ARTIFICIAL INTELLIGENCE AND LEGAL GOVERNANCE IN INDONESIA: REGULATORY CHALLENGES, ACCOUNTABILITY, AND DATA PROTECTION

Sri Rahayu Ningsi[1]

[1] Universitas Muhammadiyah Maluku Utara, Indonesia

Abstract

The rapid adoption of artificial intelligence (AI) across public administration, business, and digital services has created significant opportunities for innovation while simultaneously generating complex legal and governance challenges. In Indonesia, the development of AI governance remains supported by fragmented legal and policy instruments, including the Personal Data Protection Law and the Ministerial Circular on AI Ethics, while more comprehensive AI governance instruments are still being developed. This study examines the regulatory challenges of AI governance in Indonesia, with particular attention to accountability and personal data protection. The study employs normative juridical research using statutory, conceptual, and comparative approaches. Primary legal materials include Indonesian legislation and regulatory instruments concerning electronic systems, personal data protection, and AI ethics, while secondary materials consist of scholarly literature, policy documents, and international regulatory frameworks. The analysis demonstrates that Indonesia has established an important initial foundation for AI governance but continues to face regulatory gaps concerning risk classification, allocation of legal responsibility, human oversight, algorithmic transparency, auditing, and remedies for AI-related harm. Personal data protection also requires stronger integration throughout the AI lifecycle because AI systems may involve large-scale data processing, profiling, automated decision-making, and potential privacy risks. Comparative analysis indicates that risk-based regulation, lifecycle accountability, meaningful human oversight, transparency, and contestability can

provide relevant principles for strengthening Indonesia's regulatory framework. The study recommends developing a coherent and adaptive AI governance framework that integrates AI regulation with personal data protection, clearly allocates responsibilities among AI stakeholders, strengthens institutional supervision, and provides effective mechanisms for accountability and legal redress. Such a framework is essential to balance technological innovation with legal certainty, human rights, and responsible governance.

Keywords: *artificial intelligence; AI governance; legal accountability; data protection; Indonesia.*

Corresponding Author:
Sri Rahayu Ningsi, sri.rahayu@gmail.com

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I. INTRODUCTION

Artificial Intelligence (AI) has rapidly become an important component of digital transformation, influencing public administration, business, education, financial services, and other sectors. Its ability to process large volumes of data, generate information, and support decision-making creates opportunities for efficiency and innovation. At the same time, AI raises significant legal and governance concerns, particularly regarding transparency, accountability, privacy, discrimination, security, and human oversight. UNESCO (2021) emphasizes that AI governance should be grounded in human rights, transparency, accountability, fairness, and meaningful human oversight throughout the AI life cycle.

In Indonesia, the expansion of AI adoption has increased the need for an appropriate legal and regulatory framework. Indonesia has established several relevant legal instruments, including the Electronic Information and Transactions Law, the Personal Data Protection Law No. 27 of 2022, and Ministerial Circular Letter No. 9 of 2023 on AI Ethics. The Personal Data Protection Law provides a legal framework covering data-subject rights, personal-data processing, obligations of data controllers and processors, sanctions, and dispute resolution (Government of Indonesia, 2022). These provisions are particularly relevant to AI systems because many AI applications rely on the collection, processing, storage, and analysis of personal data.

The issuance of Ministerial Circular Letter No. 9 of 2023 on AI Ethics represents an important step in establishing ethical guidance for AI development and use in Indonesia. The circular provides ethical guidance for business actors and public and private electronic system providers involved in AI-based activities, emphasizing the need for responsible AI practices (Ministry of Communication and Informatics, 2023). However, the circular operates primarily as ethical guidance, while the increasing complexity and potential societal impact of AI raise broader questions concerning enforceable obligations, liability, institutional oversight, and mechanisms for addressing harm.

The regulatory challenge becomes more significant as AI systems increasingly influence decisions and generate outputs that may affect individuals and organizations. Questions concerning who should bear responsibility when an AI system produces harmful or inaccurate outcomes, how automated decisions can be explained or challenged, and how human oversight should be exercised are central to AI governance. UNESCO (2021) recommends that regulatory frameworks establish clear accountability for AI outcomes, maintain ultimate

responsibility with human or legal actors, and incorporate transparency, explainability, and human oversight.

