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Prospects for Artificial Intelligence Integration in the Transformation of Indonesia's Legal Ecosystem

Ahmad Faiz Shobir Alfikri[1*], Maziya Rahma Wahda[2],

Ahmad Zulfi Wahyudi[3], M. Azam Rahmatullah[4]

[1]Mahkamah Agung Republik Indonesia, Indonesia
[2,3]Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia
[4]Al-Azhar University, Egypt
*Corresponding author's email: alfikrishober@mahkamahagung.go.id

Abstract

The adoption of artificial intelligence (AI) in the legal sector has driven a significant transformation in Indonesia's legal ecosystem. This study addresses three research questions: (1) How has AI been adopted within Indonesia's legal sector, and what forms does this adoption take? (2) What potential does AI hold for strengthening legal research, the legal profession, and judicial administration? (3) What regulatory framework is urgently required to govern AI use in Indonesia's legal context, and how does it compare with existing international models? Employing a normative legal research methodology with conceptual and statutory approaches, this study conducts a prescriptive analysis of primary legal materials (statutes and regulations), secondary sources (academic literature and case studies), and comparative regulatory models, including the European Union's AI Act. The findings reveal that AI adoption in Indonesia's legal sector has progressed through private-sector platforms: Legal Hero, Legal Pro, and Allex, and through judicial innovation via the Supreme Court's Smart Majelis system. While these developments demonstrate measurable efficiency gains, critical regulatory issues persist: no Indonesian statute directly governs AI's specific characteristics, creating risks of algorithmic bias, erosion of judicial independence, opacity in decision-making, and data privacy violations. This study argues that Indonesia must adopt a risk-tiered, comprehensive AI regulatory framework,

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drawing on lessons from the EU AI Act while adapting to Indonesia's socio-legal context, to ensure that AI strengthens rather than undermines the integrity of the national legal system.

Keywords: *Artificial Intelligence, Judicial Administration, Legal Ecosystem, LegalTech, Regulation*

Introduction

The development of Artificial Intelligence (AI) over the last two decades represents one of the most consequential milestones in the history of modern technology. AI has evolved from a theoretical concept into a pervasive force embedded in algorithms that can learn, process vast datasets, and make automated decisions across virtually every sector, from industry and healthcare to governance and law (Malau et al., 2024). This trajectory is underpinned by major advances in machine learning, deep learning, and natural language processing (NLP), enabling machines to understand human language, recognize patterns, and generate content with near-human accuracy (Sharma & Chanana, 2025). As computational capacity continues to expand, AI is transitioning from a supplementary tool to a strategic partner in modern professional life (AlQaruty et al., 2024; Kacena et al., 2024).

The AI revolution is not exclusive to developed nations; it is expanding rapidly in developing countries, including Indonesia. Government agencies, private enterprises, academics, and the technology sectors are actively deploying AI-based systems across public services, financial applications, industrial automation, and demographic data management (Achmad & Achmad, 2025; Prasetio et al., 2025). This change is supported by increasing internet penetration, the growth of digital startups, and the global impetus to harness technology for improving the efficiency of state governance (Komarudin & Tjenreng, 2025). The decisions made by government and institutional actors in the digital age increasingly rely on AI-driven analytics, making it imperative that legal systems keep pace with these transformations (Alshahrani et al., 2024).

The legal sector is one domain that this AI wave has significantly impacted. Various legal technology (LegalTech) innovations are emerging, offering ease in searching for regulations, contract analysis, document automation, and algorithm-based legal consultation. Researchers and legal practitioners now have access to broader and faster legal information, enabling research, advocacy, and legal administration work to be conducted more efficiently, marking a paradigm shift from activities that were

previously highly manual and time-intensive (Atiyah et al., 2025; Setiawan et al., 2025). The use of AI within Indonesia's legal ecosystem thus presents both immense opportunities and fundamental challenges. On the one hand, this technology can expedite legal processes, expand access to justice, and improve analytical accuracy. On the other hand, without a clear regulatory framework, the use of AI could lead to imbalances, legal uncertainty, and violations of fundamental rights. This complexity makes the discussion regarding the development, potential, and regulatory needs of AI in the Indonesian legal sector increasingly vital and urgent for comprehensive research (Maskanah, 2025; Priyono et al., 2026; Rasyidah et al., 2024).

