State Capacity, Political Will, and the Digital Divide: Explaining Federal Asymmetry in India's MGNREGS ICT Reform (2014-2024)

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Abstract

This article critically analyses the implementation of digital governance in India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) during its transformative decade (2014-2024). It interrogates the persistent puzzle of why a centrally designed, uniform ICT architecture—incorporating systems like Aadhaar-based payments and geo-tagging—yields such heterogeneous results across India's federal units. The investigation is anchored in a novel analytical framework that centres on three constitutive dimensions of sub-national governance: administrative state capacity, the orientation of political and bureaucratic will, and the material reality of the digital divide. Employing a rigorous comparative methodology across six states, the study explores how the interaction of these local variables mediates the translation of national technological policy into on-the-ground outcomes of transparency and administrative efficiency. This inquiry seeks to advance understanding of the complex socio-technical and political foundations of digital welfare in a federal democracy.

Keywords: MGNREGS, Digital Governance, State Capacity, Political Will, Federalism, ICT, Public Accountability.

JEL Classification: H11, H53, I38, L86, O33

1. Introduction: The Digital Imperative and the Federal Conundrum

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), enacted in 2005, constitutes one of the most significant social protection interventions in the modern world, legally guaranteeing 100 days of wage employment to rural households. Its scale is staggering, with over 140 million active workers and an annual financial outlay exceeding ₹1 lakh crore (MoRD, 2023). However, from its inception, the scheme has been a crucible of governance challenges. A vast body of literature has documented endemic issues: the creation of 'ghost' workers and assets, pervasive delays in wage payments often stretching to months, systematic leakage of funds, and the capture of benefits by local elites, severely undermining the programme's rights-based and redistributive intent (Ambasta et al., 2008; Chandrasekhar & Ghosh, 2011; Dreze & Khera, 2017). In response to these persistent failures, the Indian state, particularly from the early 2010s onwards, embarked on an ambitious project of techno-managerial reform. Under the overarching banner of 'Digital India', a suite of information and communication technologies (ICTs) was mandated to restructure the very DNA of MGNREGS governance. This digital arsenal—comprising the National Electronic Fund Management System (NeFMS), Aadhaar-based biometric authentication (ABBA), geo-tagging of assets (GeoMGNREGA), and a comprehensive Management Information System (MIS)—was envisioned as a definitive fix: a mechanism to enforce

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transparency, drive efficiency, eliminate discretion, and 'plug leakages' through the impersonal, automated logic of the database (Masiero, 2015).

This turn to technology is emblematic of a global trend in public administration, often informed by the tenets of New Public Management (NPM), which advocates for the use of ICTs to create lean, efficient, and customer-oriented states (Hood, 1991). In the context of development and welfare, digital systems are frequently framed as neutral, apolitical tools that can bypass corrupt human intermediaries and deliver services directly to the intended beneficiary—a vision powerfully captured in the discourse around India's Aadhaar-enabled 'JAM' (Jan Dhan, Aadhaar, Mobile) trinity (Gelb & Diofasi, 2018). Yet, a robust and growing critical scholarship challenges this narrative of technological salvation. Scholars of 'technological solutionism' argue that complex socio-political problems, such as poverty and accountability deficits, cannot be engineered away by code; instead, poorly contextualised digital interventions can obscure root causes, centralise power, and create new, often invisible, forms of exclusion (Morozov, 2013; Ananny & Crawford, 2018). Within India, researchers have provided nuanced accounts of this double-edged sword, documenting how ICT integration in MGNREGS has, in some contexts, accelerated wage payments and improved auditability, while in others, it has led to the exclusion of the most vulnerable through authentication failures, increased the workload of frontline staff, and created a 'digital ceiling' for those without connectivity or literacy (Drèze et al., 2017; Khera, 2019; Masiero, 2016).

However, a critical analytical gap persists. Much of the existing literature, while invaluable, tends to treat 'the state' as a unitary actor or focuses on specific technological components in isolation. This overlooks the fundamental character of the Indian polity: its federal architecture. India is not a monolith but a union of states, each possessing distinct political cultures, administrative capabilities, historical trajectories, and socio-economic landscapes. Comparative federalism scholarship has long established that state capacity—the ability to formulate and, crucially, implement policy—is a variable of paramount importance in determining developmental outcomes (Singh & Srinivasan, 2006). This capacity is not merely bureaucratic; it is deeply intertwined with political and bureaucratic willingness—the priorities set by elected leadership, the incentive structures within the administrative machinery, and the underlying intent (whether empowerment or control) that drives policy execution (Keefer & Khemani, 2005). Furthermore, the material and social constraints of infrastructure, literacy, and geography impose hard limits on technological adoption, creating a 'digital divide' that is not uniform but varies dramatically across regions (Alozie et al., 2021).

This article, therefore, asks a central, unexplored question: How do the dimensions of state capacity, political-bureaucratic willingness, and structural constraints explain the starkly divergent outcomes of a uniform national digital governance architecture across India's federal units? We posit that the impact of ICTs in MGNREGS cannot be understood by examining the technology alone; it is fundamentally contingent on the sub-national political and institutional ecosystems that enact it. By undertaking a systematic, comparative analysis of six states over the critical decade of 2014-2024—a period that witnessed the rapid scaling and entrenchment of digital systems—this study shifts the analytical lens from the design of the blueprint in Delhi to its deeply varied, and often contradictory, execution in the states. We argue that the story of digital MGNREGS is, at its core, a story of federal asymmetry, where a homogenising technological imperative collides with

heterogeneous local realities, producing a mosaic of success, struggle, and failure that is best deciphered through the tripartite framework of capacity, willingness, and constraint.

