

Legal Accountability for Artificial Intelligence-Based Decisions from a Modern Legal Perspective

Siska Sanjahaya Jahir
Institut Dharma Bharata Grup, Kendari, Indonesia

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Corresponding Author:

Author Name*: Siska

Sanjahaya Jahir

E-mail*:

siskasanjahayajahir@gmail.com

Abstract: *The rapid development of artificial intelligence (AI) technology has penetrated various sectors of human life, from healthcare and finance to law enforcement to government administrative decision-making. The integration of AI into decision-making processes raises a fundamental question in legal science: who is legally responsible when an algorithm-based decision causes harm to a third party. This study examines the construction of legal liability for AI-based decisions from a modern legal perspective, focusing on two main dimensions: the existing normative framework and applicable liability models. The research method used is normative legal research with statutory, conceptual, and comparative approaches. The results show that Indonesia's positive legal framework does not explicitly regulate liability for AI decisions, necessitating comprehensive legislative reform. Furthermore, the product liability and shared liability models are considered the most relevant for application in the AI context to ensure adequate legal protection for the public. This article concludes that a multi-actor approach with a specific regulatory framework for AI is the best solution that aligns with the principles of the rule of law.*

Keywords: *Artificial Intelligence, Legal Liability, Modern Law, AI Regulation, Algorithmic Decisions.*

INTRODUCTION

The Fourth Industrial Revolution, characterized by the convergence of digital, physical, and biological technologies, has brought about fundamental changes in the way humans interact with technological systems. One of the most transformative components of this wave of change is artificial intelligence, or AI.¹ Artificial Intelligence (AI), a branch of computer science that seeks to simulate human cognitive abilities in machines.² From content recommendation systems on social media platforms to algorithms that determine bank creditworthiness, AI is now present in nearly every aspect of modern life, making decisions that directly impact human rights and interests. This development presents a challenge unprecedented in legal history: how a legal system designed to regulate human behavior can accommodate non-human entities capable of autonomous decision-making. This issue is all the more pressing given that AI decisions often have real legal consequences, for individuals, corporations, and state institutions.

¹Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson Education.
Lihat juga Calo, R. (2017). *Artificial Intelligence Policy: A Primer and Roadmap*. *UC Davis Law Review*, 51(1), 399–435.

² Rama, B. G. A., Prasada, D. K., & Mahadewi, K. J. (2023). Urgensi pengaturan artificial intelligence (AI) dalam bidang hukum hak cipta di Indonesia. *Jurnal Rechtsens*, 12(2), 209-224.
<https://doi.org/10.56013/rechtsens.v12i2.2395>

European Union through³ The Artificial Intelligence Act, passed in 2024, became the first jurisdiction to adopt a comprehensive legal framework to regulate AI based on a risk-based approach.⁴ This regulation classifies AI systems into four risk categories: unacceptable risk, high risk, limited risk, and minimal risk, with different legal consequences for each category. This EU move demonstrates a growing global awareness that traditional legal frameworks are no longer adequate to address the issues posed by AI. In Indonesia, although several regulations implicitly address the use of digital technology, there is no specific and comprehensive legal framework governing legal accountability for AI-based decisions, creating a regulatory vacuum that could potentially harm society.

The issue of legal liability in the context of AI becomes very complex due to the unique characteristics of AI that distinguish it from conventional technological instruments.⁵ First, the autonomous nature of AI, which allows systems to make decisions without direct human intervention, creates gaps in the legal chain of causality that typically requires a responsible human actor. Second, the opaque or "black box" nature of many machine learning-based AI systems, particularly deep neural networks, makes the decision-making process impossible to explain transparently, even to the developers themselves. Third, AI's ability to learn and adapt (adaptive learning) means that system behavior can change significantly over time, making conventional standards of care difficult to apply. Fourth, the distributed nature of AI development and implementation, involving multiple parties, from researchers and developers to infrastructure providers and end users, raises questions about the allocation of responsibility among these actors.

In Indonesian law, this issue intersects with various branches of law at once, including civil law, particularly the law on unlawful acts, criminal law, state administrative law, and consumer protection law.⁶ Law, as a dynamic social instrument, is required to respond to technological developments in a way that ensures certainty, justice, and benefits for all stakeholders. Without a clear legal framework, there is a risk that parties harmed by AI decisions will not have access to justice and adequate remedies, while AI developers and users will operate in legal uncertainty that could hinder responsible innovation.