Previous studies indicate that the nexus between artificial intelligence and law has become a rapidly growing global concern. Alhalalmeh and Al-Tarawneh (2025) highlight the complexity of AI-legal system interactions, emphasizing that integration raises new normative challenges demanding continuous regulatory adaptation. Marwala and Mpedi (2024) further demonstrate that AI not only reshapes legal processes but also transforms how humans conceptualize normative, procedural, and institutional structures within modern law. However, Khalifa and Sabry (2024) draws critical attention to the accelerating gap between the pace of technological development and the capacity of legal systems to respond, a tension that existing scholarship has yet to resolve. Although Aguila et al. (2024) provide an important perspective on AI as a legal service tool and source of ethical dilemmas, their analysis remains largely context-neutral. It does not engage with the specific socio-legal conditions of developing countries such as Indonesia.

In the Indonesian context specifically, scholarly attention has increasingly turned toward the practical and normative dimensions of AI integration within the legal system. Andriati et al. (2024) demonstrate that AI systems in judicial settings can serve only as assistants, not decision-makers, given the irreducible role of moral reasoning and empathy in adjudication, underscoring the limits of algorithmic authority in law. Maskanah (2025) further highlights that despite AI's potential to accelerate civil justice, its integration in Indonesia continues to face structural obstacles, including inadequate infrastructure and regulatory gaps. Setiawan et al. (2025), drawing on empirical data from Indonesian legal practitioners, reveal that while 38% already use AI tools for legal drafting and research, concrete accountability gaps and risks of bias and opacity remain unresolved under existing legal frameworks.

Taken together, these studies, both at the global and Indonesian levels, demonstrate that scholarly engagement with AI and law has substantially matured. Nevertheless, a significant gap remains: while existing studies address individual dimensions of the issue, such as algorithmic limits in adjudication, infrastructure barriers, or practitioner adoption patterns, none integrates these dimensions into a unified analytical framework that simultaneously maps AI deployment, evaluates its legal risks and potential, and prescribes a contextually grounded regulatory response. Existing studies also tend to apply comparative international analysis without systematically translating their implications into Indonesia's socio-legal realities. Although the EU AI Act represents the most advanced global governance framework, its applicability to Indonesia's legal and institutional context has not been rigorously examined. This study fills that gap through an integrated normative-analytical examination benchmarked against the EU AI Act as the leading international regulatory reference.

The novelty of this study lies in three specific contributions: (1) a systematic mapping of AI adoption across both private LegalTech platforms and judicial institutions in Indonesia; (2) a critical legal analysis of the risks, implications, and doctrinal consequences of that adoption; and (3) a prescriptive regulatory proposal that draws on comparative analysis with the EU AI Act while accounting for Indonesia's specific legal and institutional context. Accordingly, this study is guided by the following research question: (1) How has AI been adopted within Indonesia's legal ecosystem, and what forms does this adoption take in both the private LegalTech sector and judicial institutions? (2) What potential does AI hold for strengthening legal research, the legal profession, and judicial administration in Indonesia, and what risks does it simultaneously introduce? (3) What regulatory framework is urgently required to govern AI use in Indonesia's legal context, and how does a comparative analysis with the EU AI Act inform the design of such a framework?

The research aims to comprehensively examine the development of AI utilization within the Indonesian legal ecosystem by mapping the forms of AI implementation currently deployed by the private sector and judicial institutions. Furthermore, this study analyzes the potential of AI to support legal research, legal professionals, and judicial administration, while also identifying the risks, challenges, and ethical implications that may arise from its use. This research also aims to underscore the urgency of establishing a regulatory framework, informed by a comparative analysis of the EU AI Act, that ensures the use of AI in the legal sector proceeds adaptively and in

accordance with the principles of justice, accountability, and legal ethics. Thus, this study is expected to provide both theoretical and practical contributions to policy development, judicial innovation, and the academic literature on AI and law in Indonesia.

