: The automation of linguistic elitism. This thrives on the illusion of a single, “correct” way to speak and write, mirroring the language of the privileged – urban, upper-caste, upper-class and Western-educated.

## **How AI detection works – and fails**

Understanding how these detection systems work reveals the logic behind large language models (LLMs). Unlike human reading, AI detectors scan for statistical patterns, word probabilities, and tonal consistency. Two key metrics – perplexity and burstiness – assess predictability and sentence variance, with lower levels indicating robotic output. Ironically, a well-written, coherent human text can mistakenly trigger low perplexity scores, flagged as AI-generated. Phrases like ‘furthermore’ or ‘in the light of’ make writing sound stylised, resembling templates fed into LLMs for academic, corporate, or literary prose. This is worrying because the fluency valued in academia and professional writing is now viewed with suspicion, particularly for Global South scholars who have laboured to claim this space. It’s not just a tech issue – it’s a political one.

## **Democratising knowledge or language policing?**

An equally jarring fact is the policing of expression. In its dual role as mentor and gatekeeper, AI now wields the unsettling inheritance to decide whom to amplify or erase. And, therein lies the profound contradiction. The same system that promises to equip people with fluent language can double as a gatekeeper, tying good writing to invisible codes of class, caste, and privilege. In doing so, it erases the scope for language to become a currency of opportunity. It penalises the texture of difference – accents, idioms, and all the vibrant messiness of language. It also stifles creativity, forcing writers

to self-censor for fear of triggering AI suspicion. It overlooks that accents, grammar, and vocabulary, shaped by access, are also learned and claimed through struggle, practice, and cultural exchange. Since LLMs mimic these patterns, we are now being accused of imitating the machine when it was the machine that learned from us. This tongue is undoubtedly ours. What colonial gatekeeping once enforced, faceless algorithms now replicate, flattening the multiplicity of Englishes into a narrow, sanctioned register. This shift hits marginalised voices hardest – first-generation learners, regional writers, and self-taught professionals who have painstakingly claimed fluency in so-called “standard” English, for whom language is not just a tool of expression but also a site of struggle and aspiration.

To critique is not to reject technology – AI can be a valuable collaborator, enhancing learning and accessibility. But its impact depends on how it’s built, whose norms it follows, and who gets to shape its rules. To safeguard linguistic diversity and fairness, AI detection tools – and the editorial practices that rely on them – must be transparent and accountable to those they most affect. This means involving educators, writers, linguists, and communities from the margins in designing and calibrating these systems. Because the politics of language has always been the politics of power, which is being coded into algorithms. And we owe it to each other to make that power more justly shared.



**Scan here for the online link & read more**

## 18. Optimized, but dehumanized: AI is costing us more than just empathy<sup>1</sup>

*Arpita Kanjilal*

When OpenAI CEO Sam Altman casually remarked that “saying ‘please’ and ‘thank you’ adds millions to OpenAI’s costs,” he may have been making a light comment. But the truth behind that comment cuts deep. In a digital world driven by algorithms and machine learning, empathy is no longer seen as a strength. It is an inefficiency.

This is not just about language. It is about what we are being quietly asked to give up in the name of convenience, and who pays the price for it.

At the Digital Empowerment Foundation (DEF), our work with marginalized and last-mile communities across India makes one thing clear: when digital systems fail to recognize the full range of human behavior, it is the already-excluded who lose the most. As AI systems become more widespread, they are not just shaping how we interact. They are reshaping who we are allowed to be.

### **From users to subjects of the machine**

Today’s AI tools – voice assistants, recommendation engines, chatbots – reward clarity, brevity, and emotional neutrality. Anything outside that norm is filtered out. This sounds like harmless efficiency until you realize it discourages people from expressing themselves naturally, especially in cultures with rich oral traditions, regional dialects, or non-linear storytelling practices.

Over time, people begin to adapt to what the machine “understands.” They speak less emotionally, avoid idioms, and simplify their identity. In effect, users are being trained to sound like machines, not the other way around.

For communities on the periphery of the digital ecosystem, many of whom we work with through DEF’s Just AI initiative, this creates a new kind of exclusion, not just from platforms, but from full participation in digital life.

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*1. Originally published here: <https://maktoobmedia.com/opinion/def/optimized-but-dehumanized-ai-is-costing-us-more-than-just-empathy/>*

## **Algorithmic identity and cultural erasure**

AI does not see context. It sees patterns. It does not hear a mother explaining a health concern in metaphor. It hears a sentence it cannot parse. It does not understand the social cues in a rural youth's tone or phrasing. It marks it as irrelevant data.

What is worse is how this simplification of people into “users” flattens cultural expression into mere inputs. And when people, especially young women and marginalized users, begin changing how they speak, dress, or express themselves online to fit what platforms reward, it becomes a deeper identity crisis.

We have seen this in DEF's digital literacy work: youth increasingly curating their behavior to chase algorithmic visibility. Not because they want to, but because it is the only way to be seen.

## **The illusion of empathy**

AI might sound polite. It might even say “sorry” or use friendly emojis. However, it does not feel, nor does it understand pain, joy, or context.

What worries us is the growing preference among users for machine interactions over human ones, not because they are more helpful, but because they are faster, less messy, and emotionally detached. This reprograms how people relate to one another. It risks turning care and compassion into inefficiencies, things to skip in a rush to get things done.

## **Human futures, not machine templates**

This trajectory is not inevitable. It is the result of choices by developers, tech companies, and policymakers about what behaviors are worth recognizing and what expressions are discarded.

DEF continues to advocate for inclusive, people-centered design. We need digital systems that recognize not just data, but dignity. Technology must adapt to people, not force people to flatten themselves for machines.



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## 19. An Overview of UN Initiatives and Policies on Artificial Intelligence<sup>1</sup>

*Nandini Parashar*

Artificial Intelligence (AI), a technology that collects, classifies, and identifies patterns in data to perform tasks that are usually done by humans, can be considered one of the most prominent buzzwords of the 21st century. With constant technological innovations such as ChatGPT, DeepSeek AI, etc., AI has found top priority among all important actors in world politics. This is especially true for the United Nations (UN) and other international organisations.

Being one of the largest inter-governmental agencies influencing international relations, the United Nations stands at the forefront of creating long lasting impact in the fields of AI, its governance, and Just AI. In fact, given the scope and scale of its influence, the High Level Committee on Programmes (HLCP) even posits the UN to assume the role of Data Custodian for some Global Public Good Data.

Moreover, the UN has also set up the Inter – Agency Working Group on AI and the Office for Digital and Emerging Technologies. Under the latter, the UN also proposed a policy brief on a Global Digital Compact, highlighting the need and advantages of digital governance.

UN's approach to AI can be classified under two headings:

- Adoption of AI by UN Systems for their internal functioning
- Adoption of AI by Member States and other institutions

### **Adoption Of AI By UN Systems For Their Internal Functioning**

The United Nations has been extremely proactive in recognising the need to adopt AI within its own structures and bodies to increase efficiency and enhance productivity. One of the first few guiding documents is a UN System-wide strategic approach and roadmap for supporting capacity development for AI. It highlights the key goals and themes for the UN Systems in their work towards AI governance and adoption. These range

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1. Originally published here: <https://www.defindia.org/an-overview-of-un-initiatives-and-policies-on-artificial-intelligence/>

from data, infrastructure, human and social capabilities, human rights and international law, etc. It also classifies implementable actions such as training of members, identification of risks, etc. onto an urgency spectrum and provides a roadmap for the same.

At the Joint Session of the High-Level Committee on Programmes (HLCP) and the High-Level Committee on Management (HLCM) in 2023, a was set up to develop system guidelines and model policies on the ethical use and adoption of AI within UN Systems.

As a part of its Report on the Operational Use of AI in the UN System (2024), the task force acknowledged that the decentralized nature of the UN System presents challenges with regards to AI adoption, development, and integration. The report also provides an overview of the initiatives taken by the UN to date for adopting AI in its functioning. These include The UN Sec-Gen's Roadmap for Digital Corporation (2018) that emphasises digital inclusion, capacity development, and aligning data use with human rights laws. Other key initiatives are the UN 2.0 Quintet for Change and the UN Sec. Gen's Data Strategy for Action by Everyone, Everywhere with Insights, Impact, and Integrity: 2020 – 2022. As one of the earliest UN guiding documents on AI, the Data Strategy explains in detail how AI can be utilized and highlights its potential benefits.

To summarize the above initiatives and the UN's agenda for adopting AI in its functions:

- Ensure inter-agency cooperation for data sharing and management
- Create guidelines for ethical use of data, especially focusing on data responsibility and accountability
- Ensure internal capacity development to fully leverage AI and data usage for its own humanitarian work.
- Create a comprehensive digital data repository that can be accessed responsibly for inter-agency cooperation
- Align ethical data guidelines with international human rights law and similar legal frameworks.
- Lead UN towards becoming a world model agency for the ethical adoption, use and store of data globally.

Among the many reports supporting the above issues, one of the most important and comprehensive is the Framework for a Model Policy for the Responsible Use of AI in UN Systems. This model policy is structured around the the Principles on the Ethical Use of AI – a set of principles, which forms

the foundation of much of the UN's work on AI Governance – and identifies eight principles for adoption within UN Systems. The principles are as follows:

- Do No Harm
- Defined Purpose, Necessity, and Proportionality
- Safety and Security
- Right to Privacy, Data Protection and Data Governance
- Human Autonomy and Oversight
- Transparency and Explainability
- Responsibility and Accountability
- Inclusion and Participation

The report places special emphasis on ensuring AI guidelines comply with international law, including human rights law, data protection and privacy regulations. It also highlights the need to ensure that AI-generated content respects cultural sensitivities and avoids perpetuating harmful stereotypes.

### **Risk Identification and Assessment**

The report further acknowledges the scale, seriousness and scope of the risks associated with AI systems such as discrimination in data sets, violating data privacy, unethical use and sharing of data, and lack of data legitimacy. As a result, it proposed the need for AI Impact Assessment Tools to identify and mitigate such risks. Special emphasis is placed on the need to develop tools for risk ownership and accountability structures. It also classifies risks into Low, Medium, High, and Very High categories, and provides related action points.

The issue of Ethical Impact Assessment tools, within UN systems and beyond, has subsequently been taken up by UNESCO. UNESCO's focus on AI also includes various thematic areas such as Women and AI, Business and AI.

### **Adoption of AI by Member States and other institutions**

As a part of its efforts to lead global data and AI management, the UN is in the initial phases of building consensus for joint global action on this issue, along with possible measures to address it. Since no global agreements, conventions, or similar frameworks have been established for a Just AI transition or collaboration on AI among UN Member States, its various reports and documents remain anticipatory in nature.

## International Data Governance: Pathways to Progress

The (2023) stands to be one of the foremost UN initiatives for promoting AI collaborations and governance globally. It recognises the need and benefits of optimum AI across for both the individuals and at larger levels. It also recognizes the cost of not adopting AI (lost innovation and progress).

It notes how Member States have developed regulatory frameworks related to data, most notably in relation to privacy and data protection, open data, and an increasing number of localizing measures. However, with the nationally limited jurisdiction of these frameworks, it advocates for a global framework. All the while, it is also essential to recognise innovative national solutions such as Japan's proposal for data flow with trust and Switzerland's advocacy for digital 'self-determination'. It proposed Collective Data Governance (similar to European Data Strategy) within which collective members define a common pool of data that can be collectively valued and governed considering their best common interests.

The document also stands crucial as it highlights the risks currently associated with AI use. For e.g., most of the data used for public good is currently under private ownership, which is under no obligation to use it ethically. There has also been a spike in data-localisation i.e. restriction for data sharing and flow by countries. This can lead to deepening the North-South divide and global inequalities.

It also highlights that any framework or guidelines for ethical AI use must focus especially on data responsibility and data accountability. The former ensures protecting the people whose data is being collected (the people behind the data) and the latter creates continuous assessment to ensure a responsibility framework is well developed and applied.

The Governing AI for Humanity: Final Report is another important document for the UN's mission towards AI Governance. It has been authored by the High-level Advisory Body on AI, established under the United Nations (UN) Secretary-General's initiative. It highlights the benefits of AI in multiple fields such as agriculture, science and technology, climate change, education, etc to build the case for global partnership for AI. It goes further to identify three major gaps in global AI governance –

- Representation Gaps – AI Governance issues currently exclude several developing and under-developed countries as well as communities in the world. Rather, the field is largely dominated by a few countries such as the US, UK, France, etc. Moreover, developing countries also lack the

capacity to influence AI governance frameworks to protect themselves from exploitation.

- Coordination Gaps – The various national AI frameworks that exist are disconnected.
- Implementation Gaps – There do not exist strong accountability and assessment models that have been adopted across the world, leading to fragmented implementation, especially by private bodies.

The document also provides recommendations for enhancing global cooperation across three themes – Common Understanding, Common Ground, and Common Benefits. Under the first, it recommends creating an international scientific panel on AI for ensuring uniform standards and use of AI, imparting impartial knowledge on AI. Under Common Ground, it seeks to initiate policy dialogues and institutionalized mechanisms for AI standards exchanges. Lastly, under the third heading, it proposes common sharing data for the benefit of all through common data networks as well as a global AI fund.

Lastly, the document also proposes the setting up of a special AI desk in the UN for the promotion, research, and study of AI.

The UN 2.0 Policy Brief connects the cause of Just AI with the UN SDG goals. It focuses on building modern data expertise through improvement in collecting, handling, and governing of data from more diverse sources for better insights and actions. Most importantly, the policy brief recognises and important usage of data for humanitarian works – Behavioral Science, which involves understanding how people act and make decisions to create better choices that align with human nature.

A complete compendium of all UN documents and works on AI can be found on UN – iLibrary, UN System White Paper on AI Governance (this document also suggests learning from existing protocols in other fields such as climate to create a similar framework for Just AI) as well as the Office for Digital and Emerging Technologies website.



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## 20. The UN Needs to do Much as Artificial Intelligence Expands<sup>1</sup>

*Nandini Parashar*

Despite covering more than 190 member states and having the world's leading states, politically and economically, at its helm, the UN has still not released any formal regulation or agreement on artificial intelligence yet.

Artificial Intelligence (AI), a technology that collects, classifies, and identifies patterns in data to perform tasks that are usually done by humans, could well be the most prominent buzzwords of the twenty-first century. With constant technological innovations such as ChatGPT, DeepSeek AI, etc., AI has found top priority among all important actors in world politics. A prime example is the recent AI Roadmap released by India and France that set the tone for harnessing AI's potential through innovation and trade.

Across the world, countries and supranational organisations like the EU have also started gearing for AI regulations through laws, ethics documents and strategy plans. However, among all these developments, one corner from where a surprising silence emerges is the United Nations. Despite covering more than 190 member states and having the world's leading states, politically and economically, at its helm, the UN has still not released any formal regulation or agreement on artificial intelligence yet.

It might not, pertinently, be accurate to say that the UN has not picked up on such ongoing technological developments at all – at the institutional level, the UN has created the Inter – Agency Working Group on AI and the Office for Digital and Emerging Technologies.

### **AI Governance and Adoption**

However, the UN's approach to AI can be classified under two headings – firstly, the adoption of AI by UN Systems for their internal functioning; and secondly, the adoption of AI by member – states and other institutions. Out of the two, the UN has been actively pursuing the former and has recognised the need to adopt AI within its own structures and bodies to increase efficiency and enhance productivity.

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*1. Originally published here: <https://owsa.in/the-un-needs-to-do-much-as-artificial-intelligence-expands/>*

One of the first few guiding documents for the same is a UN System-wide strategic approach and roadmap for supporting capacity development for AI. It highlights the key goals and themes for the UN Systems in their work towards AI governance and adoption, like, data, infrastructure, human and social capabilities, human rights and international law, etc. Further, at the Joint Session of the High-Level Committee on Programmes (HLCP) and the High-Level Committee on Management (HLCM) in 2023, a Task Force was also set up to develop system-wide guidelines and model policies on the ethical use and adoption of AI within UN Systems.

Through such and other publications like the Report on the Operational Use of AI in the UN System (2024), The UN Sec-Gen's Roadmap for Digital Corporation (2018), UN 2.0 Quintet for Change; UN Sec. Gen's Data Strategy for Action by Everyone, Everywhere with Insights, Impact, and Integrity: 2020 – 2022, the UN has identified several values and action plans that further the idea of Do No Harm, such as decentralised workings, creating ethical use guidelines for AI and data sharing, risk identification and assessment and so on. The issue of Ethical Impact Assessment tools, within UN Systems and beyond, has subsequently been taken up by UNESCO.

### **Summit for the Future**

On the other hand, despite consistent AI governance around the world, the UN's work on regulating AI adoption among member-states remains anticipatory in nature.

In September 2024, the UN organised a Summit for the Future in New York. As a part of the summit, the Pact for Future document was published, which touched upon digital inclusivity development and the Digital Compact, among other issues. It connected the development of digital resources and their optimum use with the Sustainable Development Goals. Yet, however, while the document was a welcome step, it lacked direct actionable points for the member state to work upon. Another similar document which also connects SDGs with Just AI is the UN 2.0 Policy Brief, that goes a step further to recognise the use of data for behavioural science in developmental aid works. Other UN publications such as International Data Governance : Pathways to Progress (2023) and The Governing AI for Humanity: Final Report recognise important values such as data accountability and responsibility, but fail to provide much beyond that.

While such documents are indeed a positive step towards framing the narrative of AI regulation, the need of the hour is an implementable perspective on the issue. The existing AI frameworks are limited to their

national (or, at best, regional) jurisdictions. However, given the high portability of data and impact of biases in AI and its data sets, it is necessary that the world joins hands to ensure privacy and human rights in the face of rising AI penetration around us. This is especially true for developmental and humanitarian aid, as the decisions that technology could shape in distributing aid and resources could mean grave consequences for millions in deprivation around the world.

The UN has in the past produced legally binding agreements that have been ratified by member countries and are followed upon. The imperative for a similar initiative vis-à-vis AI stands strong and must be pursued actively. In 2024, the UN launched consultations to inform AI governance. With technology advancing by the hour, what remains to be seen is how effective, and how soon, such consultations lead to a technologically inclusive future for all.



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# 4

## **Just Transition, Climate & Sustainability**

## 21. Delhi's unregulated e-waste markets and the marginalised women workers who bear its cost<sup>1</sup>

Raina Ghosh, Alfya Azeem Khan

*India's urban sustainability projects and recycling ambitions are being built on the exploited, invisible labour of women workers, whose lives remain outside both state protection and public conversation.*”

Connecting the Unconnected is a monthly column by the Digital Empowerment Foundation (DEF) that explores how technology can drive inclusion and governance in India. The column focuses on how the digital divide impacts communities differently and advocates for equitable, citizen-informed solutions that ensure technology empowers rather than excludes.

Wearing a dust-laden blue outfit, Shabnam\* squats on the cold concrete floor of a dimly lit room in Delhi's Seelampur, a heap of tangled wires and broken circuit boards in front of her. Using bare, blackened hands, she strips copper wires from discarded cables, her fingers moving quickly but mechanically through the toxic debris of e-waste. Around her, other women sit cross-legged on stained mats, sorting, burning, and breaking apart tons of wires, feeding a sprawling, informal recycling economy that is hidden in plain sight.

Standing nearby, Danish\*, the workshop owner, keeps a watchful eye on the women, swiftly hijacking the conversation when any of them attempt to speak. When asked about the nature of their work, he cuts in dismissively, “This isn't work that requires brains, that's why the uneducated ones do it.”

His remark isn't just a dismissal of the labour's value but an exercise in control, positioning himself as the voice of the workshop while silencing the women. The social control here is both verbal and material, policing conversations, deciding wages, and determining who gets what kind of task – reinforcing a cycle of invisibilised, exploited labour.

Seelampur is where discarded electronics from around the globe arrive, to be dismantled, fuelling a shadowy industry of toxic waste processing. It is

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1. Originally published here: <https://www.thenewsminute.com/connecting-the-unconnected/delhis-unregulated-e-waste-markets-and-the-marginalised-women-workers-who-bear-its-cost>

a dense cluster of working-class, Muslim-majority neighbourhoods within the larger Jamna-paar (Trans-Yamuna) region of East Delhi. We were there as part of a field inquiry by the Digital Empowerment Foundation (DEF), mapping Delhi's e-waste economy through the lens of gender, caste, and labour as part of a broader Circular Economy project.

The research reiterated one thing: the urban sustainability drive has an invisible, toxic underbelly, and it is undoubtedly the workers from the informal sector who bear its cost. While precarious, hazardous labour defines life for both men and women in Delhi's sprawling e-waste economy, it is the gendered intersections of patriarchy, care work, bodily risk, and structural neglect that necessitate urgent examination of the lives of women workers in places like Seelampur's unregulated workshops.

### **No protections against toxic exposure**

Understanding these ground realities helps us explore how the same digital infrastructures that promise empowerment and opportunity for some, invisibilise and endanger others. It asks: who is left out, and harmed, by India's digital growth story? And how might truly inclusive governance account for the people who extract value from discarded technologies while receiving none of its protections?

Most of the labourers in Seelampur belong to lower-caste Muslim communities, predominantly Ansaris, Maliks, and others, who have historically occupied such working-class neighbourhoods in East Delhi. Alongside them are waves of migrant Muslim labourers from West Bengal and towns like Meerut, drawn to Seelampur's recycling economy by the promise of daily wages, however meagre and hazardous.

Men, women, and children extract copper, silver, and aluminium from broken phones, televisions, and computers with their bare hands. Shops are mostly makeshift, dimly lit, and packed wall-to-wall with discarded electronics. The methods used here – such as open burning, acid leaching, and manual separation – are outdated and perilous, with no provisions for occupational safety, no protections against toxic exposure, and no mechanisms for social security. There are no gloves, no masks, no ventilation.

Interestingly, the materiality of such manual labour becomes a medium through which these pertinent risks are unevenly distributed, making it crucial to foreground how aspects of gender, religion, caste and labour intersect to shape hierarchies of risk, precarity, and invisibility. As Fatima\* puts it, "God gave me these hands to work. I don't need protection. I trust

God to take care of me.” Workers are often unaware of the slow devastation caused by long-term exposure to toxic air, chemicals, fumes, and waste.

### **Women are essential yet invisible**

The workshops blur the boundaries between work and domesticity, compelling women to juggle different worlds of care, sociality, reproduction, household chores, and child-rearing while stripping wires in rooms thick with metallic dust.

Sabina\*, her face and hands smudged with soot, a toddler perched on her lap, sat near a furnace, sorting wires. “When they were infants, we brought them here. Now they stay at home, looking after each other,” says Yasmeen\* wearily.

The absence of any creche facility leaves these women with no choice but to either leave their children at home unsupervised or bring them along into unsafe work environments. Many are paid less than their male counterparts, Rs 250 to Rs 300 per day, compared to fixed salaries of Rs 13,000 to Rs 15,000 for men, despite working similar, if not longer, hours. Their work is repetitive and exhausting, with breaks only during major festivals, such as Eid and Ramadan.