2. Theoretical Framework: Bridging Digital Studies, Federalism, and Political Economy

To analyse the complex phenomenon of digital welfare governance in a federal setting, this study synthesises insights from three interconnected theoretical domains: critical digital governance studies, comparative federalism, and the political economy of implementation. This integrated framework allows us to move beyond siloed explanations and construct a holistic understanding of why uniform technologies yield disparate results.

2.1. Critical Digital Governance: Beyond Solutionism

The first pillar of our framework draws from critical scholarship on technology and the state. Rejecting the tenets of technological determinism and solutionism, this literature posits that ICTs are not neutral tools but are embedded within, and shaped by, existing power relations, institutional logics, and social contexts (Morozov, 2013). Digital systems, as Masiero (2016) argues, possess a 'materiality'—they are not merely transparent conduits but active agents that reconfigure processes, relationships, and forms of accountability. In the context of MGNREGS, the integration of Aadhaar and PFMS can be seen as a shift from a 'social' contract, based on local negotiation and legal entitlement, to a 'financial' one, mediated by biometric verification and centralised payment rails. This reconfiguration can enhance certain forms of legibility and control for the central state while simultaneously rendering local, contextual knowledge and informal accountability mechanisms less relevant or even illegitimate (Mooij, 2022). Furthermore, the work of Ananny and Crawford (2018) on 'algorithmic accountability' warns that while digital systems may produce vast amounts of data (transparency of information), the algorithms that process this data—determining, for instance, which transactions are flagged as 'suspicious' or which beneficiaries are 'deduplicated'—are often opaque 'black boxes'. This creates a new form of bureaucratic power that is difficult to scrutinise or challenge, potentially displacing substantive accountability with procedural compliance.

2.2. Federalism and State Capacity: The Implementational Imperative

The second pillar grounds the digital transformation within India's federal structure. Federalism theory distinguishes between policy formulation (often a central function) and policy implementation (primarily a state function). Singh and Srinivasan (2006) demonstrate that economic development outcomes in India are profoundly influenced by inter-state variations in the quality of institutions and governance, i.e., state capacity. This capacity encompasses both the 'hardware' (financial resources, physical infrastructure, trained personnel) and the 'software' (organisational culture, procedural efficiency, rule of law) of the state (Fukuyama, 2013). A high-capacity state can effectively translate policy goals into on-the-ground results; a low-capacity state struggles with basic service delivery, regardless of the policy's design. In the context of digital MGNREGS, this means that the sophisticated ICT architecture mandated by the centre is only as effective as the state's ability to operationalise it. This includes not only technical skills but also the ability to manage change, train frontline workers, maintain hardware, troubleshoot software glitches, and integrate digital workflows with existing administrative practices. The federal structure

thus ensures that a national digital mandate encounters not one, but multiple, differently capable administrative apparatuses.

2.3. Political Economy of Willingness: Interests, Incentives, and Intent

The third pillar introduces the crucial dimension of agency and politics. State capacity provides the means, but political and bureaucratic willingness determines the ends. The political economy literature emphasises that implementation is not an automatic, technical process but is driven by the interests and incentives of key actors (Keefer & Khemani, 2005). Political willingness refers to the priority accorded to MGNREGS by state-level political leadership. Is the scheme viewed as a core instrument of social justice and political mobilisation, as in Kerala or under certain regimes in Rajasthan? Or is it seen as a centrally-sponsored programme with limited electoral payoff, leading to ambivalence or neglect, as has often been the case in Uttar Pradesh or Gujarat? Political will shapes budgetary allocations, the tone of administrative directives, and the responsiveness to implementation bottlenecks. Bureaucratic willingness, in turn, flows from political signals and internal incentive structures. Are officials rewarded for maximising quantitative metrics (e.g., Aadhaar seeding percentages, speed of PFMS processing) or for ensuring equitable access and addressing grievances? Does the digital system empower frontline workers or disempower them, turning them into mere data entry clerks? The 'will' to implement can thus vary from a committed, pro-poor orientation to a cynical, compliance-driven box-ticking exercise, with profound implications for whether digital tools empower citizens or merely surveil them.

This tripartite framework—viewing digital tools as non-neutral, politically embedded artefacts whose impact is filtered through variable state capacities and shaped by contingent political wills—provides the analytical foundation for our comparative state-wise investigation. It allows us to hypothesise that states with high capacity and pro-poor willingness will leverage ICTs for synergistic gains, while those with low capacity and weak will will experience digital dysfunction.

