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ORIGINAL ARTICLE

The Risks of Unregulated Artificial Intelligence in Indonesia: Challenges and Solutions

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Abstract

The rapid diffusion of artificial intelligence (AI) systems in Indonesia has outpaced the country's regulatory capacity. Although several statutory and subordinate instruments touch upon AI-related concerns, including Law Number 11 of 2008 on Electronic Information and Transactions as most recently amended by Law Number 1 of 2024, Law Number 27 of 2022 on Personal Data Protection, Government Regulation Number 71 of 2019, the Circular Letter of the Minister of Communication and Informatics Number 9 of 2023 on the Ethics of Artificial Intelligence, the Circular Letter of the Financial Services Authority Number 19/SEOJK.06/2023, and the 2020-2045 National Strategy for Artificial Intelligence, none of these instruments establishes a comprehensive legal regime for AI. Employing normative legal research combining statutory, conceptual, and comparative approaches, this article argues that Indonesia's prevailing reliance on subordinate regulations and ministerial circulars is constitutionally insufficient for a regulatory domain that engages fundamental rights protected by Article 28J(2) of the 1945 Constitution. Drawing comparatively upon the European Union's risk-based AI Act, Singapore's Model AI Governance Framework, and Japan's agile governance approach, the article proposes a primary statute (Undang-Undang) on AI as the constitutionally proper anchor, with subordinate Presidential and Ministerial Regulations performing operational functions. The contribution is not the now familiar claim that Indonesia needs AI regulation, but the reframing of that claim as a question of constitutional form, mapping a civil law hierarchy of instruments onto it and offering Indonesian legislators and ASEAN scholarship a worked architecture suited to a civil law jurisdiction.

1. Introduction

The proliferation of artificial intelligence (AI) systems across consumer, commercial, and governmental domains in Indonesia has generated a regulatory question that legislators, ministries, and the judiciary have so far answered only piecemeal. AI tools embedded in financial services, public administration, healthcare, electoral processes, and content generation now mediate decisions affecting fundamental interests of millions of citizens. Yet Indonesia possesses no primary legislation that addresses AI as such. The instruments commonly invoked as relevant, principally Law Number 11 of 2008 on Electronic Information and Transactions as amended (UU ITE) and Law Number 27 of 2022 on Personal Data Protection (UU PDP), were drafted with different regulatory targets in mind and confront AI only obliquely through the doctrines of electronic systems liability and personal data processing [1]. Earlier Indonesian scholarship tended to treat these two statutes as the natural backbone for AI regulation, an intuition this article sets aside. The argument here is that AI raises regulatory demands that

neither statute was built to carry, so the starting point should be the legal form a dedicated regime requires rather than the adaptation of instruments designed for other targets [2–4].

This regulatory situation is not, however, a vacuum. A series of subordinate instruments has emerged during the past several years. The Circular Letter of the Minister of Communication and Informatics Number 9 of 2023 sets out ethical principles for AI deployment by electronic system operators. The Circular Letter of the Financial Services Authority Number 19/SEOJK.06/2023 applies analogous principles to information technology-based financial services. The 2020-2045 National Strategy for Artificial Intelligence (Stranas KA) lays out a long-term roadmap for AI development. These instruments share two features. First, they do not occupy the apex of the hierarchy of statutory regulations established by Law Number 12 of 2011 as amended by Law Number 13 of 2022. Second, they regulate principally through soft-law guidance rather than through binding obligations supported by sanctions [5].

This article argues that the existing regulatory architecture is insufficient on both doctrinal and constitutional grounds. The doctrinal insufficiency lies in the patchwork's inability to address AI-specific concerns such as algorithmic accountability, training-data governance, transparency obligations, and risk classification. The constitutional insufficiency follows from Article 28J(2) of the 1945 Constitution, which permits the limitation of fundamental rights only through Undang-Undang. Because comprehensive AI regulation will necessarily impose obligations on private actors that bear upon constitutionally protected interests, including privacy, non-discrimination, and freedom of expression, a regulatory instrument below the level of primary legislation cannot supply the constitutional foundation that such governance requires. This does not by itself decide whether the answer is a new statute or an amendment to UU ITE or UU PDP, since both are already primary legislation [6].