Some shop owners justify this disparity by claiming that men lift heavier loads, or are primary breadwinners. But this ignores the deeper, structural disparity: unpaid care work and low-paid productive labour remain invisible in official accounts, propping up urban economies without state accountability.

This structural neglect seeps into welfare provisions as well. The Unorganised Workers’ Social Security Act (2008) aims to extend welfare benefits, including health, disability, maternity, and old age protection, to workers in the informal sector. However, e-waste workers remain outside the purview of this scheme due to a form of legal invisibility, exposing them to exploitation and reinforcing the precarious and insecure conditions of their work.

Despite the Rashtriya Swasthya Bima Yojana (RSBY), a health insurance scheme offering Rs 30,000 in coverage per year for Below Poverty Line (BPL) families, many still pay out-of-pocket for basic healthcare. The scheme fails to address outpatient costs and the daily toll of chronic exposure to industrial waste.

“It’s hard for them to get treatment because there’s always a long line at the

hospital. And even if they get treated, the medicines are too expensive for them to buy,” says a man guarding the workshop site.

For women constantly exposed to burning plastics (PVC or vinyl), metallic dust, and chemical residues, medical help is a luxury they can rarely afford. Even as the Delhi government revised minimum wages, effective from October 2024, raising the monthly pay for unskilled, semi-skilled, and skilled workers, the improvements remain out of reach for most in the e-waste sector. Men may receive a fixed monthly income, but women remain stuck in casual, daily wage, unprotected roles.

The irony is painful. The informal e-waste sector plays a crucial role in India’s recycling ecosystem; yet, workers, particularly women, are essential yet often invisible. These labour conditions are not isolated anomalies but integral to the functioning of the global value chain of digital consumption and disposal, which systematically externalises environmental risks and labour exploitation to informal, decentralised, peripheral and last-mile processing hubs like Seelampur.

And yet, for all its dangers, Seelampur’s e-waste economy quietly keeps thousands of livelihoods afloat and plays a vital role in recycling the city’s discarded electronics. It is these workers who sort through the waste and recover valuable materials, doing a job that the formal sector rarely undertakes. To recognise their work isn’t an act of charity, but a necessary reminder that the sustainability of our cities rests on the labour of people we refuse to see.



Scan here for the online link & read more

## 22. Digital Just Transition: Digital Pathways for Community-Centered Just Transition<sup>1</sup>

*Arpita Kanjilal, Maitri Singh*

Digital technology is a defining force in shaping modern economies, governance structures, and environmental policies, making it a critical enabler of sustainable development (World Bank, 2022). From enhancing climate resilience through predictive analytics to optimizing resource use in agriculture and energy sectors, digital tools have demonstrated their potential to drive equitable progress (ITU, 2021). However, as global economies move toward a technology-driven future, marginalized communities risk being left behind—not only in digital access but also in crucial socio-economic transitions, including the shift to a low-carbon economy (UNCTAD, 2021). This reality underscores the urgent need for a Digital Just Transition—a framework ensuring that digitalization contributes to both social justice and sustainability, rather than exacerbating existing inequalities.

The intersection of digitalization and just transition is particularly significant in the context of climate action and economic restructuring. As industries decarbonize and adopt digital infrastructure, communities dependent on traditional industries—such as coal mining or informal labor markets—face heightened vulnerabilities (OECD, 2023). Without deliberate intervention, these transitions could widen digital divides, displace workers, and reinforce socio-economic disparities (UNDP, 2022). A Just Digital Transition is therefore essential, ensuring that technological advancements serve all segments of society, particularly those historically excluded from digital and economic opportunities.

This paper argues that a citizen-centric approach—anchored in hyper-local digital solutions—is key to making digitalization an instrument of justice rather than exclusion. Localized digital interventions, tailored to the specific needs of vulnerable populations, can democratize access to technology, enhance workforce resilience, and enable marginalized communities to participate in the digital economy (UNESCO, 2023). However, achieving this

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1. Originally published here: [https://www.defindia.org/wp-content/uploads/2025/02/Discussion-Paper\\_PRINT.pdf](https://www.defindia.org/wp-content/uploads/2025/02/Discussion-Paper_PRINT.pdf)

requires aligning business strategies with policy actions that safeguard digital rights, promote sustainability, and bridge digital inequalities.

By examining the necessity of Digital Just Transition and Just Digital Transition, this paper explores how inclusive and sustainable digital policies can drive equitable climate action, economic participation, and technological access—ensuring that digital transformation is not just a privilege of the few but a right for all.



**Scan here for the online link & read more**

## 23. Just Transition and Economic Diversification of Jharkhand's Coal Heartland Ground-up Studies from Ramgarh and Bokaro<sup>1</sup>

*Rishi Kishore, Sandeep Pai, Deeksha Pande, Arpita Kanjilal, Maitri Singh, Kumar Satyendra Singh, Suresh Ram Ravidas*

The year 2024 marked a crucial turning point in climate change—global mean temperatures exceeded 1.5°C above pre-industrial levels for the first time in recorded history. This unprecedented shift underscores the urgent need for decisive climate action on a global scale. With this tipping point breached, the need for reducing greenhouse gas emissions has never been more critical.

Given this urgency to tame the greenhouse gas emissions curve, along with India's commitment to achieving net zero emissions by 2070, a phase-down of coal must be approached with strategic planning. Some key insights and recommendations are summarised below:

### 1. Household dependency

- In both Ramgarh and Bokaro, approximately 10% of the households are employed in the coal mining industry.
- In terms of social infrastructure dependency, 3% of households in Ramgarh and 10% in Bokaro reside in housing provided by coal mining company Central Coalfields Limited (CCL) or thermal power companies.
- Coal is the primary cooking fuel in both the districts. In Ramgarh, 9 out of 10 households rely on coal for cooking, while in Bokaro, 5 out of 10 are dependent on coal for their cooking needs.

### 2. Industrial dependency

- Our survey shows that 73% of registered enterprises in both districts rely on the coal sector for their revenue by serving customers engaged largely in the coal sector, providing coal transportation services,

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1. Originally published here: <https://www.defindia.org/wp-content/uploads/2025/02/Just-Transition-Economic-Diversification-of-Jharkhand%E2%80%99s-Coal-Heartland.pdf>

and supplying machinery and equipment to coal and thermal power companies.

- The use of coal-based boilers is another kind of dependency for industries. Among registered enterprises, the proportion of businesses relying on coalbased boilers is notably higher in Ramgarh, where 74% of enterprises use them. By contrast, in Bokaro, 23% of registered enterprises depend on coalbased boilers for their operations.

### Diversification

- While many households still want their children to find work in the coal sector, there is also considerable interest in transitioning to non-coal industries, such as pisciculture, tourism, among others.
- Based on household and enterprise surveys, we identify several sectors for economic diversification in both districts (Table 1). These sectors reflect the aspirations and comparative advantages of the district. Focusing on these sectors would help local enterprises, households and overall communities transition to more sustainable alternatives.

Table 1:

The table illustrates the sectors for diversification at the block-level in each district based on household and enterprise surveys, interviews, policy assessments, and an evaluation of the comparative advantages of each block.

District	Sectors	Blocks
Ramgarh	Tourism	Chittarpur and Patratu
	Agro-based industry: Food Processing	Gola and Dulmi
	Pisciculture	Mandu, Patratu
	Overburden to sand	Mandu
Bokaro	Solar Manufacturing and Assembly	Chas, Bermo, Chandankyari, Chandrapura
	Pisciculture	Petarwar, Kasmar
	Non-coal based MSME	Chas, Chandankyari, Bermo, Chandrapura

Potential sectors for diversification by district and block The table illustrates the sectors for diversification at the block-level in each district based on household and enterprise surveys, interviews, policy assessments, and an evaluation of the comparative advantages of each block.

## Recommendations

**1. Institutionalize just transition at the sub-district level:** Jharkhand is the first state in the country to form a Just Transition Task Force for planning a strategic transition. However, to make this transition truly just and equitable, a bottom-up approach is necessary. This requires active engagement at the sub-district level, where local needs, aspirations, and challenges can be directly addressed. A long-term strategy including district just transition bodies should be formulated to work with sub-districts for focusing on identifying key sectors that can drive future growth and job creation.

**2. Jharkhand's task force should mobilize the state government for creating explicit just transition policies or for implementing pilot projects for economic diversification:** Our study shows that economic diversification would need nuanced planning and implementation at a large scale in coal-dependent districts. Given the central role of Jharkhand's just transition taskforce, it should make a concerted effort towards moving the discourse from engagement to real pilot projects and policy action.

**3. Develop infrastructure for emerging sectors identified for economic diversification:** Considering the comparative advantages at the block level, investments in terms of physical infrastructure should be made to support non-coal industries. For example, Ramgarh and Bokaro have significant potential for tourism, with abundant natural resources, cultural heritage, and historical sites. By revitalizing the hospitality industry, the districts can create new streams of income. Additionally, promotional activities like a "Tourism Week" can be organized in the districts to raise awareness and attract visitors to local tourism spots. These events can showcase the region's unique cultural heritage, natural attractions, and local businesses, helping to boost tourism and create new economic opportunities for the community.

**4. Foster growth of MSMEs for economic diversification:** Several non-coal MSMEs such as those engaged in food processing, chemical manufacturing, etc. can be encouraged in the districts. This requires a focus on effective supply chains for raw materials through reliable access to locally sourced raw material, sound logistic networks and storage facilities for improving the efficiency and fostering growth of such industries. Additionally, government schemes can be leveraged for promoting such industries. For example, the Prime Minister's Employment Generation Programme can be leveraged to support the creation of micro-enterprises in sectors such as food processing, textiles, or eco-tourism.

**5. Promote skill development and training programs in non-coal sectors:**

Both Ramgarh and Bokaro are heavily dependent on coal. Such dependence has created a mono-economy around coal, where people are skilled almost exclusively for coal jobs, and have a limited skill set for non-coal sector jobs. To facilitate economic diversification away from coal dependency, it is critical to invest in skill development programs tailored to emerging sectors. Training in the solar manufacturing sector, sustainable agriculture, pisciculture, tourism, will equip the local workforce with the skills needed for new job opportunities. 6. Engage local communities in decision-making: Engaging local communities in the decision-making process would be critical for the success of any economic diversification plans. By understanding the aspirations, concerns, and needs of coal-dependent workers and communities, policymakers can design solutions that are both practical and inclusive. Ongoing consultations with local stakeholders will ensure that diversification strategies align with community goals.

**6. Engage local communities in decision-making:** Engaging local communities in the decision-making process would be critical for the success of any economic diversification plans. By understanding the aspirations, concerns, and needs of coal-dependent workers and communities, policymakers can design solutions that are both practical and inclusive. Ongoing consultations with local stakeholders will ensure that diversification strategies align with community goals.



Scan here for the online link & read more

## 24 In the Shadow of Coal Dust -The story of Just Transition and Economic Diversification of Jharkhand's Bokaro and Ramgarh<sup>1</sup>

*Maitri Singh*

Coal dust preserves within my cells  
an agony that would otherwise be homeless.

These mines are my inheritance,  
as they were for my ancestors.

My spine shivers as I step in.

Above the horizon still bleeds.

Why do the living exhume pitch black ghosts?

Whose tribe was this now fossilized into coal?

What do we live for? What does one die for?

– An excerpt from Smita Sahay's poem 'Light, Again.'

The above poem, "Light, Again," reflects on the legacy of coal mining in India and points to the physical and emotional burden of the natives working in these mines, especially the Adivasi communities. The poet speaks of the pain of labour, exploitation, and the search for purpose amidst the darkness. It is indeed true that when you step into the depths of a coal mine, it feels as though the walls themselves hold the memories of all that has happened—centuries of labor, hardship, migration, endurance and, most importantly—change. Coal, which is still a crucial resource for fueling economies and livelihoods, seems to carry the echoes of those who have toiled in its presence, their stories fossilized in the black veins that run through the

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1. Originally published here: <https://typeright.stck.me/post/589214/Chapter-113-In-the-Shadow-of-Coal-Dust-The-story-of-Just-Transition-and-Economic-Diversification-of-Jharkhands-Bokaro-and-Ramgarh>

earth. These mines reveal a history of transition—one that now stands on the precipice of change. As questions of environmental sustainability, health, and fair living and working conditions begin to shape the 21st century, the coal ecosystem finds itself at a critical juncture. The mines, once a symbol of industrial progress, now face an uncertain future where their very own existence is being re-examined due to climate change and net zero.

It was November last year when I visited some of Jharkhand's oldest underground and over-pit mines. The ones I visited were in Bokaro, a district of Jharkhand, where I had travelled to work on a research project concerning 'Just Transition' and 'Economic Diversification' of two coal-dependent districts – Bokaro and Ramgarh during potential coal phase down in future. Economic diversification is the process of shifting an economy away from a single income source toward multiple sources from a growing range of sectors and markets. It is also a risk aversion strategy to avoid external shocks to one particular sector during periods of turmoil. Just Transition on the other hand is a relatively recent concept that came into existence during the 1970s labour movement. It was developed by North American trade unions to create a framework for addressing the social and economic interventions needed to support workers during the shift from high-carbon to low-carbon, climate-resilient economies.

2 This term is widely attributed to US labor and environmental activist Tony Mazzocchi, who advocated for a “Superfund for Workers”

3. This idea was inspired by a federal program for cleaning up environmental toxic waste. This fund aimed to provide minimum income and educational benefits to workers who were exposed to harmful chemicals at the workplace to help them transition from hazardous jobs. When environmentalists objected to the term 'superfund' due to its negative connotations, it was renamed 'Just Transition'. Later, it was included in the preamble of the 2015 Paris Agreement and adopted in global, national, and subnational policy circles.

The International Labour Organization (ILO) defines Just Transition as “greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.”<sup>4</sup> While this offers a solid foundation, different countries and regions imagine Just Transition differently. Simply put, just transition means leaving no one behind in the transition from fossil fuel to a cleaner energy source. This would entail equipping everyone impacted by the current system with the knowledge, education, and support they need to

successfully transition from coal without losing their livelihood, income, and homeland. However, amidst all this, the most important question remains: are we really shifting to new energy models? While climate diplomats at COP28 in Dubai debated phasing out fossil fuels last December, India faced an urgent energy challenge: it had to rapidly increase its power capacity. On December 11, the Indian government announced plans to nearly double coal production to 1.5 billion tons by 2030 to meet growing demand. Later, on December 22, Power Minister outlined plans to add 88 gigawatts of thermal power plants by 2032, the majority of which will burn coal.<sup>5</sup> Therefore, on the one hand, there is a lot of investment in coal—one of the world’s dirtiest fuel; on the other hand, the country’s leaders have been optimistic about its path to net zero, promising that 50% of its power generation will come from renewables by 2030, and 100% by 2070.<sup>6</sup> Nevertheless, in the process of an energy transition, the coal phase-down will significantly impact the local communities that are heavily reliant on coal. In order to make just policies concerning the same, much work is required to assess the dependencies at the sub-national level in major coal-producing areas and ensure a bottom-up approach.

Through our project, we wanted to explore questions related to the type and scale of economic dependence on the coal industry at the district level. How do mine closures affect coal-dependent communities? What sectors offer potential for economic diversification in these coal-reliant regions? How do the coal and non-coal-based enterprises of these districts imagine coal phase down? What kind of grievances do they have or support do they need for diversification? Additionally, coming from an organization that employs Digital as a medium for creating and supporting livelihood, we also wanted to look at what part digital can play in supporting the just transition initiative and creating alternate livelihood options in the two mentioned districts. As part of the study, I spent nearly nine months in Bokaro, Jharkhand, monitoring and implementing the project on the field. In this narrative report, I will attempt to pen down my thoughts and experiences that I have had during my time on field.

After I arrived in Jharkhand, the immediate scene was striking, towering piles of coal, roads coated with a thick layer of black coal dust, and coal gatherers struggling under the weight of coal-laden bags attached to their cycles, barely able to maintain speed. Despite my years in Delhi’s dense air, I found myself gasping for breath. We immediately took out our N-95 masks that we were advised to bring, yet the sight around us was both fascinating and troubling—shop owners cooking over open coal fires, inhaling the thick smoke instead of oxygen. A sudden thought struck me—if coal is so integral

to basic activities like making tea, how can a state like this ever transition away from it? Within moments, I saw a convoy of trucks filled with coal passing by, which showed the sheer scale of the industry's grip on the region. The sight was overwhelming, and it made me wonder: while I knew the day would come when coal would no longer dominate, were the locals aware of this shift? If so, how much and what are their thoughts, their plans? And what strategies is the state devising to navigate this transition? Jharkhand, with its historical coal dependency, has the highest number of coal mines (108) in India with a total coal share of 17%.<sup>7</sup> Many of these mines are at risk of abandonment or closure due to less profitability and efforts towards a green economy. While CIL may choose not to close unprofitable mines, there is currently no policy in place that specifically addresses this issue. However, the sector employs a large population in the state, and the communities are also largely dependent on the coal ecosystem either directly or indirectly.

During my post-training field visits with the surveyors, it became immediately apparent why our study was crucial. While a significant number of households relied on coal for fuel, received utilities such as electricity and water from CCL, or had direct or indirect employment in the coal industry, the majority were unaware that a coal phase-down could be a real possibility. In regions near coal mines, there was some understanding that a phase-down could impact their livelihoods. People shared how workers and local businesses suffer when a coal mine closes. Workers are often forced to migrate, and enterprises face declining revenues. During our fieldwork, I also observed that despite being located within an 8-kilometer radius of coal mines, some villages did not receive free electricity or water from CCL. Even in light of the potential coal phase-down, many parents wanted their children to continue working in the coal sector. Migration emerged as a particularly sensitive topic, which was surrounded by various misconceptions. When we inquired whether the location was their ancestral home, many residents became wary, fearing that we were government officials planning to evacuate them. This concern was especially pronounced among those who had illegally occupied CCL homes, so they hesitated to participate in the survey. At certain locations, misinformation spread among the villagers, leading to the belief that our surveyors were engaging in fraudulent activities or were there to evacuate them. This fear caused many villagers to refuse participation in the survey despite our efforts to explain the study's true purpose and dispel these concerns. We dealt with such matters by meeting the panchayat head of the village and showing the permission letter from the district officials to conduct the study.

However, the subject of coal phase-down itself was highly sensitive. Coal

is not just an industry but a primary means of livelihood, source of water, electricity, education as well as cooking fuel for local communities and, therefore, deeply embedded in their way of life. A potential coal phase-down represented a direct threat to their economic security. As a result, we approached questions about coal with sensitivity to ensure we did not imply that coal's role in their lives was temporary or at risk to avoid causing unnecessary alarm. This exercise overall helped me understand the community's fabric—their hopes, fears, and aspirations, all deeply intertwined with coal. I slowly started to understand how the community engages with the coal sector, and how the coal industry interacts with the community. For this, I interacted with locals to gain a clearer picture of how key players within the industry view the path forward, what do they think is possible and how much of academic discussions are translated on the field.

During a conversation with one of the trade union members, I asked what can happen during a potential coal phase down and he responded “we have not been able to figure out how much energy transition would cost us. If, in the future, coal production or supply diminishes significantly, the economic structure of the region will be entirely changed. The established settlements in these areas will collapse. Coal is the sole power here, be it in politics or among industrialists. Coal is found in every market in this area. All of these things will change here, be it the political system or the cultural heritage.” The majority of dialogues directed towards a heavy socio-economic dependence on coal and coal-related industries. Despite the diversity of perspectives from these different stakeholders, each group, whether directly or indirectly connected to the coal ecosystem, heavily relied on the coal-driven economy.

On one hand some stakeholders had limited awareness of the coal phase-down and its implications. On the other hand, other stakeholders like trade union workers and activists seemed to be deeply engaged with this issue for quite some time. Some had even taken part in Just Transition workshops held at the Just Transition Research Centre in Kanpur and some initiated ground initiatives to spread more awareness about the same. A trade union member shared that “while the activists know more, the general population does not have a lot of awareness. Therefore, we have now started COP, the Conference of Panchayat. Through this, we have been to various panchayats and spoken to their Mukhiyas about the effects of climate change and the process of transition. People understand the effect of climate change on labourers and farmers. So, we have been discussing and teaching these things in the Panchayats. The outcome so far has been really good.”. In another dialogue it was also mentioned that many people

are involved in illegal mining. “A closure would lead to more illegal mining and crime. We hear reports of people dying in illegal mines.” Locals also confirmed the ‘1:20 ratio’, which means that for every employee who works in the coal ecosystem, almost twenty other people are directly dependent on that person. “Every employee would have, on average, around five family members. That employee must also be buying ration; people working in that ration shop count as well. Then, there are other stakeholders, like contractors, DOs, etc. 20 people are dependent on every employee. There are around 15,000 employees. That means around 3,00,000 people are directly dependent on the coal industry.” One of the Civil contractors of Bokaro mentioned the effect of the closure of mines, “there used to be Kargali Washery. After its closure, 75% of the shopkeepers in this area have become unemployed. One small washery affected so many people.” The informal coal workers also seemed to be affected by the coal mine closures as it leads to unemployment and mass migration. Their livelihood depends on scavenging coal from the mines and selling it to households as a cooking fuel. This is their source of employment and closure of mines would lead to not only mass unemployment but also increased crime rates in the districts.

The discussions that I have had on the field revealed a diverse range of perspectives on alternative employment. There was also a strong emphasis on developing infrastructure and, perhaps most critically, mapping the existing skill sets within these communities to enable targeted training programs for new industries. This field experience introduced me to a new term “induced economy,” which I wanted to understand better. In the context of coal, the induced economy extends beyond mining and processing as workers spend their wages on housing, food, and services, which stimulates local businesses like retail stores, restaurants and many others. These businesses hire more staff, creating a ripple effect that supports jobs and regional development. However, this reliance on coal also makes the benefits vulnerable to declines in demand or production. During one of my visits in Ramgarh, I visited a market in a CCL colony, where a nearby mine had recently ceased operations. I spoke with local street vendors, sweet shop owners, and other small business owners. They described how the closure of the mine had severely affected their income. As one shop owner explained, “market ki raukan khatam hojati hai”—the market’s vibrancy disappears. Customers, mainly mine workers, leave the colony, and informal, contract-based workers follow, causing a significant economic downturn for the local businesses. In contrast, during periods when the mines are operational, especially around festive seasons, the market flourishes. Workers receive their arrears, and the local economy thrives. Business

owners are able to invest in their families, sending their children to better schools and improving their overall quality of life. Therefore, it was quite obvious how important enterprises were, including the small ones, in stabilizing the local economy. However, when I tried to understand about the concerns of the businesses apart from mine closures they mentioned about slow bureaucratic processes, issues related to credit access, inadequate infrastructure—particularly frequent power shortages—and land-related permissions. These were common problems across the local businesses I talked with. However, one thing became very evident: there was optimism among the enterprises. Many expressed a desire to expand their operations or establish new businesses.

