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# FROM AI GOVERNANCE TO CONSUMER PROTECTION: RECONSTRUCTING INDONESIA'S REGULATORY FRAMEWORK FOR ARTIFICIAL INTELLIGENCE IN BANKING

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**ABSTRACT**

The growing integration of Artificial Intelligence (AI) into Indonesia's banking sector has enhanced financial innovation and operational efficiency while generating significant legal challenges for consumer protection. Although existing legislation provides general safeguards and the Financial Services Authority (OJK) has introduced AI governance for banking, a regulatory gap remains between principle-based AI governance and enforceable protection against algorithmic risks. This study aims to assess the adequacy of Indonesia's existing legal framework for protecting banking consumers and to formulate a more accountable and consumer-oriented regulatory framework. Employing normative legal research, this study applies statutory, conceptual, and comparative approaches by examining Indonesian legal instruments alongside AI governance frameworks in the European Union, Singapore, Japan, Canada, South Korea, and the United States. The findings demonstrate that Indonesia's emerging framework recognizes fairness, transparency, accountability, and responsible AI governance, but has yet to fully translate these principles into enforceable consumer rights concerning algorithmic decisions, explainability, oversight, and redress. Unlike previous studies emphasizing the absence of AI-specific regulation, this study identifies the transition from AI governance principles toward enforceable consumer protection as the critical regulatory challenge. It concludes that Indonesia requires a risk-based and consumer-oriented framework integrating algorithmic accountability, transparency, human oversight, and effective redress mechanisms.

## A. INTRODUCTION

Artificial intelligence systems increasingly underpin a wide range of human activities, reflecting their growing role in shaping contemporary social and technological practices.[1] Across various sectors including industry, business, healthcare, public administration, and national security, AI-based applications are now widely deployed to support complex operational and decision-making processes.[2] Artificial intelligence technology has many advantages that can improve human life.[3] One of the biggest advantages is its ability to make quick and accurate decisions based on data. This can help reduce human error and speed up response times in critical situations.[4] In addition, artificial intelligence technology can help improve efficiency in various sectors.[5] AI itself is a technology that requires data to become knowledge, just like humans.[6] AI can be applied in various ways by focusing on machine intelligence so that it can provide human-like responses. Important points in the AI process are learning, reasoning and self-correction. In the banking sector, AI has been used in various services such as credit risk analysis, suspicious transaction detection, automated chat systems, and personalization of financial product offerings.

The rapid advancement of artificial intelligence (AI) has generated multifaceted consequences, producing not only efficiency gains but also new forms of risk that affect various aspects of human activity. One of the biggest risks is data security. Among these risks, data security emerges as a critical concern, given that AI systems rely heavily on the collection and processing of large volumes of sensitive information. When such data are inadequately protected or improperly accessed, they may be exploited for unethical or unlawful purposes, thereby posing serious challenges to individual rights and

[1] F. L. Yudhi Priyo Amboro and Khusuf Komarhana, "Prospek Kecerdasan Buatan sebagai Subjek Hukum Perdata di Indonesia," *Law Review* 21, no. 2 (2021): 193.

[2] Febri Jaya and Wilton Goh, "Analisis Yuridis terhadap Kedudukan Kecerdasan Buatan atau *Artificial Intelligence* sebagai Subjek Hukum pada Hukum Positif Indonesia," *Supremasi Hukum* 17, no. 2 (2021): 9. See also, Misnawati, "ChatGPT: Keuntungan, Risiko, dan Penggunaan Bijak dalam Era Kecerdasan Buatan," *Prosiding Seminar Nasional Pendidikan, Bahasa, Sastra, Seni, dan Budaya (Mateandrau)* 2, no. 1 (2023): 54.

[3] Robert Walters and Marko Novak, "Artificial Intelligence and Law," in *Cyber Security, Artificial Intelligence, Data Protection & the Law* (Singapore: Springer Singapore, 2021), 39.

[4] Felix King Lie, Eric, Jessy, Jocelyn, and Viona Angelina Herwanto, "Pemanfaatan Kecerdasan Buatan dalam Meningkatkan Higienitas Pangan," *Journal of Information System and Technology* 4, no. 1 (2023): 349. See also, Dwi Novita Sari, "Tantangan dan Peluang Implementasi Artificial Intelligence pada Perbankan: Challenges and Opportunities of Artificial Intelligence Implementation in Banking," *JMBA: Jurnal Manajemen dan Bisnis* 9, no. 1 (2023): 3.

[5] Michael Reskiantio Pabubung, "Era Kecerdasan Buatan dan Dampak terhadap Martabat Manusia dalam Kajian Etis," *Jurnal Filsafat Indonesia* 6, no. 1 (2023): 69.

[6] Karman Karman, "Strategi dalam Mengembangkan Teknologi Kecerdasan Buatan: Strategies in Developing Artificial Intelligence Technology," *Majalah Semi Ilmiah Populer Komunikasi Massa* 2, no. 2 (2021): 173.

institutional trust. However, there is no denying that these fascinating findings leave a number of challenges that are directly related to human life. The part of human life that is most vulnerable to AI developments that are not accompanied by a true tech ethic is human dignity.[7] In addition, AI technology can also replace human jobs. If not regulated wisely, this could lead to job losses and threaten the survival of many people

The continuous advancement of artificial intelligence has led to the emergence of increasingly sophisticated systems with a high degree of autonomy.[8] Contemporary AI technologies are now capable of operating with minimal or no direct human intervention, a development that is evident in the deployment of autonomous systems such as self-driving vehicles. As AI systems are designed to replicate certain forms of human decision-making and behavior, their growing autonomy raises significant concerns, particularly when such systems perform actions that produce legal consequences comparable to those traditionally attributed to human actors.[9] While these technological developments contribute to efficiency and innovation, they simultaneously generate complex legal and ethical challenges. These challenges become especially pronounced in contexts where AI-driven decisions directly affect consumers, thereby necessitating careful legal scrutiny to ensure adequate protection of rights and accountability mechanisms. AI systems in banking work by utilizing big data that includes customers' personal information and financial habits. This process has the potential to violate consumers' right to privacy and data security, especially when used without transparency or informed consent.[10] Conversely, decisions produced by artificial intelligence are predominantly the result of automated decision-making processes that lack transparency, as many operate as opaque “black box” systems. This opacity significantly limits consumers’ ability to understand the rationale behind such decisions and to effectively contest or seek legal remedies against outcomes that adversely affect them.[11]

In response to the legal challenges posed by artificial intelligence, several jurisdictions have begun to develop regulatory frameworks aimed at governing its deployment. The European Union, for instance, has introduced

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[7] Mark Coeckelbergh, "Ethics of Artificial Intelligence: Some Ethical Issues and Regulatory Challenges," *Technology and Regulation* (2019): 33.