Data protection represents another critical dimension of AI governance. AI systems often depend on extensive datasets, creating risks related to unauthorized processing, excessive data collection, profiling, data leakage, and secondary use of personal information. The Indonesian Personal Data Protection Law establishes rights for data subjects and obligations for data controllers and processors, providing an important legal foundation for regulating data-intensive technologies (Government of Indonesia, 2022). Internationally, UNESCO (2021) also emphasizes privacy protection, data security, privacy impact assessment, and data-subject rights throughout the AI life cycle.

The need for a more comprehensive governance framework has become increasingly apparent in Indonesia. During 2026, the Indonesian government has been developing a National AI Roadmap for 2026–2029 and a Presidential Regulation on AI Ethics. The government has stated that the proposed framework is intended to establish ethical, safe, inclusive, transparent, and accountable AI governance, while also adopting a risk-based approach to AI regulation. In July 2026, the government also described the planned Presidential Regulation as an initial step toward a more comprehensive AI law.

This regulatory development demonstrates that AI governance in Indonesia involves not only technological innovation but also questions of legal certainty, institutional responsibility, public accountability, and protection of individual rights. The challenge is therefore to develop a regulatory framework that can accommodate technological innovation while ensuring that AI systems remain subject to appropriate legal safeguards and human oversight. Recent government statements also indicate an intention to employ adaptive and risk-based regulation because AI technologies continue to develop rapidly.

Against this background, this study examines Artificial Intelligence and Legal Governance in Indonesia, focusing on three interconnected issues: regulatory challenges, accountability, and data protection. The study analyzes the existing legal framework and emerging regulatory direction for AI, examines the allocation of responsibility among relevant actors, and explores the adequacy of data-protection mechanisms in AI-based systems. By integrating legal and governance perspectives, the study seeks to contribute to the development of an adaptive, accountable, transparent, and rights-protective framework for AI governance in Indonesia.

II. LITERATURE REVIEW

Artificial Intelligence (AI) governance refers to the legal, institutional, and policy mechanisms designed to guide the development and deployment of AI in accordance with public interests, human rights, and ethical standards. Effective AI governance requires more than technological regulation because AI systems can influence individual rights, institutional decision-making, and social relations. UNESCO (2021) identifies transparency, accountability, human oversight, fairness, and human rights protection as important principles for responsible AI governance. Similarly, the OECD emphasizes that AI governance should promote trustworthy AI while addressing risks associated with privacy, security, fairness, and accountability (OECD, 2024).

In the Indonesian context, AI governance remains distributed across several legal and policy instruments rather than being governed by a single comprehensive AI law. Existing regulations, particularly the Personal Data Protection Law No. 27 of 2022 and Ministerial Circular Letter No. 9 of 2023 on AI Ethics, provide important foundations for regulating data processing and responsible AI use. However, recent legal studies indicate that these instruments do not yet comprehensively address AI-specific issues such as algorithmic transparency, risk classification, automated decision-making, algorithmic auditing, and institutional accountability (Annisa, 2025; Kirana & Silalahi, 2025). Recent comparative research similarly identifies regulatory fragmentation and limited AI-specific safeguards as important challenges for Indonesia (Revolusi & Febriandy, 2025).

Accountability is a central element of AI governance because AI systems may generate decisions or outputs that have significant consequences for individuals. The complexity and partial opacity of some AI systems can make it difficult to determine responsibility when errors, discrimination, privacy violations, or other forms of harm occur. UNESCO (2021) therefore emphasizes that ultimate responsibility for AI-related decisions should remain attributable to identifiable human or legal actors. Recent Indonesian legal scholarship also highlights uncertainty concerning liability, algorithmic auditing, and accountability mechanisms for harmful AI outcomes (Rais & Nugroho, 2025). Accordingly, effective AI governance requires clear allocation of responsibilities among developers, providers, users, data controllers, and other relevant actors.