People largely seemed to agree that any effective transition must begin with thorough assessments of the socio-economic realities faced by those living near coal industries. A comprehensive transition plan, that is tailored to the specific needs and demographics of these communities, can help in ensuring that no one is left behind. Therefore, the emphasis should be on engaging local communities, raising awareness about the impending changes, and involving them in conversations about health, environmental impacts, and the broader concept of a just transition and why their economy should be focusing on diversifying right now. One of the most essential suggestions shared by one of local stakeholders was that “the government can start anything that can benefit our people. The only request is that it should not pollute our environment further. People here are already unhealthy due to the pollution.”

## **Reflections**

Throughout the course of my time on field, one recurring question that I grappled with was whether coal could realistically be replaced in Jharkhand, particularly in the sectors we came out of our research given the existing technicalities. A deeper concern that lingered for me was the fate of the informal coal workers—those who resort to scavenging coal to sustain their livelihoods. While they may continue to do so for a while, the real question remains: why hasn't the state developed a plan to transition these workers into sustainable employment so they are no longer dependent on such risky and precarious activities? There is a general consensus that this activity helps reduce crime rates in the district. But isn't this already a form of crime? These coal scavengers are treated as criminals—they pay a fee to the local middleman and often face physical punishment or lose their cycles if caught. This raises the question: could the state's slow and cautious approach indicate a tendency to overlook such conditions rather than proactively

offering a pathway to improvement? There appears to be a lack of genuine urgency in developing a comprehensive transition plan away from coal. The increasing demand for coal production underscores this inertia. If you stand in a coal field, it is both exhilarating and anxiety-inducing. The same question echoes repeatedly: How will this transition happen? What will happen to this place and its people? Does the government have the capacities to carry out this massive task? Are people ready to imagine a post coal future? While for some, coal is hope as it powers the nation and bridges the energy gap until alternatives take hold. For others, it looms as a shadowy reminder of the climate crises we are desperately trying to escape. It is a paradox of progress and peril, coexisting together. This reflection is not just about the technicalities of coal phase-down, but about the lives tied to it, the futures at stake, and the uncertainty that looms large over these coal-dependent communities. It's clear that without deliberate, well-planned intervention, the transition may leave more questions than answers, more dust than progress.



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# 5

## **Socio-Technical Systems in Practice**

## 25. GI in the age of AI: How technology empowers Indian artisans working with GI-tagged art<sup>1</sup>

*Mili Dangwal*

As India's GI heritage meets the digital age, artisans are using technology to bring traditional crafts into contemporary markets, preserving culture while redefining visibility and value. ”

Women of the Toda tribe in Tamil Nadu's Nilgiris gather, sharing tea, stories, and the intricate work of embroidery passed down through generations. Red, black, and white threads intertwine against green backdrops, narrating the socio-cultural identity of a community through their art.

This unique art, known as Toda embroidery or pukhoor, is more than a craft; it is a living archive of cultural memory. Recognised as one of India's 653 Geographical Indication (GI)-tagged products (as of July 2025), Toda embroidery symbolises how geography and human creativity merge into heritage. Yet, in this fast-evolving digital age, the question arises: can such traditional art forms find new life and wider reach through technology?

GI: A heritage mark with global roots

GI is a label that identifies goods originating from a specific location and possessing qualities, reputation, or characteristics intrinsically linked to that place. Think of champagne from France or Parmigiano Reggiano cheese from Italy, names inseparable from their origins.

India's GI framework, formalised under the Geographical Indications of Goods (Registration and Protection) Act, 1999, was created to conserve cultural heritage, promote rural development, prevent misuse and counterfeiting, create market differentiation, and enhance exports and foreign exchange earnings. It serves as both an economic and cultural safeguard, ensuring that traditional artisans receive due recognition and benefit from their heritage. It is a perfect approach to treat traditional skill-based work as work of knowledge and wisdom.

While the concept traces back to the Paris Convention of 1883 which

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1. Originally published here: <https://www.thenewsminute.com/connecting-the-unconnected/gi-in-the-age-of-ai-how-technology-empowers-indian-artisans-working-with-gi-tagged-art>

was strengthened through the WTO's TRIPS Agreement in 1994, India has indigenised it to reflect its vast artisanal diversity from Kashmiri Pashmina and Banarasi sarees to Darjeeling tea, Kolhapuri chappals, Chanderi sarees, and Madhubani paintings. Earlier this year, the government set a target of reaching 10,000 GI tags by 2030.

### **Recognition without reach**

Despite growing recognition, for many artisans the GI tag exists only as a label and most of their products remain confined to their regions, struggling to access wider markets.

The challenges are deeply interconnected – limited awareness, weak market linkages, digital exclusion, and uneven institutional support. Also many consumers, both in India and abroad, are still unaware of what a GI tag represents, allowing mass-produced imitations to flood markets and undercut authentic crafts.

The digital divide further limits access to e-commerce and social media platforms, isolating artisans from urban and global buyers. As Osama Manzar, founder and director of the Digital Empowerment Foundation (DEF), observes in his column in Voice of Fashion, “This reveals a deeper issue in the collective inability to reimagine the handloom ecosystem within a digital paradigm.”

His point underscores the fact that the barriers are not just technological but structural, rooted in how policy, markets, and digital systems continue to overlook the needs of rural artisans. Even when artisans do manage to go online, many still lack the digital skills to effectively present, price, or promote their products.

The economic reality is stark: the average daily income of an artisan ranges between Rs 280 and Rs 375, and in rural areas it can drop to as low as Rs 74. Only 34% of artisans earn consistent wages. The sector remains constrained by disorganisation, low investment, poor exposure to new technologies, lack of market intelligence, and an inadequate institutional framework.

In short, GI registration alone is not enough. The real challenge lies in ensuring that recognition translates into sustainable income, visibility, and growth for artisans.

### **How digital platforms and AI elevate GI crafts**

India is home to over 200 million artisans, including 3.5 million handloom workers, with women forming more than 72% of this workforce. Spread

across 470 handloom clusters and operating over 2.3 million looms, the handloom sector alone contributes more than Rs 24,000 crore to the economy each year. Strengthening this community through innovation and empowerment not only uplifts millions of livelihoods but also fuels inclusive economic growth and preserves India's cultural heritage.

In villages across Tamil Nadu, this transformation is taking shape through multiple support initiatives, with technology emerging as one of the most powerful tools. The DEF works closely with artisans from GI-tagged clusters such as Salem silk, the Pattamadai pai (mat) from Tirunelveli, and Toda embroidery (Ooty), among others, to create a digital ecosystem that integrates naturally into daily life. Here, technology is not an outsider's intervention but an enabler, a means for tradition to find a modern language, reach new audiences, and create sustainable livelihoods.

Training sessions are designed specifically to meet the unique needs of each artisan community, addressing their craft, local context, and market challenges. What starts as a simple exercise in clicking product photos gradually unfolds into a deeper exploration of storytelling, marketing, and entrepreneurship. Artisans learn how to frame their craft, so that the images can speak for their identity and skill.

### **An entrepreneurship training session for Toda artisans in Ooty**

Sessions move to studying social media platforms such as Facebook and Instagram, understanding how each platform functions, who the audiences are, and what content resonates. The women learn to write captions, choose hashtags, and present their work with authenticity and confidence.

Abitha (28), a Toda artisan from Ooty, uses her phone as a creative studio. She watched her grandmother and mother embroider for hours, selling their intricate pieces at low prices. "Now, I use Instagram to promote the same embroidery and share QR code for payments. I don't have to wait for local buyers or compromise on prices as I get orders directly from people online. It has helped me carry forward our culture with pride," she says.

The training equips artisans with entrepreneurial skills, including product pricing, tracking customer preferences, responding to inquiries, and managing small online businesses. They also gain hands-on experience with e-commerce platforms such as Amazon and Flipkart, QR-based payments through UPI, and digital marketing strategies, enabling them to turn their traditional crafts into thriving micro-enterprises.

Meera (35), a Pattamadai pai artisan who has woven the GI-tagged product for over a decade, recalls: “I feel so happy when messages pop up on my Facebook asking for prices of the products. I recently shipped 10 handmade mats to a customer in Mumbai. Earlier, my work was only seen in local fairs; now it reaches living rooms in big cities.”

Remarkably, these artisans are now experimenting with AI tools such as ChatGPT. Initially, there was curiosity and laughter as they asked the AI to write catchy captions, suggest photo angles, or even propose variations of traditional patterns. Over time, these tools become quiet partners in their creative process, enhancing communication, marketing, and product presentation.

Some artisans even experiment with AI-generated designs inspired by traditional motifs, blending heritage with contemporary aesthetics. This use of technology demonstrates how innovation need not replace tradition but can amplify it, creating new opportunities for cultural preservation and economic growth.

### **Threads of the future**

From the scenic valleys of Kashmir, where around 3.5 lakh artisans create handmade products across at least 16 unique crafts, women, who once made up 47.4% of the artisan workforce but had stepped back, are now returning to spinning charkhas and weaving looms, empowered by GI recognition and the opportunities it brings; to the GI & Beyond Summit organised by the Textile Ministry, this trajectory underscores the urgent call to support artisans, preserve traditional crafts, and unlock the immense potential these heritage skills hold, both artisanally and economically.

Supporting GI-tagged products today goes beyond conscious consumption; it is a quiet act of preservation and participation. Each purchase sustains a lineage of skill and storytelling, while each click, share, or digital interaction carries a legacy forward. These treasures, once crafted in silence across India’s villages, now speak through pixels and posts, carrying the stories of looms and the pride of communities, truly embodying GI India’s tagline: ‘Invaluable Treasures of Incredible India’.



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## 26. Telemedicine in Rural India: Study of eSanjeevani Utilisation

*Suruchi Kumari, Vishnu N. Ramani*

### Abstract

Sustained reduced public expenditures on health care are characteristic of many developing countries. However, the Indian case remains critical as improved spending dented the health workforce and facilities. It is, therefore, widely believed that the processes of digitalisation of social policies are associated with advancing human-centred human development, particularly in the health sector. Several civil society organisations have opposed this tyrannical approach, though they have always supported a bottom-up approach to conventional and new media welfare politics. This chapter attempts to dismantle the myth of digitalisation of public services in the case of health by analysing the current status and dynamics of telemedicine services in rural India and their linkages with health infrastructure and primary health care. When evaluating whether telemedicine services have made the villagers' healthcare more accessible or aggravated the digital divide in access to healthcare, it analyses that question. In light of telemedicine's key features consisting of scope, enablers and barriers, this chapter provides a critical understanding of telemedicine services in rural India using eSanjeevani services availed by beneficiaries at centres managed by Digital Empowerment Foundation. The chapter responds to the questions raised, such as accessibility and connectivity, waiting time, availability of doctors online, doubts about satisfaction with consulting a doctor online, privacy and so on. This chapter contends that rural India's telemedicine/digital health services can scale up when conveyed through human service providers because the digital divide is a critical barrier. Last but not least, this chapter postulates that the future of digital health infrastructure will have to be founded upon the tie with human development concerns.

**Keywords:** digital health equity, rural, digital determinants of health, Digital Empowerment Foundation, access to digital health services, digital divide.

### Introduction

Education, health, and nutrition are the basic needs of man, and the social sector is a significant determinant of improvement in human capital that

is important for any country to grow. The health sector in India has not been soundly proper from the colonial phase, and up to the present time, the health budget, which is 1.85 cents of the total budget, has been low; it has become more privatised, the primary health care delivery system has virtually broken down, and the rural health system has been neglected. Thus, the social determinants of health remain unabated. The fact that India has been falling apart was seen mainly during the COVID pandemic, where a large number of people died not from COVID but due to the poor healthcare system in the country. Telemedicine received notice in public policy by envisioning a pilot telemedicine programme to take the form of a flagship programme named eSanjeevani of the government of India. Understanding the telemedicine practice in the rural regions of the country, the existing telemedicine services, the challenges faced and the facilitators in accessing these services, and prospects of how telemedicine might play the role of a solution in eradicating the digital health divide for enhancing the PHC services in India are the objectives of this chapter. This chapter focuses on filling the knowledge and empirical deficits concerning telemedicine by examining selected clusters relating to telemedicine services.

According to the existing data of March 31 2022, the healthcare facilities in the rural areas of the country consist of 157935 Sub Centres (SCs)<sup>1</sup>, 24,935 Primary Health Centres (PHCs)<sup>2</sup>, and 5,480 Community Health Centres (CHCs)<sup>3</sup>. This shows a much higher trend than 2005, especially in states like Rajasthan, Gujarat, Madhya Pradesh and Chhattisgarh. As for urban areas, 3089 SCs, 5183 PHCs, and 484 CHCs operate, while 24994 SCs, 3833 PHCs, and 960 CHCs are in tribal areas. However, challenges exist regarding human resources, even in conditions of organisational growth. The number of Auxiliary Nurse Midwives (ANMs)<sup>4</sup> SCs and PHCs have increased by 55%. It has increased by only 9% from 2005, and still, there is a 3.5% deviation from the expected standards and a 14% deviation in the costs of professional services. This is opposed to a four per cent vacancy rate for the sanctioned posts.

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1. For a population of three to five thousand, SCs serve as the initial point of contact between the community and the healthcare system, offering vital medical services and initiatives to promote health. Ayushman Bharath - Health and Wellness Centre and Ayushman Arogya Mandir are its new names.

2. PHCs serve between 20,000 and 30,000 individuals and are the initial point of contact for those needing medical attention. It provides preventive, curative, and promotional services.

3. CHC is intended to manage the activities of four PHCs and act as a higher-level care facility for between 80,000 and 120,000 individuals.

4. Primarily focused on maternity and child health services, (ANMs are primary healthcare providers, particularly in rural areas.

There is an addition of fifty allopathic doctors at the level of PHCs. This brand has a 9% pop-up presence, but its market influence can be described as 3. The total quantity needed to meet the above consumption rate is 22,500 by 1%; this analysis shows that the current supply is still 1% short of meeting the total requirement. The shortage is highly significant, particularly in CHCs, with a deficit of eighty-three doctors. 2% for Surgeons, 74.2% for Obstetricians and gynaecologists, and 79% of the clients reported that their clinician had provided them with adequate knowledge concerning the tetanus vaccination. That is 0.1% for Physicians and 81.6% for Paediatricians, 79. Specialist shortfall relates to 5% of all specialist positions at CHCs staying vacant (GOI, MoHFW, 2022). The healthcare system also comprises of General Duty Medical Officers<sup>5</sup> (GDMOs) and AYUSH<sup>6</sup> Practitioners. Apart from the PHCs and CHCs, 1,275 Sub Divisional/ Sub District Hospitals (SDHs) and 767 District Hospitals (DHs) operate nationwide, offering thousands of doctors and paramedical staff.

Overall bed availability at the time of 2021 was 134224 in PHCs, 184175 in CHCs, 109937 in SDHs, 162749 in DHs and 224679 in medical colleges to show the strength of the rural health care system, which is still developing. The SCs, on average, serve 5,691 people, indicating that they are slightly overloaded. On the other hand, while the PHC health facilities attend to an average population of 36,049, which is way above the population standard of 25,000 to 50,000 the CHC health facilities attend to a population of 164,027, thus overworking the system. Spatially, sub-centres cover an average area of 19.55 square kilometres, PHCs cover 123.85 km<sup>2</sup>, and CHCs span a significant 563.52 km<sup>2</sup>. The average radial distance from SCs to PHCs is 2.49 km, while CHCs are, on average, 6.28 km from PHCs. (GOI, MoHFW, 2022).

The Union Health Ministry performed a preliminary assessment to confirm compliance with different health facilities such as district hospitals, sub-district hospitals, CHCs, PHCs, and SCs. In 2022, the government announced the Indian Public Health Standards (IPHS) as the first of its kind in India. Among 120 district hospitals assessed across the country, only two have been found to have complied with the central government's IPHS (Sharma, 2024). It demonstrates overcrowding, understaffing and large distances as

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5. *Qualified physicians working in government hospitals and health centres provide primary healthcare as GDMOs.*

6. *Healthcare workers with training in traditional Indian medicine systems such as Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homoeopathy are known as AYUSH practitioners.*

significant challenges in rural areas, precisely where disparities are found. Based on these realities, this chapter assesses the factors that create enablers and barriers to utilising telemedicine services. The principal conclusions are:

- The lack of adequate healthcare facilities has left people in rural areas to cover long distances to reach CHCs or district hospitals, which is why many users have resorted to telemedicine services.
- Based on the tele-consultations, the users must use private pharmacies to avail medicines, mainly for the patient log-in mode.
- Some potential digital health goals include the early and effective prevention of preventable lifestyle diseases and improving the management of those already affected by such diseases; our study reveals that older patients are some of the least likely to engage in these telemedicine services.
- The main drawbacks are connectivity problems and long waiting time, followed by the lack of features to provide details through the chat box and OTP login details.
- Overburdening healthcare workers in terms of meeting monthly targets of facilitating teleconsultations for people.

## Methodology

An exploratory, cross-sectional research design using qualitative research methods has been employed to establish enablers and barriers in the utilisation of telemedicine in remote areas of India. To capture frequency, patterns and trends of use, the Digital Empowerment Foundation's (DEF)<sup>7</sup> Several eSanjeevani consultations have been considered instruments for analysing the accessibility issues of telemedicine service across the four clusters. To augment this, ten online face-to-face interviews were conducted with five beneficiaries and five mediators (Healthpreneurs)<sup>8</sup> of four study locales between 10<sup>th</sup> July and 15<sup>th</sup> July 2024: Alwar, Chirala, Gazipur, and Vizag. This was to gather opinions and feedback on the utilisation of the telemedicine service, its uptake, challenges, and facilitators.

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7. Digital Empowerment Foundation (DEF): A Delhi-based non-profit working to bridge the digital divide and empower marginalized communities through digital literacy and technology access.

8. A Healthpreneur is a contract-based employed person under DEF's SMARTPUR project. They help deliver accessible, affordable healthcare to rural communities while facilitating telemedicine services.

## **Scope of telemedicine in rural India**

Especially in unstaffed rural regions, it is possible to develop an effective use of highly leveraged telemedicine service (Mohan & Kumar, 2019). It is, therefore, possible to alleviate the accessibility to primary health care through remote monitoring, diagnosing and consultations (Parthasarathi et al., 2024). Telemedicine services in India have been adopted since the 2000s. The technical institutions, including ISRO MeitY and CDAC in India, pioneered the Telemedicine initiative. ISRO started telemedicine in 2001 when Chennai Apollo Hospital was connected to a remote village hospital in Aragonda. In 1999, C-DAC Pune and C-DAC Mohali were declared the technological agencies of MeitY. A large-scale research and development exercise was undertaken to build Telemedicine platforms and solutions indigenously. The following three prestigious medical schools were chosen for deployment and assessment: SGGIMS at Lucknow, PGIMER at Chandigarh and AIIMS at New Delhi. MeitY introduced two telemedicine software programs, Mercury and Sanjeevani, for which C-DAC IT was developed. The School of Telemedicine & Biomedical Informatics at SGGIMS was established in 2003 with the support of the Uttar Pradesh government for capacity development in the field of telemedicine, which was implemented in 2006 only (TIFAC, 2022). Some telemedicine solutions in rural India include telemonitoring, teleconsultation and tele-diagnostics. Telemedicine has been implemented and incorporated at an increased rate during the COVID-19 pandemic to continue patient care and to prevent pressure on the healthcare service systems regarding managing virulent incidents of COVID-19 cases (Rajkumar et al., 2022). They are, without doubt, instrumental in amplifying healthcare results in a number of fields. Different research on mHealth intervention has established the extent of lifestyle disease management as well as reproductive and child health (Prinja, 2017; Garner, 2020). The adherence to telemedicine in rural areas is cruel, even though it has something to do with it. Among such barriers is poor infrastructure, such as unavailable power or internet connection (Wilson et al., 2021). Third, telemedicine utilisation specifies the patients' and healthcare practitioners' level of digital literacy (Erku et al., 2023; Inampudi, 2024). Hence, when it comes to the effective use of telemedicine interventions, the reality of rural markets should be taken into account, and data protection must embody additional layers of challenges because of privacy and security issues.

## **The scenario at the national and state levels**

Considering the unprecedented situation that came up through the

COVID-19 outbreak, eSanjeevani was scaled up across the country to become the world's largest telemedicine system owned by the government. Initiated and conceptualised by the Ministry of Health and Family Welfare (MoHFW), Government of India, eSanjeevani has been fully operational, functioning as an unconfined parallel stream of the Indian healthcare delivery system for the people of India since 2020. It supports several premium national programs like the Ayushman Bharat Scheme, Digital India and Ayushman Bharat Digital Health Mission. Being one of the flagship programmes of Digital India, eSanjeevani provides IT solutions for doctors, specialists, and superspecialists through teleconsultation. This innovation is of significant importance within the digital health realm as it creates an ensemble to the digital health divide by taking quality health services to the rural and remote areas of the country.

eSanjeevani OPD: A patient-to-doctor telemedicine that allows people to receive outpatient services at home. Starting during the initial stages of COVID-19 in India, eSanjeevani OPD was intended to offer healthcare services during the pandemic and is still expanding post-lockdown. The public has embraced the digestive healthcare product to consult doctors, avoid travelling expenses, shorten the time spent at the health facility, and eliminate contact with infectious diseases. These areas are where eSanjeevani OPD has eased the hospital load pressure and where they can only attend to more severe patients. Some of them deliver continual, virtually round-the-clock health services throughout the year in many states. eSanjeevani is one of the most avant-garde interventions employing many native cloud services. Approximately twenty-two cloud services make it possible for eSanjeevani to have functionalities that allow it to expand as traffic is received in the daily consultations. Many aspects of the system have been made digital, including diagnosis and convenient treatment, through the use of features such as automated ePrescriptions (C-DAC, 2023).

