

The Efficiency Ceiling: Artificial Intelligence and the Limits of Technological Reform in Indian Prisons

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Abstract: Indian prison administration is widely described as a rights problem. It is also, separately, an operations problem: a system managing over five lakh inmates with a staffing shortfall of tens of thousands of positions, a sentence-calculation process still vulnerable to clerical error, and inter-agency coordination between prisons, police, and courts that remains slow and paper-dependent in large parts of the country. This paper asks a narrower and more practical question than is usually asked in the constitutional literature: where, specifically, can artificial intelligence and AI-adjacent digital tools actually reduce administrative failure in Indian prisons, and where does the efficiency argument for adopting them break down? Drawing on National Crime Records Bureau Prison Statistics India 2024, the paper identifies four administrative functions, sentence and remission calculation, records integration, court-prison coordination, and grievance triage, where the efficiency case for AI assistance is comparatively strong and evidentially supported. It then identifies the structural reason the efficiency argument fails once technology is asked to substitute for, rather than support, human staffing: a sanctioned-to-actual staff deficit of nearly 37,000 positions and a pattern of underutilised budget allocation show that India's prison problem is substantially one of institutional capacity and execution, not information scarcity. The paper closes with a brief account of the legal guardrails that any efficiency-driven deployment would still need to satisfy, without attempting the fuller constitutional analysis that the subject deserves elsewhere.

Keywords: Artificial Intelligence, Prison Administration, India, Administrative Efficiency, NCRB, e-Prisons, Institutional Capacity

1. Introduction

Most of the academic and policy writing on artificial intelligence in Indian prisons begins from risk. It asks what AI might do to prisoners' rights, and rightly so, given the coercive nature of custody. This paper begins from a different, more modest place. It asks what AI might do for prison administration, understood narrowly as the operational work of running an institution: tracking who is held, for how long, under what order, with what medical needs, and with what entitlement to release. The two questions are related but not identical, and answering the second carefully is a necessary precondition for answering the first responsibly. A safeguard framework built without a clear sense of where technology genuinely helps risks either banning useful tools or, just as easily, providing cover for tools that do nothing but automate existing dysfunction.

The administrative case for AI in Indian prisons is rarely made with evidence. It is usually asserted: prisons are crowded, records are scattered, courts are far away, therefore technology will help. This

paper tests that assertion against the National Crime Records Bureau's Prison Statistics India 2024 report, treating the data not as constitutional background but as an operations audit. Where does the data show a genuine bottleneck that better information systems could plausibly relieve? Where does it instead show a staffing or resourcing failure that no amount of software can cure? The distinction matters because conflating the two produces exactly the kind of technology-as-substitute thinking that makes administrative reform look like progress while leaving the underlying institution unchanged.

The paper proceeds in four steps. Part II sets out the administrative burden that Indian prison staff currently carry, using the 2024 data to quantify it. Part III examines four specific functions, sentence and remission calculation, records integration, court coordination, and grievance handling, where the efficiency case for digital and AI-assisted tools is comparatively well supported. Part IV identifies the point at which the efficiency argument runs out: the staffing and budget data show that India's prison problem is, at its core, a capacity and execution problem that technology cannot substitute for. Part V briefly notes the legal conditions that any efficiency-justified deployment would still have to meet, without attempting a full constitutional treatment of the subject.

2. The Administrative Burden: Evidence From Ncrb 2024

An efficiency argument needs a baseline. Before asking whether AI can help, it is worth establishing how strained the underlying administrative system already is, because the answer determines what kind of intervention is realistic. The NCRB's 2024 figures supply that baseline directly.

As of December 2024, India operated 1,333 prisons running at a national occupancy rate of 112.7 percent, a marginal change from the previous year despite a small increase in the number of facilities. Sanctioned prison staff strength stood at 99,758 positions; actual strength was 63,004, a shortfall of nearly 37,000 posts, and only 35.1 percent of serving staff had received any refresher or specialised training in the preceding year. Total sanctioned budget for prison administration was Rs. 11,442 crore, of which only Rs. 9,437.6 crore, roughly 82.5 percent, was actually spent. The data also recorded 178 escapes, five jailbreaks, and 85 clash incidents over the year, alongside 1,960 deaths in custody. Each of these figures describes a different kind of administrative pressure, and each implies a different kind of fix.