The research question this article poses is therefore the following: given the existing fragmented landscape of AI-related instruments in Indonesia, what regulatory architecture best satisfies the constitutional, doctrinal, and policy demands of comprehensive AI governance? Drawing on a comparative reading of the European Union AI Act, Singapore's Model AI Governance Framework, and Japan's agile governance approach, the article proposes a primary statute on AI as the principal regulatory anchor, operationalised through Presidential and Ministerial Regulations that perform technical, sectoral, and institutional functions. Of the three demands named here, the constitutional one is treated as primary, since it is the requirement of legal form that ultimately determines where the regime must sit, with the doctrinal and policy demands following from it. The contribution is normative rather than empirical. It is intended both to assist Indonesian legislators considering the form an AI law should take and to offer ASEAN-region scholarship a worked example of how a civil-law jurisdiction can adapt the European Union's risk-based logic to its own constitutional architecture.

2. Methods

This study employs normative legal research, also known as doctrinal legal research. Normative legal research treats law as a system of norms that can be analysed for internal coherence, hierarchical consistency, and conceptual integrity. The method is suited to the present inquiry because the research question is, in substance, a question about which legal form a regulatory regime should take, rather than an empirical question about behaviour or effect.

Three approaches are combined. The statutory approach examines primary and subordinate legislation pertinent to AI governance in Indonesia, treating each instrument as part of a hierarchical system whose internal consistency is governed by Law Number 12 of 2011 as amended by Law Number 13 of 2022 [5,7]. The conceptual approach draws on doctrinal categories such as algorithmic accountability, transparency, risk classification, and automated decision-making, which the international literature has developed but which Indonesian positive

law has not yet codified [8,9]. The comparative approach examines selected foreign regimes to identify regulatory techniques that may be transplanted, adapted, or rejected for Indonesia.

The three comparators were selected to represent three distinct regulatory forms rather than to match Indonesia on wealth or institutional capacity. The European Union represents comprehensive hard law, Singapore represents principle based soft law, and Japan represents agile governance that mixes the two. What is held constant across the comparison, the basis of comparison, is the legal form through which each regime gives AI governance its binding force and the hierarchy of instruments that supports it. This keeps the comparison focused on the question the article asks, which is one of legal form. A case approach is not employed because no developed line of Indonesian judicial authority on AI governance yet exists; this absence is itself part of the regulatory diagnosis below.

Primary foreign legal instruments, including Regulation (EU) 2024/1689, the Singapore Model AI Governance Framework, and the Japanese AI legislation, are drawn upon directly because they are central to the comparative analysis. Secondary international sources are restricted to peer reviewed publications indexed in established databases.

3. Results and Discussion

3.1 The Indonesian Regulatory Landscape: Fragmentation Without Foundation

Indonesia's AI regulations were not planned as a single regime. They were added one at a time, by different ministries, in response to different pressures. To understand the current position, three layers must be examined: the primary legislation that addresses electronic systems and personal data, the subordinate regulations that operationalise that legislation, and the soft-law instruments that have emerged to fill the gap created by the absence of an AI-specific statute. Each layer is examined in turn, before a diagnostic assessment of the cumulative architecture.

3.1.1 Primary Legislation

The most frequently cited primary instruments are UU ITE, as amended by Law Number 19 of 2016 and most recently by Law Number 1 of 2024, and UU PDP. Neither contains a definition of AI or addresses AI as a distinct regulatory object. UU ITE regulates electronic systems and electronic transactions, imposing obligations on electronic system operators (penyelenggara sistem elektronik) without distinguishing between AI-driven and non-AI-driven systems. UU PDP regulates the processing of personal data, including by automated means, and provides limited rights of objection to fully automated decision-making in its provisions on data subject rights. Such rules provide partial cover for the personal-data dimensions of AI deployment, but they leave untouched several core regulatory targets, including the governance of training data, the duties owed by deployers and developers of AI systems that do not process personal data, and the differential treatment of AI systems by risk category [10–13].