Personal data protection represents another fundamental dimension of AI governance because AI systems frequently depend on large-scale data collection, processing, and analysis. The use of personal data for AI development and deployment raises questions concerning lawful processing, consent, data minimization, transparency, security, profiling, and individual control over personal information. The OECD (2024) argues that AI governance and privacy governance should be considered together because the development of AI can intensify existing privacy risks. In Indonesia, Law No. 27 of 2022 establishes important rights for data subjects and obligations for data controllers and processors; however, recent studies identify challenges in applying these principles to AI-based processing, particularly regarding transparency, automated decision-making, data erasure, and accountability (Putri, 2025; Rais & Nugroho, 2025).

International regulatory developments provide additional perspectives for strengthening AI governance in Indonesia. The European Union's **AI Act (Regulation [EU] 2024/1689)** adopts a risk-based regulatory approach and establishes requirements concerning prohibited practices, high-risk AI systems, transparency, human oversight, conformity assessment, and enforcement. This framework demonstrates how AI regulation can move beyond general ethical principles toward more specific legal obligations. Comparative studies suggest that Indonesia can consider international regulatory experiences while adapting them to its own legal system, institutional structure, and societal context (Revolusi & Febriandy, 2025; Satya et al., 2026).

The literature therefore indicates that AI governance in Indonesia involves an interconnected relationship between **regulatory adequacy, accountability, and personal data protection**. Existing studies have predominantly examined individual dimensions, such as AI regulation, data protection, or comparative regulatory models. Recent research has identified gaps concerning integrated institutional accountability, algorithmic oversight, and the application of data-protection principles to AI systems. This study addresses this gap by examining AI governance in Indonesia through an integrated legal perspective, focusing on how regulatory frameworks can establish clearer accountability while strengthening personal data protection and maintaining space for responsible technological innovation.

III. RESEARCH METHOD

This study employed a normative juridical legal research approach to examine artificial intelligence governance in Indonesia, particularly regarding regulatory challenges, accountability, and personal data protection. The study analyzed primary legal materials, including Indonesian laws and regulations on electronic systems, personal data protection, and AI ethics, as well as relevant international regulatory instruments. Secondary legal materials consisted of scholarly articles, legal books, policy reports, and institutional publications related to AI governance, accountability, and data protection.

The research applied statutory, conceptual, and comparative approaches. The statutory approach was used to examine the consistency and adequacy of existing Indonesian regulations governing AI and personal data. The conceptual approach was applied to analyze key concepts of AI governance, accountability, transparency, human oversight, and data protection. The comparative approach examined selected international regulatory frameworks, particularly the European Union AI Act, to identify regulatory principles that may provide relevant perspectives for the development of AI governance in Indonesia.

Legal materials were collected through library research and systematic document analysis. The materials were selected based on their relevance, legal authority, and connection to the research questions. Data were analyzed qualitatively through legal interpretation, comparison, and synthesis to identify regulatory gaps, overlapping provisions, accountability challenges, and mechanisms for protecting personal data in AI-based systems.

The analysis was conducted through the sequence of identification of legal issues, examination of relevant legal provisions, conceptual and comparative analysis, identification of regulatory gaps, and formulation of legal arguments. The findings were subsequently interpreted to assess the adequacy of Indonesia's existing legal framework and formulate recommendations for more transparent, accountable, adaptive, and rights-based AI governance.

IV. RESULTS AND DISCUSSION

Results

The normative analysis identified four major findings concerning AI governance in Indonesia: (1) regulatory fragmentation, (2) limited accountability mechanisms, (3) emerging challenges in personal data protection, and (4) the need for a risk-based and adaptive governance framework. The first finding concerns

the fragmented nature of Indonesia's current AI regulatory framework. AI governance is currently supported by several legal and policy instruments rather than a single comprehensive AI statute. Law No. 27 of 2022 on Personal Data Protection provides an important legal foundation for data-related aspects of AI, while Ministerial Circular Letter No. 9 of 2023 provides ethical guidance for AI activities. The 2023 circular applies to AI-related business activities and public and private electronic system providers and emphasizes ethical principles, security, human values, inclusiveness, and responsible use. However, the existing framework does not yet constitute a comprehensive regulatory architecture specifically addressing the entire AI life cycle, including development, deployment, monitoring, risk classification, algorithmic auditing, and redress mechanisms.