The urgency of this study is also driven by the increasing adoption of AI across various strategic sectors in Indonesia. The banking and financial sectors have implemented AI for credit scoring and fraud detection, the healthcare sector has begun utilizing AI for medical diagnosis and treatment planning, and government agencies are integrating AI into public service systems and administrative decision-making.⁷ Each of these uses carries specific risks: biased credit decisions can perpetuate systemic discrimination,

³European Commission. (2021). Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act). COM(2021) 206 final. Brussels: European Commission.

⁴Gunaedi, S. A. (2025). Pembentukan Undang-Undang Kecerdasan Buatan sebagai Lex Specialis di Indonesia: Studi Perbandingan Regulasi Uni Eropa dan Amerika Serikat. *LEX DISCIPULUS LAW REVIEW*, 1(01), 103-124. <https://journal.ubaya.ac.id/index.php/LDLR/article/view/7225>

⁵Diakopoulos, N. (2020). Accountability in Algorithmic Decision Making. *Communications of the ACM*, 59(2), 56–62. doi:10.1145/2844110

⁶Rahardjo, S. (2022). Hukum dan Perubahan Sosial: Suatu Tinjauan Teoretis serta Pengalaman-pengalaman di Indonesia (Edisi Revisi). Genta Publishing.

⁷Surden, H. (2019). Artificial Intelligence and Law: An Overview. *Georgia State University Law Review*, 35(4), 1305–1337.

erroneous AI diagnoses can threaten patients' lives, and inaccurate administrative decisions can violate citizens' rights. Therefore, a comprehensive and systematic legal review is needed to map the issues, analyze the existing normative framework, and formulate legal policy recommendations that can address these challenges.

This study aims to analyze the construction of legal accountability for AI-based decisions from a modern legal perspective, with two main focuses: first, analyzing the normative framework applicable in Indonesia and comparing it with international regulatory developments; and second, formulating the most appropriate accountability model to be applied in the context of AI-based decision-making.⁸ Thus, this research is expected to contribute scientifically to the development of legal doctrine in Indonesia and serve as a reference for policymakers in developing comprehensive and fair AI regulations. Furthermore, this research seeks to fill a gap in Indonesian legal literature, which has not yet addressed this issue in depth and systematically.

METHODOLOGY

This research uses a normative legal research method, namely a research method that studies and analyzes legal materials to find norms, principles, and legal doctrines that are relevant to the problem being researched.⁹ Normative legal research was chosen because the main problem examined in this article is a legal issue in abstracto, namely whether the existing legal framework is adequate to regulate accountability for AI decisions, and how legal norms should be formulated to address the gaps or ambiguities in these norms. This research does not aim to test empirical hypotheses through field data, but rather to construct a coherent and systematic legal argument based on an in-depth analysis of primary and secondary legal sources. The research approach used encompasses three main, complementary approaches.¹⁰ First, the statute approach, which analyzes various laws and regulations in force in Indonesia and internationally that are relevant to the use of AI and legal accountability. The legal materials reviewed include the Electronic Information and Transactions Law (UU ITE), the Personal Data Protection Law (UU PDP), the Civil Code (KUHPerdata), the Criminal Code (KUHP), and various derivative regulations. At the international level, this approach includes an analysis of the EU AI Act, the European Union's General Data Protection Regulation (GDPR), and international guidelines on AI issued by various international organizations such as the OECD, UNESCO, and the UN.

Second, the conceptual approach, namely examining legal concepts that are relevant to the research problem, such as the concept of legal accountability and legal liability, the concept of legal subjects, the concept of unlawful acts, and the concept of force majeure, and adapting them in the context of AI decisions.¹¹ This conceptual approach is important because many traditional legal concepts need to be reinterpreted or further developed to be applicable to the AI phenomenon, which has characteristics unprecedented in legal history. In this regard, legal theories from various schools of thought, including legal positivism, natural law, and legal realism, are also used as a basis for analysis. Third, a comparative approach, namely comparing the legal frameworks and models of AI accountability that are in effect or

⁸Floridi, L., et al. (2021). An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations. *Minds and Machines*, 28(4), 689–707. doi:10.1007/s11023-018-9482-5

⁹Marzuki, P. M. (2021). *Penelitian Hukum (Edisi Revisi)*. Kencana Prenada Media Group.