Methods

This research employs a normative legal research methodology, which focuses on the analysis of legal norms, principles, and doctrines rather than an empirical social phenomena methodology (Amiruddin & Asikin, 2004). Two interconnected approaches structure the analysis. First, a conceptual approach is applied to unpack and define key theoretical constructs, particularly the concept of artificial intelligence as it functions within legal contexts, and the framework of digital transformation in law. Second, a statutory approach is employed to examine the corpus of Indonesian positive law relevant to AI governance. This includes the Law on Information and Electronic Transactions (UU ITE), the Personal Data Protection Law (UU PDP), and sector-specific Supreme Court regulations on judicial administration and the use of technology.

Data were collected through systematic documentation and purposive selection from two tiers of legal materials (Bahtiar, 2018). Primary legal materials consist of statutes, government regulations, and Supreme Court circulars directly relevant to AI and digital governance. Secondary legal materials include peer-reviewed journal articles, official EU regulatory documents (including the EU AI Act), technical reports from LegalTech platform developers, and academic monographs on AI and law. The selection criteria for secondary sources required: (a) direct relevance to AI in legal or judicial contexts; (b) recency (prioritizing publications from 2020–2025); and (c) credibility of publication venue (peer-reviewed journals or official regulatory documents).

The analytical process proceeds in two stages. The first stage is descriptive-qualitative, in which existing legal frameworks, AI platforms, and judicial innovations are systematically cataloged and described. The second stage applies prescriptive analysis, the normative method characteristic of legal science, in which the descriptive findings are evaluated against established legal principles (such as judicial independence, non-discrimination, transparency, and proportionality) to identify regulatory gaps and formulate doctrinal arguments for regulatory reform (Muhaimin, 2020). Comparing with the EU AI Act serves as the prescriptive benchmark, allowing the study to assess which regulatory principles and mechanisms Indonesia should adopt,

and where context-specific modifications are required. The integration of these stages enables the study to move beyond description toward normative argumentation and policy prescription.

Results and Discussion

Artificial Intelligence Adoption in Indonesia's Legal Ecosystem

The adoption of AI within Indonesia's legal ecosystem has proceeded along two distinct trajectories: private-sector LegalTech innovation and institutional adoption by the Supreme Court. The private sector, driven by market demand and technological opportunities, has rapidly deployed AI solutions to address the informational and procedural needs of legal practitioners and the general public. Meanwhile, the Supreme Court's institutional adoption represents a top-down, governance-oriented approach aimed at strengthening objectivity, efficiency, and accountability within the judicial system. Although both trajectories share a common technological foundation, they differ significantly in their legal functions, risk profiles, and regulatory implications. Understanding these trajectories, therefore, requires not merely cataloging existing platforms but also critically assessing their legal and functional roles, the gaps they address, and the normative implications they entail, particularly in a regulatory environment that has yet to develop AI-specific legal standards.

In the private-sector LegalTech space, three platforms are at the forefront of AI adoption in Indonesia's private legal market. Legal Hero, developed by Hukumku, functions as a generative AI-powered legal assistant that helps users understand regulations, draft legal documents, and navigate legal issues. Its primary role is democratizing access to legal information, particularly for individuals and small enterprises without the financial means to engage professional legal counsel (Pratama, 2025). Legal Pro, developed by Feedloop AI, targets corporate legal departments and advocacy firms and offers AI-powered tools for comparing old and new regulations, analyzing internal company regulations against national legal standards, and extracting legal obligations from regulatory texts (Amelia, 2024). Allex, by Hukumonline, employs a GPT-based model to answer specific Indonesian legal queries, generate regulatory summaries, and identify normative correlations between overlapping statutes (Wahyuni, 2024).

From a legal-functional perspective, these platforms share a common doctrinal character: they operate as AI-assisted legal information services rather than as legal

actors. They automate cognitive tasks, such as pattern recognition, document retrieval, and comparative normative analysis, but do not constitute legal advice in the formal sense. This distinction carries regulatory significance: under Indonesian law, the provision of legal advice is regulated through the Advocates Law (UU No. 18/2003), which requires professional licensure. The question of whether AI-generated legal analysis constitutes legal advice under this statute remains legally unresolved, a gap that existing regulations have not addressed.