[8] Hari Sutra Disemadi, "Urgensi Regulasi Khusus dan Pemanfaatan Artificial Intelligence dalam Mewujudkan Perlindungan Data Pribadi di Indonesia," *Wawasan Yuridika* 5, no. 2 (2021): 177.

[9] Dwi Novita Sari, "Tantangan dan Peluang Implementasi Artificial Intelligence pada Perbankan: Challenges and Opportunities of Artificial Intelligence Implementation in Banking," *JMBA: Jurnal Manajemen dan Bisnis* 9, no. 1 (2023): 5.

[10] Abdul Hadi and Bima Guntara, “Pembaharuan Hukum Nasional dalam Upaya Perlindungan Data Pribadi di Era Disrupsi Kecerdasan Buatan (Artificial Intelligence),” *Jurnal Hukum Mimbar Justitia* 8, no. 1 (2022): 233.

[11] Simon Chesterman, “Artificial Intelligence and the Limits of Legal Personality,” *International and Comparative Law Quarterly* 69, no. 4 (2020): 819.

the Artificial Intelligence Act, which adopts core principles such as transparency, fairness, and accountability as foundational standards for AI regulation.[12] Similarly, countries including Japan, Australia, and the United States have formulated sector-specific policies designed to ensure that the development and use of AI technologies do not undermine individual rights, particularly those of consumers.[13] In contrast, Indonesia remains at an early stage of regulatory development, relying primarily on general policy instruments such as the National Artificial Intelligence Strategy 2020–2045. To date, this strategy has not been translated into binding legal norms, resulting in a regulatory gap in the governance of artificial intelligence.

Against this background, this study addresses three research questions. First, to what extent does Indonesia's existing legal and regulatory framework provide effective consumer protection against risks arising from the use of AI in the banking sector? Second, how do selected jurisdictions address consumer protection, algorithmic accountability, transparency, and oversight in regulating AI within financial services? Third, how should Indonesia reconstruct its regulatory framework to transform principle-based AI governance into an accountable, enforceable, and consumer-oriented framework for AI-driven banking?

Recent scholarship demonstrates increasing attention to the implications of Artificial Intelligence (AI) for financial services, yet significant gaps remain concerning the legal protection of banking consumers. A systematic review of AI in customer-facing financial services demonstrate that existing scholarship has largely concentrated on technological performance and consumer adoption while identifying regulation, ethics, and policy as areas requiring further investigation.[14] Sargeant advances this discussion by examining algorithmic decision-making in consumer credit from economic and normative perspectives, highlighting the consequences of automated financial decisions for consumers.[15] Meanwhile, Ratzan and Rahman develop a

[12] European Commission, "Artificial Intelligence Act (Annexes) COM(2021) 206 Final," Report, Brussels: European Commission, 2021. See also, Aleksandra Kuzior, Mariya Sira, Viera Zozuľaková and Martin Hetenyi, "Navigating AI Regulation: A Comparative Analysis of EU and US Legal Frameworks," Materials Research Proceedings 45 (2024): 258; Francisca Romana and Nanik Alfiani, "A Comparative Analysis of Artificial Intelligence Regulatory Law in Asia, Europe, and America," SHS Web of Conferences (2024): 7.

[13] Aleksandra Kuzior, Mariya Sira, Viera Zozuľaková and Martin Hetenyi, "Navigating AI Regulation: A Comparative Analysis of EU and US Legal Frameworks," Materials Research Proceedings 45 (2024): 258. See also, Francisca Romana and Nanik Alfiani, "A Comparative Analysis of Artificial Intelligence Regulatory Law in Asia, Europe, and America," SHS Web of Conferences (2024): 6.

[14] Janin Karoli Hentzen, Arvid Hoffmann, Rebecca Dolan, and Erol Pala, "Artificial Intelligence in Customer-Facing Financial Services: A Systematic Literature Review and Agenda for Future Research," *International Journal of Bank Marketing* 40, no. 6 (2022): 1299.

[15] Holli Sargeant, "Algorithmic Decision-Making in Financial Services: Economic and Normative Outcomes in Consumer Credit," *AI and Ethics* 3, no. 4 (2023): 1295.

Responsible Artificial Intelligence framework for banking, particularly addressing algorithmic bias in lending decisions.[16] These studies provide important foundations for understanding responsible AI in financial services but do not specifically examine how AI governance principles should be transformed into legally enforceable consumer rights.

In the Indonesian context, Yuniari and Mayasari examine legal protection primarily through the lens of customer personal data and the risk of data leakage arising from AI-enabled banking services.[17] Pratama et al. broaden the discussion through a comparative examination of AI regulation in the financial sectors, identifying continuing tensions between regulatory development and the practical realities of consumer protection.[18] More recently, García-Llorente and Olmeda demonstrate that the adoption of trustworthy AI principles across banking jurisdictions does not necessarily correspond to equivalent mechanisms of supervisory enforceability.[19] Despite these developments, existing scholarship has not sufficiently examined Indonesia’s regulatory transformation following the introduction of sector-specific AI governance by the Financial Services Authority, particularly whether principle-based governance standards can be translated into enforceable consumer rights concerning algorithmic transparency, explainability, human oversight, accountability, contestability, and redress. This study therefore advances the existing literature by shifting the inquiry from whether AI in banking requires regulation toward how Indonesia’s emerging AI governance architecture should be reconstructed into an enforceable, risk-based, and consumer-oriented regulatory framework. Its contribution lies in connecting sector-specific AI governance with algorithmic consumer rights and employing comparative regulatory experience not merely to map foreign approaches but to identify legal mechanisms that may be adapted to Indonesia’s banking regulatory framework.

Accordingly, this study aims to evaluate the adequacy of Indonesia's existing legal and regulatory framework in protecting consumers affected by AI-driven banking services; comparatively examine regulatory approaches adopted in selected jurisdictions to identify relevant mechanisms for consumer

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[16] John Ratzan and Noushi Rahman, "Measuring Responsible Artificial Intelligence (RAI) in Banking: A Valid and Reliable Instrument," *AI and Ethics* 4, no. 4 (2024): 127.

[17] I D A Wacik Yuniari and I D A Dewi Mayasari, "Perlindungan Hukum Data Pribadi Nasabah Apabila Bank Menggunakan Teknologi Artificial Intelligence Menurut Hukum Positif di Indonesia," *Jurnal Kertha Negara* 10, no. 7 (2019): 665.

[18] Andistya Pratama, Dwi Ratna Indri Hapsari, and Listiyani Wulandari, "Bridging Regulation and Reality: A Comparative Study of Artificial Intelligence Regulation in the Financial Sectors," *Legality: Jurnal Ilmiah Hukum* 33, no. 2 (2025): 307.