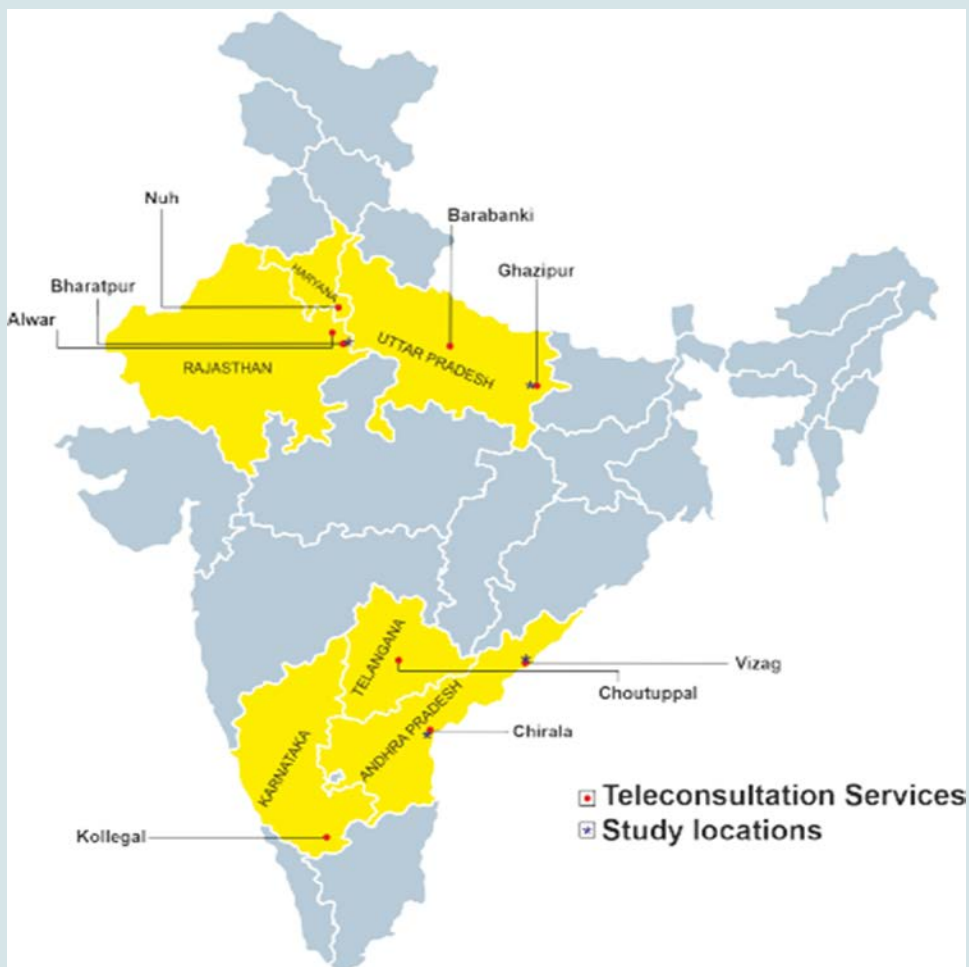
Ayushman Bharat eSanjeevani - (HWC): This is supported telemedicine for provider-to-provider, which is designed for teleconsultations under the AB Scheme. It has a hub-and-spoke model where the HWCs act as spokes connected to the hubs managed by Physicians and Experts and set up at the Medical Colleges and District level hospitals (C-DAC, 2023). The patients visiting the HWCs can virtually consult with doctors with the help of the nurses or the community health officers and get free drugs.

Implementation of eSanjeevani across the country itself gives a picture of the utilisation until 16 February 2023 & it could transmit 90,418,022 consultations done through eSanjeevani AB-HWC mode and 9,699,653 consultations through eSanjeevani OPD (Press Information Bureau, 2023).

The higher utilisation is in the states of Andhra Pradesh, Tamil Nadu, and West Bengal, while the lower utilisation is in Lakshadweep, Andaman Nicobar Islands, and Goa. These trends highlight the issues of inequity in the adoption of telemedicine services, which is even more problematic. It can also be attributed to the target criteria dispensed by each CHO or staff nurse for the AB-HWC mode. Patients can access a doctor from any AB-HWC, and because of its high usage, it demonstrates the success of patients' necessity in demand areas. On the same note, regarding the OPD mode, Tamil Nadu has the higher utilisation, followed by Uttar Pradesh. Consequently, southern states have a greater propensity to utilise OPD mode more than other states, especially the northeastern states. A possible explanation for this can be a better understanding of digital health and sound developments. The current context reveals low hardware and software connectivity Readiness, negative receptiveness, and poor knowledge of telemedicine services as key risks slowing the efficiency of Telemedicine services. Therefore, the approach at the state level needs to embrace a multi-sectoral approach embracing context-sensitive policy to attain digital health equity in the rural areas (PIB, 2023).

The intensity of eSanjeevani OPD services also differs from one state to the other. These further reveal that Tamil Nadu has the highest number of consultations, suggesting high user interaction with the platform. Karnataka and Uttar Pradesh also come in the list of high utilisations, which indicates that there is a good level of adoption of the platform in these areas. The data studies also reveal that post-Covid, the southern states such as Tamil Nadu, Karnataka, Telangana and Andhra Pradesh have been inclined towards eSanjeevani OPD services than other states. This trend demonstrates the higher utilisation of telemedicine in the south, most likely because of better facilities and more awareness of telemedicine opportunities in these states. On the other hand, many states in the country, including the northeastern region, have been reported to have minimal or negligible use of the eSanjeevani OPD platform. This is still a very low percentage, which makes one think of aspects like there being little physical infrastructure, poor levels of digital literacy, or, simply, there may have been little attempts to reach out to such regions (PIB, 2023).

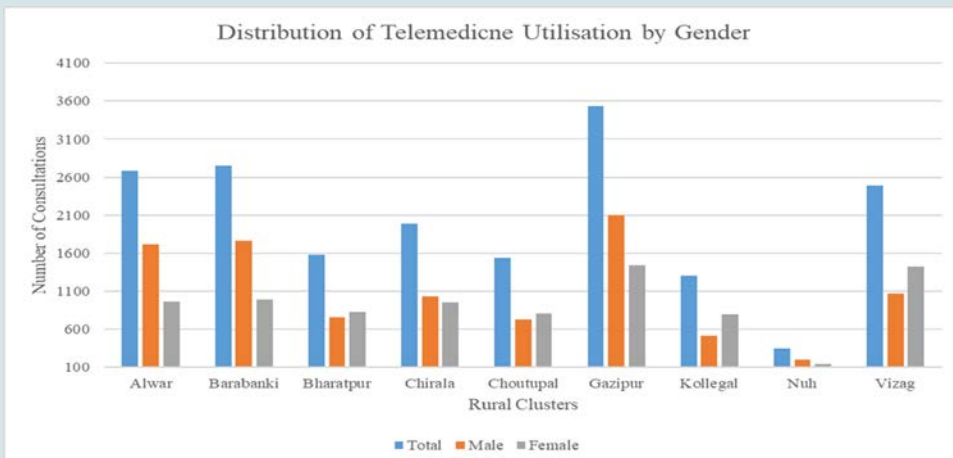
Figure 1. Teleconsultation services are available at DEF's centres.



### Scenario at the selected study locations

This study focuses on nine distinct rural localities in India: Alwar, Barabanki, Bharatpur, Chirala, Choutupal, Gazipur, Kollegal, Nuh and Vizag. Such various places may have different socio-economic status, health care provision, population attributes, and thus, establish a broad picture of the usage of telemedicine. These are the ‘Healthpreneurs,’ local, trained, digitally knowledgeable people assigned to facilitate and help in telemedicine consultation in these nine clusters and in training the community on using these services. They act as a middleman between the patients or beneficiaries and the digital consultation so that there can be early diagnosis and better health and digital literacy within the community.

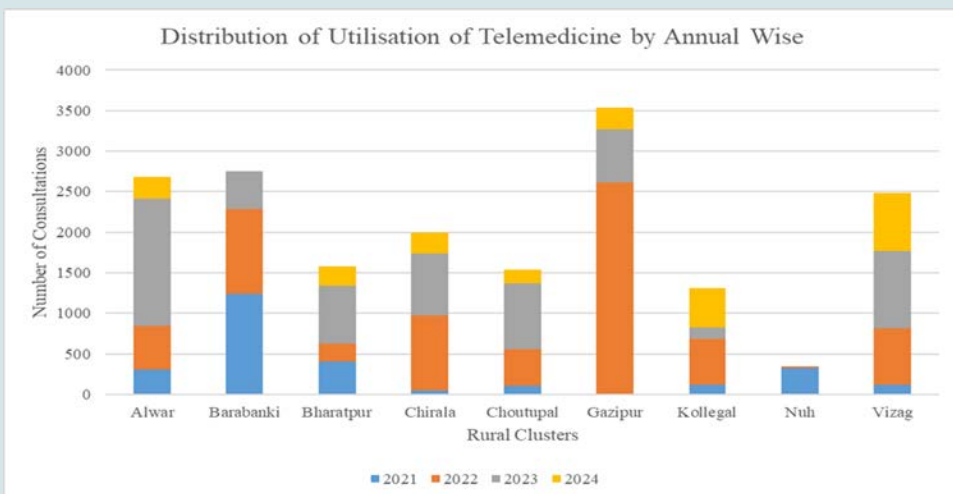
Figure 2 Gender dynamics in telemedicine utilisation



Source: Primary Data

The figure 2 shows the gender difference in telemedicine access. Still, there are such clusters, like Kollegal and Nuh, where male usage is higher than female usage of telemedicine services. In Barabanki and Nuh, the target utilisation level of telemedicine was reached midway through the project, so other clusters were selected for focus instead of these two. On the other hand, the success found in Gazipur shows that the local HealthPreneurs and other members of the community are also very influential in advocating for teleconsultations. This is also because of the systematic failure of the existing health services system’s inefficiency in addressing the population’s needs in terms of preventive healthcare and primary healthcare services.

Figure 3: Annual trends in the utilisation of telemedicine



Enumerated above are the findings on using telemedicine services by different centres at different times of the year from 2021 to 2024 based on gender. Therefore, as shown from the analysis, there are significant trends and gaps in the use of telemedicine in the past years. In general, it is possible to note a sharp increase in the use of telemedicine from 2021 to 2022. Yet, this was cut back in 2023. Regarding, data for 2024 is missing in this project as it is still under process. Based on important trends, it is highlighted that Gazipur has taken the lead in adopting telemedicine with a significant increase in the adoption in 2022 compared to 2021, with more female users than males, followed by Vizag.

### **Findings: Enablers and Barriers**

- ***The lack of adequate healthcare facilities has left people in rural areas to cover long distances to reach CHCs or district hospitals, which is why many users have resorted to telemedicine services.***

The majority of participants have stated that inadequate health care services and distances to health centres at different levels have forced them to use telemedicine services. Telemedicine helps fill the gaps resulting from long distances to health centres, thus improving the availability of healthcare for people residing in rural areas. Most people perceive telemedicine as an option for easy speciality care. They do not need the journey of miles to CHC or the district hospital. The study found that the primary healthcare system in the selected clusters could be more robust; people complained about the quality of health service delivery and the cascading mechanism of cases. Some of the data described in the paper are listed below to explain the given arguments. Some participants pointed out the very long distance they must cover to get to PHCs, CHCs and district hospitals. For example, a young male HealthPreneur from Chirala said: “Healthcare centres are 6 to 7 km away... reaching the district hospital will take 20 to 25 km.” A female PhD student from Gazipur also said: “It will take 20-25 km to get to the health centre” (In-dept Interview, July 2024).

One major limitation of travel distance implication for healthcare services is that it often leads to untimely as well as inadequate care, especially for people who do not have private cars. Another issue that came out clearly is the quality of health services at these prospects also came out as an issue. On the organisation of primary health care in the selected clusters the following weaknesses were mentioned; inadequate health care infrastructure, weakness in the quality of services and problems with the referral system. A young college student from Gazipur said, “Our PHC is also

shut down, and we have to cover 20 Km to get a health facility” (Interview detail, July 2024). This statement emphasises the irregularity and instability of healthcare facilities as well as overcome the barrier to prevent the people from going to healthcare centres. Because of these challenges, the use of telemedicine has become part and parcel of rural lives.

Patients can consult specialists through the eSanjeevani telemedicine application by eliminating the geographical barriers to accessing healthcare facilities. A young male user of eSanjeevani from Vizag put it well: “Doctors will be available on-duty hours.” (In-dept Interview, July 2024). This convenience goes a long way to eliminate the need to go through long distances physically, in getting to hospitals or in an emergency, the access to health services has been made easier.

The data also reveal that telemedicine can be viewed as a solution for the deficit of doctors and other care professionals in rural settings. A young male HealthPreneur remarked, “There are few doctors - only one general physician is there” ((In-dept Interview, July 2024), amplifying the problem of the lack of qualified human capital in the rural health service systems. Telemedicine also assists in overcoming this problem by allowing patients to reach out to more healthcare practitioners, making the healthcare experience for people in rural areas more attractive. Telemedicine services are valuable, particularly for people who cannot afford to lose working hours for doctor’s appointments. This is especially so given the fact that several workers in the informal sector work on a daily basis, and if they have to travel, they stand to lose their wages for the day. It ensures that healthcare providers do not have to quit working in order to get the healthcare they need. These telemedicine services, such as eSanjeevani, remain a necessity to help reduce the health inequalities that exist due to gaps in health access in rural regions. As telemedicine offers specialised care at the right time and patients do not need to travel long distances, it fundamentally overcomes several barriers to health care delivery, thus leading to better health for rural people.

- ***The main drawbacks are connectivity problems and long waiting time, followed by the lack of features to provide details through the chat box and OTP login details.***

Some of their claims during the interviews included that the average time they spend waiting to connect to the doctors online is 15 to 20 minutes. They also said they cannot return to the same doctor if they so wish to in the future. The first thing that is done is to put in your symptoms, and after this, there is an audio /video session with the doctors wherever they are at the time. CHO highlighted the need for audio/video consultation over Chatbox

in Vizag: “Telecommunication is necessary, which is why I link people to the doctor for them to talk to doctors with their hearts. They could reveal all the issues, and so the doctors alone would get half of the issue solved, they believe” (In-depth Interview, July 2024). We also identified the geographic disparity in terms of availability of doctors through eSanjeevani platform; according to some users from Ghazipur, UP they are able to communicate with doctors and get connected through the website from Bihar but they cannot use eSanjeevani for any interaction with doctors in UP. Regarding the Technology aspects, the southern State users in both Andhra and Telangana regions, using eSanjeevani as a service, said that it provides them with health care doctors of their regions, and they are also able to converse in their own regional language whenever required. In the past few years, there were newspaper reports of circulars issued by district and state governments asking doctors to avail themselves online to offer free consultation through eSanjeevani between 9 am and 5 pm.

One of the eSanjeevani users in Vizag who has earlier used it said, “In eSanjeevani, we have more specialists; there are two log-ins: One of them is for the patients to log in, the other is for the doctors to log in, if a patient is logged in through the patient log in id there are time lags in connecting to doctors. On the other hand, if the patient has visited the HWC and the doctor has assisted in logging in through a doctor’s ID, then the process is easier to connect to a doctor” (Ind-depth Interview, July 2024). A few users experience issues identified in the eSanjeevani include the patient data input window presenting several issues, there being few and limited ways of interacting in the chat box, and the OTP ID login system has often been an issue due to connectivity.

- ***Some potential digital health goals include the early and effective prevention of preventable lifestyle diseases and improving the management of those already affected by such diseases; our study reveals that older patients are some of the least likely to engage in these telemedicine services.***

Youth who are in schools or college have better knowledge of computer literacy. Therefore, they are capable of using telemedicine platforms or applications. They can help as middlemen, for instance, helping the elderly or those villagers who may not be conversant with the use of the internet on how to access and enhance the use of the mentioned services. Due to their openness to technological solutions, the youth will efficiently start applying telemedicine. It can encourage other such individuals also to try the service since they saw happy patrons before them. Telemedicine

is an informative service; people who have been receiving services first-hand are more likely to recommend it to their relatives. Those relatives who are more familiar with innovations can help elderly people use the possibilities of telemedicine, provided that they maintain their confidence and usage. Opinions from the family members are valuable as the sources of the information, which makes them recommendations. This can help address stakeholders' scepticism or resistance to adopting new technologies. Members of a family residing in rural areas may decide to introduce telemedicine due to a lack of quality health services in the rural setting. There is also the fact that the less well-off individuals tend to have access to government-funded/affordable healthcare, which might prioritise telemedicine as a method of service delivery. Being a rural populace, many of the people work in fields or are employed in low-wage jobs, and they cannot afford to take time off to attend in-person appointments. Telemedicine has some advantages, such as the possibility of flexibly and conveniently organising the work. If a person is a low-income earner, the charges for travel, consultation as well as medications may be very expensive. Telemedicine can be cheaper as compared to other ways of getting to a healthcare provider. A significant proportion of elderly clients, especially in rural areas, cannot fully utilise telemedicine services due to the digital divide. Elderly people's health literacy is lower, so it is challenging to comprehend and receive advantages from telemedicine consultations. That is, some of the elders have issues related to telemedicine consultations, and they still favour face-to-face consultations. Among them, some of them cannot even hear what the virtual doctor is saying, and this hinders the management of NCDs among the old people. Prevention plays a crucial role in NCD control, as well as timely diagnosis and treatment.

- ***Based on the tele-consultations, the users must use private pharmacies to avail medicines, mainly for the patient log-in mode.***

Another difficult concern is the ability to acquire medicines after consultation mainly concerning free medicine acquisition in the rural area. Specifically, the young male participants also reported that free medicines are only available through doctor login into the HWCs and not through the patient login. One young male user highlighted this issue: "While patient log-in will not make free medicine available we can get free medicines through doctor log-in from the HWCs" (In-dept Interview, July 2024). This acts as a major barrier and it makes many patients to source their drugs from private pharmacies. This is what another young male customer said, "Oh yes we used to go and get medicine from a private pharmacy in this locality" (In-dept Interview, July 2024). The availability of free medicines

through the eSanjeevani is currently in a mode with drawbacks, especially for the rural populace. The addition of HWCs with a teleconsultation feature means that when users visit HWCs and request a teleconsultation they are also allowed to take medicine. However, if they choose patient login mode there is no possibility to request for free medicines. This is added to the fact that the majority of the rural populace is normally far away from the health centres, which they require to access the doctor log-in mode. Thus, many rely on patient logins through the centres of common service provided by DEF, which can provide only virtual consultations with doctors but cannot ensure the cost of those tests, drugs, or other diagnoses that may be necessary.

Another issue arising from using personal overalls is the aspect of buying medicines from private pharmacy shops, which is more of a challenge for individuals with limited resources to meet these additional costs. This dependency magnifies health disparities in rural areas mainly because half of the out-of-pocket health expenditure includes the cost of purchasing medicines as well as tests. Apart from creating hurdles as to who can access free medicines through doctor log-ins at HWCs, the procedures place additional burdens on users, particularly older people and those with mobility issues. Thus, using tools such as telemedicine for healthcare services and medications may be beneficial, yet these services have considerable barriers, especially for the populace with low resources or knowledge regarding using such services.

- ***Overburdening healthcare workers in terms of meeting monthly targets of facilitating teleconsultations for people.***

Telemedicine services are also data sensitive, data-intensive, and data maximisation. In one interview with HealthPreneur/s in Chirala, a Community Health Officer said, “I was supposed to deliver 20 teleconsultations daily” (In-depth Interview, July 2024). This story also points towards the rising expectation from health workers to furnish teleconsultation services. This pressure is also extended down to village ASHA workers through the gruelling roles assigned to them, including providing a middle for online health services. They know that first-line medical staff, in particular, are also heavily loaded with the collection of a lot of data for various projects funded to healthcare institutions by the government and other organisations. This leads us to discuss the problem of data work in the context of the digitisation of healthcare.

## **The Future of Telemedicine in Rural Healthcare**

In the future, telemedicine will make the prospect of healthcare delivery in

rural India much more promising for the endemic population. Telemedicine has already shown the potential to help close the chasm between rural patients and doctors for consultation, evaluation, and treatment wherever needed in the country. Starving Indian primary health care lacks adequate and competent human resources. This model also has the added benefit of providing timely medical intervention while also decreasing the strain on rural clinics/hospitals. Research has established that telemedicine is cost-effective, less stressful, and time-consuming for patients. It also increases the delivery of and access to specialist care and management of chronic diseases, including diabetes and hypertension (Das et al., 2023). Nonetheless, the effectiveness of telemedicine in such areas depends on the number of social and economic inequalities already in existence. These are the restrictive factors, which include language, financial, and social barriers affecting women, lower caste, and religious minorities who are the most affected by the use of telemedicine services (Sylvia, 2024). The need to consider equity to sustain and effectively use telemedicine cannot be over-emphasized. According to Ramanadhan et al. (2022), the Telemedicine model should incorporate what they call the “Business of Humanity” which includes humaneness, equity, and inclusion of the local communities. From the analysis of DEF’s work in the area of the digital divide and the promotion of digital inclusion, one of its major innovations is an effort to empower communities. India’s Ayushman Bharat Digital Health Mission is a significant move toward unifying the digital health environment that can significantly strengthen the ‘telemedicine’ platforms (Sylvia, 2024, February). However, some areas require better attention to fully harness the benefits of telemedicine in the healthcare of rural people, such as privacy and data security, cyber security, and the availability of digital technologies. In addition, including extended telecommunication networks and continued construction of networks will ensure the sustainability of telemedicine in the primary care of rural communities in India.

### **Limitations**

This study utilised online interviews to collect primary data; therefore, the authors needed help to capture and understand one of the critical questions: The nature and extent to which various social groups understood and appreciated telemedicine services. When talking to HealthPreneurs in our online interviews, we asked them the question as to whether various social groups and historically discriminated, marginalised, and segregated social groups of Dalits, Tribals, and the Muslim community can use telemedicine services. However, it must be noted that answers to questions would have been possible had more time been spent in the study areas. This study

is a survey type because survey research investigates a phenomenon to explore its extant literature; therefore, the results of this research will help spearhead other advanced, detailed empirical research on the use of telemedicine in rural India.

## Conclusion

Telemedicine has, therefore, solved the perennial problems related to health care delivery in rural India. Yet, it would be so beneficial if the government wanted to enhance the digital determinants of health as well. This is why it can fill the geographic necessity and young ladies have been already given access to primary health care. However, this depends on several factors which make the use of telemedicine very effective. Thus, it is necessary to spend money and resources on building a digital infrastructure to expand people's knowledge of it and to guarantee equal status with it. Unfortunately, health equity is not an easy task as more than 70% of the people work in the informal sector due to the heterogeneity of the population and the differences in the regions of the country. Thus, the goal of reaching digital health equity is becoming more unreachable. Similar transfers have also affected other areas of public health, thus reducing the number of healthcare providers in both the rural and the urban areas. Thus, few citizens can access healthcare services and better quality of services when they can access them. Digital healthcare services completed some of the gaps previously present in conventional systems; however, the lack of proper digital background and low digital skills in rural areas negatively impact teleconsultations. Hence, even the goal of making digital health services available for everyone to access from the comfort of their homes is still a dream.

## Glossary

**Digital Determinants of Health:** They are factors of technology in health care which influence an individual's ability to receive quality and timely health care and/or hinder the use of technology, devices, connecting to the Internet, and their general understanding of technology.

**Digital Divide:** The digital divide refers to the opportunities for equalisation and access to information and services through the available technologies.

**Digital Empowerment:** Computing Solutions Enhancing the lives of individuals and communities; Health and education through tools, skills and access.

**Digital Health:** Expanding information communication technologies such as telemedicine, mobile health, and health informatics to improve health care results and the system.

**Digital Health Equity:** This is due to access, literacy, and infrastructure gaps that have seen a few people receive, learn about, and implement new technologies.

**E-health:** Telemedicine, electronic health records, and other health information systems are used to improve the delivery and management of healthcare systems.

**Health Equity:** Removing unfair disadvantages from people's lives, such as poverty, racism or casteism, to allow everyone the best possible chance at optimal health and welfare.

**HealthPreneur:** A local digital enabler that refers people in need to telemedicine applications in order to receive early diagnosis and embrace digital technologies.

**Hub-and-Spoke Model:** Concept of affording specialised care to patients situated in distant sites through telecommunication technology in a healthcare delivery system well-defined by a central or anchor medical facility or hospitals, often called 'spoke sites.'

**Information and Communication Technology:** ICT uses computers and communications technology to get, process, store, and transmit information.