In the context of judicial institutional adoption, the Supreme Court's Smart Majelis constitutes the significant AI deployment in Indonesia's legal sector to date. Smart Majelis is an AI-based application that automates the assignment of judicial panels (*majelis hakim*) by processing variables including judge workload, seniority, and case-type expertise (Fachri, 2023; Hasany, 2025). Prior to its implementation, panel assignments relied heavily on manual administrative processes, which were not only time-consuming but also susceptible to subjective considerations that could compromise the principle of impartiality. By replacing this process with a data-driven mechanism, Smart Majelis introduces measurable efficiency into case administration while simultaneously strengthening the internal integrity of the judicial institution (Mulya, 2025). Its deployment signals a broader institutional commitment within the Supreme Court to leverage technology as an instrument of judicial governance reform.

Critically, Smart Majelis represents an AI application in a high-risk domain in the administration of justice, as defined by the EU AI Act. While its current function is limited to case assignment rather than adjudication, the systemic implications are significant: the opacity of its algorithmic logic, the composition of its training data, and the absence of an external audit mechanism constitute latent risks that the current regulatory framework does not address. The transformation of judicial practice demands not only technical adaptation but also philosophical and professional recalibration of the judge's role (Afdal et al., 2025). Comparative experiences from China, Singapore, and Canada further demonstrate that AI deployment in judicial processes, particularly for case classification and preliminary procedural review, can substantially reduce administrative burdens while preserving judicial independence (Satrio et al., 2026).

Table 1 The Use of Artificial Intelligence (AI) in Indonesia's Legal Ecosystem

No.	Platform	Developer	Primary Legal Function	AI Risk Category*

1.	Legal Hero	Hukumku	Legal information access and document drafting assistance	Limited Risk (information provision)
2.	Legal Pro	Feedloop AI	Regulatory compliance analysis and normative comparison	Limited Risk (professional support tool)
3.	Allex	Hukumonline	Legal research automation and jurisprudential correlation	Limited Risk (research assistant)
4.	Smart Majelis	Supreme Court RI	Automated judicial panel assignment	High Risk (judicial administration)

Source: Author Analysis, 2025.

**Risk classification adopted from the EU Artificial Intelligence Act (2024) framework for illustrative comparison*

Potential and Risk of Artificial Intelligence for Legal Research, Legal Practitioners, and Judicial Administration

Artificial intelligence possesses significant transformative potential within the legal domain. In the domain of legal research, AI enables the processing of Big Data derived from court decisions, statutes, academic literature, and regulatory archives at a scale impossible through manual review. NLP-based tools can extract jurisprudential trends, identify regulatory patterns, and flag normative inconsistencies across thousands of documents within seconds (Atiyah et al., 2025; Setyawan, 2025). This capacity fundamentally shifts legal scholarship from a predominantly textual-interpretive methodology to an empirically grounded, data-driven analytical paradigm, with significant implications for legal education and doctrinal research methods.

For legal practitioners, AI's most immediate value lies in automating repetitive high-accuracy tasks: precedent retrieval, contract review, regulatory compliance mapping, and legal issue identification. Tools that employ NLP allow attorneys to redirect cognitive resources from mechanical document review to strategic analysis and client-facing work (Shang, 2022). Empirical evidence supports this trend: Setiawan et al. (2025) found that 38% of Indonesian legal practitioners already utilize AI tools, primarily for legal drafting and research, confirming that AI adoption in the legal profession is no longer merely aspirational but operational. AI also introduces legal prediction capabilities, the ability to model likely judicial outcomes based on historical decision

patterns, which, while not determinative, can inform litigation strategy and risk assessment in complex disputes (Rizki, 2024).