¹⁰Diantha, I. M. P. (2020). *Metodologi Penelitian Hukum Normatif dalam Justifikasi Teori Hukum*. Prenada Media.

¹¹Ibrahim, J. (2021). *Teori dan Metodologi Penelitian Hukum Normatif (Edisi Keempat)*. Bayumedia Publishing.

being developed in various jurisdictions, particularly the European Union, the United States, China, and ASEAN countries, to identify best practices that can be adapted to the Indonesian context.¹² This comparative approach provides a broader perspective and enriches the analysis by integrating the latest global legal developments. The legal materials used in this study are divided into three categories: primary legal materials, which include laws and court decisions; secondary legal materials, which include legal textbooks, scientific journals, and academic commentaries; and tertiary legal materials, which include legal dictionaries and encyclopedias. All legal materials were collected through library research and analyzed using qualitative analysis methods with descriptive-analytical techniques.

RESULTS AND DISCUSSION

Normative Framework for Legal Accountability for AI Decisions in Indonesia

An analysis of Indonesia's legal normative framework shows that the current positive legal system does not explicitly and comprehensively regulate legal accountability for decisions made by AI systems. This situation creates a legal vacuum that has the potential to harm various parties, especially individuals or groups subject to AI decisions. Nevertheless, several legal instruments exist that can be implicitly applied to address some of these issues, albeit with significant limitations.¹³ A thorough understanding of the capabilities and limitations of existing legal instruments is an essential prerequisite for formulating targeted and effective legislative reforms to regulate AI governance in Indonesia.

In the realm of civil law, Article 1365 of the Civil Code concerning unlawful acts (*onrechtmatige daad*) provides the most fundamental normative basis for claiming compensation for losses caused by AI decisions. The article states that "every unlawful act, which causes harm to another person, obliges the person whose fault caused the loss, to compensate for that loss." The application of this article in the AI context faces several fundamental challenges.¹⁴ First, the element of "act" in traditional civil law refers to human action, so autonomous decisions made by AI systems do not directly satisfy this element. Second, the element of "fault" (*schuld*) requires an element of intent (*dolus*) or negligence (*culpa*) on the part of the defendant, which is difficult to prove when decisions are made by complex algorithms. Third, proving a causal link between an AI decision and the resulting harm often requires a deep technical understanding of how the AI system operates, creating significant practical obstacles for plaintiffs.

Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law) as amended by Law Number 19 of 2016 is the legal instrument most directly relevant to the use of AI in digital transactions in Indonesia.¹⁵ The ITE Law regulates the implementation of electronic systems, including the obligation of providers to ensure the reliability and security of their systems. Article 15 of the ITE Law requires every electronic system provider to provide a reliable, secure electronic system and be responsible for the operation of the electronic system. Article 16 regulates the responsibilities of electronic system providers, including the obligation to maintain the confidentiality, integrity, and availability of electronic information. However, the ITE Law does not specifically regulate decisions made by AI systems, so its

¹²Soerjono Soekanto & Sri Mamudji. (2022). *Penelitian Hukum Normatif: Suatu Tinjauan Singkat* (Edisi Ke-17). PT RajaGrafindo Persada.

¹³Goodfellow, I., Bengio, Y., & Courville, A. (2020). *Deep Learning* (Adaptive Computation and Machine Learning Series). MIT Press.

¹⁴Jiang, F., et al. (2022). Artificial Intelligence in Healthcare: Past, Present and Future. *Stroke and Vascular Neurology*, 2(4), 230–243. doi:10.1136/svn-2017-000101

¹⁵Undang-Undang Republik Indonesia Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik sebagaimana diubah dengan Undang-Undang Nomor 19 Tahun 2016. *Lembaran Negara Republik Indonesia Tahun 2016 Nomor 251*.

application in the context of accountability for AI decisions requires extensive interpretation that may not always be acceptable to the courts.

A significant development in Indonesia's digital normative framework is the enactment of Law Number 27 of 2022 concerning Personal Data Protection (PDP Law), which will come into full effect in 2024.¹⁶ The PDP Law partially adopts provisions from the European Union's GDPR, including provisions on the processing of personal data for automated decision-making purposes. Article 31 of the PDP Law grants data subjects the right to obtain an explanation regarding automated decisions based on the processing of personal data that have legal or other significant effects, as well as the right to object to such automated decisions. This provision represents an important step forward, as it implicitly recognizes the existence of AI-based decision-making and provides procedural protections to data subjects. However, the PDP Law still has limitations because it only applies to the context of personal data processing and does not yet cover AI decisions that are not based on personal data or that impact the broader public interest.