Earlier scholarly assessments tended to treat UU ITE and UU PDP as the natural starting points for AI regulation in Indonesia, on the intuition that these statutes form a digital-law backbone capable of being adapted [2]. The more recent literature, however, has converged on a different view. AI systems pose regulatory challenges that are not reducible to electronic-systems liability or personal-data protection. Algorithmic opacity, the use of foundation models trained on indeterminate data, and the cross-border supply chains of generative AI demand specific regulatory tools that the existing statutes were not designed to provide [4,14].

3.1.2 Subordinate Regulations and Soft-Law Instruments

Beneath the primary statutes sit Government Regulation Number 71 of 2019 on the Operation of Electronic Systems and Transactions and Government Regulation Number 80 of 2019 on Trading Through Electronic Systems. These instruments operationalise UU ITE for specific sectors but do not address AI. More targeted is the Circular Letter of the Minister of

Communication and Informatics Number 9 of 2023 on the Ethics of Artificial Intelligence in Programming-Based Activities. This instrument sets out ethical principles drawn from international soft-law sources, including inclusivity, humanity, security, accessibility, transparency, credibility and accountability, personal data protection, sustainability and environmental concern, and intellectual property protection. Its character, however, is normatively limited [15]. As a surat edaran it is not part of the hierarchy of laws and regulations established by Article 7 of Law Number 12 of 2011 [5]. It functions as administrative guidance to electronic system operators rather than as a source of enforceable obligations. A similar character attaches to the Circular Letter of the Financial Services Authority Number 19/SEOJK.06/2023 on the Application of Responsible and Trusted Artificial Intelligence in Information Technology-Based Co-Financing Service Providers.

The 2020-2045 National Strategy for Artificial Intelligence (Stranas KA), prepared under the auspices of the Agency for the Assessment and Application of Technology (now consolidated into the National Research and Innovation Agency), is a long-term planning document. It identifies priority sectors, infrastructure needs, and ethical commitments. Its character is programmatic rather than juridical. It binds no one. It is best understood as a statement of executive intent.

3.1.3 Diagnosing the Architectural Defect

Taken together, these instruments form a patchwork that lacks a primary statutory basis. Primary statutes apply tangentially. Subordinate regulations operationalise statutes that do not target AI. Circular letters supply ethical guidance without legal force. A national strategy document outlines priorities but creates no rights and imposes no duties. The result is what the comparative literature has described as the pacing problem: the systematic lag of legal regulation behind technological change [16]. Indonesia's version of the pacing problem is worse because there is no primary statute for the subordinate instruments to refer back to.

This is not only a doctrinal problem. It also raises a constitutional one, which is taken up next. Article 28J(2) of the 1945 Constitution provides that the limitation of fundamental rights may be imposed only through statute and only in pursuit of recognised public interests. AI regulation will necessarily limit constitutionally protected interests at several points, both directly through obligations on AI deployers and indirectly through obligations on those affected by AI systems. A Presidential Regulation or a Circular Letter cannot supply the constitutional warrant for such limitations, however carefully drafted those instruments may be [17]. The constitutional architecture of Indonesian law requires that the principal regulatory commitments be enacted at the level of primary legislation.

3.2 Comparative Models for AI Regulation

A normative proposal for Indonesia benefits from comparison with regimes that have already confronted the regulatory question. This Part examines three: the European Union, Singapore, and Japan. The selection is purposive. The European Union offers the leading hard-law model, structurally compatible with Indonesia's civil-law tradition. Singapore is the most developed ASEAN exemplar of a soft-law model and offers proximate political and economic conditions. Japan provides an agile-governance approach that combines sectoral soft law with selective hard-law interventions and supplies an instructive contrast.

3.2.1 The European Union: Risk-Based Hard Law

Regulation (EU) 2024/1689, commonly known as the AI Act, establishes a comprehensive regulatory regime for AI in the Union. Its structural choice is risk-based classification. AI systems are sorted into prohibited practices, high-risk systems subject to detailed obligations on developers and deployers, limited-risk systems subject to transparency requirements, and

minimal-risk systems left to general law. The regime imposes duties on providers, deployers, importers, and distributors, supported by an enforcement architecture involving national competent authorities and a European AI Office.

