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Algorithmic Accountability in Public Administration: A Governance Framework for Responsible AI in Indian Public Services

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Abstract—Governments in emerging economies are deploying AI-assisted decision systems in high-stakes public services faster than governance infrastructure can ensure those decisions are lawful, fair, and contestable. This paper examines the resulting governance deficit and proposes an institutional framework for transforming algorithmic accountability in Indian public administration. A PRISMA 2020-compliant review of 47 peer-reviewed studies (2018–2026) and secondary case analysis across the European Union, India, and the United States inform the Public Sector XAI Accountability Framework (PSXAF), developed via design science methodology and mapped against the EU AI Act (Regulation 2024/1689), India’s Digital Personal Data Protection Act (MEITY, 2023), and ISO/IEC 42001:2023. Five reinforcing barriers are identified: technical-institutional mismatch, regulatory fragmentation, vendor lock-in, citizen explanation fatigue, and accountability diffusion. The PSXAF addresses these through five pillars — transparency logs, AI Accountability Officers, contestability portals, fairness audits, and digital literacy — anchored to enforceable regulatory obligations. The framework provides a sequenced implementation roadmap (0–6, 6–18, 18–36 months) directly applicable to Indian government departments meeting DPDPA 2023 compliance timelines.

Keywords—Algorithmic Accountability; Digital Governance; Explainable AI; DPDPA 2023; EU AI Act; Public Administration; Emerging Economies; XAI; Institutional Governance

I. INTRODUCTION

Something fundamental has changed in how governments make decisions. The welfare officer, the tax assessor, the public health authority allocating scarce clinical resources — each increasingly works alongside an algorithm. In India, AI-assisted systems support welfare benefit distribution under PM-KISAN, fraud detection in the GST network, and risk stratification in public health programmes [1]. The United States federal government operated over 700 active AI use cases as of 2023, spanning border control to veterans’ benefits determination [2].

This rapid institutional adoption has created a profound public management challenge: how do public organisations remain constitutionally and administratively accountable for decisions that are made, or significantly shaped, by algorithmic systems? The governance of AI systems in public services — specifically, how institutions can make algorithmic decisions transparent, contestable, and fair — remains critically underdeveloped as a field of public management inquiry.

That governance gap is now legally consequential. The EU Artificial Intelligence Act (Regulation (EU) 2024/1689) constitutes the world’s first comprehensive legal framework for AI, classifying the overwhelming majority of public sector AI deployments as high-risk [3]. India’s Digital Personal Data Protection Act (MEITY, 2023) similarly establishes enforceable obligations for explicable and contestable automated decisions affecting Indian citizens [4]. The legislation exists. The management infrastructure to implement it does not.

This paper makes three contributions. First, it identifies five barriers that prevent accountable AI governance in public sector digital services. Second, it proposes the PSXAF — a five-pillar governance model mapping institutional mechanisms to the compliance requirements of the EU AI Act and the DPDPA 2023. Third, it provides modular implementation guidance enabling Indian government departments to sequence adoption against existing regulatory obligations.

II. LITERATURE REVIEW

A. Digital Governance and AI Adoption in Emerging Economy Public Institutions

The literature on digital governance in emerging economies has established that technology adoption in public institutions is conditioned by organisational capacity, regulatory maturity, and institutional trust in ways that differ significantly from high-income country contexts [5]. India’s trajectory is paradigmatic.



The rapid digitisation of public services through the India Stack — Aadhaar biometric identity, Unified Payments Interface, and DigiLocker — has created the infrastructure for AI-assisted service delivery at scale [1]. Yet institutional governance capacity has not kept pace with technical deployment capacity [6].

The public administration literature has identified a broader pattern of accountability diffusion accompanying AI adoption in large institutions [7]. When algorithmic systems participate in consequential decisions, responsibility becomes distributed across technical vendors, data scientists, frontline operators, and senior managers in ways that make individual accountability difficult to assign. Vendor lock-in — organisational dependency on proprietary algorithmic systems whose internal logic is commercially protected — compounds this diffusion by making independent audit and validation structurally difficult [8].

B. Explainable AI as a Governance Instrument

Explainable AI (XAI) refers to the family of methods that make algorithmic outputs interpretable to human users. Two principal traditions dominate: intrinsically interpretable models — decision trees and rule-based systems — which are transparent by design; and post-hoc explanation methods — such as LIME [9], SHAP [10], and counterfactual explanations [11] — which explain opaque models without altering their architecture [12].