The second finding relates to accountability and responsibility for AI-generated outcomes. Existing governance arrangements provide general obligations for electronic system providers and emphasize responsible AI use, but the allocation of responsibility among AI developers, providers, deployers, users, and other relevant actors remains insufficiently differentiated for complex AI applications. This issue becomes more significant as AI systems increasingly move beyond assisting human decisions toward systems capable of planning, decision-making, and autonomous action. Indonesian policymakers themselves have identified the accountability problem associated with AI-generated actions as a central governance challenge. The analysis therefore indicates a need for clearer rules concerning responsibility, human oversight, monitoring, documentation, complaint mechanisms, and remedies when AI systems cause harm.

The third finding concerns personal data protection as a core component of AI governance. AI systems frequently depend on the collection, processing, and analysis of large datasets, creating potential risks involving excessive data collection, unauthorized processing, profiling, security breaches, and secondary use of personal information. Law No. 27 of 2022 provides a general legal basis for protecting personal data, but its application to rapidly evolving AI systems requires more specific governance mechanisms. In particular, the analysis identifies the need to clarify how data-protection principles should operate throughout the AI life cycle, including data collection and preparation, model development, deployment, monitoring, and subsequent use. The Indonesian

government has also explicitly identified personal data protection and AI ethics as two interconnected foundations of AI governance.

The fourth finding is the emergence of a risk-based regulatory direction in Indonesia. In 2026, the government developed the National AI Roadmap for 2026–2029 and a draft Presidential Regulation on AI Ethics. The two instruments underwent cross-ministerial discussion and finalization in May 2026, with the stated objective of establishing an ethical, safe, inclusive, and responsible AI ecosystem. Government statements in July 2026 further indicated an intention to apply risk-based regulation, with higher-risk AI applications subject to more comprehensive requirements than lower-risk applications. As of September 2026, government communications continued to describe the AI roadmap and AI ethics regulation as instruments being prepared, indicating that the comprehensive framework had not yet become a fully established statutory AI regime.

Comparative analysis with the European Union AI Act (Regulation (EU) 2024/1689) demonstrates several regulatory mechanisms that could inform the Indonesian framework. The EU AI Act adopts a risk-based approach and establishes differentiated obligations according to the level of risk associated with AI systems. For high-risk systems, the regulation addresses risk management, data governance, technical documentation, record-keeping, transparency, human oversight, robustness, accuracy, and cybersecurity. It also requires human oversight mechanisms that are proportionate to the risks and level of autonomy of the system.

The comparative analysis further indicates that human oversight is a critical link between accountability and data protection. The EU framework requires high-risk AI systems to be designed so that natural persons can effectively oversee their operation and intervene where necessary. It also recognizes the importance of competence, training, authority, monitoring, and documentation in implementing human oversight. This provides a useful regulatory reference for Indonesia, particularly for AI applications that may significantly affect fundamental rights or involve sensitive personal data.

The results demonstrate that Indonesia has established important foundations for AI governance through existing data-protection and AI-ethics instruments, while a more comprehensive AI governance framework is still developing. The principal regulatory gaps identified are the absence of a comprehensive AI-specific legal framework, insufficiently differentiated

allocation of accountability, limited AI-specific mechanisms for algorithmic oversight and redress, and the need to integrate personal data protection throughout the AI life cycle. The emerging Indonesian risk-based approach provides an opportunity to address these gaps while maintaining space for technological innovation.

The findings can therefore be synthesized into the following regulatory structure:

Table 1. Regulatory Structure

Governance Dimension	Existing Foundation	Key Regulatory Gap	Required Governance Direction
AI Regulation	AI Ethics Circular Letter No. 9/2023 and emerging national AI policy	No comprehensive AI-specific statutory framework	Adaptive and risk-based AI regulation
Accountability	General responsibilities of AI/electronic-system actors	Unclear allocation of responsibility for complex AI outcomes	Clear duties, monitoring, documentation, and redress
Human Oversight	Ethical emphasis on responsible AI use	Limited specific requirements for high-impact AI systems	Mandatory and proportionate human oversight
Data Protection	Law No. 27/2022	Application to AI life-cycle processes requires greater specificity	Privacy-by-design, data governance, impact assessment, and security
Transparency	General ethical and electronic-system principles	Limited AI-specific transparency and	Documentation, disclosure, and explainability appropriate to risk

		explainability mechanisms	
Risk Management	Emerging government policy direction	Risk categories and enforceable obligations are still developing	Risk classification and differentiated regulatory obligations

These results indicate that Indonesia is moving from general ethical guidance toward a more structured AI governance model, but the transition requires greater legal clarity regarding accountability, human oversight, risk management, and personal data protection. The development of future AI regulation should therefore integrate these elements into a coherent framework capable of responding to technological change while protecting individual rights and maintaining public accountability.