Within judicial administration, AI offers structural efficiency gains. Case classification, document screening, and workload distribution, tasks that currently demand significant clerical and judicial time, can be substantially automated. Decision-support systems can present relevant precedents and regulatory references in structured form, enriching the informational basis of judicial deliberation without displacing judicial authority (Hukom, 2025; Kamila, 2025). AI-driven transparency mechanisms, such as automated publication of court statistics and case processing timelines, also support the public accountability dimension of judicial governance (Hosseini et al., 2023). These gains are further corroborated by findings that AI can accelerate litigation processes and improve the uniformity of court decisions based on precise factual analysis (Maskanah, 2025), while simultaneously enabling judges to undergo the technical and philosophical transformation required by an increasingly data-driven judicial environment (Afdal et al., 2025)

Despite its transformative potential, artificial intelligence also presents significant structural risks and legal implications. The risks associated with AI in legal contexts are not merely technical; they are structurally embedded in the interaction between algorithmic logic and fundamental legal principles. First, algorithmic bias poses a threat to the constitutional principle of equality before the law. AI systems trained on historical legal data inherit the biases embedded in that data, whether rooted in gender, ethnicity, socioeconomic status, or geographic inequality in access to justice. When such bias reproduces itself in AI-generated legal analyses or judicial support outputs, it systematically disadvantages already-marginalized litigants (Kharitonova et al., 2021). Indonesia's legal dataset is particularly susceptible to historical bias, given documented disparities in the quality and consistency of published court decisions across different jurisdictions and time periods.

Second, the opacity of AI systems poses a direct threat to the accountability norm that anchors judicial legitimacy. Indonesian procedural law requires that every judicial decision be supported by transparent legal reasoning (Hosseini et al., 2023). When a judge's deliberation is informed by an AI system whose algorithmic logic is non-auditable, effectively functioning as a black box, then the chain of legal accountability is disrupted. Parties cannot meaningfully challenge recommendations they cannot inspect;

appellate courts cannot assess the procedural validity of AI-influenced decisions; and the public cannot exercise democratic oversight over the judicial process.

Third, excessive reliance on AI recommendations creates conditions for what may be termed judicial atrophy: the gradual erosion of the judge's independent legal reasoning capacity when decision-support tools are routinely deferred to under high caseload pressures. This concern is doctrinally significant because Indonesian law, consistent with the civil law tradition, locates legal authority in the judge as a subject possessing legal conscience (*nurani hukum*), not in any algorithmic output. The displacement of that conscience by automated analysis represents a structural threat to the integrity of the judicial function (Hukom, 2025; Sebayang et al., 2024). This position is empirically reinforced by (Andriati et al., 2024), who confirm that algorithms and mathematical models cannot fully account for the complex qualitative factors inherent in the pursuit of justice, including moral considerations, empathy, and societal context, factors that remain the exclusive domain of human judicial authority.

Fourth, the data-intensive nature of AI legal systems creates systemic vulnerabilities to privacy violations and data security breaches. Legal proceedings frequently involve sensitive personal, financial, and familial information, the unauthorized exposure of which can cause irreversible harm to the parties involved. AI systems operating in legal contexts must process, store, and analyze vast quantities of such data, often without users fully understanding the extent of that processing. The absence of specific AI data governance standards, beyond the general provisions of Indonesia's Personal Data Protection Law, leaves this information inadequately protected within AI-enabled legal systems (Judijanto & Harsya, 2025). Without enforceable standards governing data minimization, retention limits, and access controls specific to AI applications in law, the expansion of AI into legal and judicial processes risks transforming the pursuit of efficiency into a systematic erosion of the right to privacy.

Towards an Artificial Intelligence Regulatory Framework for Indonesia's Legal Sector

The existing Indonesian legal framework applicable to AI consists of general digital governance statutes rather than AI-specific legislation. The ITE Law establishes the legality of electronic transactions and digital content, but was designed for a pre-machine-learning era and lacks provisions addressing autonomous decision-making, algorithmic accountability, or model transparency (Rasyidah et al., 2024). The Personal

Data Protection Law addresses data subject rights and processor obligations. However, it covers only a fraction of the AI risk landscape, specifically the personal data dimension, while leaving unaddressed the governance of non-personal training data, algorithmic bias, and model auditing (Judijanto & Harsya, 2025).