Despite this technical maturity, Langer et al. [13] found that fewer than 12 per cent of XAI studies addressed public sector contexts, and fewer than 5 per cent engaged with the institutional or legal dimensions of explainability. Fernandez-Llatas et al. [14], in a global survey of barriers to XAI adoption in the public sector, found that institutional and governance barriers consistently outweighed technical barriers as drivers of non-adoption.

C. The Regulatory Architecture: EU AI Act and DPDPA 2023

The EU AI Act's risk-based architecture classifies AI systems deployed in public sector decision-making as high-risk, subject to mandatory requirements for human oversight (Article 14), transparency (Article 13), fundamental rights impact assessments (Article 9), and post-market monitoring (Article 72) [3]. India's DPDPA 2023 establishes foundational obligations consistent with the EU Act's transparency demands: data fiduciaries, including government departments, must provide data principals with information about automated decision processing and establish accessible grievance redressal mechanisms [4].

D. Documented Accountability Failures

Algorithmic auditing studies have documented the consequences of deploying AI without adequate accountability structures. The COMPAS recidivism prediction tool in the United States exhibited racial disparities affecting real sentencing outcomes [15]. The Dutch SyRI welfare fraud detection system was struck down by a court on grounds of transparency violations [16]. The UK Home Office's visa streaming algorithm was suspended following a successful legal challenge [17]. These cases represent systemic governance failures in which public organisations deployed technically functional systems without the institutional infrastructure to ensure transparency, accountability, and contestability.

III. METHODOLOGY

This study employs a mixed qualitative-analytical methodology combining a systematic literature review, secondary case analysis, and normative framework development. The systematic review followed PRISMA 2020 guidelines, searching ACM Digital Library, IEEE Xplore, Scopus, and Web of Science using the search string: (“explainable AI” OR “XAI” OR “algorithmic accountability”) AND (“public sector” OR “e-government” OR “digital government” OR “government AI”). Searches were conducted in February 2026, covering publications from January 2018 to January 2026. After applying inclusion criteria — peer-reviewed, English-language, empirical or conceptual studies directly addressing XAI in government or public administration contexts — 47 papers were retained for full analysis.

Case analysis drew on publicly documented AI governance deployments and accountability failures in government digital services across the European Union, India, and the United States, sourced from government reports, academic case studies, legal proceedings, and civil society investigations. Framework development followed the design science methodology of Hevner et al. [18], iteratively mapping identified barriers and governance requirements against institutional mechanisms and the specific compliance obligations of the EU AI Act (2024), GDPR Article 22, DPDPA 2023 [4], and ISO/IEC 42001:2023. Each pillar of the PSXAF was tested against the articulated obligations of these regulatory instruments to ensure that the framework constitutes genuine compliance architecture rather than principled aspiration.

IV. INSTITUTIONAL BARRIERS TO ACCOUNTABLE AI GOVERNANCE

Analysis of the 47 reviewed studies and 12 case analyses reveals five interconnected institutional barriers that systematically impede accountable AI governance in public sector digital services. These constitute a reinforcing structure in which each barrier amplifies the others.

A. Technical-Institutional Mismatch

The most pervasive barrier is the mismatch between the technical form of AI explanation outputs and the institutional processes through which public decisions are made and reviewed. Current explanation tools produce feature importance scores and probability distributions optimised for technically literate data scientists, but largely inaccessible to welfare officers, immigration caseworkers, and administrative judges. Veale et al. [8] found that 68 per cent of UK public sector AI users reported being unable to meaningfully interpret explanations provided by AI vendors. EU AI Act Article 13 requires that explanation outputs be designed to enable deployers to interpret a system’s output and use it appropriately [3].

B. Regulatory Fragmentation

Public sector AI in emerging economies is subject to overlapping regulatory obligations spanning data protection law, administrative law, procurement regulations, and emerging AI-specific legislation. In India, the interaction between the DPDPA 2023 [4], the Information Technology Act (2000), and sector-specific AI guidelines from IRDAI and RBI creates significant compliance uncertainty for government IT departments. Until regulatory coherence is achieved, agencies face institutional incentives to minimise AI transparency rather than maximise it.

C. Vendor Lock-In and Proprietary Opacity

The majority of AI systems deployed by governments are procured from commercial vendors whose algorithms are protected as trade secrets. A government agency may generate explanations for a black-box model’s outputs, but without access to training data, model architecture, or development documentation, those explanations cannot be independently validated. The Dutch SyRI case exemplifies this risk: the government was unable to provide the court with sufficient documentation of the system’s functioning because operational details were proprietary [16].

D. Citizen Explanation Fatigue

Even when explanation mechanisms are technically available, citizens may not engage with them effectively.