Two of these pressures are informational in character and therefore plausibly responsive to better digital systems: the coordination burden between prisons, courts, and police, and the administrative accuracy burden involved in tracking sentence, remission, and release dates for a population in the hundreds of thousands. Two others are not informational at all: the staffing shortfall and the unspent budget. No system that merely organises data more efficiently closes a 37,000-person staffing gap or explains why over Rs. 2,000 crore of an already-approved budget went unspent. That distinction is the organising idea of this paper, and it is developed in the two parts that follow.

3. Functions Where The Efficiency Case Is Strong

Four administrative functions stand out as areas where digital and AI-assisted tools address a genuine, well-evidenced bottleneck rather than a manufactured one.

A. Sentence and Remission Calculation

Calculating a release date correctly requires tracking sentence length, periods of remand already served, applicable remission, parole interruptions, and any appellate modification, across what can be years of a prisoner's file. This is precisely the kind of bounded, rule-based, high-volume calculation that software performs reliably and that manual registers perform poorly under volume pressure. A miscalculated warrant period is not a minor clerical slip; it can mean continued detention after a person's lawful entitlement to release has matured. Automated date-tracking and cross-checked

remission calculators, already a function within the e-Prisons suite, represent the clearest case of AI-adjacent technology reducing rather than creating custodial harm, because the task is arithmetic and auditable rather than evaluative. The efficiency gain here is not speculative; it follows directly from the nature of the task.

B. Records Integration Across Institutions

A second genuine bottleneck is the historical separation of police, court, and prison records. Where a prisoner's case status, warrant history, and custody record are held in three disconnected systems, or in no system at all, the practical consequence is delay: in confirming bail orders, in updating custody status after appellate relief, in producing accurate information when a court asks for it. The Interoperable Criminal Justice System and the e-Prisons platform's integration with it address this bottleneck directly by making case status queryable across institutions rather than dependent on physical file transfer. This is an efficiency gain with a measurable institutional cost of inaction: every day a custody record lags behind a judicial order is a day of potential unlawful detention that exists for no reason other than poor information flow.

C. Court-Prison Coordination Through Video Production

The NCRB 2024 data records that 1,161 of 1,333 prisons, approximately 87.1 percent, now have video-conferencing facilities. For an institution managing routine remand extensions, formal mentions, and administrative hearings across long distances and limited escort staff, this infrastructure reduces a genuine logistical cost: the transport, security, and time burden of physically producing prisoners for matters that do not require it. Used for its proper purpose, that is, routine and procedurally undemanding appearances, video production is an efficiency tool with a strong evidentiary case behind it. Its appropriateness for substantively contested hearings is a separate question, addressed briefly in Part V, but as a coordination tool for routine production it answers a real and well-documented administrative need.

D. Grievance and Welfare-Request Triage

Finally, digital grievance and welfare portals, including the e-Mulaqat system for family contact, create something that paper-based grievance handling structurally cannot: a timestamped, auditable record of when a request was made and when, if ever, it was answered. Used as a triage and audit layer rather than as a substitute for the underlying response, this is a genuine efficiency gain because it converts an informal, easily lost process into one that can be measured, escalated, and inspected. The gain is administrative rather than substantive; it does not guarantee a better outcome to any individual grievance, but it does make non-response visible in a way that paper registers do not, which is itself a meaningful efficiency improvement in institutional accountability.

4. The Limits Of The Efficiency Argument

The functions described above share a common feature: they address coordination and calculation problems, not capacity problems. The 2024 data shows that capacity, not information, is the binding constraint on most of what makes Indian prisons function poorly, and this is where the efficiency case for AI weakens sharply.

