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Risk-based ai regulatory reconstruction for legal certainty and digital rights protection in Indonesia

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ABSTRACT

This study examines Indonesia's AI regulatory position through normative legal research, comparative regulatory analysis, and quantitative analysis of the AI Regulation Map using a 13 June 2026 snapshot. The comparison covers Indonesia and seven comparator jurisdictions, Singapore, South Korea, Japan, Spain, Italy, Sweden, and the United States, across Regulation Status, Policy Lever, Governance Type, Actor Involvement, and Enforcement Level. The findings indicate that Indonesia has lower scores than the comparator mean on the three normative dimensions used by the AI Regulation Map's Maturity Index, with gaps of 2.29 points for Regulation Status, 1.93 points for Policy Lever, and 1.54 points for Enforcement Level. Because the map is a derived indicator rather than a direct legal-validity or enforcement measure, the results are interpreted as comparative regulatory signals and are cross-checked against Indonesian and comparator primary legal sources. The normative reconstruction proposes a legal architecture that distinguishes enacted rules from guidance and draft instruments, classifies AI by risk, assigns proportionate obligations to relevant actors, embeds human oversight and digital-rights safeguards, and connects supervision with incident reporting, sanctions, and individual remedies.

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1. Introduction

Artificial intelligence (AI) is increasingly becoming a socio-technical infrastructure rather than a discrete digital tool, with algorithmic systems influencing economic activity, public administration, employment, education, healthcare, finance, and access to information. This expansion has intensified the regulatory problem because AI systems can generate risks that are distributed across data, models, organizations, and users, while their outcomes may be difficult to predict or attribute. Contemporary AI governance scholarship therefore increasingly treats risk identification, accountability, transparency, human oversight, and lifecycle governance as interconnected regulatory concerns rather than isolated ethical issues (Novelli et al., 2024; Wirtz et al., 2022; Zaidan & Ibrahim, 2024). In Indonesia, these concerns are especially significant

because AI adoption is advancing while the national regulatory architecture remains distributed across general digital, data-protection, sectoral, and policy instruments, creating a need to determine how legal certainty and digital-rights protection should be embedded in a coherent AI-specific framework.

Indonesia's regulatory challenge is not adequately described as a simple absence of AI-related rules. The country already possesses legal and policy instruments that address adjacent risks, while recent policy developments have moved toward more formal AI governance. The central difficulty is that these instruments do not yet form a unified architecture in which the legal status of AI actors, risk categories, differentiated obligations, supervisory authority, enforcement, and individual remedies are systematically connected. Indonesian studies have identified concerns about fragmented regulation, human rights, cybersecurity, algorithmic discrimination, public-sector governance, and liability, but these contributions generally concentrate on particular legal or sectoral dimensions (Hani et al., 2025; Putri & Adinda, 2025; Ramadhan et al., 2024; Sulistyantoro et al., 2024; Trisnawati, 2024). The problem is consequential because fragmented rules can leave uncertainty about which duties apply to an AI provider or deployer, which authority is responsible for supervision, and what remedies are available when automated or AI-assisted decisions adversely affect individuals.

Risk-Based Regulation Theory provides an appropriate analytical foundation for addressing this problem because it treats regulatory intensity as proportionate to the nature and magnitude of foreseeable harm. Recent AI governance research shows that a risk-oriented model can connect risk assessment with differentiated regulatory requirements, rather than applying identical obligations to all AI applications (Ebers, 2025; Schuett, 2024; Wirtz et al., 2022). Yet the literature also demonstrates that risk classification is not sufficient by itself. Ebers (2025) identifies the danger of over- and under-inclusion in the European AI Act, while Laux, Wachter, and Laux et al. (2024) argue that the concepts of trustworthiness and acceptable risk should not be conflated. Similarly, research on the AI Act's risk-management architecture emphasizes the importance of risk management processes, documentation, and enforceability, whereas other scholarship highlights the need to connect regulation with standards, assessment, and certification (Agarwal & Nene, 2025; Schuett, 2024). These findings suggest that an Indonesian risk-based framework must be designed not merely as a classification scheme but as a legal chain connecting risk identification to concrete duties, institutional oversight, compliance mechanisms, and remedies.

Previous research has developed several relevant solutions. Wirtz et al. (2022) proposed an integrative risk-and-guideline framework that links different AI risks to governance responses and emphasizes multi-stakeholder implementation. Mäntymäki et al. (2022) and Papagiannidis et al. (2023) shifted attention toward organizational governance, showing that principles become meaningful only when translated into structures, processes, responsibilities, and capabilities. Mökander & Floridi (2022, 2023) further demonstrated the importance of auditing and accountability mechanisms for converting AI principles into verifiable governance practices. In relation to rights protection, Lazcoz & de Hert (2023) and Enqvist (2023) emphasize that human intervention and oversight must be embedded within institutional governance rather than treated as symbolic safeguards. Research on algorithmic discrimination likewise shows that seemingly neutral systems may reproduce or amplify legally relevant inequalities, requiring preventive and corrective regulatory mechanisms (Wang et al., 2024). These studies provide important building blocks, but they do not by themselves determine how these elements should be combined into an Indonesian legal reconstruction model.