Kaur et al. [19] found that non-expert users frequently experience explanation overload — technically accurate but cognitively overwhelming outputs that reduce rather than increase institutional trust. The DPDPA 2023 requires that grievance mechanisms be effective and accessible [4] — standards that cognitively inaccessible technical explanations do not meet. In India’s diverse population context, where digital literacy varies significantly across linguistic, geographic, and socioeconomic groups, this barrier is particularly acute.

E. Accountability Diffusion

The introduction of AI-assisted decision-making frequently produces accountability diffusion — the dispersal of responsibility across human and algorithmic actors in ways that make individual accountability difficult to assign [7]. EU AI Act Article 14 requires that high-risk AI systems be designed to enable human operators to oversee and, where necessary, disregard automated outputs [3]. Translating that legal requirement into institutional practice requires explicit role design, not just technical capability.

V. THE PUBLIC SECTOR XAI ACCOUNTABILITY FRAMEWORK (PSXAF)

The PSXAF is a five-pillar governance framework designed to operationalise accountable AI governance in public sector digital services. Grounded in the barrier analysis of Section IV, the framework maps institutional mechanisms to the compliance architecture of the EU AI Act (Articles 9, 13, 14, 26) and DPDPA 2023 [4]. Each pillar corresponds to governance artefacts — procurement clauses, role definitions, workflow standards, audit protocols, and training requirements — that can be integrated into existing public sector IT governance structures without requiring new institutions. Table I maps key AI explanation instruments to their public administration applications and regulatory anchors.

TABLE I
AI EXPLANATION INSTRUMENTS: PUBLIC ADMINISTRATION APPLICATIONS

Instrument	Type	Application	Accountability Function	Regulatory Anchor
LIME [9]	Post-hoc, local	Welfare eligibility; grant decisions	Per-case justification for appeals	AI Act Art. 13; DPDPA 2023
SHAP [10]	Post-hoc, global	Tax audit; fraud detection	Audit trails; disparity detection	AI Act Art. 9; NIST RMF
Decision Trees	Intrinsic, global	Policy simulation; compliance	Human-readable rule sets	AI Act Art. 14; ISO 42001
Counterfactual [11]	Post-hoc, local	Grant/visa rejection	Actionable recourse for citizens	GDPR Art. 22; DPDPA 2023

A. Pillar 1 — Transparency

Transparency in the PSXAF means that every AI-assisted decision affecting a citizen must generate a human-readable justification — logged, time-stamped, and retrievable — at the point of decision. The institutional mechanism is a mandatory explanation review step in high-stakes decision workflows, requiring the responsible official to confirm that they have reviewed the justification before confirming the decision. This satisfies EU AI Act Article 13 [3] and DPDPA 2023’s requirement that automated processing be made explicable to data principals [4].

B. Pillar 2 — Institutional Accountability

Accountability requires that every AI system in public deployment have a designated AI Accountability Officer (AIAO) — a named individual responsible for the system’s performance, bias monitoring, and regulatory compliance. This officer maintains a living AI System Register documenting the system’s purpose, training data provenance, performance metrics, known limitations, and explanation quality assessments. This role is modelled on the Data Protection Officer requirement under GDPR and EU AI Act Article 26 [3]. The accountability audit trail links every AI-assisted decision to the specific official who confirmed it, directly countering accountability diffusion.

C. Pillar 3 — Contestability

Contestability means that citizens have a practical — not merely theoretical — right to challenge AI-assisted decisions. The PSXAF requires that all high-stakes AI-assisted decisions include a contestability notice: a plain-language statement informing the citizen of their right to request human review, the basis for the decision, and what information, if provided, could change the outcome. This transforms the legal right to explanation under GDPR Article 22 and DPDPA 2023 [4] into an operational service standard. Pilot implementations of XAI-informed contestability in the Danish benefits system showed a 34 per cent reduction in formal appeals alongside increased first-time acceptance rates [20].

D. Pillar 4 — Fairness Monitoring

AI systems deployed in public services must be continuously monitored for discriminatory outcomes across protected demographic characteristics. The PSXAF mandates quarterly disparity audits, stratified by gender, age, geographic region, and where legally permissible, caste or ethnicity. The audit methodology follows the NIST AI Risk Management Framework’s [21] fairness metrics: demographic parity, equalised odds, and predictive parity.

Where disparities exceed pre-defined thresholds, the PSXAF requires automatic suspension of the AI system’s decision-support function pending review, aligned with EU AI Act Article 72 [3].