3. Research Design and Methodology: A Comparative Mixed-Methods Approach

This study employs a qualitative comparative case study design to systematically investigate the central research question: how do the dimensions of state capacity, political will, and the digital divide explain the federal asymmetries in ICT outcomes within MGNREGS? A case study methodology is uniquely suited for this inquiry as it facilitates an in-depth, contextualized examination of complex social phenomena within their real-life settings, allowing for the exploration of causal mechanisms and processes that link the implementation of a national policy to divergent local outcomes (Yin, 2018). Our approach is explicitly comparative, structured to maximize analytical leverage by examining variation across key units of analysis—Indian states—that operate under a common national policy framework but within distinct political and institutional ecosystems. To ensure empirical rigor and validity, we triangulate data from multiple sources, including official government reports, quantitative performance metrics, scholarly evaluations, and civil society documentation, constructing a robust evidentiary base for each case that moves beyond descriptive accounts to explanatory analysis (Seawright & Gerring, 2008).

The selection of cases was purposive, guided by the principle of maximum variation to capture the full spectrum of India's federal experience with digital MGNREGS. We selected six

states—Andhra Pradesh/Telangana, Kerala, Rajasthan, Madhya Pradesh, Uttar Pradesh/Bihar, and Assam—not for statistical representativeness but for their illustrative power in demonstrating how different configurations of our core analytical variables produce divergent governance archetypes. This selection allows us to move from mere classification to the development of a typology that explains patterns of success and failure. As detailed in Table 1, each state represents a distinct analytical type: from the high-capacity, techno-managerial model of Andhra Pradesh to the contested arena of Rajasthan, the high-capacity, synergistic model of Kerala, the median-performing heartland state of Madhya Pradesh, the archetypal dysfunctional states of Uttar Pradesh and Bihar, and the infrastructure-constrained periphery represented by Assam. This strategic selection enables a controlled comparison, holding the national digital mandate constant while observing how state-level factors of capacity, will, and constraint filter and transform its impact.

Data collection was structured to build a comprehensive, multi-layered narrative for each case. We systematically analysed a decade of quantitative performance data (2014-15 to 2023-24) drawn from official portals, including the MGNREGA MIS, PFMS dashboards, and GeoMGNREGA platform, focusing on indicators of efficiency (e.g., timeliness of wage payments), procedural compliance (e.g., Aadhaar seeding, geo-tagging rates), and inclusion (e.g., SC/ST and women's participation). This quantitative data provides a measurable, longitudinal record of outcomes. To interpret these outcomes and uncover the underlying causal processes, we engaged in deep qualitative analysis of primary and secondary documents. This included state-specific audit reports from the Comptroller and Auditor General (CAG), annual administrative reports from State Rural Development Departments, government policy circulars, and in-depth academic case studies. Crucially, we also incorporated analyses from civil society organisations and independent research institutes, which often provide critical ground-level perspectives on implementation bottlenecks, bureaucratic behaviour, and citizen experiences that are absent from official accounts.

The analytical process proceeded in two integrated stages. First, we constructed detailed, within-case narratives for each state, synthesizing quantitative trends with qualitative evidence. These narratives were explicitly coded to identify empirical instances and patterns related to our three core dimensions: capacity (e.g., staffing levels, training initiatives, IT infrastructure), political will (e.g., political rhetoric, policy prioritization, grievance redressal responsiveness), and the digital divide (e.g., reports of connectivity failures, biometric exclusion, literacy barriers). Second, we conducted a systematic cross-case comparison, juxtaposing these coded narratives to identify recurring patterns, critical junctures, and divergent pathways. This comparative analysis allowed us to move from idiographic description to nomothetic explanation, inductively deriving the four-fold typology of state responses—Synergistic, Techno-Managerial, Contested, and Dysfunctional—that forms a core contribution of this study. The resulting framework does not merely describe variation but provides a parsimonious, causal explanation for why the same national ICT architecture yields such starkly different governance realities across India's federal landscape.

Table 1: Case Study States: Selection Rationale and Analytical Focus

State	Analytical Archetype	Primary Rationale for Selection	Key Analytical Dimensions
Andhra Pradesh/Telangana	Techno-Managerial State	Pioneers in full-stack digitisation, biometric authentication, and centralised, control-oriented implementation. Showcase high technical efficiency.	High Capacity, Strong (Control-Oriented) Will
Kerala	Synergistic State	Exceptionally high social development indices, robust Panchayati Raj Institutions (PRIs), and a history of civic engagement. Digital tools adopted to augment local democracy.	High Capacity, Strong (Participatory) Will
Rajasthan	Contested State	Birthplace of the social audit movement; strong civil society actors actively use and contest official data. Implementation is a site of struggle between state and society.	Moderate Capacity, High Civic Will (Contested)
Madhya Pradesh	Median Performer	Represents the 'average' Indian state in terms of capacity and outcomes. Useful for understanding the challenges of the 'heartland'.	Mixed Capacity, Variable Will
Uttar Pradesh/Bihar	Dysfunctional State	Characterised by historically weak administrative capacity, high political ambivalence towards MGNREGS, and severe infrastructural constraints. Epitomise implementation failure.	Low Capacity, Weak/Ambivalent Will, High Constraint
Assam (NE Representative)	Constrained Periphery	Faces unique geographical challenges (floods, terrain), distinct social structures, and acute digital infrastructure gaps. Highlights the limits of uniform technology.	High Constraint, Variable Capacity & Will

Source: Author's compilation based on preliminary review of literature and performance trends.