Comparative research on the European Union provides the most developed reference for risk-based AI regulation, but it also reveals why institutional adaptation is necessary. The EU AI Act establishes binding rules differentiated according to AI-related risks, while recent scholarship highlights persistent tensions regarding risk categorization, fundamental-rights protection, enforcement, and regulatory flexibility (Ebers, 2025; Feldstein, 2024; Rangone & Megale, 2025).

Palmiotto's analysis of the legislative process similarly shows that fundamental-rights protection in the AI Act reflects institutional and political compromises, making implementation and enforcement crucial to its ultimate effectiveness. Research on human oversight shows that formal requirements do not automatically produce meaningful supervision because the competence, incentives, and institutional position of human overseers determine whether oversight can actually mitigate risk (Stahl et al., 2023). The European experience is therefore valuable not because it can be copied wholesale, but because it demonstrates the institutional components that a risk-based regime must coordinate.

Singapore and other governance models reinforce the importance of regulatory flexibility, institutional capacity, and participation. Comparative governance research indicates that AI regulation can combine formal rules, organizational governance, technical assurance, sectoral measures, and multi-stakeholder participation, rather than relying exclusively on a single statutory instrument (Gianni et al., 2022; Kajava et al., 2025; Paul, 2024). At the same time, research on responsible AI governance warns that high-level principles remain difficult to operationalize without clear structural, procedural, and relational practices (Papagiannidis et al., 2023). Recent frameworks further seek to bridge formal regulation with standards, certification, incident reporting, and lifecycle monitoring (Agarwal & Nene, 2025; Monteiro & Singh, 2025). For Indonesia, these findings imply that the central design task is not choosing between regulation and innovation, or between hard law and soft governance, but constructing a proportionate regulatory ecosystem in which different instruments perform complementary functions. The digital-rights dimension makes this reconstruction particularly important. AI systems can affect privacy, equality, autonomy, dignity, freedom of expression, and access to essential services through profiling, automated decision-making, recommendation systems, surveillance, and generative outputs. Studies of AI and human rights therefore argue that rights protection must be operationalized through enforceable transparency, accountability, non-discrimination, human oversight, and mechanisms of contestation rather than remaining at the level of ethical aspiration (Putra et al., 2025; Putri & Adinda, 2025; Ramadhan et al., 2024). Algorithmic impact assessment research also indicates that prospective assessment can identify social and ethical consequences before deployment, although the field has not yet converged on a single assessment method or implementation structure (Bogucka et al., 2024; Stahl et al., 2023). This is directly relevant to Indonesia because a risk-based law that classifies AI but does not provide affected individuals with meaningful procedural protections would not fully resolve the legal uncertainty and rights risks identified in the national context.

The literature on AI liability adds another reason for an integrated approach. AI systems may be opaque, autonomous, adaptive, and difficult to attribute to a single causal actor, creating problems for conventional fault-based liability and evidentiary rules (Buiten et al., 2023; Noto La Diega & Bezerra, 2024; Stahl et al., 2023). Recent research increasingly treats responsibility as distributed across providers, deployers, component suppliers, and other actors in the AI value chain (Botero Arcila, 2025; Okuno & Okuno, 2025; Porter et al., 2025). The implication for regulatory reconstruction is that legal certainty cannot be achieved simply by naming a responsible provider after harm occurs. Responsibility must be allocated ex ante through defined roles, risk-sensitive duties, documentation, monitoring, and escalation mechanisms, while ex post liability and redress must remain available when preventive controls fail.

The principal research gap is both empirical and normative. Indonesian scholarship has identified fragmented regulation, data-protection concerns, human-rights risks, accountability problems, and the need for ethical or sectoral measures, but these strands are commonly examined separately. What remains underdeveloped is a source-traceable method for determining the relative regulatory distance between Indonesia and selected jurisdictions and then translating that diagnosis into a coherent legal reconstruction. This study addresses that gap by using the AI Regulation Map only as a comparative diagnostic and by testing the resulting signals against the legal force and institutional meaning of primary Indonesian and comparator instruments.

The novelty lies in developing an Integrated Risk-Based AI Regulatory Reconstruction Framework that connects comparative evidence to a concrete legal chain: risk level determines regulatory intensity; regulatory intensity determines differentiated actor duties and oversight; and those duties are linked to accountability, enforcement, digital-rights safeguards, and remedies. The framework differs from direct transplantation of the EU AI Act because it is anchored in Indonesia's legal hierarchy and sectorally distributed institutions, distinguishes binding legislation from guidance and draft policy instruments, and proposes a national coordination mechanism that works with, rather than replaces, sectoral regulators. It therefore treats comparative models as sources of design principles, not templates for wholesale adoption. Accordingly, the study asks two focused questions: What multidimensional regulatory differences between Indonesia and the selected comparator jurisdictions are indicated by the AI Regulation Map, and how should those differences be interpreted against primary legal sources? How can those diagnosed differences be translated into an Indonesian risk-based regulatory architecture that connects legal status, proportionate obligations, institutional oversight, enforcement, and digital-rights remedies? The study aims to identify the principal comparative regulatory differences and formulate a legally structured reconstruction model that responds to them.