E. Pillar 5 — Digital Literacy and Institutional Capacity

EU AI Act Article 4 requires that providers and deployers ensure staff responsible for operating high-risk AI have sufficient AI literacy for their role [3]. The PSXAF operationalises this through two capacity streams: role-specific AI literacy programmes for government staff using domain examples drawn from the employee’s administrative context; and citizen-facing explanation interfaces co-designed with representative user groups, tested for comprehension, and delivered in plain language, with multilingual equivalence for India’s linguistically diverse population.

TABLE II PSXAF: GOVERNANCE PILLARS, MECHANISMS, AND PERFORMANCE INDICATORS

Pillar	Principle	Mechanism	Regulatory Anchor	Outcome Indicator
1. Transparency	AI decisions interpretable	Mandatory explanation logs; plain-language notices	AI Act Art. 13; DPDPA S.12	% decisions with justification; comprehension scores
2. Accountability	Clear human ownership	AI Accountability Officer; audit trails	AI Act Art. 14, 26; GDPR DPO	Audit completion rate; incident response time
3. Contestability	Practical right to challenge	Contestability portals; plain-language notices	AI Act Art. 26(2); GDPR Art. 22	Appeal resolution rate; reduction in judicial challenges
4. Fairness	Continuous bias detection	Quarterly disparity audits; auto-suspension	AI Act Art. 9, 72; NIST RMF	Demographic parity gap; audit rate
5. Digital Literacy	Staff and citizens engaged	Role-specific training; multilingual interfaces	AI Act Art. 4	Training completion; usability scores

VI. DISCUSSION

A. Managerial Roadmap for Indian Public Sector AI Governance

The PSXAF reconceptualises XAI adoption not as a technical upgrade but as a strategic institutional reform challenge. For a Chief Information Officer or Director-General responsible for government digital services, the framework provides a sequenced implementation pathway. In the immediate term (0–6 months), Pillars 1 and 3 represent the most urgent regulatory compliance priorities: the DPDPA 2023’s grievance mechanism and transparency requirements are already in force for Indian government departments [4].



Establishing explanation log requirements in new procurement contracts and issuing contestability notices for existing high-stakes AI systems are actions achievable within current institutional structures. In the medium term (6–18 months), Pillar 2 — the designation of AI Accountability Officers — addresses the accountability diffusion barrier and creates institutional counterparts to external technical vendors. In the longer term (18–36 months), Pillars 4 and 5 embed the governance framework into the organisation’s ongoing operational processes and staff development cycles.

These governance outcomes align directly with SDG 16.6, which calls for effective, accountable, and transparent institutions at all levels. By embedding structured accountability mechanisms within the PSXAF, participating agencies produce measurable progress against the institutional integrity benchmarks that SDG 16.6 operationalises.

B. Comparative Policy Implications

The PSXAF’s comparative dimension reflects a central insight of this analysis: institutional context fundamentally shapes governance feasibility and design. In the EU, where GDPR has already established data protection infrastructure and organisational cultures of compliance, the EU AI Act’s requirements land on prepared ground. In India, by contrast, the DPDP Act 2023 [4] is the first comprehensive personal data protection law, and its implementation coincides with the rapid scaling of government AI deployments that lack basic accountability infrastructure. The PSXAF’s modular design — with pillars sequenced against immediate regulatory obligations — directly reflects this difference in institutional starting point. For other emerging economies where government AI adoption is accelerating, including in South Asia, South-East Asia, and Sub-Saharan Africa, the framework offers a governance template adaptable to local regulatory contexts.

C. Limitations and Future Research

This study has several limitations. The systematic review is limited to English-language publications, potentially excluding relevant work from non-Anglophone contexts. The case analyses rely on publicly available documentation, which may not fully represent internal government deliberations. The framework itself is normative and design-oriented; its practical effectiveness has not yet been empirically tested in a live government deployment. Future research should conduct controlled pilots of PSXAF implementation in government digital services to generate empirical evidence on adoption feasibility and citizen trust effects.

VII. CONCLUSION

Governments are at an inflection point in the governance of algorithmic public services. The EU AI Act [3] and India’s DPDP Act 2023 [4] have converted explainability from a principle into an obligation — one with enforceable compliance timelines, designated regulatory authorities, and sanctions for non-compliance.

The management infrastructure to meet those obligations does not yet exist in most jurisdictions. This paper has argued that explainable AI is not merely a technical enhancement to existing government systems but a foundational organisational governance requirement. The Public Sector XAI Accountability Framework provides a practical, evidence-based structure for achieving this. Its five pillars — transparency, institutional accountability, contestability, fairness monitoring, and digital literacy — translate the abstract obligations of the EU AI Act, GDPR, DPDP Act 2023, and equivalent frameworks into operational governance directly actionable by the practitioners, managers, and policymakers responsible for transforming Indian public administration.

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