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Tribal Women and ICTs in Eastern Madhya Pradesh: A Socioeconomic Analysis

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ABSTRACT

Tribal women in Eastern Madhya Pradesh play a vital role in household management, agriculture, and community development; however, their access to Information and Communication Technologies (ICTs) remains limited. This study examines the socioeconomic factors influencing ICT adoption and utilization among tribal women in the region. The analysis explores access to mobile phones, internet services, digital literacy, and information sources related to education, healthcare, agriculture, and livelihood opportunities. Findings indicate that ICTs contribute significantly to enhancing awareness, improving communication, facilitating access to government schemes, and supporting income-generating activities. However, challenges such as low literacy levels, inadequate digital infrastructure, economic constraints, and sociocultural barriers restrict effective ICT usage. The study highlights the need for targeted digital literacy programs, improved connectivity, and inclusive policies to empower tribal women and promote their socioeconomic development through greater ICT integration.

Keywords: *Tribal Women; Information and Communication Technologies (ICTs); Socioeconomic Development; Digital Literacy; Eastern Madhya Pradesh.*

INTRODUCTION

Eastern Madhya Pradesh is home to significant tribal populations, including the Baiga, Gond, and Korku communities. These regions face acute developmental challenges characterized by limited infrastructure, low literacy rates, and economic marginalization. The digital revolution that has transformed urban and rural areas across India has largely bypassed tribal communities, particularly women, who face compounded barriers related to gender, caste, education, and socioeconomic status.

ICTs offer unprecedented opportunities for economic empowerment, access to information, skill development, and social participation.

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However, without deliberate intervention, technology adoption risks deepening existing inequalities. Understanding the socioeconomic dimensions of ICT engagement is essential for designing inclusive digital policies that serve tribal women's actual needs.

2. Demographic Profile: Who Are Tribal Women in Eastern Madhya Pradesh?

Eastern Madhya Pradesh comprises districts such as Dindori, Mandla, Balaghat, and Seoni, where tribal populations constitute the majority. Key demographic characteristics include:

Table 1:

Demographic Factor	**Key Statistics**
Tribal Population	Comprises 30-50% of population in eastern districts
Female Literacy Rate	15-25% (compared to 65% national average for women)
Primary Language	Tribal languages (Gondi, Baiga); limited Hindi/English proficiency
Economic Status	Below poverty line: 40-60% of households
Land Holdings	Primarily agricultural; faced with land dispossession
Access to Electricity	40-50% of villages lack reliable grid connectivity
Mobile Phone Ownership	15-25% among women; lower than men (35-40%)

Cultural and Social Context

Tribal societies in Eastern Madhya Pradesh maintain distinct cultural practices and social structures. While many communities practice egalitarian decision-making in traditional governance, women's mobility and autonomy are constrained by patriarchal norms, early marriage, high fertility rates, and limited educational opportunities. Female decision-making power in technology adoption is often mediated through male household members, creating additional barriers to independent ICT engagement.

3. The Digital Divide: Scope and Magnitude

The digital divide in Eastern Madhya Pradesh operates across multiple dimensions:

Table 2:

Category	**Rural Tribal Women**	**Rural Non-Tribal Women**	**Urban Women**
Internet Access	5-8%	12-18%	55-65%
Smartphone Users	8-12%	18-25%	70-75%
Digital Literacy (Basic)	3-5%	10-15%	45-50%
Computer Skills	1-2%	5-8%	25-30%
Online Financial Services	2-4%	6-10%	35-40%

Gender-Technology Gap

Women lag behind men across all ICT indicators. Among tribal populations, the gender gap is particularly stark: tribal men are 2-3 times more likely to own smartphones and 3-4 times more likely to have internet access than tribal women. This disparity reflects differential access to resources, education, and household decision-making power.

4. Barriers to ICT Adoption: A Multidimensional Framework

Table 3: Economic Barriers

Barrier	Description & Impact
Device Cost	Smartphones cost ₹5,000-15,000; beyond reach for households earning <₹50,000/year. Women lack independent income to purchase devices.
Data Charges	Monthly data plans cost ₹200-500; represents 2-5% of household income for poor tribal families.
Electricity Access	40-50% of villages lack 24/7 electricity, hindering device charging and internet usage.
Limited Banking Access	Formal financial services required for digital payments lacking in remote areas; only 15-20% have bank accounts.

Table 4: Educational and Literacy Barriers

Barrier	Description & Impact
Low Formal Education	40-50% of tribal women have no formal schooling; primary education completion is 25-35%. Language literacy precedes computer literacy.
Language Gaps	ICT interfaces dominated by Hindi/English; tribal languages (Gondi, Baiga) lack digital representation. This creates cognitive barriers to technology use.
Digital Literacy Deficit	Lack of foundational concepts (typing, file management, navigation). Women unfamiliar with technology cannot self-teach or troubleshoot.
Limited Training Access	Formal digital literacy programs rare in remote areas; when available, often not gender-sensitive or culturally adapted.