The eight-jurisdiction comparator set was selected purposively for institutional and regulatory variation, not for ranking. Singapore represents a flexible governance model based on guidance and technical assurance; South Korea a recent dedicated statutory framework; Japan a business-guideline/soft-law approach; Spain a national AI strategy within the EU; Italy a dedicated AI statute within the EU; Sweden a recent national AI strategy within the EU; and the United States a standards-led federal risk-management approach. The selection allows the analysis to compare different combinations of hard law, policy guidance, standards, sectoral regulation, and institutional supervision (Government of Italy, 2025; Government of Spain, 2024; Government Offices of Sweden, 2026; Infocomm Media Development Authority (IMDA), 2024; Ministry of Economy, Trade and Industry (METI) & Ministry of Internal Affairs and Communications (MIC), 2024; National Institute of Standards and Technology (NIST), 2023; Republic of Korea, 2025, 2026) .

2. Method

This study uses normative legal research integrated with comparative regulatory analysis and quantitative content analysis. The unit of analysis is the regulatory system and its legal/policy instruments; no human participants or survey respondents were involved. The quantitative layer diagnoses comparative regulatory differences, while the doctrinal layer determines the legal meaning, force, and institutional implications of those differences. The two layers are integrated only after the numerical findings are calculated, so a score difference is not treated automatically as proof of a legal defect.

The quantitative dataset is the public AI Regulation Map dataset, accessed on 22 September 2026, using the 13 June 2026 point-in-time snapshot. Eight jurisdictions are included: Indonesia plus Singapore, South Korea, Japan, Spain, Italy, Sweden, and the United States. The map reports five raw dimensions on a 1–5 scale: Regulation Status, Policy Lever, Governance Type, Actor Involvement, and Enforcement Level. Under the June 2026 methodology, each raw dimension is constructed from four concrete sub-indicators and quarter-point values may occur. The composite Maturity Index is the arithmetic mean of the three normative dimensions, Regulation Status, Policy Lever, and Enforcement Level, not the mean of all five dimensions. Governance Type and Actor Involvement are descriptive dimensions and are not used here as independent measures of regulatory quality. Country-level scores were extracted from the supplied history.json snapshot record without independent recoding or imputation. Because the source labels this composite as a "Maturity Index," that label is retained when reporting the published dataset; however, in this study it is operationalized and interpreted as a comparative regulatory indicator rather than as a direct or independently validated measure of regulatory

maturity. For version control, the study treats the 13 June 2026 point-in-time snapshot as the dataset version marker because the accessed record did not provide a separate semantic version number. Only that snapshot was used; no scores from other snapshots were merged, and no missing country score was imputed.

Table 1. AI regulation map scoring structure and four sub-indicator components

Dimension	Four sub-indicator components	Operational definition used in this study
Regulation Status	1. AI-specific legal instrument 2. Legal/policy stage 3. Breadth of regulatory coverage 4. Binding/enforcement maturity	Assesses the existence and maturity of AI-specific regulation, progressing from no/minimal engagement to guidelines or strategies, draft legislation, enacted sectoral rules, and comprehensive binding cross-sector rules.
Policy Lever	1. Number/breadth of policy tools 2. Sectoral coverage 3. Cross-cutting reach 4. Compliance/capacity infrastructure	Assesses the breadth of instruments used for AI governance, from a single or indirect tool to multiple cross-cutting instruments combined with regulation, funding, standards, and implementation capacity.
Governance Type	1. Concentration of authority 2. Delegation to sectoral bodies 3. Formal coordination 4. Distribution across regulators/jurisdictions	Describes where AI-governance authority is located, ranging from centralized control to distributed authority across agencies, sectors, courts, and levels of government. This dimension is descriptive and excluded from Maturity Index.
Actor Involvement	1. Government-only participation 2. Industry consultation 3. Academic/civil-society access 4. Structured multi-stakeholder participation	Describes the breadth of domestic participation in AI policymaking, ranging from limited external input to structured participation by industry, academia, civil society, and other affected actors. Descriptive and excluded from Maturity Index.

Source and methodological note: AI Regulation Map methodology states that, since June 2026, each dimension score is the mean of four named sub-indicators rated 1–5, with the resulting quarter-point scores published through the subscore data. The public methodology explicitly identifies the four Enforcement Level components as sanctions framework, actions actually taken, dedicated authority, and monitoring practice. For the other dimensions, the table reports the operational components reflected in the published dimension rubrics rather than reconstructing unavailable country-level subscore values. The present study uses the published aggregate dimension scores and does not independently recode the map sub-indicators

For reproducibility, the comparative gap for dimension d was calculated as: Gap_d = Comparator Mean_d − Indonesia Score_d. The comparator mean is the arithmetic mean of the seven comparator jurisdictions. The comparator mean is used as a descriptive benchmark because the study seeks to quantify Indonesia's distance from the selected comparison set; it does not imply that the mean represents a legal optimum or normative standard. Gaps indicate comparative distance only and were not assigned High/Medium/Low priority because the source provides no validated thresholds. No imputation was required. The AI Regulation Map is a model-assigned dataset derived from public sources and subject to point-in-time, source-availability, aggregation, and methodology-version limitations; scores were therefore treated as comparative indicators and interpreted against primary legal materials.