Discussion

The findings demonstrate that artificial intelligence (AI) governance in Indonesia is developing within a regulatory environment that remains fragmented across different legal and policy instruments. This condition is not unique to Indonesia, as AI governance internationally requires coordination among technology regulation, privacy protection, human rights, administrative law, and sector-specific rules. However, the Indonesian context presents a particular challenge because AI-specific regulation is still emerging while the use of AI is expanding across public and private sectors. Recent legal scholarship identifies the absence of a comprehensive AI-specific framework as one of the principal challenges for Indonesia, particularly regarding risk classification, algorithmic transparency, human oversight, and accountability (Disemadi & Sudirman, 2025; Satya et al., 2026).

The fragmented character of the current framework can be understood from the coexistence of general digital regulations and AI-specific ethical guidance. Law No. 27 of 2022 on Personal Data Protection establishes important obligations concerning personal-data processing, while Ministerial Circular Letter No. 9 of 2023 provides ethical guidance for AI activities. The circular emphasizes inclusiveness, humanity, security, transparency, accountability, and the protection of personal data in AI-related activities. Nevertheless, these instruments were not

designed as a single comprehensive AI governance framework. Satya et al. (2026) argue that Indonesia's existing legal instruments were not specifically designed to address the distinctive risks of AI systems, particularly in relation to risk classification, algorithmic auditing, human oversight, and transparency.

This finding is also consistent with Yudistira and Antari (2026), who identify fragmentation of AI regulation as a problem from the perspective of administrative law. Their analysis highlights uncertainty concerning regulatory authority, administrative discretion, algorithmic auditing, certification, compliance supervision, and institutional accountability. Thus, AI governance should not be viewed solely as a matter of technology regulation. It is also a matter of administrative governance, particularly when AI is used by government institutions in public decision-making and service delivery.

The Indonesian government's recent regulatory development demonstrates an effort to address this fragmentation. In 2025, the government published a White Paper on the National AI Roadmap and a draft AI Ethics Guideline as part of a broader effort to establish an inclusive, sustainable, safe, and responsible AI ecosystem. In May 2026, the Ministry of Communication and Digital Affairs announced that cross-ministerial discussions on the draft Presidential Regulation on AI Ethics and the National AI Roadmap for 2026–2029 had been completed before submission for presidential determination. This development indicates that Indonesia is gradually moving from general ethical guidance toward a more coordinated national governance framework.

A second major issue concerns accountability. AI systems can generate recommendations, classifications, predictions, or decisions that affect individuals and organizations, while the processes underlying those outputs may be technically complex or difficult to interpret. Consequently, conventional approaches to legal responsibility may be insufficient if they focus only on identifying liability after harm has occurred. Accountability should instead be distributed across the AI life cycle, including development, data preparation, deployment, monitoring, maintenance, and post-deployment evaluation. The OECD AI Principles emphasize that AI actors should be accountable according to their roles and should ensure traceability of datasets, processes, and decisions throughout the AI life cycle (OECD, 2024).

This issue is particularly significant in Indonesia because current legal arrangements do not yet provide sufficiently detailed AI-specific rules concerning responsibility for harmful algorithmic outcomes. A recent study in *Law Reform* identifies legal responsibility for AI developers and operators, algorithmic transparency, and the use of AI in public-interest sectors as areas requiring further regulation. Similarly, Satya et al. (2026) identify the absence of clear accountability mechanisms and algorithmic auditing requirements as important regulatory gaps in Indonesia. These findings suggest that future AI regulation should identify responsibilities according to the roles and capabilities of different actors rather than treating AI systems as autonomous legal subjects.