In state administrative law, Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (SPBE) encourages the use of digital technology, including AI, in governance.¹⁷ However, the Presidential Regulation on the State Administration System (SPBE) focuses more on the technical aspects and system management, and does not specifically regulate legal liability when administrative decisions made through AI-based systems are found to be erroneous or detrimental to citizens. In this context, the provisions on administrative lawsuits in the Government Administration Law (AP Law) can theoretically be applied to challenge flawed administrative decisions, but their application requires adaptation because the AP Law is designed for decisions made by human officials with discretionary authority, not by algorithmic systems.

A comparison with international regulatory developments demonstrates how far Indonesia lags in developing a legal framework responsive to AI challenges. The European Union has completed the legislative process for the EU AI Act, which applies a risk-based approach with varying obligations and prohibitions depending on the risk level of the AI system.¹⁸ In the United States, while there is no comprehensive federal regulation yet, various states have developed sectoral laws governing the use of AI in specific domains such as job recruitment, credit services, and the criminal justice system.¹⁹ China has issued a series of regulations on recommendation algorithms, deepfakes, and generative AI services. Meanwhile, other ASEAN countries, including Singapore through its Model AI Governance Framework, are also increasingly developing AI guidelines and regulations. This regulatory lag places Indonesia in a vulnerable position, where foreign AI products and services that may not meet adequate legal protection standards can circulate and be freely used in Indonesia.

It's important to note that Indonesia's AI regulatory vacuum doesn't mean a complete absence of policy efforts. The Indonesian government, through the Ministry of Communication and Informatics, has published the 2020-2045 National Strategy for Artificial Intelligence, which outlines a vision and roadmap

¹⁶Undang-Undang Republik Indonesia Nomor 27 Tahun 2022 tentang Pelindungan Data Pribadi. Lembaran Negara Republik Indonesia Tahun 2022 Nomor 196.

¹⁷Peraturan Presiden Republik Indonesia Nomor 95 Tahun 2018 tentang Sistem Pemerintahan Berbasis Elektronik. Lembaran Negara Republik Indonesia Tahun 2018 Nomor 182.

¹⁸European Parliament. (2022). EU Artificial Intelligence Act: MEPs Adopt Their Negotiating Position. Press Release, June 14, 2023. Strasbourg: European Parliament.

¹⁹Hasanuddin, M., & Nurfransiska, F. (2026). Pengaturan Artificial Intelligence (AI) Dalam Perspektif Hukum Indonesia: Analisis Normatif Atas Tantangan, Implikasi, Dan Model Regulasi Ideal. *Judge: Jurnal Hukum*, 6(06), 1890-1897. <https://doi.org/10.54209/judge.v6i06.1632>

for national AI development.²⁰ This strategic document identifies five priority sectors for AI development: health, bureaucracy, education, food security, and smart city mobility. However, this strategic document has not yet been translated into a binding legal instrument that provides legal certainty regarding accountability for AI decisions. This reflects a significant gap between the policy vision and the legal framework that supports it, a situation that must be addressed immediately to ensure the responsible development and use of AI in Indonesia.

An analysis of several concrete cases that can be cited as precedents, although not specifically about AI, provides an insight into how Indonesian courts might approach AI liability issues in the future.²¹ Court decisions in digital technology disputes in Indonesia show a tendency to apply conventional legal principles by analogy, which often cannot fully accommodate the complexities of new technologies.²² This highlights the need to build better judicial capacity to understand and adjudicate disputes involving AI technology, through judicial training programs, the establishment of specialized technology courts, or the use of technology experts in court proceedings. Without adequate judicial capacity, even the best-laid AI regulations will not be effectively implemented.

A Legal Liability Model Applicable to AI-Based Decisions

Designing an appropriate legal accountability model for AI-based decisions is one of the most complex intellectual challenges facing contemporary legal science.²³ This complexity stems from the technical characteristics of AI that do not fit neatly into existing legal categories, as well as from the unique distribution of roles within the AI ecosystem, which involves many actors with varying contributions. At least five liability models have been identified and discussed in the international legal literature, each with its own strengths and weaknesses: the product liability model, the shared/distributed liability model, the operator liability model, the mandatory insurance model, and the direct liability model for AI as a separate legal subject.