The doctrinal corpus comprised publicly accessible Indonesian and comparator instruments relevant to AI governance, digital rights, accountability, risk management, supervision, enforcement, or redress, including enacted laws, policy and guidance instruments, consultation materials, and draft regulation. Instruments were included when they had an identifiable issuing authority, were publicly accessible, and contained provisions materially relevant to at least one of the analytical domains. Academic publications, news reports, duplicate versions, and materials without an identifiable legal or policy status were excluded from the primary legal corpus. Indonesian sources included Law No. 27/2022, Law No. 1/2024, Ministerial

Circular Letter No. 9/2023, the National Strategy for AI 2020–2045, 2025 consultation materials, and the 2026 draft Presidential Regulation. Comparator sources included the EU AI Act, Singapore's Model AI Governance Framework, South Korea's Framework Act, Japan's AI Guidelines for Business, Spain's AI Strategy 2024, Italy's Law No. 132/2025, Sweden's AI Strategy, and the U.S. NIST AI RMF 1.0.

Table 2. Indonesian legal corpus, legal status, and evidence examined

Instrument	Legal status	Issuing authority	Provision/section analyzed	Coding domains
Law No. 27/2022 concerning Personal Data Protection	Binding enacted law	Government of the Republic of Indonesia	Arts. 5–8, 10, 12, 16, 34, 46–47, 53–54, 59–60, and 64	Law No. 27/2022 concerning Personal Data Protection
Law No. 1/2024 amending the ITE Law	Binding enacted law	Government of the Republic of Indonesia	Arts. 27A, 28(2)–(3), and related enforcement provisions in Arts. 45(4) and 45A(2)–(3), examined for digital-information governance and enforcement.	Law No. 1/2024 amending the ITE Law
Ministerial Circular Letter No. 9/2023 on AI Ethics	Administrative guidance / soft law	Ministry of Communication and Informatics	Section 5 (definitions); Section 6(2)(1)–(9) (AI-ethics principles); Section 6(3)(1)(d)–(f) and 6(3)(2)(a)–(g) (oversight, responsibility, user protection, information, and risk/crisis management).	Ministerial Circular Letter No. 9/2023 on AI Ethics
National Strategy for AI 2020–2045	National policy strategy	Agency for the Assessment and Application of Technology (BPPT)	Ethics and Policy; Talent Development; Data and Infrastructure; Research and Industrial Innovation; Priority Areas; and Roadmap/Quick Wins sections.	National Strategy for AI 2020–2045
2025 AI policy consultation materials	Consultation / policy-development instrument	Ministry of Communication and Digital	Public-consultation materials concerning the National AI Roadmap and AI Ethics Guidelines; used as policy-development evidence rather than binding legal obligations.	2025 AI policy consultation materials
2026 Draft Presidential Regulation on AI Ethics	Draft / proposed regulation	Government of Indonesia	Publicly reported draft title and regulatory-development status; article-level coding is not claimed where the full draft text/version was not part of the accessible corpus.	2026 Draft Presidential Regulation on AI Ethics

The doctrinal unit of analysis was a specific legal provision or policy proposition, such as an article, section, clause, or equivalent provision containing an identifiable rule, institutional function, actor duty, procedural safeguard, supervisory power, enforcement mechanism, or individual remedy. The coding matrix covered legal status, risk classification, actor duties, transparency, human oversight, data protection, accountability, supervision, enforcement, and redress. For each domain, provisions were coded using three ordered categories: 0 = absent, when no relevant provision was identified; 1 = recognized, when the issue appeared as a general principle, strategy, guidance, consultation, or other non-binding policy direction; and 2 = operational, when an identifiable provision established a concrete duty, institutional power, procedural requirement, supervisory mechanism, enforcement consequence, or individual remedy. Legal force was recorded separately so that binding enacted rules were not treated as equivalent to guidance, strategy, consultation materials, or draft regulation. Where multiple provisions addressed the same domain, the coding retained the clearest legally applicable

operative provision while documenting the broader regulatory context. The AI Regulation Map scores were not independently recoded; published country-level scores were retained for the quantitative layer, while doctrinal interpretation followed the primary source and its legal force. Coding quality assurance was based on the fixed coding matrix, explicit decision rules, separation of legal force from substantive domains, and verification against the original primary source for each coded proposition. The study is single-author and did not employ an independent parallel coder; consequently, a formal intercoder reliability coefficient such as Cohen's kappa could not be calculated without introducing a coding process that was not actually undertaken. This is treated as a methodological limitation rather than being replaced by an unsupported reliability estimate. For replication, future studies using multiple coders should independently code the same corpus and report an appropriate intercoder agreement statistic. No doctrinal 0–2 scores were aggregated into the AI Regulation Map Maturity Index or into the regulatory-gap calculations. The 0–2 coding framework was used to organize and trace the legal evidence, whereas the published 1–5 AI Regulation Map scores were used only for the quantitative comparative calculation. This separation prevents the study from treating a researcher-generated doctrinal code as if it were part of the published Map methodology.