The question of whether AI itself should be treated as a legal subject further reinforces the importance of human accountability. Disemadi and Sudirman (2025) argue that AI should remain a technological tool rather than an independent legal subject because AI lacks the characteristics associated with human moral responsibility and legal personhood. Their analysis emphasizes human dignity as a central consideration in determining the legal position of AI. From this perspective, legal responsibility should remain attributable to identifiable human or organizational actors involved in the development, deployment, or use of AI.

Human oversight therefore becomes an important mechanism for translating accountability into practice. Human oversight should allow responsible actors to monitor AI systems, evaluate outputs, intervene when necessary, and prevent automated processes from producing unjustified or harmful consequences. This principle is particularly relevant for high-impact applications where AI outputs may affect fundamental rights. Satya et al. (2026) identify mandatory human oversight as one of the regulatory elements that remains insufficiently developed in Indonesia. The European Union AI Act provides a useful comparative reference by requiring human oversight for high-risk AI systems and linking such oversight to the ability to understand, monitor, interpret, and intervene in system operation.

The third major issue is the relationship between AI governance and personal data protection. AI development frequently relies on large datasets, including potentially sensitive personal information. Consequently, privacy risks may arise at multiple stages, including data collection, model training, deployment, profiling, inference, storage, and secondary use. The OECD's work

on AI, data governance, and privacy emphasizes that AI governance and privacy governance should be considered together because the development of AI can intensify existing data-protection risks (OECD, 2024).

Indonesia's Law No. 27 of 2022 provides a substantial legal foundation for personal data protection. Nevertheless, the application of general data-protection principles to AI systems creates several practical and legal questions. These include the legal basis for using personal data to train AI models, data minimization, purpose limitation, transparency, profiling, automated decision-making, security, retention, and the exercise of data-subject rights. Recent Indonesian legal research similarly argues that the rapid development of AI requires further regulatory clarification regarding the use of personal data and the responsibilities of AI developers and operators.

The relationship between data protection and AI governance is increasingly recognized by the Indonesian government itself. In July 2026, the Ministry of Communication and Digital Affairs stated that AI ethics and personal data protection constitute two central foundations of Indonesia's emerging AI governance framework. The government also indicated that future AI regulation would employ a risk-based approach, with higher-risk AI systems subject to more comprehensive regulatory requirements. This direction is consistent with international regulatory developments and provides an important basis for developing differentiated obligations according to the potential impact of AI systems.

The risk-based approach is particularly relevant because not all AI systems present the same degree of legal or social risk. A simple AI application for administrative assistance, for example, does not necessarily create the same risks as an AI system used to determine access to public services, employment opportunities, financial services, education, or other rights-sensitive areas. The EU AI Act provides one of the most developed examples of this approach by differentiating regulatory obligations according to the risk associated with particular AI practices and systems. Satya et al. (2026) similarly identify risk classification as a key element that could strengthen Indonesia's regulatory framework.

A risk-based model should nevertheless be accompanied by proportionality and institutional capacity. Excessive regulation may create

unnecessary barriers to innovation, whereas insufficient regulation may leave individuals inadequately protected. Indonesia's government has explicitly emphasized the objective of developing adaptive regulation that supports innovation while mitigating AI-related risks. The regulatory challenge is therefore to establish differentiated obligations that correspond to the level of risk while maintaining legal certainty and enforceability.

Another important dimension is transparency and explainability. AI governance requires affected individuals and regulators to have sufficient information about how AI systems are used and, where appropriate, how outputs are generated. Transparency is important not only for ethical reasons but also for legal accountability because individuals cannot effectively challenge an adverse decision if they do not know that AI was involved or cannot obtain meaningful information about the basis of the decision. Satya et al. (2026) identify algorithmic transparency and auditing as significant gaps in Indonesia's current regulatory framework.

Transparency should therefore be connected to procedural rights and remedies. Where AI is used in decisions affecting individuals, governance mechanisms should provide avenues for review, contestation, correction, and human intervention. This is particularly important in public-sector applications because administrative decisions are subject to principles of legality, accountability, and protection of citizens' rights. Yudistira and Antari (2026) consequently place AI oversight within the broader framework of administrative law and emphasize the importance of compliance supervision and institutional accountability.