The product liability model is the most widely discussed approach and has the strongest basis in existing law. In this model, an AI system is treated as a product, and its developer is liable for damages caused by defects in that product, whether design defects, manufacturing defects, or defective instructions or warnings.²⁴ The main advantage of this model is that it does not require proof of fault on the part of the developer; it simply requires proof of the product defect and a causal relationship between the defect and the resulting loss. This model has proven effective in internalizing the costs of negative externalities to producers and encouraging the development of safer products.²⁵ However, applying the product liability

²⁰Kementerian Komunikasi dan Informatika RI. (2020). Strategi Nasional Kecerdasan Artifisial Indonesia 2020–2045. Jakarta: Kementerian Kominfo RI.

²¹Kamila, Z. (2025). Pengaturan Hukum Dan Prospek Penggunaan Artificial Intelligence Dalam Era Digitalisasi Sistem Peradilan Di Indonesia. *Jurnal Riset Multidisiplin Edukasi*, 2(3), 16-36. <https://doi.org/10.71282/jurmie.v2i3.172>

²²Mahkamah Agung Republik Indonesia. (2021). Pedoman Perilaku Hakim dan Kode Etik Hakim. Jakarta: Mahkamah Agung RI.

²³Buiten, M. C. (2019). Towards Intelligent Regulation of Artificial Intelligence. *European Journal of Risk Regulation*, 10(1), 41–59. doi:10.1017/err.2019.8

²⁴Chesterman, S. (2021). *We, the Robots? Regulating Artificial Intelligence and the Limits of the Law*. Cambridge University Press.

²⁵Fauziyah, S., Mutafarida, B., & Yuliani, Y. (2024). INTERNALISASI BIAYA EKSTERNAL DALAM PENAWARAN: PERSPEKTIF MAQASID SYARIAH. *Khazanah: Jurnal Ekonomi dan Perbankan Islam*, 8(2). <https://doi.org/10.69604/shd5hs67>

model to AI faces several serious conceptual challenges. First, AI is not a static product because its self-learning capabilities mean that the system's characteristics can change significantly after its delivery to the market (post-market modification), a situation not anticipated by traditional product liability regimes.

Second, when an AI system causes harm not because of a technical defect but because of incorrect decision-making in an ambiguous or unexpected situation, it is difficult to qualify it as a “defect” in the legal sense of product liability.²⁶ Third, in complex AI ecosystems, there may be many parties contributing to the development of a system—including researchers who develop the underlying algorithms, companies that train models with specific data, platforms that integrate models into their services, and users who perform fine-tuning or additional configuration—making identifying the responsible “manufacturer” challenging. To address these limitations, some experts have proposed modifications to traditional product liability regimes, such as applying strict liability to high-risk AI systems, or developing a more flexible definition of “defect” that encompasses conditions in which an AI system fails to meet reasonable safety expectations in the context of its use.

The shared liability or distributed liability model starts from the recognition that in a complex AI ecosystem, no single actor can be seen as responsible for all the consequences of AI decisions.²⁷ This model allocates responsibility proportionally among various actors based on their respective contributions to and control over the AI system and the decisions it generates. These actors may include: (1) AI developers responsible for the system's basic design and capabilities; (2) data providers responsible for the quality and representativeness of training data; (3) operators or users responsible for the configuration, implementation, and oversight of the system; and (4) regulatory bodies responsible for an adequate standards framework and oversight. This division of responsibility can be accomplished through various mechanisms, including contractual agreements, industry standards, or regulatory requirements.

The advantage of the distributed liability model is that it reflects the reality of the complexity of the AI ecosystem more accurately than models that designate only one party as responsible.²⁸ This model also incentivizes all actors in the AI value chain to play an active role in minimizing risk, as each actor recognizes that they can be held accountable for their specific contributions to the system. However, this model faces significant implementation challenges, particularly in accurately and fairly determining each party's proportion of responsibility in each specific case. Furthermore, from a victim's perspective, this model can complicate efforts to obtain redress because victims must identify and sue multiple parties simultaneously, substantially increasing the cost and complexity of litigation.