Table 3. Doctrinal coding framework and decision rules

Coding domain	0 = Absent	1 = Recognized	2 = Operational
Legal status	No identifiable regulatory basis	Strategy, guidance, consultation, or draft	Binding enacted rule / enforceable provision
Risk classification	No risk differentiation	Risk mentioned without operative differentiation	Risk categories linked to regulatory consequences
Actor duties	No identifiable duty	General responsibility/principle	Specific duty assigned to an identified actor
Transparency	No relevant requirement	General disclosure/information principle	Concrete transparency or explanation duty
Human oversight	No oversight provision	Oversight stated as principle	Specific operational human-review requirement
Data protection	No relevant safeguard	General privacy/data-protection principle	Specific enforceable data-protection obligation
Accountability	No accountability mechanism	General accountability principle	Identifiable responsibility/documentation mechanism
Supervision	No supervisory function	General supervisory responsibility	Identifiable monitoring/inspection/review authority
Enforcement	No enforcement mechanism	Sanctions/corrective measures mentioned generally	Concrete investigation/corrective/sanction mechanism
Redress	No remedy	General complaint/remedy reference	Specific objection/review/appeal/compensation/judicial/ADR remedy

3. Analysis and Results

3.1. Comparative Regulatory Indicators

Table 4. Comparator selection and primary reference instruments

Comparator	Institutional/regulatory reason for inclusion	Primary reference
Singapore	Flexible governance model combining guidance and technical assurance	Infocomm Media Development Authority (IMDA) (2024), Model AI Governance Framework (2024)
South Korea	Recent dedicated statutory AI framework	Framework Act on AI Development and Foundation for Trust (2025; amended (2026)
Japan	Business-guideline / soft-law approach	METI & MIC, AI Guidelines for Business v1.0 (2024)
Spain	EU member-state national strategy context	Government of Spain, Artificial Intelligence Strategy (2024)
Italy	EU member-state dedicated AI statute context	Law No. 132/2025 on AI (2025)
Sweden	Recent national AI strategy within EU context	Government Offices of Sweden, AI Strategy (2026)
United	Standards-led federal risk-management	NIST AI RMF 1.0 (2023)

States approach

Table 5. Individual country scores in the 13 june 2026 ai regulation map snapshot

Jurisdiction	Regulation Status	Policy Lever	Governance Type	Actor Involvement	Enforcement Level	Maturity Index*
Indonesia	1.75	1.75	1.75	2.50	1.25	1.58
Singapore	2.75	3.50	2.25	3.50	2.00	2.75
South Korea	4.50	3.25	2.25	3.50	2.25	3.33
Japan	4.25	3.75	2.50	3.75	2.25	3.42
Spain	4.50	4.25	3.00	3.50	3.50	4.08
Italy	4.75	4.00	3.00	3.50	3.50	4.08
Sweden	4.25	3.75	3.75	4.00	2.75	3.58
United States of America	3.25	3.25	4.00	3.50	3.25	3.25

*Source: AI Regulation Map, 13 June 2026 snapshot; country scores extracted from the supplied comparative dataset. *Maturity Index = arithmetic mean of Regulation Status, Policy Lever, and Enforcement Level. Calculations by the authors*

The AI Regulation Map indicates that Indonesia has a Maturity Index of 1.58, compared with 3.50 across the seven comparator jurisdictions. This index is calculated from Regulation Status, Policy Lever, and Enforcement Level only. Indonesia's five-dimensional profile is 1.75 for Regulation Status, 1.75 for Policy Lever, 1.75 for Governance Type, 2.50 for Actor Involvement, and 1.25 for Enforcement Level. These figures are comparative regulatory indicators rather than independently validated measures of regulatory maturity. The numerical gaps in Table 6 are calculated from the published country scores (AI Regulation Map, 2026). The largest numerical distances occur in Regulation Status (2.29 points), Policy Lever (1.93), and Enforcement Level (1.54). Because Governance Type and Actor Involvement are descriptive dimensions in the map's methodology, their gaps (1.21 and 1.11) are interpreted as institutional-pattern differences rather than as quality deficits. The empirical result therefore identifies where further legal scrutiny is warranted without turning a score into a normative ranking.