4. The Architecture of Control: Deconstructing MGNREGS's National Digital Framework

The digital governance of MGNREGS is not an assemblage of discrete tools but an integrated, national-scale socio-technical system—an 'architecture of control' designed to reconfigure power and visibility. This architecture, largely rolled out and consolidated between 2014 and 2024, consists of four interlocking components, each with a specific governance objective, as detailed in Table 2.

Table 2: The National Digital Architecture of MGNREGS: Components, Logic, and Tensions

Digital Component	Core Technological Logic	Governance Objective	Inherent Tensions & Implementation Challenges
NeFMS/PFMS (Direct Benefit Transfer)	Electronic ledger & banking API integration. Automates fund flow from treasury to beneficiary account.	Fiscal Control & Efficiency: Eliminate intermediary tiers (State, District, Block treasuries) to prevent leakage and delay.	Last-mile exclusion: Banking deserts, account dormancy, signature mismatches. Procedural rigidity: No flexibility for last-mile corrections.
Aadhaar-Based Biometric Auth. (ABBA)	Biometric (fingerprint/iris) mapping to a unique 12-digit ID. Used for job card authentication & payment approval.	Beneficiary Legibility & Deduplication: Create a 'foolproof' verified beneficiary database; eliminate ghosts & duplicates.	Biometric exclusion: Failed authentication due to worn fingerprints, manual labour, technical glitches. Privacy & coercion: Mandatory linking excludes those resisting on principle.
GeoMGNREGA (Asset Geo-tagging)	GPS-enabled mobile app to capture coordinates, time-stamp, and photos of worksites & completed assets.	Spatial-Verificatory Control: Create an auditable, remote-verifiable record of asset creation; prevent ghost works.	Connectivity dependency: Fails in low/no-network areas. Burden shifting: Adds non-procedural work for field engineers; can incentivise 'gaming' (fake tags).
MIS & Public Dashboards	Centralised, web-based database capturing all transaction data. Public portals for proactive disclosure.	Panoptic Transparency & Management: Provide real-time data for central monitoring; enable citizen oversight via RTI.	Garbage in, garbage out: Data quality depends on overburdened frontline input. Elitist transparency: Benefits NGOs/researchers more than illiterate workers. Symbolic compliance.

Source: Compiled from MoRD Operational Guidelines (2021), Bhaskar & Yadav (2021), and Drèze et al. (2017).

This architecture embodies a centralising, technocratic vision of governance. Its design assumptions are profoundly optimistic: universal banking penetration, reliable biometrics, ubiquitous internet connectivity, digitally literate frontline staff, and a citizenry capable of navigating online portals. It seeks to replace the 'messy' social and political processes of local implementation—with their attendant discretion, negotiation, and potential for corruption—with the clean, automated logic of the database. The state, in this model, transitions from a direct provider entangled in local politics to a 'regulatory' or 'platform' state that sets rules, provides infrastructure, and monitors compliance from a distance (Mooij, 2022).

However, this vision encounters its fundamental test in the arena of federal implementation. The architecture is a central blueprint, but it is state governments that must supply the bricks, mortar, and labour to build it locally. They must retrofit their existing administrative workflows, train their personnel, invest in complementary infrastructure, and navigate the political fallout of system failures. The uniform code of the digital system thus meets the variable 'firmware' of 28+ distinct state administrations. This section has outlined the blueprint; the following sections will demonstrate how this blueprint is interpreted, resisted, adapted, and often transformed beyond recognition in the diverse workshops of India's states.

5. The Capacity Chasm: Administrative Machinery as the Primary Filter

The dimension of state capacity forms the tangible, often overlooked, foundation upon which the virtual edifice of digital governance is constructed. It is the differential in this administrative bedrock that creates the first and perhaps most significant filter, determining whether digital systems function as designed or become sources of systemic paralysis.

5.1. High-Capacity States: The Engine Rooms of Digital Efficiency

In states like Kerala and Andhra Pradesh/Telangana, one observes administrative machinery that has been deliberately calibrated—or in some cases, rebuilt—to interface with complex digital systems. Kerala's capacity stems from a long-term, cross-party investment in decentralisation and human development. Its Panchayati Raj Institutions (PRIs) are among the most empowered in India, staffed by officials who are relatively well-trained, stable, and possess high general literacy. When the MGNREGS digital suite was introduced, it was absorbed into an administrative culture already accustomed to systematic planning, record-keeping, and public accountability (Thomas, 2020). The state didn't just adopt the MIS; it integrated its data into local planning processes. Frontline workers, from Junior Engineers to Gram Panchayat secretaries, received structured training. Crucially, the state invested in creating a support ecosystem—district-level IT cells and help desks—to troubleshoot problems, preventing minor glitches from cascading into systemic breakdowns.

Andhra Pradesh and Telangana represent a different, more technocratic model of high capacity. Here, capacity was not merely adapted but constructed around the digital imperative. The states established centralised 'command-and-control centres'—war rooms with large digital dashboards that monitor thousands of worksites in real-time (Masiero & Prakash, 2021). This required not just technology but a significant bureaucratic re-engineering: creating new roles (data analysts, IT managers), developing new protocols, and instilling a culture of data-driven decision-making and strict compliance. The capacity here is geared towards achieving peak technical efficiency and enforcing top-down control, showcasing an ability to manage vast digital data flows and complex payment algorithms.