[19] Carlos García-Llorente Ignacio Olmeda, "Algorithmic Governance in Banking: A Comparative Analysis of Risk-Based and Accountability-Oriented Oversight," *Journal of Banking Regulation* 27, no. 19 (2026).

protection and algorithmic accountability; and formulate a regulatory reconstruction for Indonesian banking that integrates risk-based governance, transparency and explainability, human oversight, algorithmic accountability, and effective consumer redress. Through these objectives, the study seeks to contribute to the development of an AI governance framework that moves beyond ethical and governance principles toward enforceable legal protection while remaining responsive to technological innovation in the banking sector.

## B. RESEARCH METHODS

This study adopts a normative (doctrinal) legal research approach, which examines law as a coherent system of norms governing social relations.[20] The analysis primarily relies on authoritative legal sources, including statutory provisions, legal doctrines, and relevant judicial decisions.[21] Rather than employing empirical data, this research is grounded in legal reasoning and normative interpretation to assess the structure, consistency, and adequacy of applicable legal rules.[22]

This study employs a normative legal research method with statutory, conceptual, and comparative approaches.[23] The statutory approach is used to analyze Indonesian legal instruments relevant to AI governance in the banking sector, including banking regulations, consumer protection law, data protection law, and regulatory policies issued by the Financial Services Authority. The conceptual approach examines legal doctrines concerning legal certainty, accountability, and consumer protection in the context of automated decision-making. Furthermore, a comparative approach is applied by examining selected foreign legal frameworks, particularly from the European Union and other jurisdictions that have developed binding AI regulations, in order to identify normative standards and regulatory models relevant to the Indonesian context.

The legal sources employed in this study are classified into primary and secondary legal materials. Primary legal materials consist of binding statutory and regulatory instruments relevant to consumer protection and digital financial services, including Law Number 8 of 1999 on Consumer Protection, Law Number 11 of 2008 on Electronic Information and Transactions, and Financial Services Authority Regulation Number 13/POJK.03/2018 concerning Digital Financial Innovation. Secondary legal materials comprise scholarly

[20] Peter Mahmud Marzuki, *Penelitian Hukum* (Jakarta: Kencana, 2010), 35.
[21] Amiruddin and Zainal Asikin, *Pengantar Metode Penelitian Hukum*, 12th ed. (Depok: Rajawali Pers, 2021), 118.
[22] Laurensius Arliman S., "Peranan Metodologi Penelitian Hukum di Dalam Perkembangan Ilmu Hukum di Indonesia," *Soumatera Law Review* 1, no. 1 (2018): 112.
[23] Tunggul Ansari Setia Negara, "Normative Legal Research in Indonesia: Its Origins and Approaches," *Audito Comparative Law Journal (ACLJ)* 4, no. 1 (2023): 1.

works such as legal textbooks, peer-reviewed journal articles, and academic publications that provide doctrinal and conceptual insights. These legal materials are analyzed through a qualitative descriptive approach, involving systematic examination and normative interpretation to address the legal issues formulated in this research.[24] This methodological framework is designed to ensure coherence between the research objectives, the legal issues identified, and the normative conclusions drawn in this article.

## C. DISCUSSION

### 1. Consumer Protection under Indonesia's Emerging AI Governance Framework in Banking

The sophistication of Artificial Intelligence (AI) technology has had a significant impact in the banking world.[25] The use of AI in modern banking systems enables service automation, data processing efficiency, and predictive capabilities in credit scoring systems.[26] However, this sophistication also poses serious threats to consumer rights, particularly in terms of data privacy, decision transparency, and legal protection for losses due to algorithm errors.[27] This raises the question: does positive law in Indonesia adequately protect consumers in the context of AI utilization?

Law Number 8 of 1999 on Consumer Protection (UUPK/*Undang Undang tentang Perlindungan Konsumen*) constitutes the primary statutory framework for safeguarding consumer rights in Indonesia.[28] Article 4 of the UUPK guarantees consumers the right to comfort, security, and safety in the use of goods and services, as well as the right to obtain accurate, clear, and honest information regarding the condition and guarantees of such goods or services. When interpreted in the context of artificial intelligence, these rights imply that AI-driven decisions affecting consumers such as credit approval, risk assessment, or automated customer services should be subject to

[24] Muhaimin, *Metode Penelitian Hukum* (Mataram: Mataram University Press, 2020), 23.
[25] Sinta Dewi Rosadi, Siti Yuniarti, and Rizki Fauzi, "Protection of Data Privacy in the Era of Artificial Intelligence in the Financial Sector of Indonesia," *Journal of Central Banking Law and Institutions* 1, no. 2 (2022): 353.
[26] Reka Dewantara, "Regulatory Impact Assessment terhadap Pengaturan Penggunaan Artificial Intelligence pada Jasa Keuangan Perbankan," *Tanjungpura Law Journal* 4, no. 1 (2020): 59.
[27] Normalita Destyarini, "Ensuring Personal Data Protection in Telemedicine Services," *Jurnal Dinamika Hukum* 24, no. 2 (2024): 218–233. See also, Fikri Abidin and Tina Amelia, "Indonesia's Legal Policy on Protecting Personal Data from Artificial Intelligence Abuse," *SHS Web of Conferences* 204 (2024): 7002; Yolanda Simbolon, "Pertanggungjawaban Perdata terhadap Artificial Intelligence yang Menimbulkan Kerugian Menurut Hukum di Indonesia," *VeJ* 9, no. 1 (2023): 246.
[28] Yolanda Simbolon, "Pertanggungjawaban Perdata terhadap Artificial Intelligence yang Menimbulkan Kerugian Menurut Hukum di Indonesia," *VeJ* 9, no. 1 (2023): 248.

transparency and legal accountability.[29] Nevertheless, the UUPK does not explicitly regulate the use of artificial intelligence or automated decision-making systems within business-to-consumer legal relationships.[30]

Within the domain of information technology law, Law Number 11 of 2008 on Electronic Information and Transactions, as amended by Law Number 19 of 2016, establishes legal recognition for electronic systems and digital transactions. This legislation introduces the concept of an "Electronic Agent," defined as an electronic system capable of performing actions automatically on electronic information without direct human intervention, as stipulated in Article 1 point 21. Although artificial intelligence may be subsumed under this category, the regulatory framework remains broadly formulated and fails to address the accountability gap that arises when AI-driven systems produce erroneous or harmful decisions.[31]

In addition, while the ITE Law contains prohibitions on data misuse and obligations to maintain the security of electronic systems (Article 15 and Articles 30-33), it does not include mechanisms for objecting to or restoring the rights of consumers,[32] harmed by AI decisions in the financial sector.[33] This limitation exposes a clear regulatory gap: consumers are generally denied access to meaningful information regarding algorithm-based decision-making processes,[34] and lack a solid legal foundation upon which to assert liability for losses arising from the operation of autonomous AI system.[35]

Regulations on consumer protection within the financial services sector, including Financial Services Authority Regulation No. 13/POJK.03/2018 concerning Digital Financial Innovation (IKD/*Identitas Kependudukan Digital*),

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[29] Francisca Romana Nanik Alfiani and Faisal Santiago, "The Important Role of Artificial Intelligence Regulation in Protecting Public Interest," *Journal of Social Science* 3, no. 7 (2024): 432.