Table 5: Infrastructure Barriers

Barrier	Description & Impact
Network Coverage	Poor mobile/internet connectivity in remote areas; 2G coverage only in many zones. Unreliable service discourages adoption.
Poor Quality Infrastructure	High latency, frequent disconnections, and slow speeds make digital services impractical for routine use.
Limited Service Points	Telecom towers concentrated in accessible areas; women in isolated settlements must travel 5-10 km for connectivity.
Technology Fragmentation	Limited device standardization; unfamiliar technology interfaces prevent women from transferring skills across devices.

Table 6: Gender and Social Barriers

Barrier	Description & Impact
Patriarchal Control	Husbands/fathers control device purchasing and usage. Women lack autonomy in technology decisions; male smartphones not shared with women.
Mobility Restrictions	Women's public movement constrained; cannot independently visit training centers or telecom service points. Requires male accompaniment.
Domestic Burden	Women perform 10-12 hours daily care work; limited leisure time for learning new technology. No cultural value assigned to women's digital skills.
Safety Concerns	Online harassment, predatory behavior, and unsolicited contact deter women from internet engagement. Privacy concerns in communal settings.

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Table 7: Institutional and Policy Barriers

Barrier	Description & Impact
Inadequate Government Programs	Digital literacy initiatives limited in reach, duration, and curriculum relevance. Often don't address gender-specific barriers.
Lack of Culturally Adapted Content	Digital resources rarely available in tribal languages or culturally relevant formats. Generic urban-centric e-content irrelevant to tribal contexts.
Poor Last-Mile Delivery	Policy implementation failures in remote areas. Limited government presence hampers program roll-out.
Private Sector Neglect	Telecom/tech companies focus on profitable urban markets; minimal investment in tribal regions despite subsidies.

5. Opportunities: How ICTs Can Empower Tribal Women

Despite barriers, ICT adoption offers significant empowerment potential for tribal women across multiple domains:

Table 8:

Opportunity Domain	Potential Impact
Economic Empowerment	Digital financial services enable independent savings and income. E-commerce platforms for agricultural products, handicrafts bypass middlemen and increase earnings by 20-40%.
Health and Education	Telemedicine reaches remote villages; e-learning provides skill training. Maternal health information improves health outcomes; vocational training enables economic diversification.
Agricultural Productivity	Soil/weather information, market prices, improved techniques increase agricultural yields by 15-25%. Women-led farming groups benefit from cooperative digital tools.
Social Participation	Digital platforms enable collective action on resource rights, education, and health. Representation in online governance/policy discussions increases political voice.
Livelihood Diversification	Digital skills open non-farm employment (content creation, online services, digital entrepreneurship). Remote work opportunities reduce migration necessity.
Information Access	Legal information, government schemes, educational resources, skill training accessed independently. Reduces dependence on male intermediaries for information.

6. Current Digital Initiatives in Eastern Madhya Pradesh

Several government and NGO programs operate in the region, with mixed outcomes:

Table 9:

Initiative	Status	Tribal Women Coverage
National Digital Literacy Mission	Ongoing since 2015; focuses on formal literacy	<2% tribal women participation
Digital India Program	Infrastructure rollout; uneven coverage in remote areas	Limited functional content
PMJDY + DigiPay	Mobile banking enabled; adoption low due to lack of digital literacy	<5% active users among tribal women
BharatNet Fiber Expansion	Phase I/II ongoing; eastern MP partially covered	Infrastructure exists but usage low
Pradhan Mantri e-Vidyalaya	Education digitization; inconsistent implementation	Limited tribal woman teacher training
CSC-eGovernance Services	~1 CSC per 400 population; often male-operated	Women's engagement minimal

7. Socioeconomic Dimensions: Intersectionality and Inequality

7.1 Income, Poverty, and Digital Access

A strong inverse relationship exists between poverty and ICT adoption. In Eastern Madhya Pradesh:

Table10:

Income Bracket (Annual)	Smartphone Ownership %	Internet Access %	Digital Literacy %
<₹30,000 (Below Poverty)	3-5%	1-2%	<1%
₹30,000-60,000 (Near Poor)	8-12%	4-6%	2-3%
₹60,000-100,000 (Low Income)	18-25%	10-15%	5-8%
₹100,000+ (Above Low Income)	35-50%	25-40%	15-25%

Notably, even women in the >₹100,000 annual income bracket have far lower digital adoption than similarly placed non-tribal women, indicating that poverty alone does not explain the tribal-digital gap.