5.2. Low-Capacity States: When Digital Mandates Overwhelm

The contrast with states like Uttar Pradesh and Bihar is stark and reveals the harsh reality of administrative under-resourcing. In these states, the very foundation of MGNREGS implementation—the frontline administration—is chronically fragile. Key positions like Gram Rozgar Sahayaks (GRS) and Technical Assistants are perennially vacant, contractual, or filled by undertrained and overburdened individuals who are responsible for multiple schemes (Khera,

2019). There is a severe deficit of middle-management capacity at the Block level to supervise, guide, and support these frontline workers.

The introduction of complex digital systems into this fragile ecosystem has often been catastrophic. The state bureaucracies lack dedicated, skilled IT wings within their rural development departments. When a payment fails in PFMS due to an Aadhaar-bank account mismatch, or when a geo-tag fails to upload, there is no responsive local mechanism to diagnose and fix the problem. These 'technical' issues enter a bureaucratic black hole. Frontline workers, already struggling with paper-based processes, are now burdened with data entry tasks for systems they barely understand, on devices that may not work, with internet connections that are unreliable. The result, as documented by Drèze et al. (2017) in Jharkhand (a state with similar capacity constraints), is not efficiency but a new digital pathology: massive backlogs of 'pending payments', long lists of beneficiaries awaiting 'data correction', and worksites that remain digitally invisible due to connectivity or procedural failure. In these contexts, the digital mandate does not solve the problem of weak governance; it compounds it. Capacity, therefore, acts as a non-negotiable prerequisite. Where it is strong, digital tools can be leveraged; where it is weak, they become instruments of confusion, delay, and exclusion.

Table 3: Illustrative Indicators of Administrative Capacity for Digital Governance

Capacity Indicator	**High-Capacity State (e.g., Kerala/AP)**	**Low-Capacity State (e.g., UP/Bihar)**
Frontline Staffing	Near-full sanctions; trained, permanent/stable contractual staff.	High vacancies (>30%); high turnover; untrained, overburdened staff.
IT Support & Training	Dedicated IT cells at district level; regular, structured training modules.	Ad-hoc or no IT support; sporadic, ineffective training.
Digital Infrastructure	Reliable hardware supply at Block/Gram Panchayat level; budget for maintenance.	Erratic hardware supply; broken devices; no maintenance budget.
Grievance Redressal	Functional, tracked system for digital/technical grievances; some accountability.	Overwhelmed, non-functional system; grievances languish unresolved.
Data Quality Management	Proactive validation and correction routines; higher data fidelity.	Reactive, chaotic correction processes; poor data quality.

Source: Synthesised from CAG Audit Reports (Various Years) and State Administrative Reports.

6. The Variable of Will: Political and Bureaucratic Intent in Digital Implementation

If capacity is the hardware, willingness is the software—the operating system that determines what the machinery is used for. This dimension of political and bureaucratic will explains why states with comparable administrative resources can produce diametrically opposite forms of digital governance, one empowering and the other controlling.

6.1. Political Will: From Electoral Calculus to Ideological Commitment

Political will at the state level sets the overarching tone for implementation. In Andhra Pradesh and Telangana, MGNREGS digitisation has been a flagship political project, heavily marketed as a triumph of 'good governance' and technological modernity. The ruling parties have staked considerable political capital on showcasing a 'leakage-proof', efficient delivery system. This generates intense top-down pressure on the bureaucracy to deliver flawless performance on digital metrics (Aadhaar seeding, timely PFMS flows), often prioritising these numbers over qualitative aspects like work suitability or wage adequacy (Masiero, 2016). The will is strong, but its orientation is unequivocally techno-managerial and centralising.

In Kerala, political will has historically been channeled through a different ideology: democratic decentralisation and social empowerment. Here, successive governments have strengthened PRIs and supported mechanisms like social audits. Digital tools are seen not as replacements for these processes but as enablers. The political directive has been to use the MIS to make Panchayats better planners and to provide data to labourer collectives like Kudumbashree for monitoring (Thomas, 2020). The will is for participatory and substantive transparency.

In Rajasthan, political will is not a monolithic state project but is contested by a powerful legacy of social movements. The Mazdoor Kisan Shakti Sangathan (MKSS) and other groups have forced transparency and accountability onto the political agenda. The state's political leadership, regardless of party, must operate in an environment where digital data will be scrutinised and challenged by organised citizens. This creates a unique dynamic where the will for control is constantly checked by civic pressure for accountability (Shah, 2018).

In stark contrast, in states like Uttar Pradesh, MGNREGS has rarely been a central plank in the political agenda of major parties. It is often viewed as a 'poor people's scheme' or a central government programme, resulting in ambivalent or weak political will. This translates into a lack of high-level impetus to solve chronic implementation problems, poor budget allocation for capacity building, and an overall climate of administrative neglect.

6.2. Bureaucratic Will: Incentives, Culture, and Discretion

Bureaucratic willingness is the translation of political signals into administrative action. In high-will, control-oriented states, the bureaucracy is incentivised through performance metrics linked to digital outputs. Promotions and positive evaluations may depend on achieving 100% Aadhaar seeding or zero PFMS rejections. This can lead to perverse outcomes: officials may coercively seed Aadhaar, delete 'problematic' job cards to clean databases, or avoid registering demanding workers to keep payment timelines short.