**mHealth:** Mobile technology is the optimal element in integrated support of public and clinical health activities in the form of applications, messages, and health monitoring systems.

**Non-Communicable Diseases:** Such endemic diseases, such as cardiovascular diseases, diabetes mellitus, and noncommunicable illnesses that are not spread from one person to another; these illnesses result from lifestyle diseases.

**Primary Health Care:** First point of contact, it is essential healthcare readily available for the entire population in the community.

**Remote consultations:** Doctor visits are via telecommunications technologies including video calls or telephone, to examine or facilitate a patient's diagnosis or treatment remotely.

**Social Determinants of Health:** Any other factors apart from them that affect

health generals, including the socio-economic status of an individual and his environment.

**SoochnaPreneur:** An online community specialist who is schooled in the use of digital technology in the distribution of credible information and digital services for business and other purposes within a community wherein the specialist assumes the role of teacher, counsellor, and fact checker, which will enhance the continuity of information sharing in the process.

**Telediagnosis:** Availability of medical conditions through telecommunications without people being present for a checkup.

**Teleconsultation:** Telephone consultation and other forms of delivering health services by ensuring that patients do not necessarily have to be present physically.

**Telehealth Education:** Technology-assisted delivering educational content and training for HC professionals and patients to facilitate learning remotely.

**Telemedicine:** The appointment of medical diagnosis and treatment sessions, monitoring and administrative medical management through telecommunications technologies.

**Telemonitoring:** Continuous supervising patient status using digital devices where healthcare providers can continue monitoring patients' data.

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## 27. How ‘DiDi’- an AI Chatbot is becoming the Tech-Guru for Rural Women<sup>1</sup>

Raina Ghosh

Until a few months back, Kalawati, a housewife from rural Ajmer, would mostly watch videos and reels on her son’s smartphone. Like her, many rural women across the country are made to hear, “*Phone to mardon ke liye hota hai. Aurton ke haath me phone aye toh bas bigadne ka darr satane lagta hai*” (Phones are meant for men—when a woman gets a phone, there is a fear of her going astray). Women’s smartphone usage remains highly surveilled and policed by male family members, making it a patriarchal tool for social control. As per the Nielsen India Internet Report 2023<sup>1</sup>, about 177 million women use the internet in rural India, of which 39% access it through shared devices due to low rates of personal smartphone ownership among women.

Moreover, today’s rapidly digitalising world can become intimidating due to the sheer technicalities, ‘smartness’, and digital acumen required for effectively navigating this space. A *GSMA Mobile Gender Gap Report (2023)*<sup>2</sup> highlights that South Asian women are 41% less likely than men to use mobile internet due to lack of digital skills. This knowledge gap isolates them, availing a host of digitally mediated citizen services like financial services, government welfare schemes, and educational resources, reinforcing their dependence on male family members.

But times are changing. Today, AI chatbots hold immense potential to bridge the gendered digital divide and make the most of shared digital devices. And this can be done in the most non-techy way, as Digital Empowerment Foundation’s newest innovation proves.

This Women’s Day, meet ‘DiDi’, a catchy short form for *DigitalDidi* – that promises to be an ally for digital empowerment to thousands of rural women. Developed by DEF, it is an AI-powered chatbot that interactively teaches registered women members at their own pace and guides them through the fundamentals of Critical Digital Literacy and Digital Financial Literacy. DiDi acts as a 24×7 personal digital companion tutor, offering discreet, self-paced learning in local languages—teaching women how

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1. Originally published here: <https://www.defindia.org/how-didi-an-ai-chatbot-is-becoming-the-tech-guru-for-rural-women/>

to navigate digital spaces from scratch. This bot has the provision to be integrated with human intervention to resolve issues when the database does not have ready replies to the queries posed by the users or learners. The best part of the chatbot is the cost-effective way it allows scope for multiple times of training, learning and retraining as per the needs of individual learners, by taking the user through segments like – Learner Pre-assessment, Course modules with sub-themes, Learner Post-assessment and Certification.

The learning modules, which can be accessed offline once downloaded, include step-by-step guide, for actions, taken for granted otherwise by an urban user – like setting up a phone, using applications for writing emails, G-suite applications, messaging apps, sharing photos, making digital payments, accessing government schemes, managing finances, and even exploring online entrepreneurship by availing online investment and loan opportunities. It further uses illustrations to pictorially showcase the ways of accessing ATMs for electronic transactions (transfer and withdrawals), using digital payments, maintaining e-wallets, decoding types of insurances, forms of investment (deposits, mutual funds, provident funds, bonds, stocks) as well as the concept and applications of plastic money. All of it comes in superb graphics, with a dash of colours and symbols – that familiarises women regarding how the ‘digital’ looks, feels and comes into use. Motivation and engagement remain high with voice lessons, discussion cards with picture guides, and quizzes that feel like games. Its user-friendly interface and conversational approach make digital literacy and financial independence more accessible for women like Kalawati.

So far, nearly 971 rural women have registered on DiDi, mostly from marginalised social groups like SCs, STs, OBCs, and BPL households. And, beating the usual perceptions of rural women’s high drop-out rates, nearly 123 women have received certificates upon successfully completing these courses.

Unlike traditional learning spaces, AI chatbots like DiDi can help bypass societal gatekeeping, providing information without fear of surveillance or judgment and make learning tech, a field often considered tough, ‘manly’ stuff, fun! Digital Didi puts knowledge directly into the hands of rural women, empowering them to break cycles of dependency, enhance self-esteem, economic participation, and gradual social transformation – one digital lesson at a time.

According to Saurabh Srivastava, Deputy Director at DEF, the DiDi AI Chatbot enjoys a wide range of content developed with the support from various CSR organisations including Commonwealth of Learning. Besides, the organisation is also building a huge database of content by recording learners' experiences and their content contribution so that in future, DiDi AI Chatbot provides maximum solutions through its own database rather than passing on to human intervention.



**Scan here for the online link & read more**

1. Dhawan, H. (2023, July 12). No phone of their own: How Indian women have to share mobiles. *The Times of India*. <https://timesofindia.indiatimes.com/india/no-phone-of-their-own-how-indian-women-have-to-share-mobiles/articleshow/101692465.cms>

2. GSMA Mobile Gender Gap Report 2023

## 28. How Internet is Changing Lives in Tea Gardens of Assam and North Bengal<sup>1</sup>

*Dhiraj Singha*

In the villages in large tea estates of North Bengal and Assam, a cluster of people huddles around a place, eyes glued to their screens: some are watching downloaded learning materials, some are applying for jobs or their entitlements, some are talking to their acquaintances, some watching movies or even playing games. Thanks to an initiative aptly named Internet Roshni (“Roshni” meaning light) that is bringing digital connectivity to these communities.

Scenes like these are increasingly becoming common in these tea garden villages, especially in times where glaring evidences of digital divide can be found across rural India. Only about 24% of rural households have access to the internet, compared to 66% in urban areas. Alarming, the gap seems to be widening in its usages. Oxfam’s 2022 India Inequality Report (Digital Divide) points out that 31% people in rural areas uses internet in comparison to 67% in urban.

The villages in lush tea estates of this region are emblematic of such deep digital divide. The problem is not simply with irregular or unstable connectivity; the bigger problem lies with the ways problems are approached to be solved. The Comprehensive Annual Surveys from 2022–23 to 2025 demonstrate that access is slowly getting better, although experts say that big differences still exist between social groups.

People who are still not connected to the internet are often the most disadvantaged, and this lack of access to important services like education, health care, and banking. Despite flagship efforts like Digital India, BharatNet, and the PM-WANI public Wi-Fi scheme, internet is still a luxury for lot of people, not something they need. People often say that broadband should be treated like electricity, as a public good. But that involves paying for access, teaching people how to use technology, and making sure that technologies work for everyone, even the poorest.

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1. Originally published here: <https://thewire.in/tech/how-internet-is-changing-lives-in-tea-gardens-of-assam-and-north-bengal>

## Limits of PM-WANI

Launched in 2020, the PM-WANI scheme was implemented with the idea to democratise connectivity, to enable anyone who could set up a Public Data Office (PDO) and offer internet access to the public. However, the progress has been uneven. One major roadblock was cost. Small shopkeepers, the very people expected to run these PDOs, found the high-priced leased lines required for backhaul connections expensive. It was not until mid-2024 that the government stepped in to cap these tariffs in hopes of encouraging wider adoption.

But cost was not the only problem. Many hotspots that were put in place were never used. Uptake stayed low, especially among the disenfranchised, mostly because they didn't know much about computers. In essence, PM-WANI put the technical backbone, such as wires, routers, and bandwidth, ahead of the social side of connectivity. And that's when the true job of inclusion usually starts.

### **A community-led alternative: Internet Roshni**

Complementing PM-WANI's hardware-heavy approach, the Digital Empowerment Foundation, with support from the Internet Society Foundation, implemented Internet Roshni programme in 2023-24: a low-cost, last-mile network designed to bring meaningful connectivity to tea garden communities in Assam and West Bengal.

The model has been strategic in leveraging PM-WANI scheme, in creating localised Wi-Fi zones. It creates localised Wi-Fi zones anchored around Community Internet Libraries (CILs) – village resource centres stocked with tablets and digital learning content – and trains local youth and women to serve as “SoochnaPreneurs”.

These SoochnaPreneurs act as digital guides for their neighbors, helping people get online, teaching them basic skills, and assisting them in navigating e-government services safely.

With over 50,000 beneficiaries targeted across 100 tea gardens, the project focused not only on connectivity, but on what that accessible connectivity could enable. The idea is to use these hotspots into community assets – a place where students could download learning materials, aspirants could learn new techniques online, and workers could access to their entitlements.

In essence, Internet Roshni invested in human infrastructure alongside tech – by designing the programme with local needs in mind and providing

on-the-ground mediation through the SoochnaPreneurs, Internet Roshni hoped to turn connectivity into a catalyst for affecting multiple dimensions of development.

What really changed when people get internet connectivity? That was the question at the heart of an evaluation conducted after a year of Internet Roshni on the ground. The initiative's architects wanted to know: Does giving a woman Wi-Fi, curated content, and a role of SoochnaPreneur who help her neighbors learn more, earn more, stay healthy, or access government services better?

### **How the impact was measured?**

To explore what difference Internet Roshni made, a cross-sectional endline survey has been conducted between January and February 2025. 389 households were surveyed across 12 tea garden villages – three in Assam's Jorhat district and nine in West Bengal (Alipurduar, Coochbehar, and Jalpaiguri). About 85% of the respondents were from villages that had the Internet Roshni intervention, and 15% were from the controlled areas – the nearby tea garden communities where the initiative has not taken place, serving as a comparison group.

The villages were all within 5-10 km of an Internet Roshni site and were chosen for their similar socio-economic profiles, to ensure a fair intervention vs. control comparison. The survey's scope ranged across education, livelihood, health, and governance – asking people about how they use digital technology, whether and how their habits changed, and if they were accessing any new services like online learning or welfare schemes. The sample deliberately included women, young people, and households tied to tea work.

### **Multiple dimensions of development with internet**

As a first step, straightforward descriptive comparisons between intervention and control areas have been performed and the results showed clear differences.

One broad pattern stood out: simply having access to a working internet hotspot – coupled with community support – dramatically changed how people used their phones. Both the village sites had high rates of phone ownership (over 90%), but almost all the respondents in the Internet Roshni sites reported being internet users (90%), compared to only about 74% in the nearby control areas. Moreover, due to training that was provided, almost

everyone in the intervention sites had reported about being able to assess online information, while only about 32% in control areas did.

For students and youth, connectivity translated into learning. In villages with Internet Roshni, an overwhelming majority of households reported that their children now go online for studies – whether it's doing homework research, watching tutorial videos, or accessing educational apps.

At the time of the survey, about 85.8% of respondents in these sites said someone in their family (often a school-going child) had used the internet for education in the past month, more than double the proportion in the villages (36%) without the programme.

Internet access also broadened people's economic imagination. In the Roshni sites, 93% of respondents said they had looked up some form of income-related content online, whether it was job listings, information on government livelihood programmes, or tutorials on farming and small businesses. By contrast, in the non-Roshni villages, that figure was about 75% – substantial, but clearly lower. What this suggests is a growing ambition among the connected communities.

That is especially notable in areas where stable employment, other than relying on tea estates, is scarce. These numbers hint at a growing interest among rural youth in alternative livelihoods and skill development. With this line, 85% 'strongly' perceives that internet access improved their understanding of local business opportunities.

Perhaps the most visible change was in how people interacted with the state. Awareness of government welfare schemes improved: nearly all respondents in intervention villages (97–100%) said they knew what schemes were available, compared to less than 70% in control areas. And knowledge translated into action, 96% of treated households had applied for at least one scheme online in the past year, versus just 39% in the control group.

Several respondents reported that digital access helped them avoid intermediaries or extra payments. Between 95% and 100% of respondents in intervention sites perceive those digital services in their villages made welfare access better.

#### Role of internet in shaping attitudes and aspirations

These multi-dimensional changes in daily life have also been accompanied by a subtle yet important shift in attitudes and aspirations. A series of multivariate logistic regressions have been performed, focusing on four

domains of change that came up repeatedly in the field: (1) attitudes toward online learning, (2) awareness and access to government welfare schemes, (3) health information-seeking, and (4) entrepreneurial aspirations. In each case, three key predictors have been examined: whether someone lived in an intervention village, whether they were a direct project beneficiary, and whether they were a frequent internet user.

The impacts are statistically significant. On online learning, for example, people in intervention villages were nearly five times more likely to view it positively (AOR: 4.81;  $p = 0.001$ ), while direct participants were over eleven times more likely (AOR: 11.68; CI: 3.61–37.77;  $p < 0.001$ ). Civic knowledge and ambition followed a similar trend. In the Roshni villages, residents were almost ten times more likely than those in non-connected villages to know about government welfare programmes and how to access them.

Health information seeking behaviours also shifted in meaningful ways. People in intervention sites were nearly three times more likely to look up health content online (AOR: 2.81;  $p = 0.015$ ), and direct beneficiaries were five times more likely (AOR: 5.04;  $p = 0.006$ ). Yet here, frequency of internet use mattered even more: across groups, regular users were almost nineteen times more likely to seek out health-related information (AOR: 18.85;  $p < 0.001$ ).

Entrepreneurial aspirations tell a similar story. Simply living in an intervention area nearly tripled the odds of people aspiring to improve their livelihoods (AOR: 2.97;  $p = 0.012$ ). Again, frequent internet users stood out: they were more than seven times more likely to imagine alternative economic futures for themselves (AOR: 7.19;  $p < 0.001$ ).

What emerges is a consistent pattern. The programme mattered – being part of it or simply living in its orbit significantly increased the likelihood of positive outcomes across learning, civic knowledge, health, and entrepreneurship. At the same time, habitual internet use cut across all domains as the most powerful predictor, suggesting that digital practice itself, once embedded in daily life, becomes a driver of wider attitudinal change.

### **Challenges and the road ahead**

Wi-Fi access and digital instruction are, of course, not magic bullets. Socio-structural hurdles still exist, even with Internet Roshni. There is a complicated history of exploitation and discrimination behind the beautiful tea gardens. People who live in tea gardens have been watched over and

governed in many different ways, including by colonial management boards, post-colonial political unions, government authorities, and development groups.

Even after many efforts, tea garden workers still face ongoing socioeconomic problems, such as gender discrimination, low pay, poor living and working circumstances, and little chances to move up in the company. These problems get worse because people can't get reliable information, digital platforms, or state welfare programmes. Power cuts still happen often, and network signals are generally weak in steep or isolated tea estate locations. Language is another problem. Many government websites and forms are only available in Bengali/Assamese, Hindi, or English, which a lot of tribal workers don't know how to read. These issues typically determine who may access and make use of the benefits of connectivity.

The evaluation shows some evidence to demonstrate how accessible internet, with support of SoochnaPreneurs, can bring changes and tackle some of these issues. Of course, usage of internet and online world have their loopholes, might have negative effects on their identity, but such integrated developmental approach in the field of ICT4D can create pathways to dignity, opportunity, and essential state services.

With right interventions, it may enable someone to watch online tutorials to upgrade her skills; a student can attend a virtual class; a tea garden worker can check her pension account; and an entire village can use social media groups to crowdsource or share ideas to tackle everyday hurdles in tea gardens.

If Digital India is to be more than just an infrastructure project, policy must go beyond fibre and apps. It needs to implement in manner so that it creates human resource: through training, community facilitators, and content that makes sense in local languages and contexts. The findings of this evaluation aligns with those experts who argues for treating broadband like electricity: universally available, subsidised, locally managed, and surrounded by human support.



**Scan here for the online link & read more**

## 29. SoochnaPreneurs in Consumer Acquisition and Value Creation: A Review<sup>1</sup>

*Dhiraj Singha*

The article “*Rural Women Microentrepreneurs, Consumer Acquisition, and Value Delivery: Evidence from a Quasi-Experiment in Rural India*”, published by the Journal of the Academy of Marketing Science on 23<sup>rd</sup> September, 2024, was authored by Aindrila Chatterjee from Institute of Management Technology Hyderabad, along with Amit J. Chauradia from School of Marketing and Innovation (University of South Florida) and Kiran Pedada from Asper School of Business, University of Manitoba. They argue that recruiting rural women microentrepreneurs (RWM) not only improves consumer acquisition and value delivery in the emerging markets, but also motivates male peers to perform well, which further leads towards contributing to the larger Sustainable Development Goals like gender equality and reduced inequalities.

The study is situated within a digital inclusion initiative of Digital Empowerment Foundation (DEF), a social enterprise known for leveraging digital technology to empower marginalized communities. More specifically, the authors evaluate DEF’s SoochnaPreneur (SP) (information entrepreneurs) program as a real-world context for their quasi-experiment. This program deploys local SPs in villages to bridge last-mile gaps in welfare services and digital access.

The findings of the article contribute meaningfully to the literatures around marketing, gender dynamics, and social entrepreneurship. This essay presents a review on the study’s core arguments, its theoretical underpinings, and highlight the areas that requires further inquiries. At the same time, it expands the context to consider how initiatives like SPs operate at scale, and how the results inform ongoing efforts to close India’s gender digital divide.

### **Bridging Gender Gaps in Rural Markets – The Study at a Glance**

The authors employ a quasi-experimental design using a difference-in-differences (DID) approach to compare outcomes between intervention

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1. Originally published here: [https://www.defindia.org/wp-content/uploads/2025/07/SoochnaPreneurs-in-Consumer-Acquisition-and-Value-Creation-A-Review\\_14-July-2025-1.pdf](https://www.defindia.org/wp-content/uploads/2025/07/SoochnaPreneurs-in-Consumer-Acquisition-and-Value-Creation-A-Review_14-July-2025-1.pdf)

(treatment) areas – where a policy shift in 2018 increased the recruitment of women microentrepreneurs – and control areas that maintained a traditional male-dominated recruitment strategy. This design, supplemented by qualitative interviews, allows them to investigate three questions: (1) How does a greater presence of RWMs affect consumer acquisition and overall value delivered by the social enterprise? (2) What is the impact on the value delivered specifically to women consumers when RWMs are involved? (3) How does the presence of RWMs influence the performance of male microentrepreneurs in the same network?

Drawing on data from DEF's interventions, the study tracked 285 unique microentrepreneurs – referred to as SPs – across 164 panchayats in six districts over a 36-month period (January 2017 to December 2019). In total, 91 panchayats served as intervention areas (post-2018, more women were recruited) and 73 as control areas (continuing business-as-usual with mostly men). The intervention districts included places like Alwar, Guna, and Ranchi, where DEF's policy change in early 2018 dramatically increased the intake of women entrepreneurs. It's important to understand what these SPs actually do: they are part of DEF's flagship program of SPs meant to provide last-mile access to critical information and services in rural India. DEF equips these village-level microentrepreneurs with internet-enabled digital devices, a multilingual mobile app, and training on how to assist citizens in availing various government welfare schemes and digital services. In practice, a SP goes door-to-door identifying eligible families, raising awareness about entitlements (from health insurance to scholarships), and helping with the paperwork and online form submissions needed to enroll in these programs. For each successful enrollment, the SP charges a nominal fee of about ₹200 (\$2.40) – a sum kept affordable by DEF's guidelines – as compensation for the time and service. This micro-franchise model enables entrepreneurs to earn a livelihood while delivering value in two ways: directly connecting villagers to financial benefits (cash transfers, subsidies, insurance payouts, etc.) and providing convenience by saving them travel and bureaucracy (for instance, preventing a day's lost wages that a manual trip to a distant government office would incur). By 2019, there were hundreds of SPs working in many states, including Rajasthan, Madhya Pradesh, Jharkhand, Bihar, and Odisha. This shows how big the initiative was and how it helped both digital and financial inclusion. This background sets the stage for the study to look at how adding women to this type of model impacts the results.

Briefly, the finding indicates that the treated locations where women were brought into the entrepreneur workforce, consumer reach and service

delivery significantly outperformed the controls. To summarize the results: the intervention villages saw a 40.8% increase in consumer acquisition and 64.1% greater value delivered to consumers compared to villages with only male entrepreneurs. Moreover, women consumers in these gender-inclusive areas received an additional \$5,445 worth of value (over the study period) when served by women microentrepreneurs (as opposed to being served by men). Perhaps most intriguingly, the presence of female entrepreneurs had a spillover effect on their male counterparts – men in mixed-gender teams delivered about \$25,100 more value to consumers than men operating in all-male environments. All three findings were statistically significant and substantively meaningful. In essence, bringing women into the fold not only directly improved outreach to consumers (especially female consumers), but also indirectly boosted the productivity of the men in the network.

The authors attribute these impressive outcomes to women’s “communal traits” (e.g. empathy, patience, care) and the shared identity women entrepreneurs have with women consumers, invoking social role theory to explain the higher trust and rapport in those interactions. Qualitative interviews with 14 RWMs (the women Sochnapreneurs) reinforce this: women spoke of how their active engagement earned social recognition and began to chip away at patriarchal norms in their communities, as they became known not just as someone’s wife or daughter-in-law but as entrepreneurs in their own right. By contrasting rural India – where 800 million people live – with more developed urban markets, the article fills an important gap in marketing literature. It foregrounds the role of rural gender norms (e.g. women’s traditional roles as caregivers) to account for why women’s economic engagement can generate disproportionate social impact. In line with social role theory, culturally prescribed gender roles mean that women entrepreneurs often approach consumers with a community-centric mindset rather than a purely transactional one. Their “communal nature” (as the study calls it) helps build trust and rapport, especially with women customers who may be dealing with sensitive issues like menstrual hygiene or who have been historically excluded from formal financial systems. The SPs’ ability to bridge information gaps for such marginalized groups is a key mechanism behind the quantitative metrics.

Equally interesting is the ripple effect on men. Male microentrepreneurs, when working alongside women, either stepped up their performance due to healthy competition or perhaps learned new customer engagement approaches by observing their female peers. This dynamic demonstrates how gender affects group entrepreneurship. It suggests that teams that include people of all genders can create a virtuous loop of peer motivation

and a wider client base, which would be good for the business as a whole.