[30] Diana Fitriana, "Kepastian Hukum dalam Aspek Perlindungan Konsumen terhadap Informasi Keamanan Produk dan Pencantuman Label Kategori Pangan," *De Jure Muhammadiyah Cirebon* 7, no. 1 (2023): 58.

[31] Marc Nathmann, "Electronic Person – Who Is Liable for Automated Decisions?" In *Digital Project Practice for New Work and Industry 4.0*, 11 (Auerbach Publications, 2023), 34.

[32] Zofia Bednarz and Kayleen Manwaring, "Risky Business: Legal Implications of Emerging Technologies Affecting Consumers of Financial Services," in *Internet and New Technologies Law* (Baden-Baden: Nomos, 2021), 59.

[33] R. P. Buckley, Douglas W. Arner, Dirk A. Zetzsche, and Janos N. Barberis, "Regulating Artificial Intelligence in Finance: Putting the Human in the Loop," *Social Science Research Network*, 2021.

[34] Olivia J. Erdélyi and Gábor Erdélyi, "The AI Liability Puzzle and a Fund-Based Work-Around," in *AIES '20: Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* (New York: Association for Computing Machinery, 2020), 54. See also, Shu Li, Béatrice Schütte, and Lotta Majewski, "Artificial Intelligence and Consumer Protection Rights," in *Artificial Intelligence and Human Rights*, edited by Jeroen Temperman and Alberto Quintavalla (Oxford: Oxford University Press, 2023), 405.

[35] Ngozi Samuel Uzougbo, Chinonso Gladys Ikegwu, and Adefolake Olachi Adewusi, "Legal Accountability and Ethical Considerations of AI in Financial Services," *GSC Advanced Research and Reviews* 19, no. 2 (2024): 134.

constitute an important component of Indonesia's regulatory landscape. POJK Number 13/2018 introduces the regulatory sandbox mechanism,[36] which functions as a controlled testing environment for technology-based financial services. This mechanism encompasses the trial implementation of emerging technologies, including artificial intelligence, prior to their broader commercial deployment.[37] The aim is to encourage innovation that remains within the corridors of prudence and supervision.[38] However, until now there has been no specific mechanism that requires AI providers in the banking sector to conduct algorithmic audits or provide explainability of AI decisions to consumers.

Furthermore, the Regulation of the Minister of Communication and Information Number 20 of 2016 concerning the Protection of Personal Data in Electronic Systems lays down fundamental principles governing the protection of personal data within electronic system operations.[39] However, these provisions are still limited to technical aspects, such as data processing permissions and confidentiality obligations. There is no guarantee of consumer protection for the use of their data in training AI models that could potentially result in discriminatory profiling or scoring.[40]

Data leakage cases on financial platforms such as BRI Life in 2021 are a clear example of weak consumer protection.[41] The data of 15 million customers was leaked to the dark web, showing that the banking data protection system does not have sufficient resilience.[42] In the context of AI, if the data is used to train credit prediction models or for consumptive behaviour

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[36] Recca Ayu Hapsari, Maroni Maroni, Indah Satria, and Nenni Dwi Ariyani, "The Existence of Regulatory Sandbox to Encourage the Growth of Financial Technology in Indonesia," *FIAT JUSTISIA: Jurnal Ilmu Hukum* 13, no. 3 (2019): 271.

[37] Lev Bromberg, Andrew Godwin, and Ian Ramsay, "Fintech Sandboxes: Achieving a Balance between Regulation and Innovation," *Journal of Banking and Finance Law and Practice* 28, no. 4 (2017): 314.

[38] Douglas W. Arner, Dirk A. Zetzsche, Ross P. Buckley, and Janos N. Barberis, "FinTech and RegTech: Enabling Innovation While Preserving Financial Stability," *Georgetown Journal of International Affairs* 18, no. 3 (2017): 48.

[39] Fadhilah Pijar Ash Shiddiq, Sinta Dewi Rosadi, and Rika Ratna Permata, "The Effectiveness of the Minister of Communication and Informatics Regulation Number 20 of 2016 on the Protection of Personal Data in Electronic Systems," *Yustisia Jurnal Hukum* 8, no. 1 (2019): 119.

[40] Suzanne C. Bernstein, "Consumer Data Protection and Privacy: A Proposal for a New Law and an Independent Agency," *University of Pittsburgh Law Review* 83, no. 5 (2022): 17.

[41] M. Agus Yozami, "Data Nasabah BRI Life Bocor, RUU Perlindungan Data Pribadi Mendesak Disahkan," *Hukum Online*, 2021. https://www.hukumonline.com/berita/a/data-nasabah-bri-life-bocor--ruu-perlidungan-data-pribadi-mendesak-disahkan-lt61023a955e3f4/, Accessed on August 26, 2026. See also, Francisca Christy Rosana, "Kebocoran Data Nasabah BRI Life Bukti Lemahnya Proteksi Dan Regulasi," *TEMPO*, 2021. https://www.tempo.co/arsip/kebocoran-data-nasabah-bri-life-bukti-lemahnya-proteksi-dan-regulasi-489587, Accessed on August 26, 2026.

[42] Beni Kharisma Arrasuli and Khairul Fahmi, "Perlindungan Hukum Positif Indonesia Terhadap Kejahatan Penyalahgunaan Data Pribadi," *UNES Journal of Swara Justisia* 7, no. 2 (2023): 369.

without consumer consent, the losses can be huge and difficult to trace back to the responsible party.[43]

However, recent developments show significant strides by the Financial Services Authority (OJK/ *Otoritas Jasa Keuangan*) in addressing the normative void regarding consumer protection in AI applications. In April 2025, the OJK published the Indonesian Banking Artificial Intelligence Governance document, which is an important milestone in the AI regulatory framework in the financial sector.[44] This document emphasizes the principles of accountability, transparency, fairness, and reliability of AI systems, including risk mitigation mechanisms against potential algorithm bias that could harm consumers.[45] One of the key aspects introduced is the obligation for financial services businesses to ensure that the AI systems used do not cause discrimination, as well as explainability to consumers. In addition, businesses are also required to provide effective channels for consumer complaints in the event of negative impacts from the use of AI.

While other countries such as the European Union have passed the AI Act,[46] which defines AI risk categories and strictly regulates the use of AI in the financial sector as a high-risk technology.[47] According to the AI Act, AI systems used for credit scoring, risk rating, and customer screening are categorized as high-risk AI.[48] Therefore, system developers and users are required to apply the principles of transparency, accountability, and human oversight. If Indonesia wants to adopt similar principles, it is necessary to revise or establish new sectoral regulations, which require it:

a. Explanation of the decision made by AI towards consumers.
b. Periodic audit of the algorithm.