In high-will, participatory states, bureaucratic incentives are (at least partially) aligned with facilitating local governance. Officials may be evaluated on their support to Panchayats or the effectiveness of grievance redressal. In low-will states, the bureaucracy operates in a vacuum of political direction. The incentive is to minimise 'trouble'—avoid audit objections, prevent negative media reports—which often means a culture of passive compliance. Digital systems are operated at the minimal level required to avoid censure from above, with little effort to optimise them for service delivery or to use their transparency potential proactively. Grievance portals exist but are

ignored; dashboards are updated but not analysed; and the human discretion that digital systems were meant to eliminate simply retreats into the shadows of data entry or procedural obstruction.

Thus, willingness shapes the soul of the digital system. It determines whether technology becomes an instrument of surveillance, a tool for empowerment, a site of struggle, or merely an expensive, inert façade.

7. The Unyielding Ground: Structural Constraints and the Limits of Techno-Utopia

Even the most capable and willing state administration confronts the hard, material realities of structural constraints. These are the contextual factors—infrastructural, geographical, and socio-economic—that form the unyielding 'ground truth' against which the techno-utopian assumptions of the national digital blueprint are shattered.

7.1. Infrastructural and Geographical Constraints

The digital architecture of MGNREGS presupposes a networked territory. Yet, vast swathes of rural India, particularly in states like Jharkhand, Odisha, Chhattisgarh, and the Northeastern region, suffer from poor or non-existent mobile internet connectivity and erratic electricity. The mandate for real-time geo-tagging becomes a physical impossibility in such areas. Officials must travel long distances to find a network signal, or works remain digitally unverified for weeks. In hilly or forested terrain, GPS signals themselves can be weak or inaccurate. These are not trivial issues; they render a core component of the transparency architecture non-functional and can lead to the penalisation of field staff or the non-payment for genuine works (Saikia, 2022).

7.2. Socio-Economic and Demographic Constraints

Perhaps the most profound constraints are social. Aadhaar-based biometric authentication fails for a significant proportion of manual labourers—the primary beneficiaries of MGNREGS. Years of working with hands, in mud, water, and with tools, erode fingerprints, making them unreadable to scanners (Drèze et al., 2017). This is not a 'glitch' but a systematic failure of the technology when applied to the biological reality of its intended users. The result is the 'technological exclusion' of some of the poorest and most needy workers, predominantly from Scheduled Caste and Scheduled Tribe communities.

Furthermore, the digital literacy divide is cavernous. While urban activists and researchers celebrate the proactive disclosure of the MIS, the average MGNREGA worker—often a woman with limited formal education—cannot navigate a complex web portal, decipher an SMS alert in English or standard Hindi, or use a grievance lodging app. The promised 'transparency' remains inaccessible, perpetuating information asymmetry. Financial inclusion, though improved, remains patchy. In regions with low bank branch penetration or where business correspondents are inactive, the DBT pipeline breaks at the last mile, leaving workers with a 'payment credited' status in the system but no cash in hand.

Table 4: Mapping Structural Constraints and Their Exclusionary Impacts

Dimension of Digital Divide	Manifestation in MGNREGS	Primary States Affected	Exclusionary Impact
Infrastructural (Connectivity)	No/low mobile internet in remote, hilly, forested areas.	NE States, Jharkhand, Odisha, HP, UK.	Assets not geo-tagged; works not validated; payments delayed.
Biometric (Technological)	Worn fingerprints due to manual labour; poor quality scanners.	Nationwide, acute in high-MGNREGA states (RJ, MP, BH, JH).	Authentication failure → denial of work/wages; requires multiple visits.
Literacy & Capability	Inability to use smartphones, apps, web portals; language barriers.	High in low-literacy states (BH, UP, MP, RJ tribal belts).	Cannot access transparency tools (MIS); cannot lodge online grievances.
Financial Access	Lack of active bank account; dormant account; BC failure.	Remote areas across states, esp. tribal regions.	DBT fails; worker must travel to distant branch to resolve.
Gendered Access	Lower access to phones, bank accounts; lower mobility/literacy.	Pan-India, severity varies.	Women disproportionately excluded from digital processes.

Source: Field studies by Drèze et al. (2017), Saikia (2022), and PAEG Reports (Various).

These constraints are not easily surmountable by administrative fiat. They expose the central fallacy of 'one-size-fits-all' digital design. In high-constraint regions, the architecture does not bridge the accountability gap; it often widens the exclusion gap, transforming a legal right into a technologically-mediated privilege accessible only to those who can successfully navigate the digital maze.

8. A Decade in Data: State-Wise Performance and the Emergent Typology (2014-2024)

The interplay of capacity, willingness, and constraint over the past decade has crystallised into measurable and persistent disparities in MGNREGS performance. Analysing official data from 2014-15 to 2023-24 reveals clear patterns that align with our analytical framework, as summarised in Table 5.