The human-rights dimension further strengthens this argument. Satya et al. (2026) identify privacy, non-discrimination, accountability, and legal certainty as major human-rights concerns associated with AI governance in Indonesia. Their comparative analysis of the EU, China, and United States demonstrates that different jurisdictions have developed different regulatory mechanisms for addressing algorithmic risks, transparency, synthetic-content regulation, and discrimination. This suggests that Indonesia can learn from international regulatory experience without necessarily adopting a foreign model in its entirety.

The comparative evidence therefore supports a context-sensitive regulatory approach. The EU AI Act offers lessons concerning risk classification and human oversight, while other jurisdictions provide different approaches to

algorithmic governance, transparency, and content regulation. For Indonesia, the challenge is to adapt these principles to the national legal system, institutional structure, regulatory capacity, and constitutional commitment to human rights. Such adaptation is preferable to direct transplantation because the effectiveness of AI regulation depends not only on substantive rules but also on institutional capacity to supervise and enforce them.

The findings support an integrated model of AI Legal Governance in Indonesia consisting of five interconnected elements: risk-based regulation, lifecycle accountability, meaningful human oversight, transparency and contestability, and personal data protection. These elements should operate as an integrated system rather than as separate regulatory objectives. Risk classification determines the level of regulatory intervention; accountability identifies responsible actors; human oversight provides a mechanism for intervention; transparency enables monitoring and contestation; and data protection safeguards individual rights throughout the AI life cycle. The proposed framework can be summarized as follows:

Table 2. AI Legal Governance Framework

Governance Element	Legal Function	Main Regulatory Objective
Risk-Based Regulation	Classifies AI according to potential harm	Proportionate regulation
Lifecycle Accountability	Allocates duties among AI actors	Clear responsibility and liability
Human Oversight	Enables monitoring and intervention	Prevent harmful automated decisions
Transparency and Contestability	Provides information and review mechanisms	Procedural fairness and legal certainty
Personal Data Protection	Regulates data collection and processing	Privacy and individual rights

The discussion confirms that Indonesia has moved beyond the initial stage of recognizing AI as an emerging ethical issue and is now developing a broader governance architecture. However, the literature and current regulatory

developments indicate that significant challenges remain concerning regulatory coherence, institutional oversight, accountability, algorithmic transparency, and the integration of personal data protection into AI governance. The future legal framework should therefore combine innovation-oriented regulation with enforceable rights protection, ensuring that technological development remains subject to legality, accountability, transparency, and meaningful human control.

V. CONCLUSION AND RECOMMENDATION

This study concludes that Indonesia has established an initial foundation for AI governance through personal data protection, electronic systems regulation, and AI ethics policies. However, the existing framework remains fragmented and does not yet comprehensively address the AI lifecycle, particularly risk classification, algorithmic transparency, human oversight, auditing, accountability, and liability. Legal responsibility should remain attributable to the human and institutional actors involved in developing, providing, deploying, supervising, and using AI systems. Personal data protection should also be integrated throughout the AI lifecycle rather than treated as a separate compliance requirement. Indonesia's emerging AI governance framework indicates a transition toward more institutionalized regulation, but its effectiveness will depend on clear legal obligations, institutional authority, enforcement mechanisms, and accessible remedies. Overall, effective AI governance requires an integrated and adaptive framework combining risk-based regulation, lifecycle accountability, meaningful human oversight, transparency, personal data protection, and mechanisms for review and redress.

Indonesia should therefore develop a comprehensive and coherent AI regulatory framework that clearly defines regulatory scope, risk categories, institutional responsibilities, compliance obligations, sanctions, and remedies. A risk-based approach should impose proportionate requirements, with stronger obligations for high-risk systems concerning risk assessment, documentation, cybersecurity, monitoring, human oversight, and auditing. Responsibility should be clearly distributed among developers, providers, deployers, operators, and institutional users, while high-impact AI systems should provide meaningful human intervention and override mechanisms. AI governance should also incorporate privacy-by-design, data minimization, security safeguards, impact assessments, algorithmic transparency, and accessible procedures for human

review and contestation. Future research should examine the implementation of these mechanisms empirically and comparatively so that Indonesia's regulatory framework remains responsive to technological development while protecting legal certainty, human rights, and public accountability.

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