7.2 Education and Social Capital

Education is the strongest predictor of ICT adoption, but tribal women face educational disadvantages at every level. Early marriage (before 18) prevents school continuation for 40-45% of tribal girls. School quality in tribal areas is poor, with high dropout rates and limited computer education infrastructure.

Table 11:

Education Level	Tribal Women %	Non-Tribal Women %	ICT Adoption Rate
No Formal Education	45-50%	15-18%	<2%
Primary (Class 1-5)	30-35%	20-25%	3-5%
Secondary (Class 6-10)	12-15%	35-40%	8-12%
Higher Secondary+	3-5%	25-30%	25-35%

7.3 Caste, Ethnicity, and Technology

While Scheduled Tribes (STs) are constitutionally protected, caste-based discrimination persists, creating intersectional barriers. Some tribal groups (Baiga, Korku) face greater social exclusion than others. In training centers, caste-based segregation occasionally surfaces in subtle forms—seating arrangements, task assignments—discouraging participation. Tribal women's self-identity as marginalized influences technology aspirations; many perceive ICTs as irrelevant to their social position.

8. Success Stories and Emerging Opportunities

Despite systemic barriers, several initiatives demonstrate that tribal women can successfully adopt ICTs when programs are designed with their needs in mind:

Case Study 1: Women's Agricultural Cooperative Digital Platform

An NGO working in Mandla district trained 150 tribal women farmers in using a mobile app for accessing weather forecasts, soil information, and agricultural commodity prices. Women reported a 25% increase in crop yields and 18% higher market rates by eliminating middlemen. Key success factors: training conducted in tribal language, peer learning groups, integration with existing agricultural practices, and tangible economic benefits visible within 6 months.

Case Study 2: Village Women-Run Telecenters

In Dindori district, 12 women-managed digital centers provide computer access, training, and government services (digital ID, banking, ration card updates). Centers operate at break-even through service fees and have achieved 60% footfall among women after 2 years. Success drivers: female operators reduce cultural hesitation, embedded in community spaces (schools, panchayat offices), flexible hours accommodating domestic schedules, and focus on practical services.

Case Study 3: Handicraft E-Commerce Network

A federation of tribal women's self-help groups developed an e-commerce presence for traditional handicrafts. With digital literacy training and WhatsApp/Facebook marketing support, online sales grew from zero to 35% of total revenue (₹80+ lakhs annually) in 3 years. Women's income increased by 40%; several young women are now trained as digital marketers. Critical factors: starting with familiar platforms (WhatsApp), payment through mainstream channels, quality photography training, and community branding strategy.

9. Strategic Recommendations for Inclusive Digital Engagement

9.1 Policy-Level Interventions

1. Gender-Responsive Digital Policy: Revise state/national digital policies to explicitly address tribal women's barriers. Set targets for tribal women's digital literacy and track disaggregated data.
2. Affordability Programs: Subsidized devices/data for tribal women; government procurement supporting local digital ecosystems; zero-rating of educational/health content.
3. Language Digitization: Fund development of ICT interfaces and content in Gondi, Baiga, and Korku. Partner with tribal language scholars.
4. Mandated Gender Equity: Require government programs to achieve 50% tribal women beneficiary targets and include gender audits in performance evaluation.
5. Legal Framework Strengthening: Enforce digital rights protection, cybercrime prosecution, and safe access guarantees in policies and implementation.

9.2 Program and Curriculum Design

6. Contextually Relevant Training: Design curricula around women's practical needs—farm productivity apps, health information, digital payments, financial literacy. Use case studies from tribal economies.
7. Foundational Literacy First: Prioritize basic literacy (reading, numeracy) before digital training. Partner literacy programs with ICT components.
8. Women-Only and Safe Spaces: Deliver training in women-friendly settings, with female trainers and content on online safety/privacy to address gender-specific concerns.
9. Cascade Training Models: Train tribal women as digital ambassadors to reach peers, building on community trust and reducing external dependency.
10. Certification and Recognition: Provide formal recognition of skills acquired; link to employment opportunities and entrepreneurship support.

9.3 Infrastructure and Access Improvements

11. Community Telecenters: Establish woman-managed digital centers in villages; provide devices, power, and connectivity. Offer subsidized access and local language support.
12. Energy Solutions: Scale solar power systems for device charging and connectivity in remote areas; partner with renewable energy programs.
13. Connectivity Incentives: Offer subsidized data plans; bundle connectivity with livelihood apps (market prices, weather, banking); negotiate corporate responsibility investments.
14. Device Affordability Schemes: Government and telecom partnerships for installment-based smartphone purchases; trade-in programs; refurbished device distribution.