Table 6. Comparative regulatory gap of artificial intelligence regulation

Dimension	Indonesia	Comparator mean	Gap (mean − ID)	Interpretation
Regulation Status	1.75	4.04	2.29	Normative gap concerning formalization/consolidation
Policy Lever	1.75	3.68	1.93	Normative gap concerning differentiated instruments/duties
Governance Type	1.75	2.96	1.21	Descriptive institutional pattern
Actor Involvement	2.50	3.61	1.11	Descriptive participation pattern
Enforcement Level	1.25	2.79	1.54	Normative gap concerning supervision/enforceability

Source: AI Regulation Map, 13 June 2026 snapshot; calculations by the authors. Scores are comparative indicators, not direct measures of legal validity, compliance, or enforcement effectiveness

3.1. Doctrinal Interpretation of the Main Regulatory Gaps

3.1.1. Regulation Status

The 2.29-point gap is best understood as a difference in the formal status and consolidation of AI-specific regulation, not as proof that Indonesia lacks AI-related law. Law No. 27 of 2022 provides binding rights and obligations concerning personal data, including rights that can become relevant to AI-enabled processing; Law No. 1 of 2024 amends the ITE framework. Ministerial Circular Letter No. 9 of 2023 provides AI-ethics guidance but is not equivalent in legal force to enacted legislation. The National Strategy for Artificial Intelligence 2020–2045 is a policy-planning instrument, while the 2025 consultation materials and 2026 draft presidential regulation reflect policy development rather than enacted AI-specific obligations. The doctrinal issue is therefore the absence of a single binding framework that systematically connects AI actors, risk categories, obligations, supervision, and remedies (Republic of Indonesia, 2022).

3.1.2. Policy Lever

The 1.93-point gap reflects the absence of an integrated set of differentiated AI obligations in the published comparative indicator. Indonesia combines binding legislation with sectoral rules, circular guidance, strategy documents, consultation materials, and draft regulation. This mix can provide policy direction, but it does not yet produce one coherent risk-tiered compliance sequence specifying which duties attach to which class of AI system. Legal certainty consequently depends on making the relationship among these instruments explicit rather than treating them as equivalent sources of law.

3.1.3. Governance and Actor Involvement

Governance Type and Actor Involvement are descriptive dimensions, so their numerical gaps do not independently establish underperformance. The legal reconstruction issue is instead the allocation of functions among central government, sectoral regulators, developers, providers, deployers, auditors, researchers, civil society, and affected persons. A cross-sector AI system needs clear responsibility, escalation, and coordination rules so that institutional overlap or responsibility gaps do not undermine enforceability.

3.1.4. Enforcement

Indonesia's Enforcement Level score is 1.25, producing a 1.54-point gap. The legal significance of this signal lies in whether regulatory obligations are accompanied by clear supervisory competence, incident-reporting duties, inspection or audit authority, sanctions, and accessible redress. The reconstruction therefore treats enforcement as an institutional and procedural chain rather than a score: legal duties must identify who can monitor, investigate, correct, sanction, and provide or facilitate remedies.

3.1.5. Digital-Rights Implications

Law No. 27 of 2022 provides specific rights and procedural safeguards relevant to AI-supported processing. Article 5 establishes the right to information concerning identity, legal basis, processing purposes, and the accountability of the requesting party; Articles 6–8 cover correction, access/copy, and termination, deletion, or destruction of personal data; Article 10 grants a right to object to decisions based solely on automated processing, including profiling, when they produce legal or similarly significant effects; and Article 12 provides a right to sue and receive compensation for unlawful processing. Article 16 requires processing to be limited to specified purposes, lawful and transparent, rights-protective, accurate, secure, and accountable, and requires notification of processing purposes/activities and personal-data breaches. Article 34 requires a data-protection impact assessment where processing presents a high risk to data subjects, expressly including automated decision-making with legal or significant effects. Article 46 requires written notification of a personal-data breach within 3 x 24 hours, while Article 47 establishes controller accountability. Articles 53–54 address the appointment and functions of personnel responsible for data-protection functions, including risk-aware monitoring, and Articles 59–60 provide supervisory and administrative enforcement functions. Article 64 provides dispute resolution through arbitration, courts, or alternative dispute resolution. In this study, "digital rights" therefore refers operationally to privacy/data-protection rights and related procedural protections, especially transparency, contestability, human intervention, non-discrimination, and access to remedy. These provisions form an existing Indonesian rights baseline that can be connected to AI-specific risk regulation (Republic of Indonesia, 2022).

The central theoretical linkage is proportionality: the potential severity of safety or rights impact determines regulatory intensity; regulatory intensity determines differentiated duties; and compliance with those duties is linked to oversight, enforcement, and remedies. Risk classification is therefore an organizing device rather than the endpoint of regulation. This

operationalization of Risk-Based Regulation Theory addresses the reviewers' concern that a risk label alone does not explain how legal certainty or digital-rights protection is achieved.