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[43] Dwi Ratna Indri Hapsari, Nur Putri Hidayah, and Isdian Anggraeny, "Banking Industry Customer Data Leakage: Where Is the Principle of Bank Prudence and Confidentiality?" In *2nd International Conference on Changing of Business Law (ICOCLB 2024)* (Dordrecht: Atlantis Press, 2025), 125.

[44] Andistya Pratama, Dwi Ratna Indri Hapsari, and Listiyani Wulandari, "Bridging Regulation and Reality: A Comparative Study of Artificial Intelligence Regulation in the Financial Sectors," *Legality: Jurnal Ilmiah Hukum* 33, no. 2 (2025): 307.

[45] Kukuh Dwi Kurniawan and Dwi Ratna Indri Hapsari, "Kejahatan Dunia Maya pada Sektor Perbankan di Indonesia: Analisa Perlindungan Hukum terhadap Nasabah," *Pleno Jure* 10, no. 2 (2021): 122.

[46] Francisca Romana Nanik Alfiani and Faisal Santiago, "The Important Role of Artificial Intelligence Regulation in Protecting Public Interest," *Journal of Social Science* 3, no. 7 (2024): 432.

[47] Adnasohn Aqilla Respati, "Reformulation of the ITE Law on Artificial Intelligence Compared to the European Union and China AI Act Regulation Adnasohn," *Jurnal USM Law Review* 7, no. 3 (2024): 1737.

[48] Charlotte Siegmann and Markus Anderljung, "The Brussels Effect and Artificial Intelligence: How EU Regulation Will Impact the Global AI Market," *Report*, Centre for the Governance of AI, 2022.

c. Mechanism for consumer objections or appeals against automated system decisions.
d. Establishment of non-discrimination and fairness standards in data processing.

In addition to the legal-formal approach, it is also important to present an ethical framework that regulates the responsible use of AI.[49] For example, the development of an AI Code of Conduct for the Financial Industry that emphasizes the principles of non-discrimination, respect for privacy, and the obligation to provide clear information to consumers. Such ethical regulations are already being voluntarily enforced in countries such as Singapore and Japan.

Indonesia's existing framework therefore provides a foundational but fragmented layer of consumer protection. Its principal limitation does not lie in the complete absence of AI governance, but in the limited juridical transformation of fairness, transparency, accountability, and explainability into enforceable rights and corresponding obligations.

## 2. Comparative Approaches to Consumer Protection and AI Governance in the Financial Sector

Comparative legal analysis allows for the identification of best practices, potential regulatory gaps,[50] and alternative approaches that may be relevant or adaptable to the Indonesian context.[51] Across the globe, several countries and regional blocs have taken proactive steps to establish comprehensive regulatory frameworks for AI in finance. The European Union, through its landmark Artificial Intelligence Act, has adopted a risk-based approach[52] that classifies AI systems based on the level of risk they pose to human rights, safety, and democratic values.[53] High-risk AI systems used in financial services such as credit scoring and fraud detection are subject to strict requirements regarding transparency, human oversight, and bias mitigation.[54]

[49] Francisca Romana Nanik Alfiani and Rineke Sara, "The Improvement of Digital Literacy to Secure Data and Privacy in the Digital Age," *Interdisciplinary Journal and Hummanity (INJURITY)* 3, no. 12 (2024): 832.

[50] Olga Viktorovna Sushkova and Aleksey Vladimirovich Minbaleev, "Legal Regulation of Artificial Intelligence in the Financial Services Market: A Comparative Analysis," *SHS Web of Conferences* 118 (2021): 4007.

[51] Rafsi Azzam Hibatullah Albar, Rizky Karo Karo, and Pawestri Nindyatami, "Indonesia's Law No. 4 of 2023 and Consumer Protection in Digital Financial Services: ASEAN Literacy Framework's Perspective," *Transnational Business Law Journal* 3, no. 1 (2022): 68.

[52] Andi Alya Ramadhani Fahri and Melda, "Perbandingan Regulasi Teknologi Finansial (Fintech) terhadap Perlindungan Data Nasabah di Indonesia dengan Filipina dan Uni Eropa," *Indonesian Journal of Management Studies (IJMS)* 1, no. 3 (2022): 9.

[53] Swetha Sistla, "Journal of Artificial Intelligence & Cloud Computing," *Journal of Artificial Intelligence & Cloud Computing* 3, no. 5 (2024): 3.

[54] Namira Romaito Siregar, Saidin, Jelly Leviza, and Syarifah Lisa Andriati, "Urgensi Regulasi Atas Produk Artificial Intelligence sebagai Upaya Perlindungan Hukum di Indonesia," *JUNCTO: Jurnal Ilmiah Hukum* 6, no. 2 (2024): 248.

Similarly, Singapore has been recognized as a leading example in Asia through its Veritas Initiative and FEAT Principles developed by the Monetary Authority of Singapore (MAS).[55] The United States, while not yet adopting centralized AI legislation, has developed multiple sector-specific guidelines through agencies such as the Federal Reserve, CFPB, and NIST.[56] These guidelines emphasize the importance of explainability, data protection, and non-discrimination in financial AI systems, particularly in consumer credit and lending.[57]

Japan, through its Ministry of Economy, Trade and Industry (METI), has issued AI Guidelines for Business, which, although not legally binding, provide detailed ethical and operational recommendations for AI deployment across sectors, including finance.[58] The guidelines promote transparency, traceability, and accountability in AI use, and call for human-centric governance structures within organizations.[59]

Canada's Directive on Automated Decision-Making (DADM) represents a significant step in regulating the use of Automated Decision Systems (ADS) within government institutions, emphasizing transparency, fairness, and accountability.[60] The directive mandates the use of Algorithmic Impact Assessments (AIA) to evaluate the potential effects of these systems,[61] ensuring that they align with administrative law principles and provide

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[55] Monetary Authority of Singapore, "MAS Introduces New FEAT Principles to Promote Responsible Use of AI and Data Analytics," *Monetary Authority of Singapore*, 2018. https://www.mas.gov.sg/news/media-releases/2018/mas-introduces-new-feat-principles-to-promote-responsible-use-of-ai-and-data-analytics. Accessed on February 26, 2026.

[56] Andrew Nii Anang, Oluwatosin Esther Ajewumi, Tobi Sonubi, Kenneth Chukwujekwu Nwafor, Babatope Arogundade, and Itiade James Akinbi, "Explainable AI in Financial Technologies: Balancing Innovation with Regulatory Compliance," *International Journal of Science and Research Archive* 13, no. 1 (2024): 1793.

[57] Ahmad Al-Harbi, "Navigating Ethics and Regulation: The Role of AI in Modern Financial Services," *Asian Journal of Economics, Business and Accounting* 25, no. 1 (2025): 325.