At the operative level, Annex III fixes the high risk uses in concrete terms, covering systems used in biometric identification, critical infrastructure, education, employment, access to essential services, law enforcement, migration, and the administration of justice, and the Act assigns the heavier obligations of risk management, data governance, logging, and human oversight to providers while placing narrower use and monitoring duties on deployers. This division of duties, rather than the four tier label alone, is what Indonesia would be adapting.

The risk-based logic of the AI Act has attracted both endorsement and criticism. Laux, Wachter, and Mittelstadt (2024) argue that the Act conflates trustworthiness with the acceptability of risk and that several of its core provisions do not in fact follow the risk-based approach to which it is rhetorically committed [18,19]. Gamito and Marsden (2024) note the heavy reliance on harmonised standards as a vehicle for co-regulation, with attendant questions about democratic accountability. Goodman and Flaxman (2017) had earlier highlighted, in the GDPR context, the difficulty of operationalising a meaningful right to explanation in the face of algorithmic complexity. Despite these critiques, the AI Act represents the most developed legislative answer to the regulatory question in any major jurisdiction and has become a reference point for legislatures in third countries.

For Indonesia, several features of the European model are pertinent. The use of risk classification as the principal regulatory technique provides a method for proportionate regulation . The clear delineation between providers and deployers offers a workable allocation of duties. The integration of conformity assessment, post-market monitoring, and sanctions supplies an enforcement architecture that the current Indonesian instruments lack. The hierarchical relationship between the Regulation (the apex instrument) and delegated and implementing acts (subordinate instruments) mirrors the relationship that would obtain in Indonesia between an AI statute and its implementing regulations.

3.2.2 Singapore: Soft Law and Model Frameworks

Singapore's Model AI Governance Framework, first issued in 2019 and subsequently revised, takes a different path. It is a non-binding framework that articulates principles and offers practical guidance to organisations deploying AI. The Framework is supplemented by an Implementation and Self-Assessment Guide for Organisations and by sector-specific guidance issued by regulators such as the Monetary Authority of Singapore. The choice of soft law reflects Singapore's broader regulatory philosophy of pro-innovation flexibility paired with strong institutional capacity [20].

The Singaporean approach is attractive on grounds of speed and adaptability. It avoids the lengthy political processes of primary legislation. It allows iterative refinement as the technology evolves. It signals to industry that the regulator is responsive. But the model has limits. Soft law is enforceable only through reputational and institutional pressure, which presupposes a regulatory environment in which firms are highly responsive to such signals. In jurisdictions with weaker enforcement cultures, soft-law instruments tend to be honoured selectively. Indonesia's enforcement capacity, although strengthened by the establishment of the Personal Data Protection Agency under UU PDP, remains under-developed in the AI domain. A purely Singaporean approach would, in the Indonesian context, replicate the limitations of the current circular letters.

3.2.3 Japan: Agile Governance and Sectoral Precision

Japan has pursued what its government has labelled agile governance. The approach combines

existing sectoral law (particularly product liability, personal data protection, and intellectual property statutes), non-binding governance guidelines, and selective primary legislation where specific risks are identified. The Act on the Promotion of Research and Development and Utilization of AI Related Technologies, commonly called the AI Promotion Act, which was enacted on 28 May 2025, together with accompanying policy statements, articulates this hybrid. The Act is principle based and pro innovation, setting national objectives and establishing coordinating machinery rather than imposing detailed prohibitions or penalties, which makes it a precision instrument rather than a general regulatory blanket [21].

The Japanese model has the advantage of conceptual humility. It acknowledges that comprehensive regulation of a fast-moving technology by primary legislation risks ossification. Its disadvantages mirror those of the Singaporean approach. The reliance on sectoral law presupposes that the existing sectoral law is fit for the AI context, an assumption that is not safe for jurisdictions in which sectoral statutes do not yet address algorithmic decision-making.

3.2.4 Synthesis: Three Models for Three Functions

The three models can be understood as discharging three regulatory functions in different proportions. The three models prioritise different things. The EU AI Act prioritises legal certainty and rights protection, paid for in compliance cost. Singapore's Framework prioritises adaptability, which only works where regulators have the institutional pull to make non-binding guidance stick. Japan's approach prioritises sectoral precision, which assumes the sectoral statutes are already in good shape. None is freely transplantable to Indonesia. The European model would impose compliance costs and administrative complexity that exceed Indonesia's enforcement capacity. The Singaporean model presupposes institutional conditions that Indonesia does not yet fully possess. The Japanese model presupposes a sectoral legal infrastructure of which Indonesia has only fragments.