These results are encouraging because they show a way to close the gender digital divide in India. Rural women in India have historically been left on the wrong side of the digital revolution – indeed, as of 2019-21 only one in three women in the country had ever used the internet, and in rural areas men are twice as likely as women to be online (49% of men vs just 25% of women). There are many reasons for this gap, such as social norms that limit women’s usage of mobile phones, lower literacy rates, and limited access to ICT infrastructure. The SP model directly solves some of these problems by making women digital change agents in their villages. When a local woman becomes the go-to person for accessing e-governance services, it not only empowers her but also makes other women in the community more comfortable engaging with technology and public services. Many female consumers who might hesitate to approach a male agent or travel to town for a government office are now served at their doorstep by a woman they trust.

This “women-helping-women” dynamic is very helpful in situations when purdah (gender seclusion) or safety concerns make it hard for women to move around. The initiative uses women’s social networks to give female beneficiaries digital perks including the ability to fill out forms online, make payments digitally, and get information through mobile apps. Without these benefits, these women could not have access to them. In terms of digital and financial inclusion, this creates a positive feedback loop: as more women agents come online and gain digital skills, they bring more women customers online (at least indirectly, to obtain services), which gradually normalizes technology use among rural women. The study’s outcomes thus serve as encouraging evidence that closing the gender gap among service providers can help close the gap among end-users. In a country that accounts for half of the world’s gendered digital divide, such evidence-based guidelines are extremely valuable. They suggest that policymakers and development organizations should invest in programs that train and support women to be last-mile digital service providers – a strategy that can make Digital India more inclusive by design.

It’s worth noting that the approach and findings here resonate strongly with India’s broader Self-Help Group (SHG) movement for women’s empowerment. For decades, SHGs – grassroots collectives of 10–20 women engaging in savings, credit, and microenterprise – have been a cornerstone of rural development, successfully aiding the financial inclusion of women through programs like the SHG-Bank Linkage scheme. The government’s

National Rural Livelihoods Mission (NRLM), for example, builds on SHGs to train “Bank Sakhis” (female community bankers) who act as banking correspondents in villages. These women, much like SPs, use digital tools (handheld devices, tablets) to offer services such as depositing money, withdrawing cash, transferring funds, and even enabling e-commerce and online education in remote areas. The SHG model has already demonstrated the power of collective female entrepreneurship – it is arguably the largest women’s empowerment project in the country, growing steadily at about 10% annually and reaching millions of women. What the SPs initiative does is add an explicit digital and information-services layer on top of this model. It turns individual women (or groups of women) into infomediaries – people who not only manage finances but also connect the community with knowledge and entitlements. The study under review aligns with and reinforces this trajectory. Its evidence that women entrepreneurs can drive superior outcomes provides empirical support to expand such integrations of SHGs with digital technology. One can imagine synergistic policies where SHG members are trained to also become SPs or Bank Sakhis, thereby combining the social capital of SHGs with the tech-driven approach of DEF. Such a convergence could dramatically enhance both economic and social empowerment outcomes – women gaining income and status as entrepreneurs, households gaining easier access to welfare schemes, and communities witnessing normative change as women take on public-facing leadership roles.

### **Reflections and Scopes for Future Research**

Along with such valuable contributions, the article remained limited, leaving scope for further inquiries to ask. Methodologically, beyond the technical design, the ethical framework of the study appears underdeveloped. The absence of reflexivity raises concerns about possible neo-colonial dynamics, wherein foreign-funded actors’ “experiment” on rural women under the banner of rescuing them. It’s a wider pattern in positivist development research: the drive to produce generalizable policy insights can overshadow the need for community agency and ethical stringency.

Theoretically, the article leans heavily on social role theory, positing that women’s communal attributes (nurturance, empathy, altruism) explain their superior performance in delivering value to consumers. While this interpretation is consistent with a body of gender-and-entrepreneurship research – and indeed resonates with the narratives from the field – it also walks a fine line. Emphasizing women’s innate caring qualities can slide into essentialism, reinforcing the trope that women are “natural caregivers”

whose entrepreneurship is an extension of their social roles. The focus on shared identity (women serving women) adds nuance by highlighting how representation matters – rural women consumers feel more comfortable and trusting with someone who understands their context. Yet even this risks a deficit narrative if not handled carefully: it implies that the primary reason marginalized women lack services is the absence of female providers, sidestepping the broader institutional failures that necessitate a special program in the first place. The positive spillover effects observed among male entrepreneurs are another aspect that merits deeper theorization. The authors speculate these effects might arise from competition (men feeling challenged to keep up) or social learning (men emulating the successful practices of their female colleagues). Both explanations are plausible and align with broader theories of behavior change. Future studies should also inquire about *how* this learning or competition manifests. Do men adopt a more community-engaging style after seeing women do it, or do they simply work harder once women break the ice in conservative villages? How do men acknowledge learning from their female peers?

The study's operationalization of "value" delivered is innovative in that it quantifies welfare access (monetary benefits disbursed, time saved for consumers) using data tracked via a mobile app. However, in my view, it is also too necessary to discuss such conclusions vis-a-vis the risk that such quantification can slip into the neoliberal logic that dominates much development discourse. By translating empowerment into rupees saved or minutes freed, the analysis may inadvertently validate the idea that improvements are most legible when expressed in market-centric metrics.

With such theoretical underpinnings, it is also important to ask few follow-up questions: Did these women, after three years, gain greater say in household decisions? Did their new roles reduce social stigma or shift patriarchal attitudes among their family members? Or, conversely, did taking on this additional "job" merely add to their burdens (the notorious double burden of work and domestic duties) without relieving them of any traditional responsibilities at home? The value delivered to consumers is evident, but what is the value retained by the women beyond modest income and self-reported esteem? If an empowerment intervention does not tackle issues like land rights, legal awareness, or redistribution of care work, can it truly be transformative, or is it destined to remain a piecemeal fix?

The findings moreover underscore the need for emancipatory frameworks like intersectionality in future researches. They explicitly accounted for how caste, religion, and class intersect with gender to shape women's

experiences. Rather than treating these as control variables to neutralize, future research should center them as core factors that co-constitute agency. For example, a follow-up study could examine *which* women were more likely to thrive as SPs and why – perhaps Dalit women faced different hurdles or Muslim women needed different support – thereby tailoring interventions more finely.

In short, there is room to bridge the gap between econometric rigor and the “messier” work of social change. The study is compelling and a practical guidepost. It shows that empowering rural women as entrepreneurs and information leaders is not just a matter of checking a diversity box – it actively reshapes communities and markets for the better.



**Scan here for the online link & read more**

## 30. SoचनाPreneurs in Rural Development: Outcomes of the 'Saksham' Program in Tea Gardens of North Bengal<sup>1</sup>

*Dhiraj Singha*

Tea gardens in West Bengal (WB) have historically been subject to various forms of oversight and governance, ranging from colonial management boards to post-colonial political unions, government bodies, and development organizations. Despite these interventions, tea garden workers still face numerous socio-economic challenges, including low wages, gender discrimination, inadequate working and living conditions, and limited opportunities for socio-economic advancement. These challenges are further compounded by restricted access to accurate information, digital platforms, and state welfare schemes. To address some of these issues, the Digital Empowerment Foundation (in collaboration with Swaniti Initiatives) launched the Saksham Project (Strengthening Access to Social Security) for tea garden workers in North Bengal covering four districts of WB: Alipurduar, Cooch Behar, Jalpaiguri, and Darjeeling. The project is based on DEF's 'SoचनाPreneur' model and follows a multi-stakeholder approach, aiming to tackle the issues faced by garden workers. As part of this initiative, 16 women were trained as SoचनाPreneurs to help their communities navigate digital platforms and access welfare entitlements. This study examines the outcomes of the Saksham Project using qualitative methods, including focus group discussions and interviews with various stakeholders and beneficiaries.

The findings underscore the crucial role of women SoचनाPreneurs in challenging deep-seated gender norms, improving community access to information and welfare services, and enhancing the effectiveness of local governance.



**Scan here for the online link & read more**

*1. Originally published here: [HYPERLINK "https://www.defindia.org/wp-content/uploads/2024/10/The-Outcomes-of-%E2%80%98Saksham%E2%80%99-Program-in-Tea-Gardens-of-North-Bengal\\_15-Oct-2024.pdf"](https://www.defindia.org/wp-content/uploads/2024/10/The-Outcomes-of-%E2%80%98Saksham%E2%80%99-Program-in-Tea-Gardens-of-North-Bengal_15-Oct-2024.pdf)*



# 6

## **Data Governance, Social Inequalities & Digital Futures**

## 31. Does the Number of ICT Users Indicate Digital Adoption?<sup>1</sup>

*Osama Manzar, Arpita Kanjilal*

This is a critical juncture. Being a digital citizen in the twenty-first century is indispensable for availing e-governance services and basic citizen entitlements. At this point in history it is crucial to evaluate the ‘digital-by-design’ framework vis-a-vis the scale of digital reach, adoption, and impact in the last mile.

Who constitutes the ‘last mile’ in India? This question is central to assessing the scale of digital transformation and the ensuing social impact. Owing to India’s multifarious diversity, with people hailing from diverse castes, classes, genders and demographics, the last mile constitutes citizens and communities, who are differently positioned in the pyramid of graded social inequalities. This positioning also shapes their status in the digital realm, determining their varied access to connectivity, ICTs, and the digital public infrastructure.

Several ongoing multi-stakeholder and multi-sectoral efforts aim to democratise the digital ecosystem for all citizens. However, the statistics call attention to the stark digital divide in the country. While India’s digital economy is skyrocketing, with a projection of a trillion-dollar valuation by 2028, the country struggles to ensure meaningful connectivity, access and adoption that enables the socio-economic empowerment of its citizens. Where are we falling short? To address the same, let us examine one such community in India – Persons with Disabilities (PwDs) – who remain subjected to digital exclusion among other forms of systemic, social, and bureaucratic exclusion.

A pan-India study by Digital Empowerment Foundation (DEF), Broadband India Forum (BIF) and Center for Development Policy and Practice (CDPP) presents comprehensive findings and recommendations, highlighting two key insights – 1) the potential of ICTs in enabling social, economic and community integration of PwDs to become rightful citizens; 2) the gaps in the current design and deployment of the digital public infrastructure that creates a barrier for PwDs in accessing ICTs.

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*1. Originally published here: <https://owsa.in/does-the-number-of-ict-users-indicate-digital-adoption/>*

## Meaningful Access to the Internet

Policy discussions often overlook the socio-demographic diversity among PwDs and the types of disabilities. Collecting census data to account for the PwD population and its diversity is a crucial first step in formulating effective policies for ICT accessibility, especially in rural, remote, and underserved regions of India.

Accordingly, ICTs must integrate tailored assistive technologies and accessibility features to ensure meaningful ICT adoption. India took a significant step to ensure web accessibility by legislating the ICT Accessibility Standard IS 17802. This should be enforced among public and private service providers to ensure meaningful access to the internet. The public and private service providers can be pivotal in ensuring meaningful access by leveraging the innovation ecosystem to design and deploy subsidised and low-cost digital infrastructure that enhance ICT reach, accessibility, and efficacy. Strengthening the local digital ecosystem with remote access enabled to avail the services of the physical digital service centers is imperative to achieve widespread ICT adoption among PwDs. Tailored to specific needs in hyperlocal settings, digital literacy curriculum, skill development and capacity-building initiatives must be facilitated for a comprehensive support for availing education and livelihood opportunities.

The study with 300+ PwD digital changemakers has demonstrated that enhancing ICT accessibility will empower and enable PwDs to live a life with dignity and respect. This measure, however, will be meaningful when we move away from measuring the impact of digital inclusion, often based on a binary divide between the haves and have-nots, whereby the number of ICT users is seen as a milestone for digital adoption. This approach has proven insufficient, especially in addressing the widening digital divide in the country. We must, therefore, envision a digital-by-design framework that is built on a citizen-centric, rather than a consumer-centric model; a model that addresses contextual, evidence-based, and specific digital needs of diverse communities in India. The term 'meaningful' is crucial here for bridging the graded digital inequalities and building digital equity for all.



**Scan here for the online link & read more**

## 32. Public Data of Private People: Issues of Data, Access and Privacy<sup>1</sup>

Osama Manzar

*The line between providing government services like Google predicts your next possible search comes at a huge trade-off. Clearly, the line between a techno-utopia and a surveillance dystopia can be really thin. India needs a proper data protection law drafted carefully drafted with due consultations with stakeholders.*”

Let's start by running down some numbers. It is a fact that India is both, one of the most connected countries and one of the most unconnected countries. For example, internet users do not number more than 700 million of India's population of 1.35 billion. Of these, only 300 million people use the internet regularly; the rest are either token users or, as is called, not 'habitual users'. Another perspective on internet uses in India is that about 800 million people live in rural areas, and smartphone penetration in rural India is not more than 300 million. It is not contested that a smartphone is one of the more apt device to use the internet for any purpose. Therefore, in terms of sheer numbers and scale of availability of digital Infrastructure, at least 700 million Indians do not have any digital infrastructure or digital means to conduct any work online.

Yet, every Indian citizen, connected or unconnected, private or public, poor or rich, employed or unemployed, man, woman or any gender, has a digital identity, a digital footprint, or a digital stamp of sorts. In other words, the government in India has a right/willingness/aspiration/authority to 'digitalise' you, the citizen. But it also does not want to give the citizen a right over their data or privacy or a simple digital right.

Let's break this down in the light of two developments – the country's Unique Identification (UID) system called the Aadhaar, and the personal data protection laws. Claiming to be a welfare-guaranteeing project that planned to identify citizens to weed out loopholes and welfare 'leaks,' the

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1. Originally published here: <https://owsa.in/public-data-of-private-people-issues-of-data-access-and-privacy/>

Aadhaar and the authority issuing it, the UIDAI, claimed to fight corruption and increase inclusion. On that pretext, huge amounts of data on a billion-plus citizens were collected and stored – including detailed biometric data. Unlike the US' welfare programme like the Social Security Number, the Aadhaar works to uniquely identify anyone with this collected data.

### **EU exemplifies regulation**

The first issue has to do with what we started with – that India is grossly under-connected (at least half the country does not have internet access). This means that there are still thousands of people who either have no way to make an Aadhaar, or are not aware of the welfare schemes that they ought to be entitled to, or can apply for these schemes.

Another issue is that this collected data is stored centrally by the agency, and until very recently, other than activists' flagging issues, there was little awareness on what exactly could go wrong. In the last couple of years, there have been several reports of data breaches and leaks exposing information pertaining to crores of people to malicious attackers. This is reportedly also one of the largest such breaches in the history of the internet.

This is where the importance of a data protection law comes in. The European Union, for example, has a fairly tight regulation on how data is being collected, stored and used. It is called the GDPR, and by invoking the privacy law and of human rights law from Article 8 of the Charter of Fundamental Rights of the European Union, it is a model on how to frame such legislation.

How? Both, India's government and the private sector seemingly have the right to digitalise the citizen and his/her data. However, the citizen does not have the right or privilege to ask a question pertaining to this data. Like, "how is the data that is being collected/taken/recorded from me being used? Is the data collected about me private? Is it in 'safe' hands? Will my privacy be secure? Does the data stay sovereign?"

### **Techno-utopia or surveillance dystopia?**

To briefly explain the people's lost digital rights or right to privacy and data in the light of "Right to Information", "Right to Food", "Right to Education", "Right to Health", and "Right to Shelter". All these are fundamental rights and pretty much human rights. Now, Aadhaar has been at the forefront of a lot of exclusions from these very rights. There have, of course, been reports of such exclusions. Digital and human rights activists have documented many of them.

Linking Aadhaar to all this data intends to create a system of ‘real-time governance,’ which along with the 360-degree profiling would track people in real-time across databases of birth, death, healthcare, vehicle registration, ownership of land or properties, and even policing. The line between providing government services like Google predicts your next possible search comes at a huge trade-off. Clearly, the line between a techno-utopia and a surveillance dystopia can be really thin.

At DEF, our work has been primarily to empower marginalised communities by enabling them with digital access and literacy. This opens up several avenues for their upliftment. Simultaneously, they are also able to avail several of the welfare schemes the government has been promising them. DEF has helped set up several Community Information Resource Centres (CIRCs), which are digital data houses, or ICT hubs, where members of the rural community gather to meet their digital needs in education, health, livelihood, public service delivery. Our CIRCs also double up as points of internet delivery through community networks.

### **Aadhaar. Data. Hunger**

However, the point is this: On one side, there is the fact that Aadhaar has been leading to exclusions, and centrally stored data is vulnerable to breaches. However, at the same time, there is a need to work to empower communities by enabling them to get access to both digital tools and the documentations required for them to get the minimum entitlements the government provides. Aadhaar is presently demanded for almost everything. For housing welfare-related schemes, the government requires both Aadhar, and also geo-tagged locations to track building progress and follow up for fund disbursement.

Likewise, Aadhaar has been linked to most other welfare schemes, to connect bank accounts to get basic pensions or cooking gas subsidies. There have been most infamously, reports of starvation deaths following Aadhaar authentication failures leading to inability in obtaining rations. The same applied to admissions, and even mid-day meals that were given in schools. When schools were closed due to the COVID-19 pandemic, there were long queues of students in front of kiosks to withdraw the mid-day meal equivalent of cash subsidy given to students of rural schools.

Let us look at this from another lens. The 2021 Global Hunger Index ranks India at 101 among 116 countries. As a reminder, in conservative estimates, a staggering 900 million of the country’s population depends on the Public Distribution System for foodgrains, and 120 million children in over 1.27

million schools depend on the mid-day meal schemes. If it were not for these entitlements, India's position on the Global Hunger Index would be further alarming.

### **Commoditising personal data**

Added with the problems of exclusion are the mentioned issues of data privacy and protection. By forcing people to link their identities with Aadhaars, and openly calling to monetize data, the government is opening up personal data as a commodity without doing the primary safeguards needed. People are coerced into giving data, and have no idea why their data is being collected or how they will be used. While the idea of an OpenData platform to let the public access of shareable data is a boon to research, the notion of commercially opening up private data before proper mechanisms are in place cannot be viewed similarly.

What we need is a proper data protection law, one drafted not on the government's whims to bring in ways to monetize public data and exclude people, but one carefully drafted with due consultations with stakeholders. Data laws need to be rethought – more on the line of how we drew up the RTI laws (before amendments diluted it!). Just like we have a movement that is demanding the continuity to the RTI (like the Jawabdehi Campaign for Social Accountability), we need a grounds-up call to design data rights such that it benefits communities and not commodities.

The internet, and ensuring digital access to more marginal communities is an important part of the puzzle to effectively address issues of education, sanitation, gender, health, and rights and more. But in doing this, we must ensure that there are neither any exclusions due to lack of infrastructure and access, nor are there shortcomings in safeguarding people's data.

### **Citizen coerced to part with data**

The biggest challenge of Indian society is that digital tools, digital media, and diverse digital platforms are being adopted rapidly, and assuming rapid pervasiveness of digital adaptability, both government and major digital platforms are pushing a no-alternative type system of offering all solutions via digital means. Insisting access to natural services and daily needs of lives via digital media and also making all policies assuming digital is the only means is leading to large scale digital exclusion, increasing the cost of seeking services, and constantly giving data that is asked or made mandatory without collateral accountability.

The situation of Indian citizens being pushed to the wall, and made to part with their data as a mandatory practice is nothing but treating, even coercing the population as if they are consumers without rights. Therefore, it is only natural that the masses need their digital rights, data rights, and digital human rights before they are asked for their data. Time is passing by – we needed the data and privacy law yesterday, we should keep fighting for it today.



**Scan here for the online link & read more**

### 33. Death by data: The human cost of digital governance<sup>1</sup>

*Osama Manzar, Arpita Kanjilal*

In a small village in India, where fields stretch endlessly and homes are built with mud and hope, lived a girl named Ruhi. She was five years old, full of mischief, always running barefoot across the dusty lanes, her laughter echoing in the warm air. But one day, her laughter faded. Her body grew frail, her stomach remained empty, and her mother's eyes filled with helplessness.

Ruhi did not die in an accident. She did not succumb to disease. She died of hunger—hunger caused not by a drought or a failed harvest, but by a spelling mistake.

For 21 months, her family had been denied ration because their Aadhaar ID—their digital proof of existence—was not linked to their ration card. The reason? A clerical error in her father's name. The spelling in one document did not match the other. The machine at the ration shop refused to verify them. The computer had spoken.

Her mother begged the ration officer, “But you know us! We have been coming here for years.”

The officer shook his head. “Rules are rules. Without the link, the system will not approve your food.”

And so, Ruhi's family walked back home with empty hands. Day after day. Until one day, Ruhi did not wake up.

This is not just a bureaucratic error. This is death by data. This is death by digital governance that does not account for human lives.

The internet decides who eats and who does not

When the internet is governed, life is governed. When the internet is shut, life is shut. When access is restricted, so is survival.

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1. Originally published here: <https://www.thenewsminute.com/connecting-the-unconnected/death-by-data-the-human-cost-of-digital-governance>

In today's world, where everything is moving online, those without digital access are left behind—not just in education or opportunities, but in the most basic need of all: food.

Governments claim digital systems reduce corruption. But who do these systems actually serve? The ones who create them, or the ones who need them the most?

Ruhi's family had never owned a smartphone. They had never used the internet. Yet their lives were dictated by digital governance—by a system they could not access, let alone understand.

This is the irony of our time: the internet does not belong only to those who use it. It governs even those who do not.

### **The biometric betrayal**

Consider another story, one that plays out in countless villages every day.

Ramesh, a daily wage worker, stood in line at the employment guarantee scheme office. He had worked for three weeks but when his wages arrived, he had received payment only for two weeks. Surprised, he asked the officer.

The officer smirked. "That is what the machine says. The biometric system has already processed your fingerprint. Nothing can be changed now."

What Ramesh did not know was that his fingerprint had been used thrice. The officer took his fingerprints three times to process the payment. When Ramesh placed his thumb on the scanner, the machine was supposed to beep, confirming his identity. But the officer had muted the sound the third time but still recorded Ramesh's fingerprint, then took the money himself. He instructed Ramesh to return the following week to collect his payment for the third week.

When Ramesh returned to claim his overdue payment, the officer demanded proof and asked him to provide the receipt. However, since the receipt displayed three entries, the officer refused to give him the payment because officially there should be only one entry per week.

Ramesh walked away, unaware that he had just been robbed by technology.

### **Old age pension: A simple hack**

Across India, many elderly people depend on government pensions to survive. But what happens when fraud seeps into the system?

The minimum age for old age pension is 65 years. Those younger than this do not qualify. But a workaround exists: change the date of birth on an Aadhaar card, take a colour printout, and apply. The altered document is accepted without verification and the pension is disbursed. A system designed for support is instead manipulated, exploiting gaps in digital identity checks.

### **Disability pension: Buying a certificate**

For those seeking a disability pension, a government-issued SADAREM certificate is required, proving at least 41% disability. But the process to obtain one legally is rigorous.

A black market solution exists: pay Rs 4,000-5,000, acquire a genuine certificate, scan it in colour, and modify the name using Photoshop. The fraudulently altered certificate can then be submitted, and the pension is granted. The loopholes in digital verification enable individuals to misuse a scheme meant for those truly in need.