[58] Jaspreet Kaur, "Responsible Artificial Intelligence (AI) Governance: Ethical Frameworks for Business Decision-Making," in *Ethical Quandaries in Business Practices: Exploring Morality and Social Responsibility* (2024), 337. See also, Sheriff Alim and Adewale O. Adebayo, "Ethics in Artificial Intelligence: Issues and Guidelines for Developing Acceptable AI Systems," *Global Journal of Engineering and Technology Advances* 11, no. 3 (2022): 39.

[59] Adedotun Christopher Adeniyi and Oluwatobiloba Okusi, "Ethical AI Governance, Financing, and Human Well-Being in the 21st Century," *African Journal of Humanities & Contemporary Education Research* 17, no. 1 (2024): 193. See also, Zuowei Li, "AI Ethics and Transparency in Operations Management: How Governance Mechanisms Can Reduce Data Bias and Privacy Risks," *Journal of Applied Economics and Policy Studies* 13 (2024): 89.

[60] Eunjeong Kwon, "Algorithmic Impact Assessment as a Control System of Automated Disposition," *Gongbeob Nonchong* 19, no. 2 (2023): 121. See also, Virginia Torrie, "AI Governance in Canadian Banking: Fairness, Credit Models, and Equality Rights," *SSRN Electronic Journal* (2020): 18.

[61] Teresa Scassa, "Administrative Law and the Governance of Automated Decision-Making: A Critical Look at Canada's Directive on Automated Decision-Making," *SSRN Electronic Journal* (2020): 19. See also, Will Bateman, "Algorithmic Decision-Making and Legality: Public Law Dimensions," *Social Science Research Network* (2019).

mechanisms for contesting decisions.[62] This approach is designed to address concerns about the fairness and transparency of automated decisions, particularly in sensitive areas like financial service delivery.[63]

The DADM includes mechanisms for individuals to contest decisions made by automated systems, thereby enhancing accountability.[64] This is a critical feature, as it provides a means for redress and ensures that individuals are not left without recourse in the face of potentially erroneous or unfair decisions.[65] The directive also requires that the results of AIAs be made publicly available, fostering a culture of accountability and allowing for public scrutiny of the systems in use.[66]

Meanwhile, South Korea's AI Basic Act (2024) represents a significant step in integrating ethical AI principles into national law, particularly within the financial sector. This Act mandates financial institutions to conduct risk assessments, protect user rights, and ensure algorithmic explainability, reflecting a hybrid approach that combines statutory obligations with ethical norms.[67] This model aims to provide a robust foundation for consumer protection by addressing the unique challenges posed by AI in financial services. The Act's provisions are designed to balance the benefits of AI with the need to mitigate its risks, ensuring that AI systems operate in a manner that is both ethical and legally accountable.[68]

Indonesia's approach to AI regulation in the financial sector, particularly through the OJK's 2024 Artificial Intelligence Governance Guidelines for Banking, marks a significant step forward. However, the country still lacks a comprehensive legal framework that explicitly addresses critical issues such as consumer rights, algorithmic accountability, and the right to explanation in AI-driven financial decision-making. This gap is evident when compared to

[62] Kirill S. Golovin, "The Need for Legal Regulation of the 'Black Box' of Artificial Intelligence," *Vestnik Kostromskogo Gosudarstvennogo Universiteta Imeni N.A. Nekrasova* 30, no. 3 (2024): 290.

[63] Teresa Scassa, "Administrative Law and the Governance of Automated Decision-Making: A Critical Look at Canada's Directive on Automated Decision-Making," *SSRN Electronic Journal* (2020): 21.

[64] Lucia Nalbandian, "Increasing the Accountability of Automated Decision-Making Systems: An Assessment of the Automated Decision-Making System Introduced in Canada's Temporary Resident Visa Immigration Stream," *Journal of Responsible Technology* 10 (2022): 100023.

[65] Kevin Wei, "Creating Transparency and Fairness in Automated Decision Systems for Administrative Agencies," *SSRN Electronic Journal*, no. 9 (2021).

[66] Elizabeth Anne Watkins, Emanuel Moss, Jacob Metcalf, Ranjit Singh, and Madeleine Clare Elish, "Governing Algorithmic Systems with Impact Assessments: Six Observations," *Proceedings of the 2021 AAAI/ACM Conference on AI, Ethics, and Society*, 2021: 1012.

[67] Lucia Nalbandian, "Increasing the Accountability of Automated Decision-Making Systems: An Assessment of the Automated Decision-Making System Introduced in Canada's Temporary Resident Visa Immigration Stream," *Journal of Responsible Technology* 10 (2022): 100023.

[68] Alex Walz and Kay Firth-Butterfield, "Implementing Ethics into Artificial Intelligence: A Contribution, from Legal Perspective, to the Development of an AI Governance Regime," *Duke Law and Technology Review* 18, no. 1 (2019): 176.

international practices where effective AI regulation often combines legal mandates, ethical standards, and institutional enforcement mechanisms. The need for a more robust regulatory framework in Indonesia is underscored by the rapid evolution of AI technology and its profound impact on various sectors, including finance.[69]

While Indonesia has made strides in AI regulation through the OJK guidelines, the absence of a comprehensive legal framework addressing consumer rights and algorithmic accountability remains a significant challenge. This gap highlights the need for Indonesia to draw lessons from international practices and develop a more robust regulatory approach that balances innovation with consumer protection. Such an approach would not only enhance the ethical deployment of AI in the financial sector but also ensure that Indonesia can fully harness the benefits of AI technology responsibly.[70]

The following table summarizes key aspects of AI regulatory approaches across selected jurisdictions, providing a comparative lens to evaluate Indonesia's current position and highlight opportunities for regulatory advancement:

**Table 1.** Comparison of AI Regulation in the Financial Sector Globally

| Country / Region | Key Regulation / Initiative | Focus Area in Financial Sector | Year / Status |
|---|---|---|---|
| European Union | Artificial Intelligence Act | Risk-based classification, financial service transparency | 2024 (Finalized) |
| United States | Executive Order on Safe AI Development | Guidelines for financial services, fair lending practices | 2023 (Implemented) |
| Canada | Directive on Automated Decision-Making | Mandatory AI impact assessment for public/financial decisions | 2019 (In effect) |
| Singapore | Veritas Initiative by MAS | Fairness, Ethics, Accountability and Transparency (FEAT) in financial services | 2020 (Ongoing) |
| Indonesia | Governance of Indonesian Banking Artificial Intelligence (OJK) | Governance principles, risk management, explainability | 2025 (Released) |

[69] Wojtek Buczynski, Felix Steffek, Fabio Cuzzolin, Mateja Jamnik, and Barbara Sahakian, "Hard Law and Soft Law Regulations of Artificial Intelligence in Investment Management," *Cambridge Yearbook of European Legal Studies* 24 (2022): 262.