What Indonesia should take from these three regimes is partial, not wholesale: the EU's risk-based logic, Singapore's flexibility at the subordinate level, and Japan's sectoral focus in implementation. Indonesia requires the constitutional anchor and the risk-based logic of the European approach, the flexibility of the Singaporean model in the design of subordinate instruments, and the sectoral attentiveness of the Japanese model in implementing measures. The next Part develops this synthesis into a concrete proposal.

3.3 A Normative Proposal for Indonesia

3.3.1 The Constitutional Case for Primary Legislation

The most fundamental claim of this article is that AI regulation in Indonesia must be anchored in Undang-Undang. The case rests on Article 28J(2) of the 1945 Constitution, which provides that fundamental rights may be limited only by statute and only in pursuit of recognised public interests. Comprehensive AI regulation will limit constitutional rights at multiple points. Obligations of transparency limit freedom of contract and freedom to conduct business. Restrictions on prohibited practices, for instance social scoring or untargeted scraping of biometric data, limit freedom of expression and the right to develop oneself through technology guaranteed by Article 28C. Duties of risk assessment and impact reporting impose data-handling obligations beyond those contained in UU PDP and so engage the right to personal data protection recognised in Article 28G(1).

Indonesian constitutional scholarship has emphasised the principle of legalitas formil, the requirement that limitations of fundamental rights be grounded in primary legislation duly enacted by the Dewan Perwakilan Rakyat acting jointly with the President [5,7] . The Mahkamah Konstitusi has applied this principle consistently in its review of statutes that impinge upon fundamental rights, treating the choice of legal form, Undang-Undang as opposed to lower

instruments, as integral to constitutionality. A Presidential Regulation enacting substantive AI obligations would on this analysis be vulnerable to challenge on the ground that it lacks the requisite primary basis [22].

To be clear about the scope of this claim. It does not entail that subordinate regulations have no role. To the contrary, the technical specification of risk classes, the prescription of conformity-assessment procedures, the designation of sectoral authorities, and the elaboration of standards are properly delegated to Presidential and Ministerial Regulations. What is required at the level of Undang-Undang is the establishment of the regulatory regime itself: its scope, its categories of regulated subjects, its principal obligations, its sanctions, and the institutional architecture for enforcement. The argument in earlier policy literature for a Perpres-based AI Roadmap is not wrong as an account of where operational guidance belongs. It is, however, incomplete as an account of where the regulatory regime as a whole should sit.

3.3.2 The Roadmap Reframed

The 2020-2045 Stranas KA and the proposed governance roadmap are, properly understood, instruments of executive coordination and policy direction. They identify priority sectors, set national targets, and coordinate ministerial action. These are legitimate and important functions, and they belong in Presidential Regulations or in similar executive instruments. The redirection proposed here is not to abandon the roadmap but to subordinate it to a primary statute. The roadmap then serves as the operational arm of a constitutionally grounded regulatory regime, rather than as the regime itself.

The relationship would be the following. An Undang-Undang on Artificial Intelligence would establish the regulatory regime, the categories of risk, the basic obligations, and the institutional architecture. A Presidential Regulation, of which the Stranas KA would form a continuing component, would specify national priorities, allocate ministerial responsibilities, and coordinate implementation. Ministerial Regulations and circular letters would supply technical specifications, sectoral applications, and operational guidance. This architecture is consistent with Article 7 of Law Number 12 of 2011 and with the constitutional principle that legal form must match substantive function [5].

3.3.3 Substantive Architecture of the Proposed Statute

Drawing on the comparative analysis above, four components are essential. First, a definition of AI that is technologically neutral but sufficiently specific to identify the regulatory object. The OECD-derived formulation embraced by the AI Act, which characterises AI as a machine-based system that infers from input how to generate output, is a workable starting point. Indonesian drafting should adapt it to local context and reconcile it with the existing definitional architecture of UU ITE.