Table 5: State-Wise Digital Governance Performance Metrics (2014-15 to 2023-24)

State (Archetype)	Avg. % Wages in 15 Days (22-23)	Aadhaar Seeding % (Mar '24)	Geo-Tagging % (23-24)	Avg. Person-Days/HH (14-15 to 22-23)	SC/ST Share of Person-Days (22-23)
Kerala (Synergistic)	94.7%	99.2%	98.1%	51.2	38%
Andhra Pradesh (Techno-Managerial)	96.3%	99.8%	99.5%	47.8	45%
Rajasthan (Contested)	81.5%	95.1%	89.4%	53.6	68%
Madhya Pradesh (Median)	76.8%	92.7%	84.2%	44.9	62%
Uttar Pradesh (Dysfunctional)	68.2%	88.4%	75.9%	37.5	49%
Bihar (Dysfunctional)	61.8%	85.6%	69.3%	34.1	58%
Assam (Constrained)	72.4%	91.3%	78.5%	42.3	52%
All-India Average	78.5%	93.4%	86.7%	45.6	57%

Sources: MGNREGS Reports, Ministry of Rural Development, Government of India.

The data tells a compelling story:

Techno-Managerial States (AP/Telangana) lead on purely technical efficiency metrics (wage timeliness, seeding, geo-tagging), demonstrating high capacity and control-oriented will.

Synergistic States (Kerala) also score high on efficiency but combine this with robust person-day generation and a balanced inclusion of SC/ST groups, reflecting a participatory approach.

Contested States (Rajasthan) show moderate efficiency scores, but the highest person-days and a very high SC/ST share, indicating strong demand and a system pressured to be inclusive, albeit with operational hiccups.

Dysfunctional States (UP, Bihar) languish at the bottom across all technical metrics and generate the lowest employment, reflecting the convergence of low capacity, weak will, and high constraints.

Constrained States (Assam) show performance depressed below its potential likely due to infrastructural hurdles, despite moderate capacity and will.

From this empirical analysis, we inductively derive a four-fold typology of state responses to digital governance, which synthesises the causal pathways explored in previous sections.

Table 6: A Typology of State Responses to Digital MGNREGS Governance

Archetype	Defining Configuration	Efficiency Outcome	Transparency & Accountability Outcome	Illustrative State(s)
1. Synergistic	High Capacity + Participatory Will + Moderate Digital Divide	High & Sustainable. Digital tools streamline processes within a capable administration.	Substantive & Empowering. Transparency tools are used by local institutions & citizens for actionable oversight.	Kerala
2. Techno-Managerial	High Capacity + Control-Oriented Will	Very High (Technical). Peak performance on digital metrics; system optimised for central oversight.	Procedural & Upward-Looking. Transparency serves state surveillance; can marginalise local accountability.	Andhra Pradesh, Telangana
3. Contested	Moderate Capacity + High Civic Will (Contested)	Moderate & Unstable. Efficiency gains are uneven and often won through struggle against systemic flaws.	Forced & Adversarial. Transparency is extracted by civil society; accountability is a constant negotiation.	Rajasthan
4. Dysfunctional	Low Capacity + Weak Will + High Digital Divide	Low, Systems Add Delay. Digital mandates overwhelm administration; technology deepens inefficiency.	Low, New Digital Opacity. Systems are gamed or neglected; old opacities are replaced by technical ones.	Uttar Pradesh, Bihar

Source: Author's synthesis based on comparative analysis of evidence from Sections 4-7 and performance data in Table 5.

This typology provides a powerful explanatory framework for the divergent trajectories of digital MGNREGS across India. It moves beyond labelling states as 'good' or 'bad' implementers and instead offers a diagnostic tool rooted in their specific governance configurations.

9. Gendered and Socially Exclusive Impacts of Digitisation

A critical test of any welfare system is its ability to serve the most marginalised. The digital transformation of MGNREGS, while gender- and caste-blind in its design, has had profoundly gendered and socially differential impacts, often exacerbating existing inequalities.

9.1. The Gendered Digital Divide

Women constitute over 50% of MGNREGS person-days nationally, a statutory achievement. However, digital governance introduces new barriers. Women workers typically have lower levels of digital and financial literacy, less access to personal mobile phones, and less autonomy to visit

banks or business correspondents repeatedly to resolve payment issues (Khera, 2019). Aadhaar seeding often links to the male head of household's bank account, undermining women's direct financial access. Biometric authentication failures disproportionately affect women engaged in strenuous manual work. Furthermore, the increased procedural complexity and the need for multiple verifications can deter women from persisting with work demands, especially if it involves navigating male-dominated Panchayat offices or bank branches.

9.2. Caste, Tribe, and Technological Exclusion

Scheduled Caste (SC) and Scheduled Tribe (ST) communities, who are central to MGNREGS, face compounded exclusion. They are over-represented in regions with poor digital infrastructure. Linguistic barriers make navigating Hindi/English-centric interfaces difficult. More insidiously, as observed by Drèze et al. (2017), local power structures can use the digital system as a new instrument of control. Dominant-caste officials or middlemen may 'assist' with Aadhaar seeding or app-based processes, thereby retaining gatekeeping power under a veneer of technological neutrality. Errors in database entries (name spellings, ages) are more common for ST communities and are harder to rectify, leading to effective deletion from the system. Thus, while the programme's offline implementation had well-documented issues of caste-based discrimination, the digital layer can automate and obscure these biases, making them harder to detect and challenge.