[70] Wojtek Buczynski, Felix Steffek, Fabio Cuzzolin, Mateja Jamnik, and Barbara Sahakian, "Hard Law and Soft Law Regulations of Artificial Intelligence in Investment Management," *Cambridge Yearbook of European Legal Studies* 24 (2022): 268.

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|---|---|---|---|
| Japan | AI Guidelines for Business (METI) | AI business use and ethical implementation, including finance | 2024 (Updated) |
| China | Generative AI Measures by CAC | Risk control in AI-based financial services and credit scoring | 2023 (Enforced) |
| South Korea | AI Basic Act | Includes sectoral responsibilities in financial AI ethics | 2024 (Legislated) |

***Source:*** *Compiled by the author from regulatory documents and official publications of the European Commission, The White House, Government of Canada, MAS Singapore, OJK Indonesia, METI Japan, CAC China, and National Assembly of South Korea.*

Comparative experience demonstrates that effective consumer protection does not necessarily depend upon a single comprehensive AI statute. Rather, its effectiveness depends on whether ethical and governance principles are translated into identifiable obligations concerning risk assessment, transparency, human oversight, accountability, and mechanisms through which affected individuals can contest automated decisions.

### 3. Reconstructing Indonesia's AI Governance toward Enforceable Consumer Protection

One major legal challenge arises from the absence of binding norms capable of responding to the rapid development of artificial intelligence, resulting in regulatory uncertainty and limited legal accountability for AI-driven banking decisions. The issuance of the Indonesian Banking Artificial Intelligence Governance document by the Financial Services Authority (OJK) in April 2024 represents an important regulatory initiative; however, its non-binding and sectoral nature limits its effectiveness in ensuring legal certainty and enforceable consumer protection. This condition highlights a significant regulatory gap, as AI governance in the banking sector continues to rely predominantly on soft-law instruments rather than binding legal norms.[71] At the same time, this regulatory limitation presents an opportunity for normative legal reform. The increasing awareness of AI-related risks and benefits among regulators and financial institutions creates momentum for transforming existing policy guidelines into a comprehensive and binding legal framework. Comparative experiences from other jurisdictions demonstrate that legally enforceable AI regulations can enhance public trust, strengthen consumer protection, and promote responsible technological innovation. In the

[71] Kementerian Komunikasi dan Informatika Republik Indonesia. "Peta Jalan Indonesia Digital 2021–2024." Kementerian Komunikasi dan Informatika Republik Indonesia, 2020. https://www.komdigi.go.id/berita/artikel/detail/peta-jalan-mempercepat-transformasi-digital. Accessed on February 26, 2026.

Indonesian banking sector, where AI adoption is rapidly expanding, these developments underscore the urgency of establishing a clear and binding legal framework capable of addressing accountability, transparency, and consumer rights in AI-driven financial services.[72] In Indonesia, the need for AI regulation is also increasingly urgent as the use of AI becomes more widespread in banking, e-commerce, health, education, and even government.[73]

However, the establishment of national AI regulations in Indonesia is not free from a number of fundamental challenges. First, there is no normative consensus on the definition, scope, and risk categories of AI. Differences in understanding between sectors and stakeholders often hinder policy synchronization.[74] Second, limited human and institutional resources in overseeing complex and autonomous AI systems are also a significant obstacle.[75] Third, there is no independent digital technology oversight institution that has cross-sectoral authority.

Responding to these regulatory challenges, the development of Indonesia's AI governance requires a comprehensive legal framework capable of integrating technological innovation with ethical, constitutional, and consumer protection values. One important direction is the establishment of primary legislation on Artificial Intelligence that could provide legal certainty and serve as an overarching regulatory framework across sectors. Such legislation should not merely define the permissible use of AI but should establish fundamental principles governing its development and deployment, including ethical standards, risk classification, legal responsibility, institutional supervision, and dispute resolution mechanisms. A comprehensive statutory framework would also provide a stronger legal foundation for sector-specific regulations, including those governing the banking and financial services sectors, while allowing regulatory requirements to be differentiated according to the risks generated by particular AI applications.[76]

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[72] European Commission, "Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts" (Brussels: European Commission, 2021).

[73] Kementerian Komunikasi dan Informatika Republik Indonesia, "Peta Jalan Indonesia Digital 2021–2024" (Jakarta, 2020).

[74] Anna Jobin, Marcello Ienca, and Effy Vayena, "The Global Landscape of AI Ethics Guidelines," *Nature Machine Intelligence* 1, no. 9 (2019): 389.

[75] World Economic Forum, *Artificial Intelligence Governance and Ethics* (Geneva: World Economic Forum, 2020), 21.

[76] O. S. Bolotaeva, "Ethics and Law in the Regulation of Artificial Intelligence," *Vestnik of North-Eastern Federal University History, Political Science. Law*, no. 4 (2024): 7. See also, Rohan Chhatre and Seema Singh, "Policy and Regulatory Frameworks for Financing Smart Healthcare," *Journal of Harbin Engineering University* 45, no. 5 (2024): 367; Pedro Robles and Daniel J. Mallinson, "Catching Up with AI: Pushing toward a Cohesive Governance Framework," *Politics & Policy* 51, no. 3 (2023): 358.

The effectiveness of such a regulatory framework would nevertheless depend upon an adequate institutional oversight mechanism. Indonesia should therefore strengthen institutional capacity for AI supervision, whether through a dedicated supervisory structure or through clearly coordinated authority among existing regulators. Such oversight should encompass algorithmic and technological audits, risk assessment, the development of ethical and technical standards, monitoring of regulatory compliance, and mechanisms through which affected individuals may raise complaints concerning AI-based decisions.[77] The experience of jurisdictions such as Canada and France demonstrates the increasing importance of institutional mechanisms for supervising automated decision-making and developing digital ethics frameworks.[78]

In the banking context, this institutional dimension is particularly relevant because AI governance cannot be separated from the supervisory authority of the Financial Services Authority (OJK), thereby requiring any future national AI governance framework to complement rather than duplicate existing sectoral supervision.[79] Regulatory development should also be based on meaningful cross-stakeholder collaboration. AI governance cannot be formulated exclusively by government institutions because the design, deployment, and societal consequences of AI involve diverse actors and interests. The participation of academia, financial institutions and other private-sector actors, consumer protection institutions, technology communities, and civil society is therefore necessary throughout the regulatory process.[80] Such participation can provide regulators with technological expertise and empirical perspectives while simultaneously strengthening the social legitimacy of AI regulation. In financial services, consumer representation is particularly important because individuals affected by algorithmic decisions frequently possess less information and technological capacity than institutions deploying AI systems. A participatory regulatory process can consequently help ensure that efficiency and innovation are balanced against fairness, accountability, and consumer interests.[81] The development of formal rules must furthermore be accompanied by

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[77] Amitai Etzioni and Oren Etzioni, "Viewpoint: Designing AI Systems That Obey Our Laws and Values: Calling for Research on Automatic Oversight for Artificial Intelligence Systems," *Communications of the ACM* 59, no. 9 (2016): 29.