Second, a risk classification. Indonesia need not adopt the European fourfold scheme in detail, but a tiered approach that distinguishes prohibited practices, high-risk uses, limited-risk uses, and minimal-risk uses is essential to proportionate regulation. The classification should be operationalised by Presidential Regulation, with periodic review. The classification should give particular attention to high-risk uses in the public sector and in elections, given the documented potential of AI to distort democratic processes in the Indonesian context [4].

Third, a set of substantive obligations. These should include transparency obligations for AI deployers, whose strongest articulation in the existing Indonesian literature has been provided by Fazriati, Rosadi, and Amalia (2025); risk-assessment and data-governance obligations for providers of high-risk systems; human-oversight requirements for automated decision-making, building on the limited provisions of UU PDP; and a baseline duty of accountability that operates as a backstop where specific obligations do not reach. Liability for harm caused by AI systems

should be allocated by reference to a primary-liability rule, under which the deployer or provider bears initial responsibility, combined with a contributory-fault apparatus for cases of user misuse [14].

Fourth, an institutional architecture. The principal options are the establishment of an independent AI authority, the expansion of an existing agency (most plausibly the Personal Data Protection Agency or the Ministry of Communication and Digital Affairs), and a coordinated multi-agency model. A multi-agency model, in which a designated coordinator works with sectoral regulators (the Financial Services Authority for finance, the Ministry of Health for medical AI, the Ministry of Manpower for labour-market AI), is most consistent with the existing institutional fabric of Indonesian regulation and with the sectoral attentiveness drawn from the Japanese model. The coordinator should be established by statute and should have rulemaking, advisory, and enforcement functions, with sectoral authorities retaining domain-specific competence.

3.3.4 Implementation Sequence

A realistic implementation sequence would proceed in three stages. In the immediate term, the existing circular letters and the Stranas KA continue to provide guidance and signal regulatory expectations to industry. In the medium term, the drafting and enactment of an AI Undang-Undang takes place, supported by a thorough academic preparation (naskah akademik) and broad stakeholder consultation including academia, industry, civil society, and sectoral regulators. In the longer term, subordinate Presidential and Ministerial Regulations operationalise the statute, while the existing soft-law instruments are either absorbed into binding subordinate measures or repurposed as administrative guidance. This sequence reflects the legislative pattern observable in significant regulatory statutes recently enacted in Indonesia, of which UU PDP is the most instructive precedent.

4. Conclusions

Indonesia today regulates AI only by accident. UU ITE, UU PDP, PP 71/2019, two circular letters, and a national strategy document each touch on the technology, but none was drafted to govern it, and together they do not amount to a regime. The result is fragmentation without foundation, with AI addressed partially at every level and comprehensively at none. As the technology advances, that gap will impose mounting costs on citizens whose interests AI systems increasingly mediate, on firms denied legal certainty, and on the state itself.

The proper response is primary legislation anchored constitutionally at the level of Undang-Undang and operationalised through subordinate Presidential and Ministerial Regulations. The argument rests on three pillars: Article 28J (2) of the 1945 Constitution, which subjects rights-limiting measures to law, the comparative lessons of the European Union, Singapore, and Japan, and the demonstrated inadequacy of soft-law and Perpres-based instruments to a problem that engages constitutional rights and cross-sectoral interests. The planned AI Roadmap is not discarded but repositioned, serving as the operational arm of a regime whose principal commitments are enacted at the appropriate constitutional level.

This study is normative and doctrinal. It makes no empirical claim about how any regime performs in practice, measures no enforcement outcomes, and does not test the comparative effectiveness of the models discussed, leaving those effects to later empirical work. Several questions also remain open, including a substantive risk classification adapted to Indonesian sectoral conditions, the institutional design of an AI coordinator and its relationship to the Personal Data Protection Agency and the Financial Services Authority, the interaction between Indonesia's prospective AI law and emerging ASEAN-level instruments, and how Indonesian courts will construe AI-related obligations in the early years of any new statute. But these are

subsidiary. They can be settled only once the architectural choice is made, and the choice defended here, a primary statute anchored in Article 28J(2), is the one most consistent with Indonesia's constitutional order and with the experience of jurisdictions already confronting AI's regulatory demands.

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