### **Digital dreams or digital nightmares?**

Three decades after its inception, the internet was meant to bring opportunity, freedom, and justice. Instead, it has become a tool of control—by governments that throttle access, by corporations that trade data for profit, and by bureaucracies that treat digital IDs as more real than the people they represent.

The misuse of Aadhaar and biometric authentication highlights systemic vulnerabilities in India's digital identity framework. Apart from the examples of fraud mentioned earlier, exploitation occurs in widow and labour pensions, particularly among bidi workers. These instances expose the urgent need for stronger safeguards, accountability measures, and oversight to prevent digital identity fraud and ensure equitable access to welfare benefits.

If internet governance continues in this direction, the question is no longer about access—it is about survival.

Who gets to eat?

Who gets to work?

Who gets to exist?

## **Resolve for a just digital future**

History has shown us that governance can be reimagined. Environmental laws such as Precautionary Principles and the Convention on Biodiversity have created safeguards against exploitation. These models prove that global norms can work—if they are built on fairness and inclusion.

Governments, digital experts, social scientists, IT professionals, and policymakers must work together to ensure universal digital access as a fundamental right, preventing exclusion due to clerical errors in digital identities. Tech corporations must be held accountable to prevent profiteering at the cost of public harm, while governments should not exploit the internet to suppress dissent or control populations. Additionally, global internet governance must be inclusive, ensuring that policies are shaped by diverse voices rather than being dominated by powerful governments and corporations.

## **Beyond maybes: Call for data justice**

Ruhi's mother still keeps her old clothes folded in a wooden box. Every morning, she sits by the door, staring at the road that leads to the ration shop. Maybe, just maybe, the system will change. Maybe the next time she goes, the machine will recognise her. Maybe this time she will return with food.

But should survival be a game of maybe?

The internet should not be a gatekeeper of life and death. It should be a tool for justice, dignity, and equal opportunity. If we fail to build a digital world that works for all, we are not just failing the present—we are erasing the future.

Instead of moving fast and breaking things, we must move slowly and take everyone forward. Only then can we build a world where technology serves humanity—not the other way around.



**Scan here for the online link & read more**

## 34. When power meets platform: Zuckerberg's fact-check ban and its impact on India's rural digital landscape<sup>1</sup>

*Arpita Kanjilal*

Mark Zuckerberg's decision to remove fact-checking mechanisms from Facebook disproportionately favors those in power and well-resourced entities, who can exploit the platform's lack of oversight to amplify their narratives. Politicians, corporations, and individuals with significant financial resources often have access to tools and strategies to push their messaging effectively. Without fact-checking, these groups can spread tailored disinformation, create echo chambers, and dominate digital spaces with unchecked content. False narratives or propaganda can be strategically disseminated to influence elections, public opinion, and policy decisions, benefiting those who can afford to pay for targeted ads or create viral content. This skews the digital landscape, giving a disproportionate advantage to those already in positions of power and influence.

On the other hand, marginalized communities—particularly those with limited access to digital tools, lower levels of digital literacy, and weaker voices in public and policymaking discourse—stand to be adversely impacted by the removal of fact-checking. These communities are often more susceptible to misinformation, especially without trusted verification mechanisms. Disinformation targeted at these groups can further deepen their marginalization by spreading harmful stereotypes, misinformation about social programs, or false health information, often leading to tangible harm.

Rural India and underserved communities—the focus of the Digital Empowerment Foundation's efforts—are already underrepresented on digital platforms and face significant barriers to accessing accurate information. Misinformation and fake news can amplify existing social divides, perpetuate inequalities, and harm their ability to make informed choices, whether in health, education, or politics. By removing fact-checking, Zuckerberg effectively removes a tool that these vulnerable communities rely on to navigate the digital ecosystem and protect themselves from harmful narratives.

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1. Originally published here: <https://maktoobmedia.com/opinion/when-power-meets-platform-zuckerbergs-fact-check-ban-and-its-impact-on-indias-rural-digital-landscape/>

DEF has been actively addressing this issue through its SoochnaPreneur initiative. These rural women fact-checkers spanning 2000 Communication Information Resource Centers (CIRCs) are being trained to become trusted information intermediaries within their communities, ensuring wide outreach and a contextually, socially, and politically specific approach to tackling misinformation. This grassroots model not only helps disseminate accurate information but also empowers local women to become leaders in their communities, directly combating disinformation at the source. The SoochnaPreneurs are uniquely positioned to understand the local challenges, concerns, and cultural nuances of their communities, which makes them highly effective in curbing the spread of false content. However, with the removal of fact-checking on platforms like Facebook, the barrier to misinformation becomes even higher, and the vital role of initiatives like SoochnaPreneurs becomes more challenging.

Additionally, the absence of accountability for false information is likely to embolden those who spread misinformation about these marginalized communities, further othering them and influencing public attitudes against them. For instance, misinformation around health care, legal rights, or government schemes can have disastrous consequences, especially when disadvantaged populations are already less likely to access trusted, credible sources of information.

Zuckerberg's allyship with the President of the United States can be seen as a political maneuver, which raises significant concerns, particularly when private companies like Facebook align closely with government power. When government and private entities forge alliances, it often leads to the erosion of public sector accountability and ethical standards. This partnership can diminish the role of the public sector in ensuring fairness, transparency, and accountability, as the interests of private entities may not always align with the greater public good. In the case of Zuckerberg's decision to remove fact-checking, this confluence of interests may allow for unchecked influence over public discourse, ultimately weakening the role of the public in holding powerful entities accountable and compromising the principles of democratic governance. The public sector's responsibility to regulate and safeguard the ethical use of digital platforms is undermined when such alliances are made, with the potential to exacerbate issues like disinformation and political manipulation.

In light of this decision, UN experts have expressed deep concern. They warn that removing fact-checking mechanisms will likely exacerbate the global infodemic of misinformation, disinformation, and hate speech online,

particularly impacting vulnerable communities. The lack of oversight would make it even more difficult for these communities to discern credible information from harmful content, deepening social divides and undermining trust in democratic institutions. The UN experts emphasized that digital platforms have a responsibility to safeguard the integrity of information circulating in their spaces, as these platforms are increasingly central to public discourse, human rights, and the protection of democratic values.

The removal of fact-checking processes is seen as a significant setback in the global fight against disinformation, which already disproportionately affects marginalized and disenfranchised populations. UN experts argue that without such measures, the spread of false narratives becomes easier, and the victims of these misleading campaigns—often women, minorities, and low-income communities—will suffer greater harm. These groups, already marginalized in digital spaces, face greater risks of being subjected to manipulation and exclusion through disinformation that targets their vulnerabilities.

Additionally, UN experts warn that Zuckerberg’s decision could worsen online hate speech and racially motivated violence, particularly in regions where discriminatory rhetoric and divisive ideologies are already prevalent. In their view, the absence of fact-checking would create an environment where false claims could escalate unchecked, potentially leading to real-world harm, including hate crimes and political unrest. This could jeopardize the right to freedom of expression by allowing misleading information to distort public debate, impede social cohesion, and threaten public safety.

In essence, the decision to remove fact-checking on Facebook could perpetuate digital inequality, entrenching the power of privileged groups while making it harder for marginalized communities to navigate the digital landscape responsibly.



**Scan here for the online link & read more**

## 35. The caste that doesn't want to be counted<sup>1</sup>

Dhiraj Singha

*Names like 'Paliya' are not just labels. They are wounds – and also acts of survival, dignity, and resistance. A just census must see without shaming, count without erasing, and recognise without punishing.*”

In a village on the outskirts of Kaliyaganj, near the Bangladesh border in West Bengal's Uttar Dinajpur district, I once sat with Robin, a retired schoolteacher and former census enumerator. “I didn't mark anyone as Paliya. I counted their names as Rajbanshi. No one should remain Paliya,” he told me. This wasn't done with the intention to deceive, but out of a sense of duty. As if he was righting some historical wrong – removing a “slur”, read as a caste name that carries social stigma.

This encounter unveiled a dilemma around caste counting: People's yearning for dignity, individuals negotiating stigma, and the state machinery that both conceals and discloses caste. Amidst the move for a national caste census, my ethnographic experience made me ask: What happens when the state counts caste, but a caste does not want to name itself?

### **The decline of a community**

The Paliya community, officially listed among West Bengal's 61 Scheduled Castes (SCs), is facing statistical erasure. Census data reveals a sharp decline in their recorded population: From 1.33 million in 1991, to 1.31 million in 2001, and then a steep fall to 1.01 million by 2011.

This isn't a demographic accident. It's the outcome of reshaping identity, everyday acts of concealment, renaming, and reclassification. In many villages across Uttar and Dakshin Dinajpur, Paliyas now call themselves Rajbanshi or Kshatriya – names that offer recognition and less stigma.

Chitra, a retired teacher and social activist, told me, “We have to be cultured. Those who still call themselves Paliya don't know about our heroes, our

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1. Originally published here: [HYPERLINK “https://indianexpress.com/article/opinion/columns/paliya-the-caste-that-doesnt-want-to-be-counted-9985314/”](https://indianexpress.com/article/opinion/columns/paliya-the-caste-that-doesnt-want-to-be-counted-9985314/)

history, or Panchanan Barma.” He added, “If past generations didn’t know, will we continue to remain ignorant and call ourselves Paliyas?”

### **The caste that refuses to be counted**

Much of this “identity work” is driven by stigma. The term “Paliya” is linked with notions of impurity, “untouchability”, and foreignness. Colonial ethnographers and Hindu scriptures have both framed Paliyas as “depressed”, “pisacha”, or “kuvacha” – beings with demonic tongues and impure habits. Contemporary stereotypes often paint them as a community of “quarrelsome women”, “pork-eating men”, or “unclean” migrants.

These labels are not abstract, they shape the everyday life of the community. Many Paliyas adopt surnames like Ray or Sarkar, participate in sacred thread ceremonies, and seek blessings from Brahmin priests – all to symbolically affirm their Kshatriya status. During census years, they change not only their self-perception, but official identities on documents that influence policy and representation.

### **Enumerators as agents of erasure**

The story becomes complicated as many Paliyas often serve as census enumerators. Robin wasn’t alone. Jitu, another resident, confided he had two caste certificates – one saying Paliya and the other Rajbanshi. “It doesn’t feel good to hear ‘Paliya,’” he said. “So I thought, let it be Rajbanshi.”

Field interviews with an enumerator, now a retired schoolteacher, from the Desia/Rajbanshi community corroborated this pattern. He insisted: “We must write what people tell us. But in this area, everyone says Rajbanshi. Only one in a thousand says Paliya. So that’s what we write.”

Thus, a complex circuit of silence emerges, where individuals avoid naming themselves, and the state stops asking. Stigma creates denial. Denial feeds erasure.

### **Misalignment – A tactic?**

This isn’t just confusion. It’s a politics of misalignment – the widening gap between lived caste realities and official categories. The stigmatised misreport caste to escape caste. Misalignment becomes a survival strategy.

But this misalignment is uneven. Those with bureaucratic savvy or political networks can successfully “pass” as Rajbanshi or Kshatriya. Others – without certificates or rituals of concealment – remain marked. Ironically, they’re stigmatised for failing to escape stigma.

As one elderly resident explained, “The Babu Paliyas can eat everything – even pigs. But we are Sadhu Paliyas. We are clean. We are Barman.” These internal hierarchies – Matal, Sadhu, Desi – reveal how stigma is not erased but percolates within the community itself.

This is not new. In colonial times, Rajbanshi leaders distanced themselves from “semi-Hindu” Paliyas or Koches in their campaign for Kshatriya status. The postcolonial state grouped Koch, Rajbanshi, and Paliya under three broad SC categories, quietly allowing realignments through electoral, welfare and symbolic rewards.

### **Can the census see stigma?**

A caste census, in theory, promises to rectify these gaps by producing accurate data to inform policy, redress injustice, and ensure representation. But in Bengal, where caste is seen as a “non-issue,” this promise is fragile.

Enumeration cannot work when shame, concealment, and fiction shape self-presentation. It cannot capture caste when people, understandably, lie to escape it, and when enumerators are not trained to handle caste sensitivity. The result is a statistical picture that hides more than it reveals. Data cannot produce justice when visibility invites ridicule and silence offers safety.

Moreover, the state’s own actions have muddied the waters. By failing to address sub-caste realities, refusing public engagement with caste stigma, and using umbrella categories, the state has institutionalised misalignment, mirroring colonial-Brahmanical mislabelling.

This has larger implications in times of increasing digitalisation, where this data becomes the basis of decision-making. Digital tools, built on such flawed inputs, amplify these gaps unless we push for a census that captures caste’s complexity – its social, behavioural, ethnic, historical, emotional, and linguistic aspects shaping every facet of life.

### **Toward a just enumeration**

Where do we go from here? First, we must reject the myth that Bengal is casteless. Silence signals not absence but internalised stigma. Second, caste must be treated not as a static data point but as lived experience, marked by improvisation, concealment, and pain. A just caste census must listen like an ethnographer, document like a historian, and critique its own categories. Finally, enumeration must be accountable. Forms, classification processes, and enumerator training should be open to public scrutiny.

Names like “Paliya” are not just labels. They are wounds – and also acts of survival, dignity, and resistance. A just census must see without shaming, count without erasing, and recognise without punishing. For the Paliyas of Bengal – and many others – it may be the only way to be seen at all.



**Scan here for the online link & read more**

## 36. How Technology Discriminates Against Handloom Workers<sup>1</sup>

Osama Manzar

*It is time to treat handloom clusters as digital destinations armed with public infrastructure and healthcare, like the smart-city model.*”

Every year on National Handloom Day, the same conversations come back. The decline of the sector, lack of policy support, shrinking market share, and the broken value chain. The mood is often one of lament—understandable, but predictable. Perhaps, it is time to shift the frame of inquiry.

At its core, the handloom is a machine, rudimentary perhaps, but no less a technology. The hand that operates it is not merely executing labour, but engaging in design, mathematical in imagination, a form of engineering passed down generations. The person who sets up and operates a loom is a technician, a thinker, an innovator. In today’s digitally driven world, that insight should be obvious, but it still is not.

Despite the complex processes involved, from weaving intricate Ikat patterns and calibrating thread tension to operating the jacquard machine (one of the earliest forms of programmable computing), the handloom worker continues to be seen as a labourer, not a technologist. In reality, handloom weaving is a form of knowledge work. It involves spatial logic, systems thinking, design sensibility, and physical precision. Yet, the system continues to treat these artisans as unskilled, peripheral contributors, inferior to fashion designers, buyers, or bureaucrats who legislate over their futures.

This reveals a deeper issue in the collective inability to reimagine the handloom ecosystem within a digital economy. Policy frameworks and market interventions still rely on outdated ways of thinking. Frequently asked questions focus on how artisans can sell online or compete with power looms. But these miss the more urgent questions: are we truly empowering weavers as knowledge workers? Are we building a foundation that recognises their role as cultural and technological contributors?

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1. Originally published here: <https://www.thevoiceoffashion.com/fabric-of-india/features/how-technology-discriminates-against-handloom-workers-6371>

## **The Scale of What We are Ignoring**

The argument for a new approach is both demographic and economic. India is home to over 200 million artisans, including 3.5 million handloom workers. More than 72 per cent are women. The 470 handloom clusters, across 2.3 million looms, contribute more than ₹24,000 crore to the economy annually.

Yet, 78 per cent of handloom Micro, Small and Medium Enterprises (MSMEs) lack access to finance. Only 30 per cent bank branches are located in rural India, which is home to nearly 910 million people. Financial exclusion is not incidental; it is structural. In the era of UPI and Aadhar-linked banking, not having financial inclusion is digital exclusion.

## **Digital Expansion versus Exclusion**

The exclusion extends into the digital realm. India boasts 445 million rural internet users and 425 million rural smartphone users. But only 122 million rural users have ever made an online payment. Even more telling is that only six percent of 122 million accounts for 45 per cent of all digital transactions, indicating a heavily skewed usage pattern according to the Nielson India Report 2023.

If this is the level of digital engagement across rural India, how many in the handloom sector, already marginalised, are truly active in the digital economy? The answer, in all likelihood, is very few.

This is even more stark when we look at Geographical Indication (GI) tags, markers of heritage and cultural identity. Of 605 GI-tagged products, 342 are handicrafts and many from the handloom sector. These are economic goods, as well as cultural artefacts. Yet, the very people safeguarding these legacies are excluded from the digital tools that could help preserve, promote, and earn profit for them.

## **A Digital Public Infrastructure for the Loom**

It is time to treat handloom clusters as digital destinations, not just production nodes. Much like the “smart city” model, handloom clusters deserve a public digital infrastructure. This should include reliable internet access, affordable mobile connectivity, digitally integrated schools, and primary health centres.

Every micro and nano enterprise, even those running from a weaver’s home, should receive subsidised digital access. But infrastructure alone is not

enough. We must reframe the weaver's role from labourer to knowledge worker. Their wages, job structures, and working conditions must reflect the value they create, not in sympathy, but in parity with other knowledge sectors like design, tech, and fashion.

### **Chanderi and Beyond**

The Digital Empowerment Foundation (DEF) has been implementing these ideas since 2009, starting with Chanderi, Madhya Pradesh. There, DEF built a local digital ecosystem across homes, schools, and health centres. Over 50,000 weaving designs were digitised. During the COVID-19 lockdown, the number of operational looms rose from 4,000 to 5,500, because of the digital training and market connectivity. The project included Community Information Resource Centres and trained 10,000 artisans in digital literacy, design, and e-commerce.

DEF's Digital Cluster Development Program has since expanded to 10 handloom and handicraft clusters across states like Rajasthan, Uttar Pradesh, Tamil Nadu, Maharashtra, Odisha, Karnataka, and Telangana, reaching nearly 50,000 artisans and weavers.

In Tamil Nadu, DEF has focused on GI-tagged clusters in Salem (Silk Fabric as GI), Pattamadai (mat as GI), and the Toda Community in Nilgiris (embroidery as GI), working to enhance digital skilling and market access. These efforts aim to expand customer reach, improve income, and secure cultural recognition for weavers by making them visible in the digital world.

It is a call to action for policymakers, designers, educators, financiers, and technologists. A call to finally rise for the weavers, not just in words, but in systems that centre their value and agency. Let's design each handloom cluster and each GI as digitally enabled Smart Cluster and Smart GI.



**Scan here for the online link & read more**

## 37. Are Deliberate Documentation Errors Denying Bengal Tea Workers Access to State Welfare?<sup>1</sup>

Dhiraj Singha

*Governance mechanisms continue to fall short of addressing the fundamental rights of communities living in the tea gardens of northern West Bengal, a study has found.* ”

Tea gardens have long been critical pivots of colonial and post-colonial administration and governance, subjected to the scrutiny of various agencies – including tea management boards, political unions, government officials, and various development organisations.

However, a recent fieldwork, in July 2024, with a community of tea garden workers revealed persistent challenges faced in accessing state welfare, especially due to documentation discrepancies.

Governance mechanisms often continue to fall short of addressing the fundamental rights of communities living in the tea gardens of northern West Bengal.

During interviews and focused group discussions (FGD), tea garden workers highlighted persistent challenges they face in availing entitlements due to various irregularities in information dissemination due to discrepancies in vital documents such as voter cards, Aadhaar cards, ration cards, PAN cards, and reservation certificates, and errors in paperwork during the application process.

Many of them often remain unaware of the errors in their documentation or even the status of their applications, creating layers of obstacles. Moreover, they speculated that the source of discrepancies arises not only from systemic ignorance or lack of awareness but also from deliberate actions of the corrupt individuals with socio-political privileges, officers and profit-oriented digitally skilled entrepreneurs.

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1. Originally published here: [HYPERLINK “https://thewire.in/labour/are-deliberate-documentation-errors-denying-bengal-tea-workers-access-to-state-welfare”](https://thewire.in/labour/are-deliberate-documentation-errors-denying-bengal-tea-workers-access-to-state-welfare)

The burden of discrepancies in documents often flows to the next generation, generating an inter-generational cycle of ‘wrong’ documentation.

The fieldwork was part of an intervention project of the Digital Empowerment Foundation (DEF), carried out in various tea gardens like Bandapani, Tasati, Binaguri, Huntapara, Dalgaon, etc., from districts like Alipurduar, Jalpaiguri and Cooch Behar. It aimed at assessing the outcomes of the program called SoochnaPreneur, qualitatively.

Under the intervention, sixteen women were recruited as SoochnaPreneurs and trained to run digitally enabled community centres for public service. A few of them, from the village of Bandapani, situated in the isolated and undulating terrain of Alipurduar and surrounded by vast tea gardens and interlaced by numerous dry riverbeds, shared their struggles in the interviews and FGDs.

Their challenges can be described in the following ways.

### **Delayed & networked information dissemination**

An FGD, with a group of 9 tea garden workers with mixed gender composition – the age group of 22-56 years – revealed that information-related entitlements remain secluded to a few individuals and networks of the privileged.

Despite the growing efforts to bridge the digital gaps and eradicate information poverty, many estimates suggest that access to information remains a challenge for a large section of Indian societies, as many do not even have access to smartphones or meaningful internet connectivity.

This challenge is far more stressful in villages surrounding the tea gardens of Assam and West Bengal, a recent baseline study of DEF suggests.

For example, only 38.66% of people have a smartphone in the gardens of Jalpaiguri district, while the situation is worse in districts like Cooch Behar (5.80%) of West Bengal, and Dibrugarh (20.89%) and Sonitpur (2.01%) of Assam.

As a consequence of such a striking digital divide, compounded with factors like lower educational attainments among their parents, Sudeshna\* and Sitala\*, two student participants (pursuing undergraduate degree) stated the following:

Sudeshna: “When the job applications come out, we usually find out later

that the form was available, and by then, the time has already passed. It would have been better if we had known earlier.”

Sitala: “If we could get updates as soon as the forms are released and know about it in advance, we could apply on time.”

During the ‘Duare Sarkar’ initiatives of the West Bengal government, which aimed to deliver services and welfare schemes at the doorsteps of the people through outreach camps, the participants emphasised about information asymmetry in receiving timely notifications, often via mobile phones, while the majority remained unaware due to limited access to connectivity and ICTs. For instance, Jopona\* shared:

“During Duare Sarkar, only some people received the news, either from the Panchayat office or through mobile notifications. But many didn’t get the information because most people don’t have smartphones, and they spend most of their time working in the gardens.”

The situation is even more challenging in remote villages like Chaibasa, located in the border areas near Bhutan, where internet connectivity is significantly less. Manisha\*, at her early 30s from the Chaibasa area of the garden, highlighted the difficulties, stating:

“Our village is surrounded by rivers on all sides, and we don’t even get proper network coverage. We struggle to get all this information here.”

Given such conditions manifested through information inequality and the digital divide, traditional methods of information dissemination have limited reach and often arrive too late.

Even owning a smartphone does not guarantee timely access to information to the underserved tea garden workers – for whom the process of leaving the village to visit the nearest internet café or Panchayat office is both time-consuming and costly, cutting into already inadequate daily wages.