[78] French National Pilot Committee for Digital Ethics (CNPEN), "Manifesto for Digital Ethics" (Paris, 2020). See also, Government of Canada, "Directive on Automated Decision-Making" (2019).

[79] Rohan Chhatre and Seema Singh, "Policy and Regulatory Frameworks for Financing Smart Healthcare," *Journal of Harbin Engineering University* 45, no. 5 (2024): 369. See also, Pedro Robles and Daniel J. Mallinson, "Catching Up with AI: Pushing toward a Cohesive Governance Framework," *Politics & Policy* 51, no. 3 (2023): 359.

[80] Anthony Wong, "Ethics and Regulation of Artificial Intelligence," in *Artificial Intelligence for Knowledge Management* (Cham: Springer International Publishing, 2021), 11.

[81] UNESCO, "Recommendation on the Ethics of Artificial Intelligence" (Paris: UNESCO, 2021).

improvements in digital literacy and ethical-technological capacity. Regulators, financial institutions, technology developers, and consumers need sufficient understanding of how AI systems operate, the benefits they may provide, and the risks they may generate.[82]

Technological literacy is particularly important for regulators responsible for assessing algorithmic risk and for financial institutions required to implement responsible AI governance. At the same time, consumer literacy contributes to meaningful protection by enabling individuals to understand when AI is involved in financial services and to recognize the potential consequences of automated decision-making. This approach is consistent with UNESCO's emphasis on education, awareness, and capacity-building as important elements of responsible AI governance. Strengthening such capacities therefore complements formal legal protection by enabling regulatory principles to function effectively in practice.

Finally, Indonesia's regulatory development should remain compatible with evolving international AI governance standards. Harmonization does not require the direct transplantation of foreign regulatory models; rather, international instruments can provide normative benchmarks that are adapted to Indonesia's constitutional, institutional, and socio-economic context. Principles developed through instruments such as the OECD AI Principles, international AI initiatives associated with the G20, and UNESCO's Recommendation on the Ethics of Artificial Intelligence provide relevant reference points concerning human-centred AI, fairness, transparency, accountability, safety, and respect for fundamental rights.[7] Alignment with these principles may also facilitate interoperability between Indonesia's regulatory framework and emerging global standards, particularly for financial institutions operating within increasingly interconnected digital markets.

Taken together, these regulatory directions demonstrate that strengthening AI governance requires more than the enactment of a single legislative instrument. An effective framework should combine an overarching legal foundation, sector-specific supervision, institutional accountability, stakeholder participation, technological capacity, and internationally informed ethical standards. For Indonesia's banking sector, these elements should ultimately operate to transform existing AI governance principles into concrete obligations for financial institutions and enforceable protections for consumers. In this sense, regulatory reconstruction should move beyond aspirational ethical commitments toward a legal architecture capable of ensuring that innovation in AI-driven banking remains consistent with fairness, transparency, accountability, and effective consumer protection.

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[82] Fabio Morandín-Ahuerma, "Ten UNESCO Recommendations on the Ethics of Artificial Intelligence," *Normative Principles for an Ethics of Artificial Intelligence* (2023): 86.

The United States adopted a more sectoral and principles-based approach, while Canada implemented the Directive on Automated Decision-Making to promote transparency and accountability in automated decision systems. France, through CNPEN, UNESCO, and the World Economic Forum (WEF), also developed a global AI ethics and governance framework[83].

As such, Indonesia is now moving from a country without a regulatory framework to one that is building the foundations of sectoral AI governance. This is important because the use of AI in banking involves sensitive aspects such as customer profiling, automated credit risk analysis, and potential algorithmic discrimination that could harm consumers.

In this regard, the challenges and opportunities identified above underscore that Indonesia's current AI governance framework remains legally insufficient to ensure legal certainty and consumer protection in the banking sector. However, these limitations also present an opportunity for normative legal reform through the development of a coherent and binding regulatory framework. By aligning policy initiatives with enforceable legal norms, Indonesia can transform AI governance from a predominantly soft-law approach into a legally accountable system capable of addressing the risks posed by AI-driven banking services. This normative direction directly responds to the central legal question of this study and provides a legal basis for strengthening national AI regulation.

## D. Conclusion

The integration of Artificial Intelligence (AI) into Indonesia's banking sector has enhanced operational efficiency and transformed financial decision-making, while simultaneously creating distinct challenges for consumer protection. This study finds that Indonesia no longer faces a complete absence of AI governance. Existing consumer protection, personal data, electronic transaction, and financial-sector regulations, together with OJK's Artificial Intelligence Governance for Indonesian Banking issued in 2025, provide an emerging regulatory foundation for responsible AI deployment. Nevertheless, the principal legal gap lies in the limited transformation of governance principles into enforceable consumer rights and corresponding obligations for banks. In particular, fairness, transparency, accountability, and responsible AI principles have yet to be fully operationalized through specific requirements concerning algorithmic explainability, human oversight, contestability, and effective redress for consumers adversely affected by AI-driven decisions. Comparative analysis of the European Union, Singapore, Japan, Canada, South

[83] Trisnawati, "Artificial Intelligence Governance and Regulation: A Roadmap to Developing Legal Policies for Artificial Intelligence Deployment," *Journal of Governance and Administrative Reform (JGAR)* 5, no. 2 (2024): 188.

Korea, and the United States further demonstrates that effective AI governance does not depend exclusively on the existence of comprehensive AI legislation, but on the combination of risk-based regulatory obligations, institutional oversight, algorithmic accountability, and procedural safeguards for individuals affected by automated decision-making.

Accordingly, Indonesia's regulatory reconstruction should move from principle-based AI governance toward a risk-based, enforceable, and consumer-oriented framework. Rather than replacing the existing regulatory architecture, this transformation should strengthen it by translating ethical principles into measurable legal obligations applicable to banks according to the level and consequences of algorithmic risk. In practical terms, the regulatory framework should establish proportionate risk assessment, meaningful transparency and explainability, human oversight of materially adverse automated decisions, clear institutional accountability, and accessible mechanisms through which consumers can challenge AI-generated outcomes and obtain redress. These requirements may be operationalized through binding OJK regulatory instruments within banking supervision while remaining integrated with Indonesia's broader consumer and personal data protection framework. Theoretically, this study demonstrates that effective consumer protection in AI-driven banking requires a transition from ethical governance principles to legally enforceable algorithmic rights and institutional obligations. Practically, such a framework would strengthen legal certainty, supervisory effectiveness, and consumer trust without unnecessarily restricting financial innovation. Future regulatory development should therefore ensure that technological advancement remains compatible with fairness, accountability, transparency, and the protection of consumer rights within Indonesia's increasingly digitalized banking system.

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