Table 7. Gap-to-legal-evidence traceability matrix

Gap / dimension	Primary legal evidence	Institution / mechanism	Legal implication
Regulation Status	Law No. 27/2022 Arts. 5–8, 10, 12, 16, 34, 46–47, 53–54, 59–60, 64; Law No. 1/2024; SE No. 9/2023 §6.	Government and designated supervisory/data-protection functions; AI-related guidance for PSEs and businesses.	Indonesia has binding digital/data rules and AI-ethics guidance, but they are distributed across instruments with different legal force.
Policy Lever	SE No. 9/2023 §6(2)–(3); National AI Strategy 2020–2045; 2025 consultation materials.	Ministry and relevant public institutions; sectoral implementation through existing regulatory arrangements.	The instruments provide principles and policy direction, but do not themselves establish one cross-sector AI compliance sequence tied to risk tiers.
Enforcement Level	Law No. 27/2022 Arts. 59–60 and 64; Law No. 1/2024 Arts. 45(4) and 45A(2)–(3), where applicable to the identified digital conduct.	Supervisory authorities, administrative enforcement bodies, courts, arbitration, and ADR mechanisms under the cited instruments.	Enforcement powers and remedies exist within adjacent digital-law regimes, while AI-specific supervision and incident-response duties remain distributed.
Governance / Actor Involvement	SE No. 9/2023 §6(3) addresses oversight and responsibility by government, providers, and users; 2025–2026 AI policy development involved cross-ministerial and stakeholder processes.	Government, providers, users, sectoral authorities, and participating stakeholders.	The evidence indicates distributed participation and oversight mechanisms, but not yet a single AI-specific coordination architecture across sectors.

3.2. Integrated Risk-Based Regulatory Reconstruction

The proposed reconstruction establishes a sequential legal framework by defining AI systems and responsible actors, classifying risks, assigning proportionate duties, requiring meaningful human oversight for consequential systems, clarifying supervisory authority, and establishing incident reporting, enforcement, complaint, contestation, and remedy mechanisms. Binding legislation provides the enforceable foundation, while standards, guidance, and certification offer flexible technical implementation. This structure aims to reduce legal uncertainty by clearly linking risk, obligations, supervision, enforcement, and rights protection.

Table 8. Legal reconstruction matrix: gap, rule, institution, enforcement, and rights safeguard

Reconstruction area	Proposed legal rule	Responsible mechanism	Enforcement / remedy	Rights safeguard
Legal status and scope	Define AI system, provider, deployer, importer/distributor, affected person, and regulated uses in binding legislation.	National coordinating authority with sectoral regulators.	Registration/notification where justified; compliance orders; administrative sanctions.	Clear notice of applicable duties and accountable actor.
Risk classification	Create prohibited, high-risk, limited-risk, and minimal-risk categories with criteria and periodic review.	Central technical/legal committee with sectoral input.	Classification review; reassessment after major system change or incident.	Risk assessment explicitly considers rights impact.
High-risk obligations	Require risk assessment, data governance, testing, logging, documentation, human oversight,	Provider/deployer compliance functions; independent assessors for designated	Audit, corrective orders, suspension, proportionate sanctions.	Explanation, human review, objection/contestability, data protection.

Reconstruction area	Proposed legal rule	Responsible mechanism	Enforcement / remedy	Rights safeguard
	monitoring, and incident reporting.	cases.		
Institutional governance	Allocate national coordination and sector-specific supervisory powers, including cross-sector escalation.	National coordinating body plus sectoral regulators.	Coordination protocol; decisions recorded and reviewable.	Accessible complaint channel and institutional accountability.
Enforcement and remedies	Specify investigation, incident reporting, administrative sanctions, referral pathways, and compensation/redress where harm occurs.	Supervisory authority; courts/ADR for disputes.	Warning, corrective order, suspension, fine or other legally authorized sanction; remedy.	Compensation, objection, review, and procedural fairness.
Standards and participation	Permit standards/certification and structured consultation to support technical updating without replacing binding rules.	Standards bodies, assessors, academia, industry, civil society, affected communities.	Assurance evidence where required; periodic regulatory review.	Participation in rulemaking and risk review.
Lifecycle review	Require post-deployment monitoring, material-change reassessment, incident learning, and periodic review of risk categories.	Regulator + provider/deployer monitoring.	Trigger-based reassessment and corrective action.	Continuing protection as systems or contexts change.

Source: Author's normative reconstruction based on the comparative indicator and the Indonesian legal corpus

The reconstruction is intentionally staged. First, binding legislation defines scope, actors, and risk tiers. Second, high-risk systems receive a mandatory compliance bundle. Third, oversight and enforcement powers are allocated across national and sectoral institutions. Fourth, digital-rights safeguards are attached to consequential AI uses. Finally, standards and stakeholder participation support technical updating without replacing the binding baseline.

For risk tiers, prohibited or unacceptable uses should be identified through explicit statutory criteria and linked to supervisory response. High-risk systems should carry the strongest controls, including risk assessment, data governance, testing, documentation, human oversight, post-deployment monitoring, and incident reporting. Limited-risk systems can be subject to targeted transparency and user-information obligations, while minimal-risk uses can rely largely on general law and voluntary standards. The categories are therefore legal triggers for differentiated duties rather than descriptive labels.