### **‘Wrong’ documentation and information poverty**

An interview with Laxmi\*, a 28-year-old woman graduate running a small ICT service-related business in the village as a SoochnaPreneur, mentioned the transformative potential of socioeconomic growth when one gets information regarding entitlements.

She described the impact of information poverty on marginalised communities in the following way:

Laxmi: “Many people don’t even know if there are errors in their Aadhaar or voter cards. For example, women often face issues because they don’t have caste certificates, which prevents them from accessing benefits like the Lokkhi Bhandar Scheme. Before our centre was established, people would try to apply, often going to the distant Madarihat block office. But they would fill out the forms incorrectly. For instance, if there was an error in the Aadhaar card name, they didn’t know why their application got cancelled. When applying for a caste certificate, they would sometimes submit proof of their husband instead of their father, not realizing that proof from the husband wouldn’t suffice. They would keep reapplying without understanding the reason for rejection. They didn’t even ask why—it was just, ‘We submitted it, but it keeps getting rejected. Who knows why?’ They didn’t understand the cause.”

I asked, “Didn’t the officers tell them anything?”

Laxmi: “The officers were there to explain the forms, but they didn’t tell them, ‘Look, there’s an error in your Aadhaar card, and that’s why it might get rejected.’ They didn’t provide that information. When we started our centre, people came to us asking, ‘Why aren’t we getting the caste certificate? What should we do?’”

The lack of awareness about the ‘wrongs’ in their documents is not only due to systemic barriers in education but also from the kind of support they get from government bodies, which leads to a general mistrust of government processes.

The daunting experience of applying, more so because of the replacement of manual offline systems with digital systems, especially for those who are unfamiliar or had bad experiences with bureaucratic processes, often makes them reluctant about these processes, discouraging them from claiming their rightful entitlements.

### **Deliberate discrepancies?**

Furthermore, discussions also indicated that the discrepancies in documentation arise not only from systemic ignorance or lack of awareness around it but may also be because of deliberate actions. While discussing the sources of such discrepancies, some participants claimed the following:

Sachin\*: “We can’t really say, sir...how these things keep happening! They [meant to indicate the officers/businesspersons of internet cafes/or other intermediaries] are told everything properly, but they still make spelling mistakes.”

Jopona: “Maybe, they do it intentionally.”

Laxmi: “It happens, especially when Aadhaar cards are made, some people intentionally make errors. It’s like a cycle—as if they ensure mistakes are there so that people have to return and pay money for corrections. If everything were accurate from the start, where would their income come from?”

Even though it can be a question of human capacity – to be able to correctly spell one’s name by just hearing or by decoding one’s handwriting – there are several measures to keep such problems of misspelling/mismatches in check. Implications of these intentional actions create loopholes that often perpetuate corruption, contributing to barriers to essential services.

In many cases, the participants said that the burden of a single spelling mistake made by others in vital identity documents of tea garden workers often gets reproduced in the documents of their children.

If a generation fails to manage and maintain consistency across documents or any digital records, the burden gets transferred to the next, especially in contexts where parents have received less education, live in isolated terrains, and efforts to correct documents may cost their daily wage.

While highlighting these challenges, they mentioned the intergenerational impact of documentation discrepancies leading to a lack of welfare access:

Sachin: “Yes, it’s easier to correct the documents for the children nowadays, but the biggest problem is when the parents’ names are incorrect. If the guardians’ names are wrong, it affects the children too. One often keeps on fixing these things throughout their lifetime.”

Jopona: “If the parents’ documents are wrong, then the children’s will also be wrong. The problem will continue intergenerationally.”

Purnima: “There still exists a family here without Aadhaar cards, despite spending so much money on the process. They had to go back to Bihar to get it done.”

Given such conditioning, these discrepancies in documents are exacerbated by the recent push towards linking every document under new digitalisation initiatives, where any discrepancy, even a minor one, can cause significant anxiety among the already marginalised communities.

In such remote environments, it is necessary to map out the economies

underlying correction of documentation discrepancies and allocate services closer to these underserved communities, which reduces the need for expensive and time-consuming travel to distant government offices with an uncertainty of results.

Despite numerous interventions, many studies suggest how these tea garden workers still face persistent socio-economic challenges, including gender discrimination, low wages, inadequate living and working conditions, and limited opportunities for upward mobility.

The lack of access to accurate information, digital platforms, and state welfare schemes further aggravates these issues.

While civil society organisations working at the grassroots and programs like SoochnaPreneur have helped navigate challenges related to information poverty, documentation discrepancies and corrupt actions through various participatory approaches with the communities, the government mechanisms need to step up as well.

*\*All names changed to protect the identities of the workers*



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## 38. Quiet Acts, Clever Subversions: Everyday Online Resistance in India's Authoritarian Digital Publics. Dialogues on Digital Society.<sup>1</sup>

*Dhiraj Singha, Raina Ghosh*

**Abstract:** As India's digital sphere faces tightening authoritarianism marked by censorship, surveillance and algorithmic suppression, overt dissent has become risky. Drawing on Scott's 'hidden transcripts', this commentary examines how everyday online practices serve as potent acts of resistance. We argue that digital dissent in India operates through hidden subversions that spread throughout ordinary social interactions instead of relying on viral spectacles. Through ethnographic vignettes, the piece maps how citizens navigate shrinking civic spaces via witty memes, coded vernacular references, anonymous handles, disappearing content and regional platforms. The analysis views these resistance practices as cultural expressions which broaden political strategies available to Indian authoritarian governments. These digital resistance methods develop as durable political challenges, different from traditional mass demonstrations. It contributes to debates on online resistance cultures in the Global South. Mapping these digital tactics highlights how 'quiet acts' and 'clever subversions' enrich resistance in India's authoritarian digital regime.



**Scan here for the online link & read more**

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1. Originally published here: <https://doi.org/10.1177/29768640251371537>

## 39. What is Justice – for you, me and hum?<sup>1</sup>

Raina Ghosh



*To understand justice, one must move beyond the conventional scales of rights and wrongs into a wider sphere of affective lived realities, unveiling the structural and personal blindfolds of the domain of law. Acknowledging the subjective interpretations of what justice means in the everyday experiences of diverse sections of society gives us a people's repository of vocabularies around justice – one that is rooted, contextual and emergent from the grassroots.*

As a child, justice seemed to be an incomprehensible domain, a far-away concept that exists on paper, in law books, in the courtrooms, and is entirely in the interest of a “criminal”. Why would a “good” person even bother to think about it? However, as I grew older, this relatively narrow and reductive understanding of justice was transformed, mainly due to the influence of

1. Originally published here: <https://notes.agami.in/p/what-is-justice-for-you-me-and-hum>

books, personal encounters, and people's stories. I started seeing justice in the context of its nemesis – in the ordinariness of unfairness, when injustice seeps, creeps and challenges the freedom of the individual, the collective.

On a sunny morning in Bhopal, at [Agami's JusticeMakers Mela 2024](#), I began a curious, introspective journey in collecting meanings and building a self-curated, multilingual people's dictionary of justice. This interest stemmed from my short tryst with the development sector, which made me realise how ambiguity and the layered, intersectional experiences of communities and community workers make interpreting, seeking, and achieving justice a polysemous exercise. The quest, I figured out, can act as a metaphorical exercise for all of us who are part of this sector in knowing about realities different from ours, in driving a humbling journey to understand how we can effectively become a voice of the community, protecting the agency and integrity of the people without suffering from a saviour complex?

### **The ABCs of Justice: A for Agony, B for Belonging, C for Collective...Z for Zindaa**

For instance, to Rani, a community worker with a Madhya Pradesh-based non-profit, the thought around justice comes with a deep rush of sheer 'agony' and suffering of the community women she works with. Gulal, a graphic storyteller, finds justice in the solace brought in by the 'homecoming' of their lost cat after weeks of scurrying across neighbourhoods. Homecoming is significant here, for it quenches the thirst after days of being denied something in its search for water and home. Pragma, a sexual assault survivor, finds a 'cathartic' refuge in her art, in the genderless stick figures, to express the grief and trauma she felt once and to connect with many others who have gone through similar experiences. Dhoop thinks justice is a queer process – for it lies in the messiness of the everyday conundrum of finding a voice, losing a voice, in grief, anger, hesitations, shame, and stigma. In short, justice is when *Dhoop*, the 'warmest sunshine', finds a way into the mind's kingdom of darkness and dilemmas. These discernments of justice are deeply intimate – defining justice as pursued, lived, and mediated in the 'everydayness' of societal existence. However, while collating these meanings, I also learned about aspects of justice as a verb - the need to unlearn our set conventions of doing justice, transcending personal boundaries to the powerful, 'collective' political acts of justice-making. Take, for example, the chilling oral histories of feisty resilience from the margin lands of Sunderbans and the floodplains of Bihar - of strength, persistent fights against caste atrocities and heinous crimes like sex slavery. To *mallah* women (fisherwomen) like Parul Devi and Uriya Devi

from these regions, justice seems to be as simple and powerful as “*zindaa rehna*” or mere being – a solid affirmation of their everyday subaltern existence, visibility and resistance in the local power matrices. ‘Being’ also refers to a sense of ‘belonging’, an attempt towards *bekhauf* (fearless) living, to regain one’s customary rights over their community land, forests, and water. In the melodies of Dashug’s Ladakhi folk and Kabir’s *dohas*, justice seemed to weave not one, but uncountable, multilingual philosophies of our existence. For you, me and *hum*, sometimes justice is the act of healing over time, sometimes it is an incomplete journey - like leaving a book halfway while colouring it, and often, it is the clouded perspective of deep-rooted inhibitions that keeps us stuck in our fat cauldron of unfairness.

Listening and engaging more, I wondered how people’s conflicts, disputes, and contestations in community spaces have been dealt with in local contexts. Walking barefoot on the lush green lawns of Khushabhau Hall, I soon stumbled upon the keyword ‘*Koodam*’ – wafting through the air as a soft breeze blew from the *talab* (lake) nearby. The socio-cultural practice of *Koodam* (from Tamil, meaning ‘gathering place’) – an old method of dialogue, mediation and consensus building is believed to be effective in bringing breakthroughs to institutional deadlocks. In the *Koodam* model, justice-seeking is usually preconditioned by forming a collective to assemble and democratise information flows and decision-making. At the institutional level, this entails pedagogic experimentations in ‘doing’ justice by navigating deep-rooted power relations, hierarchies, and institutional bureaucracies and facilitating solutions for grassroots governance challenges.

### **Justice as a ‘safe space’ by design?**

While a classic dictionary would limit itself to semantics around justice and practices as means to reach these meanings, I realised that justice also thrives around our mental mappings of space – as a design metaphor for inclusivity, openness, and neutralisation of power dynamics. *Koodams*, in their functioning, can sometimes end up in moralistic outcomes, reinforcing existing faultlines of caste, class, gender and religion. However, this very concept and ethics of a ‘dialogic, experimental space’ can allow diverse groups to discuss and dissent, resonating with similar spatial models of *Chaupals* (village meeting places) or *Panchayats* (village councils or assemblies). Therefore, as justicemakers, community workers or change-wishers, creating and preserving these inclusive spaces is necessary. Agami’s experimentation with the *Mela* format proved that existing vernacular spaces, modes of conviviality and gathering places like *aangan* (courtyard), *baithak* (meeting), *chowks* (square), can be nurtured as non-confined

geographies of facilitating dialogues around justice, to even out the structural societal fault lines of caste, class, religion and so on.

But what about those topsy-turvy pot-holed roads that lead to these spaces of gathering, where no wheelchairs can reach, where disability access remains an afterthought? Justice, then, is not only about creating spaces for dialogue but also about integrating a justice ethic that is rooted in *care*. It goes beyond accommodating various forms of non-normativity with mere special measures, but actively makes accessibility a core principle of design. *Care* and *accessibility* as justice frameworks ask: Who can enter? Who feels safe in these spaces? Who is left behind? It challenges justice to move beyond intent and towards accountability by reimagining the conditions of justice itself.

### **Is Justice about information literacy?**

Sitting on the corners of the grand corridors was Sujata, from a faraway Adivasi village in North Bengal's tea gardens. She calls herself a [SoochnaPreneur](#) (an infopreneur) who, with her magic wand of literacy, makes a livelihood by providing information and services through digital centres to her communities at nominal charges. Beside her sat Mohammad from Nuh. Having fought poverty and disability all his life, today he takes pride in making their entire village digitally '*saksham*'—financially capable and socially empowered by disseminating information, digitally linking fellow community members to social security schemes, and busting misinformation and myths on the internet. To millions in this country, literacy is a precursor to justice, for it helps them access *soochna* or information. I quickly added these two terms to my dictionary – as crucial tools that empower communities to fight against prejudices and equip them with knowledge about their due rights in the pursuit of fairness.

### ***Weaving the final covers for my Dictionary***

In the course of this exercise, one thing became evident. This quest brings out undoubtedly subjective, nuanced and complex meanings of justice, conditioned by the vantage point of who looks at it and how. It dwells within an in-betweenness of knowing, in the hundred shades of greys between an absolute right and an absolute wrong. When I finally weave these many entries under the rubric of justice, from my impromptu meaning-hunt exercise, an index to this dictionary of justice sounds like:

To my fellow country (wo)men, 'I' for Information opens the 'O' around Opportunities that unlock the uncountable 'P's in the Pathways to achieve

the 'F' in Freedom and Fairness. Justice is that 'W' in the Wish to change the status quo of things, either earned through active resistance by the 'V' of Voicing fearlessly or working towards the 'M' of the *Modus-vivendi*. Justice is thriving to build that 'N' of the Network, propelling more conscientisation around the 'R's of Rights and helping you, me and *hum* to take these slow strides towards the 'S' of 'Samadhan' (resolutions). In its most plural sense, justice is that seven-lettered, *satrangi* transcendental journey for the 'U' of *Utthaan* – from the kaleidoscope of injustices surrounding each one of us – at each moment, at each corner.



Scan here for the online link & read more

## 40. Youth and the Internet – Reflections from the 7th Youth IGF Forum<sup>1</sup>

*Maitri Singh*

I recently attended the 7th Annual Forum of the Youth Internet Governance Fellowship (YIGF) at IIMB. While working at Digital Empowerment Foundation (DEF) gives one a broader understanding of the digital world from the perspective of civil society, at YIGF, I had the pleasure of meeting people from different walks of life who represented different stakeholder groups from civil society, tech and business, law as well from the government with varied levels of expertise in the digital ecosystem. The forum offered an open platform to discuss and raise the everyday evolving challenges as well as opportunities in the Internet governance space. Subjects such as AI governance, digital inclusion, digital and business and cybersecurity, and most importantly, the importance of multistakeholder collaboration became the central focus of the forum. Among all the participants, inclusive of students, academicians, domain experts, and the selected fellows, there was a strong sense of understanding that the future of the internet is something we all have a role in shaping, and therefore our efforts have to be aligned in making the internet “equitable, just and inclusive”. The forum started with a session on Demystifying Internet Governance (IG) Issues – Global & Indian Perspectives, exploring how the pace of technological innovation, especially artificial intelligence should be balanced with the need for safety and security. In the session one of the primary concerns highlighted was the increased reliance on data that is AI-generated, as it could lead to issues like “model collapse”<sup>1</sup> if not managed properly. For me, the session highlighted the importance of safety nets in policy frameworks to prevent unintended AI consequences.

The discussions further delved on the vulnerabilities faced by peri-urban populations in India and how policies, like Tamil Nadu Data Policy (TNDP)<sup>2</sup> in Tamil Nadu could serve as models for balancing privacy alongside innovation. It was discussed how global powers like the USA, China, and India have been engaging with AI governance, with India having the most balanced approach at leading AI governance due to its “jugaadu”<sup>3</sup> approach.

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*1. Originally published here: <https://typeright.stck.me/post/814971/Chapter-120-Youth-and-the-Internet-Reflections-from-the-7th-Youth-IGF-Forum>*

There was another session on the Internet Governance Ecosystem, which traced the history and development of the organisations that have played an important role in shaping the Internet's infrastructure. Speakers helped in breaking down the complex web of institutions such as ICANN, ISOC, and RIRs, which govern different parts of the internet's framework. What stood out in this session was the emphasis on collaboration and consensus-building, which ensures that no single entity has too much control over the internet. The discussion specifically highlighted the growing influence of major corporations and the importance of maintaining a balanced, multi-stakeholder approach and how state-level policies can be adapted and scaled across different regional contexts. It reinforced the idea that policy experimentation at the state level can serve as models for national frameworks.

Marten Botterman from ICANN in his presentation explained the history of Internet governance and the need for cooperation among governments, civil society, and private sector players. He discussed how the internet has evolved, and also touched on the watershed moments like the publication of the TCP/IP standard and the shift to online operations during the COVID-19 pandemic. I also learnt about the idea of the "Four Internets"—a concept that talks about how different political climates are shaping different versions of the Internet.

The panel discussion on Preparing Youth for the AI-Driven Future was one of the most engaging sessions. Analyzing the ethical challenges posed by AI and its growing impact on the workforce, the panel talked about the importance of creating risk assessment frameworks to ensure AI is used safely, especially in high-stakes industries like finance and aviation. There was also a discussion about AI bias and the importance of transparent governance. The forum also addressed the growing concerns about Cybersecurity in a Connected World. Speakers talked about the increasing threat of ransomware attacks and the importance of cloud security, as more businesses are shifting to cloud-based services. It was discussed that while digital technologies open up vast opportunities, they also introduce significant vulnerabilities.

One of the most interactive parts of the event was the Stakeholder Roleplay, where participants took on the roles of various stakeholders involved in AI governance. In a scenario where a virus is detected in a region, the stakeholders were required to come up with solutions of whether to impose internet shutdown or not; if yes, what kind of shutdown would it be and what would be the rationale behind every decision? The exercise showed

how difficult it is to balance encouraging innovation and protecting the public interest. It also showed how critical it is to have diverse perspectives at the table. One of my key learnings from this roleplay was how different stakeholders make decisions and considerations they go through before taking decisive steps. What became evident during this exercise is that civil society and the general public are often the last to be considered in decision-making processes, as they hold less authority and influence compared to other stakeholders. The final session on Internet Governance— Meaningful Access & Connectivity was a good conclusion to the forum, with domain experts raising the issue of unequal access to the Internet, particularly in rural and marginalised communities and stressing the need for meaningful access, so that the Internet is not only made available but also ensured to be safe, affordable, and inclusive.

Being part of the 7th Annual Youth Internet Governance Fellowship was an exciting experience for me as it offered a space for me to understand and observe the world of Internet governance more closely. It left me with a strong sense of belief that the future of the internet is in our hands and that the youth of this country have a crucial role to play as stakeholders and changemakers in responsibly shaping the digital future.



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## 41. Freedoms for Tomorrow: Enabling Universal Meaningful Access for an Inclusive Nation by 2047<sup>1</sup>

*Osama Manzar, Raina Ghosh*

In 2025, the aspirations of a billion plus Indians seem to have travelled light-years away from those of post-colonial gestating periods of growth. Interestingly, the country's glide towards its 100th year of independence marks a look back at the crucial five-decade period that offered a unique entanglement of digital technology in the everyday lives of its people. It is a testimony to our progress since the Internet in India was launched on August 15, 1995.

Over these years, the nation's course and people's aspirations have rerouted themselves to existential questions in a rapidly digitising nation. Today, India stands at the crossroads of a new definition of inclusivity that seeks liberation from the complex unfreedoms of '(digital) exclusion' and '(information) poverty'. This would mean not only addressing the structural barriers of caste, class, and religion affecting limited educational and economic opportunities but also fundamentally addressing the digital literacy gaps hindering one's freedom from information darkness. Moreover, we have also understood that in the digital era, literacy entails embracing the entire spectrum of Media and Information Literacy (MIL)—to strategically navigate the threats of an 'infodemic' of digital wrongs and misinformation.

But what does a Digital Bharat look like in its 100th independence year? How do we ensure India@100 is futuristic, technologically competent, and built upon strong equity and inclusivity principles? One of the key tools for embracing inclusivity would be the facilitation of access to digitally mediated information for people through robust digital skilling programs, improving digital infrastructure provisions across the geographies of rural, urban, and physical remoteness. It is to be understood how access to information can open a ripple effect of opportunities towards government and private services, entitlements, social security benefits, new skills, jobs, and the wider integration into the nation's financial economy. This would mean marginalised sections like women, elderly, Persons with Disabilities

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1. Originally published here: [https://indiaat75.in/wp-content/uploads/2025/03/february\\_2025-03-18T101553.740474.html](https://indiaat75.in/wp-content/uploads/2025/03/february_2025-03-18T101553.740474.html)

(PwDs), Dalits, Adivasis, other backward groups, and minority populations (religion, gender, and language groups) are granted an invisible weapon to overcome the intergenerational cycles of discrimination and disadvantages.

The Confederation of Indian Industry (CII) has envisaged many such flagship initiatives constructively propelling the nation and its massive workforce toward a more inclusive realm of digitalisation—acknowledging the interconnectedness of technology in daily human lives. An inclusive future requires working hand-in-hand and working for the interests of this huge unorganised labour force. Keeping in mind the needs of different underprivileged constituencies of labour in rural areas, the Digital Empowerment Foundation (DEF) partnered with the CII-led India@75 Foundation to jointly design and run the Function Literacy Program (FLiP).

FLiP, a 3-module program, focussed on digital skilling of different labour groups within the rural workforce. The benefits were getting digitally empowered and learning about the functional aspects of digital and financial literacy, as well as moving beyond the mere act of ‘going digital’ or ‘going online.’ The program essentially ensured training, access, and digital linkages to government and private services, addressing the issues of the digital divide vis-à-vis the sectors of digital education and the digital financial economy.

For a time when most public services and entitlements have been hinged on digital platforms, the program facilitated access to these welfare avenues for the most vulnerable populations in rural areas through tools like LMS (Learning Management System). This meant inclusivity ushered in by overcoming the various barriers to digital literacy, allowing the lower rung of the population to leverage information, economic independence, and empowerment through informed decision-making.

Therefore, imagining a digitally inclusive nation in 2047 would require many such initiatives like FLiP to enable broader access to technology whereby marginalised communities can advocate for their rights, access essential services, and engage in economic opportunities.



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*The Digital Frontlines: A Knowledge Compendium 2025, published by the Digital Empowerment Foundation (DEF), is a comprehensive anthology that captures a year's worth of ideas, field research, and reflective writing on India's evolving digital landscape. Encompassing over sixty works - including essays, research papers, and community case studies - the report documents how digital technologies intersect with issues of inclusion, gender, sustainability, governance, and ethics.*

*The compendium portrays technology as a socially embedded and contested space, deeply influenced by caste, class, gender, and geography. Through themes like Digital Inclusion & Access, Gender & Technology, Artificial Intelligence & Ethics, Just Transition & Sustainability, and Governance, Rights & Digital Futures, the report shows how communities adapt, innovate, and challenge structural inequities within India's digital transformation.*

*In essence, the publication positions itself as a living record of thought and action - a call to rethink digitalization as a participatory, human-centered process shaped by both grassroots initiatives and institutional choices*

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