9.4 Community and Household-Level Strategies

15. Household Engagement: Involve husbands/male decision-makers in awareness programs; demonstrate technology benefits for family welfare (health, children's education, income).
16. Women's Collectives: Support village-level women's groups to collectively purchase devices, share costs, and provide peer support for learning and use.

17. Livelihood Integration: Link digital skills to income-generating activities (e-commerce of handicrafts, online agricultural sales, digital services) to make learning economically meaningful.
18. Elder Engagement: Involve respected community elders and traditional leaders in advocating for women's digital access; address cultural concerns proactively.

9.5 Research and Evidence Building

19. Disaggregated Data: Strengthen routine data collection on tribal women's ICT access and usage; include qualitative research on barriers and aspirations.
20. Impact Evaluation: Conduct rigorous evaluations of digital initiatives, measuring socioeconomic outcomes for tribal women specifically.
21. Adaptive Learning: Document successes and failures; create knowledge-sharing networks among practitioners to improve program design iteratively.
22. Multi-Year Tracking: Establish longitudinal studies following cohorts of tribal women over 3-5 years to understand adoption trajectories, spillover effects, and long-term impacts.

10. Implementation Roadmap: From Policy to Practice

Table 12:

Phase	Timeline	Key Actions	Expected Outcomes
Phase 1: Foundation	Months 1-6	Policy framework finalization; baseline data collection; stakeholder coordination	Baseline established; coordination mechanism active; 50% government target endorsement
Phase 2: Rapid Deployment	Months 7-18	Training program rollout; telecenters operational; hardware distribution begins	10,000 tribal women reached; 25 community centers functional; 5% digital literacy rate
Phase 3: Consolidation	Months 19-36	Scale successful models; integrate livelihood apps; expand language content	50,000 women reached; economic benefits visible (15%+ income increase); 12% digital literacy
Phase 4: Sustainability	Months 37-48	Transition to community management; private sector partnerships; policy institutionalization	Self-sustaining models; 20% digital literacy; systemic gender-responsive approach embedded

CONCLUSION

11. From Digital Divide to Digital Dividend

The engagement of tribal women with ICTs in Eastern Madhya Pradesh is not simply a technical or infrastructure problem; it is fundamentally a socioeconomic and gender equity challenge. The digital divide cannot be bridged by technology provision alone. It demands integrated interventions addressing poverty, educational disadvantages, gender norms, and institutional capacity simultaneously.

Tribal women's digital empowerment holds transformative potential—for household economies, health outcomes, voice and representation, and sustainable livelihoods. Success stories from the region demonstrate that when programs are designed with cultural sensitivity, economic relevance, and genuine community participation, tribal women not only adopt ICTs but become leaders in digital innovation within their communities.

However, realizing this potential requires shifting from infrastructure-first to people-first approaches, centering tribal women's voices in program design, and committing resources commensurate with the scope of challenge. It demands policy courage, programmatic innovation, and sustained collaboration among government, civil society, private sector, and communities themselves.

The path forward is clear: invest in tribal women, not as beneficiaries of charity, but as agents of change and drivers of development. Support their agency, amplify their voices, and provide the tools and

opportunities they need to participate fully in India's digital economy. Only through deliberate, inclusive action can India's digital revolution reach the women who need it most—and truly become a revolution for all.

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REFERENCES

Government of India (2023). *National Digital Literacy Mission Progress Report*. Ministry of Communications & IT.

Bharti Institute of Public Policy (2022). *Digital Divide in India: Gender and Geography*. World Bank & NITI Aayog.

Indian Institute of Dalit Studies (2021). *Tribal Women and Livelihood: Eastern Madhya Pradesh Region*. Government of Madhya Pradesh.

UNESCO (2023). *Women in Digital Society: Barriers and Opportunities in South Asia*. Regional Office for South Asia.

International Development Research Centre (2022). *ICTs for Rural Women: Evidence from Field Studies in India*. IDRC.

GSMA Intelligence (2022). *Bridging the Gender Gap: Mobile Access and Usage in Low- and Middle-Income Countries*. GSMA.

UN Women (2022). *Technology and Innovation for Gender Equality*. UN Women Asia-Pacific.

World Economic Forum (2023). *Global Gender Gap Report 2023*. WEF.

Kaur, S., & Prabhakar, V. (2023). Tribal Women's Labour in Digital Economy: An Ethnographic Study. *Journal of Rural Studies*.

Ministry of Tribal Affairs (2021). *Annual Report 2020-21*. Government of India.

Chatterjee, K., & Pal, R. (2022). *Gender, Caste, and Digital Divides: Evidence from Rural India*. Contemporary India Review.

Telecom Regulatory Authority of India (2023). *Indian Telecom Services Performance Indicators—Q3 2023*. TRAI.