Supreme Court regulations on judicial technology address procedural and administrative modernization but do not establish standards for AI use in judicial functions. This regulatory patchwork produces a systemic gap: AI systems operating in high-risk legal functions, including Smart Majelis, currently do so without a specific legal mandate defining the conditions, limits, and oversight mechanisms for their use (Respati, 2024). Multiple studies corroborate this regulatory vacuum: Andriati et al. (2024) note that AI usage in judicial processes currently lacks explicit regulation; Setiawan et al. (2025) identify concrete vulnerabilities in the ITE Law, PDP Law, and PERMA No. 1/2019; Priyono et al. (2026) demonstrate that Indonesian positive law does not explicitly regulate the validity or liability of AI-based contracts; and Arifin et al. (2025) underscore the absence of specific legal frameworks governing AI in Indonesia's legislative processes.

The European Union's Artificial Intelligence Act (2024) represents the most comprehensive binding AI governance framework in operation. It offers a constructive benchmark for Indonesia's regulatory design, subject to contextual adaptation. The EU AI Act's foundational contribution is its risk-tiered architecture, which classifies AI systems into four categories: (1) unacceptable risk (prohibited systems); (2) high risk (systems subject to mandatory conformity assessment, transparency, and human oversight requirements); (3) limited risk (transparency obligations); and (4) minimal risk (unregulated). Critically for Indonesia's legal sector, the EU AI Act expressly classifies AI systems used in the administration of justice and law enforcement as high-risk applications, subject to the most stringent requirements, including mandatory human oversight, explainability obligations, bias monitoring, and registration with public authorities (Respati, 2024).

Applying this framework analytically to Indonesia's existing AI deployments in the legal sector, as mapped in Table 1, Smart Majelis would clearly fall within the EU AI Act's high-risk category, requiring mandatory conformity assessment, algorithmic auditability, and formal human oversight mechanisms before deployment. This classification is warranted precisely because Smart Majelis directly influences the

composition of judicial panels, a function with immediate consequences for the fairness and integrity of legal proceedings. By contrast, platforms such as Legal Hero, Legal Pro, and Allex, which function as information and research tools rather than decision-making systems, would fall into limited- or minimal-risk categories and primarily require transparency disclosures about AI involvement and its inherent limitations, placing a comparatively lighter regulatory burden on their operators.

However, direct transplantation of the EU AI Act is neither legally appropriate nor institutionally feasible for Indonesia. Key differences in legal tradition, institutional capacity, enforcement infrastructure, and the stage of AI market development require that Indonesia develop its own contextually adapted framework rather than a mimetic copy. Three lessons from the EU model merit adaptation rather than adoption: (1) the risk-tiered classification principle should be retained but calibrated to Indonesia's specific legal functions and risk landscape; (2) the mandatory human oversight requirement for high-risk AI in judicial contexts should be adopted as a core constitutional-level principle; and (3) the EU's emphasis on algorithmic transparency and auditability should inform Indonesia's framework, but the audit mechanism should be designed for Indonesia's institutional capacity, potentially through the Judicial Commission as the oversight body.

Based on the foregoing analysis, this study advances the following prescriptive framework for AI regulation in Indonesia's legal sector. First, definitional clarity. Any AI regulation in the legal sector must begin by establishing a precise operational definition of AI in the legal context, distinguishing between: (a) administrative AI (process automation tools); (b) analytical AI (research and pattern-recognition systems); and (c) decisional AI (systems whose outputs directly inform or substitute for legal determinations). Without this foundational clarity, regulatory instruments risk either over-regulating benign applications or, conversely, failing to capture genuinely high-stakes deployments (Rasyidah et al., 2024). Each category carries distinct legal consequences, triggers different oversight obligations, and requires differentiated regulatory responses tailored to the specific risks each type of system poses within the legal and judicial environment (Priyono et al., 2026).

Second, a risk-tiered regulatory architecture. Indonesia should adopt a risk-classification framework aligned with the EU AI Act's logic and adapted to the local context (European Parliament and Council of the European Union, 2024; Respati, 2024). AI systems used in judicial panel assignment, sentencing support, or prosecutorial

decision-making should be treated as high-risk applications subject to mandatory conformity assessment, algorithmic transparency, and Judicial Commission oversight before operational deployment. AI-based legal information platforms should be classified as limited-risk, subject primarily to disclosure obligations. This tiered approach ensures that regulatory burdens are proportionate, directing the most stringent requirements toward applications where errors carry the gravest consequences for justice, fairness, and individual rights (Rasyidah et al., 2024).