The operator liability model places primary responsibility on the entity that operates or uses the AI system in a particular context, rather than on the developer or manufacturer.²⁹ The underlying logic of this model is that the operator is best positioned to understand the specific context of use, identify relevant risks, and take appropriate mitigation measures. The operator is also typically the party closest to the victim in an existing legal relationship—for example, a bank using AI for credit scoring has a direct contractual relationship with its customer, or a hospital using diagnostic AI has a treatment relationship with its patient.

²⁶Calo, R. (2017). Artificial Intelligence Policy: A Primer and Roadmap. *UC Davis Law Review*, 51(1), 399–435.

²⁷Doshi-Velez, F., & Kim, B. (2021). Towards a Rigorous Science of Interpretable Machine Learning. *arXiv preprint arXiv:1702.08608*.

²⁸Wachter, S., Mittelstadt, B., & Russell, C. (2020). Counterfactual Explanations Without Opening the Black Box: Automated Decisions and the GDPR. *Harvard Journal of Law & Technology*, 31(2), 841–887.

²⁹Kitchin, R. (2017). Thinking Critically About and Researching Algorithms. *Information, Communication & Society*, 20(1), 14–29. doi:10.1080/1369118X.2016.1154087

This model is relatively easy to implement because it leverages existing legal relationships and avoids the need to identify AI developers, who may be located in different jurisdictions.

The mandatory insurance scheme model is an approach that is oriented towards compensation rather than fault determination.³⁰ Under this model, all operators of AI systems exceeding a certain risk threshold are required to have AI liability insurance, with the funds collected used to compensate victims without the need for lengthy and expensive litigation. This model has precedent in other areas, such as mandatory motor vehicle insurance and workers' compensation, where policy considerations regarding compensation efficiency and risk distribution are considered more important than individual culpability. The model's primary advantages are its ease and speed of access to compensation for victims, as well as its ability to distribute risk more broadly across the AI industry.

The most controversial and speculative model is the idea of granting AI legal personhood, which would allow AI to directly bear legal rights and obligations, including responsibility for its decisions.³¹ This idea is inspired by the fact that law has long recognized non-human entities—such as corporations—as legal subjects with full legal capacity. Several arguments support this concept, particularly in the context of increasingly autonomous and sophisticated AI. The European Parliament, in a 2017 resolution, raised the possibility of establishing a special legal status for robots and the most advanced AI as "electronic persons." However, this idea faces strong opposition, both philosophically—as it contradicts the view that only entities with consciousness and the capacity to suffer can be legal subjects—and practically, as existing AI lacks enforceable assets to pay damages.

Taking the above analysis into account, this study concludes that no single model is fully adequate to address the entire spectrum of AI liability issues.³² Instead, Indonesia needs to develop a hybrid legal framework that combines the best elements of various models, tailored to the socio-legal context and the level of development of AI technology in Indonesia. Concretely, this framework can be structured as follows: (1) for high-risk AI systems used in critical sectors such as health, finance, and the administration of justice, strict product liability is applied to developers combined with mandatory insurance obligations for operators; (2) for medium-risk AI systems, negligence-based liability is applied with a reversed burden of proof so that developers and operators must prove that they have taken all reasonable precautions; and (3) for low-risk AI systems, general provisions on unlawful acts with the usual burden of proof are sufficient.

It is also important to note that the transparency and explainability aspects of AI are fundamental prerequisites for effectively implementing any accountability model.³³ If an AI system is completely opaque and its decision-making processes cannot be explained, proving causality and fault in legal proceedings will be nearly impossible. Therefore, Indonesian AI regulations must require a level of transparency and explainability commensurate with the system's risk level, and failure to meet this transparency requirement should itself be considered a legal violation subject to accountability. This requirement aligns with the "right to explanation" provision recognized in the PDP Law and is a critical step in ensuring that the AI

³⁰Kearns, M., & Roth, A. (2020). *The Ethical Algorithm: The Science of Socially Aware Algorithm Design*. Oxford University Press.

³¹Solum, L. B. (2022). Legal Personhood for Artificial Intelligences. *North Carolina Law Review*, 70(4), 1231–1287.

³²Pasquale, F. (2020). *New Laws of Robotics: Defending Human Expertise in the Age of AI*. Harvard University Press.

³³Lipton, Z. C. (2018). The Mythos of Model Interpretability. *Queue*, 16(3), 31–57. doi:10.1145/3236386.3241340

accountability framework not only exists normatively but can also be effectively operationalized in legal practice.