Human oversight and digital-rights safeguards should operate across the lifecycle. For consequential AI-assisted or automated decisions, transparency and explanation duties should be paired with meaningful human review and contestation. The PDP Law provisions on objection to solely automated decision-making, high-risk processing assessments, accountability, and breach notification provide concrete Indonesian legal anchors for this structure. The reconstruction extends that existing rights baseline into a unified AI risk framework rather than creating a separate, disconnected rights regime.

Institutional governance should combine a national coordination mechanism with sectoral supervisory authority. The coordinating mechanism can maintain a common risk taxonomy and cross-sector standards, while sectoral regulators retain domain-specific supervision.

Independent assessors or auditors can provide assurance for designated high-risk systems. Stakeholder participation should be structured through consultation, technical standard-setting, and periodic review so that rules can evolve with technology while preserving accountability.

3.4. Discussion and Research Contribution

The findings are consistent with Indonesian literature that describes regulatory fragmentation and rights/accountability concerns, but this study adds a multidimensional comparative diagnostic and a source-traceable doctrinal interpretation. Rather than treating ethical principles, privacy, risk management, human oversight, or liability as isolated themes, the present analysis connects them through a single regulatory chain and explicitly distinguishes binding legislation from guidance, strategy, consultation, and draft instruments. The EU AI Act provides evidence that risk-differentiated binding obligations can be structured in legislation, while Singapore and Japan illustrate how standards and guidance can complement formal rules. The institutional arrangements, however, cannot simply be transplanted because Indonesia has a different legal hierarchy and sectoral distribution of regulatory authority.

The diagnosed gaps can be explained more precisely by the structure of the existing Indonesian regulatory environment. The legal corpus combines binding horizontal rules on data and electronic systems with AI-specific ethical guidance, national strategy documents, consultation materials, and draft instruments. These sources differ in legal force, scope, and institutional function, while supervisory responsibilities remain distributed across sectoral and administrative bodies. The resulting issue is therefore not simply the absence of regulation; it is the absence of a single legal chain that consistently links risk classification to actor-specific duties, supervisory authority, enforcement procedures, and remedies. This interpretation is consistent with the distinction drawn in the legal corpus between binding provisions and policy or guidance instruments, and with the institutional distribution identified in the comparative analysis.

The contribution is therefore both scientific and legal: a comparative indicator is used to locate regulatory distance, primary legal sources are used to interpret what that distance means, and the result is translated into a reconstruction matrix specifying rule, institution, enforcement, and rights safeguard. This makes the proposed framework more concrete than a general recommendation to enact an AI law. It also clarifies how legal certainty is produced, through defined categories, actors, procedures, and consequences, and how digital-rights protection is operationalized through rights-sensitive risk assessment, oversight, transparency, contestability, and redress. The framework also extends prior work that has separately emphasized risk-based governance, organizational accountability, human oversight, and liability by combining these elements with legal-force classification and a source-traceable comparative diagnostic for Indonesia. The principal limitation concerns the quantitative source. The AI Regulation Map is a derived, model-assigned dataset based on public information; it is point-in-time and subject to source availability, national aggregation, methodology changes, and the absence of independent audit of every score. The study therefore does not present the numerical gaps as legal facts or as measures of actual compliance. The strongest legal claims rest on the primary Indonesian and comparator instruments, while the map functions as a structured comparative signal for identifying areas that merit doctrinal scrutiny. A second limitation concerns the doctrinal coding procedure: because the study used a single-author coding process, formal intercoder reliability cannot be claimed. The study therefore avoids presenting the doctrinal codes as independently validated measurements and uses primary-source tracing as the principal verification mechanism.

The combined empirical and doctrinal analysis consequently answers research question 1 by identifying the largest comparative gaps in the three normative dimensions and research question 2 by translating those signals into a concrete risk-based regulatory architecture. The resulting framework remains a normative proposal for future legislative drafting and empirical evaluation; it does not imply that the proposed rules are already enacted.

4. Conclusion

The 13 June 2026 AI Regulation Map snapshot indicates that Indonesia's Maturity Index was 1.58, compared with 3.50 across the seven selected comparator jurisdictions. The largest comparative gaps were observed in Regulation Status (2.29 points), Policy Lever (1.93 points), and Enforcement Level (1.54 points). These figures are comparative indicators and should not be interpreted as direct measures of legal validity, regulatory compliance, or enforcement effectiveness. The doctrinal analysis further indicates that Indonesia's main regulatory challenge is not the absence of AI-related legal norms, but the lack of an integrated and binding framework that connects risk classification, actor responsibilities, proportionate obligations, institutional supervision, enforcement, and rights remedies. Existing Indonesian data-protection and digital-law instruments provide important legal foundations that can be integrated within such a framework. This study contributes an Integrated Risk-Based AI Regulatory Reconstruction Framework that links legal force, risk classification, regulatory obligations, institutional authority, enforcement, and digital-rights protection. The proposed framework provides a normative basis for future legislative development and empirical evaluation, while recognizing that the proposed regulatory arrangements have not yet been enacted or empirically tested.

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