The promise of digital governance as a neutral leveller is thus contradicted by its real-world effects. Without explicit, compensatory measures for inclusion—offline alternatives, gender- and caste-sensitive grievance channels, literacy-appropriate interfaces—digital MGNREGS risks becoming a system that works best for the relatively better-off, literate, and connected among the poor, while failing those at the intersection of multiple marginalities.

10. Policy Implications: From Uniform Mandates to Differentiated Co-Production

The analysis presented leads to unambiguous, if challenging, policy implications. The fundamental flaw in the current approach is the uniformity of the digital mandate imposed on a heterogeneous federal landscape. Treating Andhra Pradesh and Uttar Pradesh as similar implementers is a category error that guarantees failure in the latter. Therefore, central policy must undergo a paradigm shift: from being a standard-setting regulator to becoming a facilitative enabler of differentiated co-production.

This requires a typology-driven approach:

For Dysfunctional States (UP, Bihar): Policy must prioritise foundational capacity building before pushing complex digital compliance. This means central support for filling frontline vacancies, massive investments in training, setting up robust IT support cells, and improving physical infrastructure (connectivity, banking). Digital mandates should be introduced in a phased, learning-by-doing manner, with generous timelines and hand-holding.

For Contested States (Rajasthan): Policy should formalise and resource the interface between civil society and the state. This could involve mandating and funding social audit processes that directly use MIS data, creating joint monitoring committees, and establishing fast-track grievance redressal mechanisms for issues raised through digital platforms.

For Techno-Managerial States (AP, Telangana): Policy should incentivise re-decentralisation. This could involve creating performance-linked grants for devolving planning and fund management to PRIs, and for integrating robust, independent social audit findings into the official evaluation of the scheme's performance at the state level.

For All States: A rights-based override mechanism is essential. No beneficiary should be denied work or wages due to a 'technical' failure (Aadhaar, DBT, geo-tag). Legally mandated offline fallback procedures (manual muster, cash payments as exception) must be functional, accessible, and non-stigmatising.

Furthermore, the design of digital systems must move beyond a control-centric model. The 'Architecture of Control' needs redesigning into an 'Architecture of Facilitation'. This means:

- Developing lightweight, offline-first mobile applications for field functionaries.
- Creating voice-based, multi-lingual grievance and information systems accessible via basic phones.
- Ensuring transparency in algorithms (e.g., the logic for flagging 'suspicious' transactions).
- Mandating and publishing regular, independent evaluations of the inclusionary impact of digital systems, with a focus on gender, caste, and disability.

11. Conclusion

This article has demonstrated that the digital transformation of India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is not a story of uniform technological progress, but a narrative of profound federal divergence. Through a decade-long analysis (2014–2024) across six strategically selected states, we have established that the impact of a centrally mandated ICT architecture is decisively filtered through the tripartite prism of state capacity, political-bureaucratic willingness, and the structural realities of the digital divide. The resulting landscape is one of stark asymmetry: from the synergistic integration of digital tools with local democracy in Kerala, to the high-efficiency but centralising techno-managerial model of Andhra Pradesh, the contested and pressure-driven accountability in Rajasthan, and the systemic dysfunction where technology amplifies administrative failure in states like Uttar Pradesh and Bihar.

These disparities are neither accidental nor merely reflective of prior developmental differences; they are the direct outcome of how sub-national governance ecosystems absorb, interpret, and operationalise national policy. A high-capacity bureaucracy can harness digital systems for efficiency, but whether that efficiency translates into substantive transparency or mere surveillance depends crucially on political will. Conversely, in contexts of low capacity and weak political commitment, the same digital systems do not reform governance—they overwhelm it, adding layers of technical opacity and exclusion to pre-existing inefficiencies. The digital divide, encompassing infrastructural, biometric, and literacy barriers, acts not as a peripheral challenge but as a central axis of exclusion, determining who can successfully claim their legal entitlements in the new digital welfare state.

The central policy implication is unambiguous: the prevailing paradigm of a uniform, compliance-driven digital mandate is fundamentally misaligned with the heterogeneous realities of

Indian federalism. It is an approach that succeeds only where state-level conditions are already favourable, while deepening inequities and governance failures elsewhere. Therefore, the future of digital social protection must lie in a decisive shift from standardised imposition to differentiated co-production. This requires the central government to adopt the role of a responsive enabler, providing tailored, context-sensitive support that builds foundational administrative capacity in lagging states, incentivises the re-decentralisation of control in techno-managerial states, formalises citizen-state data interfaces in contested states, and legally mandates robust offline fallbacks to prevent technological exclusion. The architecture of digital governance itself must be reimagined—from an 'architecture of control' to an 'architecture of facilitation and inclusion,' designed for the realities of limited connectivity, low literacy, and the biological and social specificities of its intended beneficiaries.

Ultimately, this study affirms that technology is not an autonomous force for good in governance; it is a contingent variable, its effects powerfully shaped by the political and institutional structures into which it is introduced. The promise of digital welfare—transparency, efficiency, and empowerment—can only be realised when we recognise that the most critical code is not written in software, but in the capacity of institutions, the quality of political will, and the commitment to bridging the deep divides that technology alone cannot solve. For MGNREGS to fulfil its foundational promise of work with dignity in the digital age, policy must begin not with the question of how to make states comply with technology, but with how to make technology serve the diverse and unequal states of India.

Conflict of Interest

The authors have declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

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