The ethical dimension of AI accountability cannot be separated from its legal dimension.³⁴ The ethical principles for AI articulated by various international bodies—including the OECD, UNESCO, and the European Union's High-Level Expert Group on AI—include values such as fairness, transparency, accountability, reliability, and privacy. These values need to be translated into enforceable legal standards, not just contained in non-binding guidance documents. Therefore, comprehensive AI regulation should include not only rules on ex post liability (after harm occurs) but also ex ante standards (before harm occurs) governing the responsible design, development, testing, and deployment of AI systems.

From a legal reform perspective, Indonesia needs to develop a comprehensive Artificial Intelligence Law (AI Law) that explicitly regulates accountability for AI decisions, complementing the existing general legal framework.³⁵ The AI Law should ideally include: a clear definition of AI systems and a risk-based classification, mandatory development and testing standards prior to deployment, transparency and explainability obligations commensurate with the level of risk, independent audit and certification mechanisms, a clear and predictable accountability regime, effective and accessible compensation mechanisms, a regulatory body with the necessary technical and judicial expertise, and international cooperation mechanisms. The establishment of such regulations is not only a necessary legal protection for citizens but also a prerequisite for ensuring Indonesia's full and sovereign participation in the global digital economy, which is increasingly dominated by AI.

CONCLUSIONS

Based on the analysis conducted, this study draws several important conclusions. First, Indonesia's current positive legal framework does not explicitly and comprehensively regulate legal liability for AI-based decisions, creating a normative vacuum that has the potential to harm society and hinder the development of responsible AI. Existing legal instruments, including the ITE Law, the PDP Law, the Civil Code, and the Criminal Code, can be applied partially and analogously, but have fundamental limitations that prevent them from adequately addressing the full complexity of AI liability issues. This situation places Indonesia in a vulnerable position amidst the widespread use of AI systems, both domestically and internationally. Therefore, comprehensive legislative reform in the form of an Artificial Intelligence Law (AI Law) is an urgent need that cannot be postponed any longer. Second, no single liability model is fully adequate to address the full spectrum of AI decision cases. Each model of product liability, shared liability, operator liability, mandatory insurance, and legal personhood of AI has its own strengths and limitations in addressing the unique characteristics of AI. The most appropriate solution is the development of a hybrid legal framework that combines the best elements of various models and applies them differentially based on the level of risk of the AI system. This risk-based approach is not only more efficient in allocating regulatory and judicial resources, but also fairer because it does not burden developers of low-risk AI systems with disproportionate requirements, while providing stronger protections for sectors where AI errors can have a particularly serious impact on human life.

Third, transparency and explainability in AI are fundamental prerequisites, not merely desirable ethical values, for effectively implementing an AI accountability model. Without the ability to explain how

³⁴Tegmark, M. (2017). *Life 3.0: Being Human in the Age of Artificial Intelligence*. Knopf. Lihat juga Bostrom, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.

³⁵Undang-Undang Republik Indonesia Nomor 12 Tahun 2011 tentang Pembentukan Peraturan Perundang-undangan sebagaimana diubah dengan Undang-Undang Nomor 15 Tahun 2019. Lembaran Negara Republik Indonesia Tahun 2019 Nomor 183.

an AI decision was made, proving it in legal proceedings will be nearly impossible, rendering victims' rights unenforceable in practice. Comprehensive AI regulation must therefore require transparency and explainability standards commensurate with the level of risk, and failure to meet these standards should be considered a legal violation in itself, regardless of whether the AI decision in question has also caused concrete harm. An effective AI accountability framework must therefore operate on two levels: ex ante through design and transparency standards, and ex post through a clear and enforceable accountability regime. The implication of these conclusions is that Indonesia needs to take immediate concrete steps to update its legal framework to respond to the challenges of AI. These steps include: the development and enactment of a comprehensive, risk-based AI law; the establishment of an AI regulatory body with the necessary technical and judicial capacity; investment in enhancing judicial capacity and citizens' understanding of their rights when dealing with AI systems; and active participation in the development of international AI standards and norms. By proactively taking these steps, Indonesia will not only be able to provide better legal protection for its citizens but will also position itself as a leader in responsible AI governance in the Southeast Asian region—a strategic position that will provide significant economic, diplomatic, and social benefits in the era of artificial intelligence.

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