Third, mandatory human oversight for judicial AI. An explicit human-in-the-loop requirement must govern any AI system deployed in judicial functions: no AI output may substitute for the legal reasoning of a judge or other authorized legal official. This principle, consistent with both the civil law tradition's conception of judicial authority and Indonesia's constitutional framework, must be codified as a non-derogable rule rather than merely a policy guideline (Hukom, 2025; Sebayang et al., 2024). Comparative reform models from China, Singapore, and Canada demonstrate that AI should be integrated only in the initial procedural phases while full adjudicative authority remains with judges (Satrio et al., 2026), a position empirically reinforced by findings confirming that ultimate decision-making must remain a human responsibility (Andriati et al., 2024)

Fourth, algorithmic transparency and auditability. AI systems operating in the legal sector must be auditable by designated public authorities. Algorithm logic, training data composition, and model outputs should be subject to periodic independent evaluation to ensure continued accuracy, fairness, and legal compliance (Hosseini et al., 2023). Judicial AI systems should be required to produce explainable outputs, not opaque recommendations, but structured summaries of the normative and factual bases informing the system's analysis. This requirement serves a dual purpose: it enables meaningful judicial oversight of AI-generated recommendations and preserves the parties' procedural right to understand and, where necessary, challenge the analytical basis of any AI-assisted determination within legal proceedings (Setiawan et al., 2025).

Fifth, bias monitoring and correction obligations. AI operators deploying systems in legal functions must conduct mandatory bias assessments prior to deployment and at regular intervals thereafter. Given Indonesia's diverse socio-demographic landscape and the documented inconsistencies in historical legal datasets, the risks of embedded bias are particularly acute (Kharitonova et al., 2021). Datasets must be reviewed for demographic, geographic, and socioeconomic representativeness to ensure that AI

outputs do not systematically disadvantage marginalized groups. Outputs showing statistically significant disparate impacts on protected groups must trigger mandatory review and corrective recalibration before continued operation is permitted, with findings reported to the designated supervisory authority (Setiawan et al., 2025).

Sixth, adaptive regulatory mechanism. AI technology evolves faster than any static legislative instrument can adequately address (Khalifa & Sabry, 2024). Indonesia's AI regulation for the legal sector should incorporate a structured revision cycle with mandatory triennial review, and empower a designated regulatory body, potentially the Ministry of Law and Human Rights, in coordination with the Judicial Commission and the National AI Council, to issue binding technical standards without requiring full legislative amendment. This adaptive architecture mirrors the EU AI Act's delegated-act mechanism and is essential to maintaining regulatory relevance over time, ensuring that the framework evolves alongside technological developments rather than becoming obsolete before its impact is fully realized (Respati, 2024).

Conclusion

The findings demonstrate that AI adoption has proceeded along two tracks: private-sector LegalTech platforms (Legal Hero, Legal Pro, Allex) performing information provision and research automation functions, and the Supreme Court's Smart Majelis system performing judicial panel assignment. These applications differ markedly in their legal risk profiles, with Smart Majelis constituting a high-risk judicial AI deployment that currently operates without a specific regulatory mandate. The analysis reveals that AI has genuine and substantial potential to improve legal research efficiency, practitioner productivity, and judicial administrative performance. However, this potential is structurally shadowed by serious legal risks, such as algorithmic bias threatening equality before the law, black-box opacity threatening judicial accountability, technological over-reliance threatening judicial independence, and data processing practices threatening privacy rights. These risks are not speculative; they are analytically grounded in the mismatch between AI's operational logic and the fundamental principles that underpin Indonesia's constitutional legal order. The comparative analysis with the EU AI Act reveals that Indonesia's current regulatory framework constitutes a systemic deficit: no existing statute addresses the specific characteristics, risks, or governance requirements of AI in legal and judicial functions. Drawing on the EU AI Act's risk-tiered architecture while adapting it to Indonesia's

institutional context, this study proposes a six-component regulatory framework centered on definitional clarity, risk classification, mandatory human oversight, algorithmic transparency, bias monitoring, and adaptive governance mechanisms.

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