Consider staffing. A sanctioned strength of 99,758 against an actual strength of 63,004 is not a problem that better software resolves. If anything, the temptation runs the other way: an understaffed institution facing more inmates than its sanctioned strength can supervise is precisely the institution most likely to treat a surveillance dashboard or an automated alert system as a stand-in for the human supervision it cannot afford to provide. That substitution does not close the staffing gap. It redirects the consequences of the gap onto whichever function the software was meant to support, typically

welfare monitoring, medical observation, or disciplinary judgment, all of which require interpretation that a deficit of trained correctional and medical staff cannot supply regardless of how good the underlying data system is. The data is direct on this point: only 35.1 percent of actual staff received any refresher or reorientation training in 2024, and several states with populations above 2,000 inmates had no correctional staff at all. No dashboard substitutes for a correctional officer who is not there.

The budget figures reinforce the same conclusion from a different angle. Roughly 17.5 percent of an already-sanctioned prison budget went unspent in 2024. Underutilisation of approved funds is not a symptom of inadequate information about prison needs; it is a symptom of institutional and procedural friction in actually deploying resources that have already been allocated. Introducing a new technology layer into a system that struggles to spend the money it already has does not address that friction. It adds a further procurement and implementation burden to an administrative machinery that the data shows is already failing to execute on simpler tasks. An efficiency case for AI that does not reckon with this pattern is not really an efficiency case; it is an assumption that the next tool will succeed where institutional execution has repeatedly fallen short.

The honest conclusion is therefore a divided one. AI and AI-adjacent tools have a real, evidentially supported efficiency role in bounded, rule-based, high-volume administrative functions, sentence calculation, records integration, routine court coordination, and grievance auditing. They have a weak and potentially counterproductive role wherever the underlying problem is a shortage of trained human judgement, because in those settings technology is liable to be adopted not to solve the problem but to disguise it.

5. Legal Conditions On Deployment

An efficiency case is not, by itself, a sufficient justification for deployment. Even where a tool clears the bottleneck test set out in Part III, its use inside a custodial institution must still satisfy basic conditions of legality and accountability, conditions the Supreme Court has affirmed apply inside prison walls notwithstanding lawful confinement, and which the Court has located in Article 21's guarantee of fair procedure and in the privacy standard set out in *K.S. Puttaswamy v. Union of India*. In practice this means three things hold regardless of how strong the efficiency case for a given tool is: any system whose output materially affects classification, release timing, or disciplinary treatment must remain subject to substantive human review rather than automatic execution; data gathered for one administrative purpose, such as identity verification or sentence tracking, should not be repurposed for predictive or behavioural analysis without separate authorisation; and a prisoner affected by a tool's output must have some practical means of understanding and contesting it.

These conditions are not exhaustive, and a fuller constitutional treatment of risk, classification, surveillance, and privacy in Indian prison administration is beyond the scope of a paper organised around the efficiency question. The point made here is narrower: even the strongest efficiency case, of the kind set out in Part III, does not exempt a tool from this minimum legal floor, and an institution adopting AI for genuine administrative gain should not treat that gain as a substitute for satisfying it.

6. Conclusion

The question this paper set out to answer was deliberately narrower than the question usually asked about AI in Indian prisons. It is not whether AI threatens prisoners' rights, a question that deserves and has received serious constitutional attention elsewhere, but whether AI actually improves the administration of Indian prisons, and if so, where. The 2024 NCRB data supports a qualified yes. In bounded, rule-based, high-volume functions, sentence and remission calculation, inter-institutional records integration, routine court coordination, and grievance auditing, the efficiency case is real and the evidence for it is direct. In functions that depend on trained human judgement rather than

information processing, above all the welfare, medical, and disciplinary functions left hollow by a staffing deficit of nearly 37,000 positions, the efficiency case collapses, and the same data that supports cautious optimism in Part III counsels real scepticism in Part IV.

India's prison system does not suffer mainly from a shortage of information. NCRB's own figures show an institution that already knows, with considerable precision, how overcrowded it is, how understaffed it is, and how much of its own approved budget it fails to spend. What it lacks is not better data but the institutional capacity to act on the data it already has. Artificial intelligence can plausibly close part of that gap. It cannot close all of it, and an administration that treats the technology as if it could is solving the wrong problem.

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