

The Use Of Artificial Intelligence In The Court Process In Indonesia: A Review Of Procedural Law On The Aspect Of Evidence And Decision-Making

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Abstract

The rapid development of artificial intelligence (AI) presents significant opportunities to address structural challenges within the Indonesian justice system. This article examines the use of AI in judicial processes from a procedural law perspective, focusing on two key stages: evidentiary proceedings and judicial decision-making. Employing a normative legal method and a comparative analysis with the European Union (EU), the study explores Indonesia's regulatory framework, practical implementation, and emerging legal challenges related to AI integration. Indonesian initiatives such as the Smart Assembly system for judge assignment and the Supreme Court's Early Detection mechanism to reduce decision disparities serve as illustrative case studies. The analysis demonstrates that AI has the potential to enhance administrative efficiency, improve consistency in the application of law, and

assist in the evaluation of electronic evidence and formulation of judicial recommendations. However, its integration raises important procedural concerns, including the admissibility and reliability of digital evidence, algorithmic accountability, risks of data bias, and the possible erosion of independent human judicial reasoning. Unlike the EU, which has established comprehensive ethical guidelines and regulatory safeguards to ensure transparency, non-discrimination, human oversight, and human rights protection, Indonesia lacks a coherent legal framework governing AI use in the judiciary. The article concludes that AI should function as a supportive instrument rather than a substitute for judicial authority. Regulatory reform is therefore necessary to ensure that AI deployment aligns with the principles of fairness, accountability, and dignified justice.

KEYWORDS Artificial Intelligence, Evidence, Judge's Decision.

Introduction

Artificial Intelligence (AI) technology has brought significant changes in various sectors of life, including in the legal field.¹ AI is a computer system designed to imitate human intelligence and thought patterns, able to recognize patterns, analyze data, understand natural language, and make predictions based on existing data. In the era of the Industrial Revolution 4.0, AI integration is expected to increase efficiency and accuracy of performance, including in the process of law enforcement and justice.² Several countries have begun adopting AI to support complex legal tasks. For example, courts in China are reportedly using 'AI judges' to handle certain e-commerce and copyright cases, with the ability to analyze legal documents quickly and accurately. Similar experiments have emerged in Estonia, which is developing a prototype robot judge for

¹ Masinton Pasaribu, 'Penerapan Kecerdasan Buatan (Artificial Intelligence) Dalam Proses Legislasi Dan Sistem Peradilan Di Indonesia', *Jurnal Hukum Dan Bisnis (Selisik)* 10, no. 2 (2024): 2, <https://doi.org/10.35814/selisik.v10i2>.

² Rida Ista Sitepu and Nuchraha Alhuda Hasnda, 'Analysis of the Implementation of E-Litigation with Artificial Intelligence Approach in Procedural Justice and Access to Justice in Pretrial Proceedings', *Perspektif Hukum*, 25 May 2024, 45–71, <https://doi.org/10.30649/ph.v24i1.275>.

small-value disputes, as well as in several other jurisdictions that are using legal chatbots to provide information to the public.³

In the context of the judiciary, AI is expected to enhance process efficiency and ensure the objectivity of decisions. First, AI can reduce the administrative burden on the court, for example by processing case data, automatically compiling files, or managing a database of decisions to streamline legal precedent searches. This is believed to accelerate case resolution and reduce the cost of the judicial process. Furthermore, the digitalization of the judiciary, including the use of AI, is also expected to strengthen transparency and accountability, for example by minimizing administrative errors and closing gaps for irregularities in case handling. Second, as AI is neutral and is not influenced by bribery or external pressure, it has the potential to prevent judge shopping or intervention practices that violate the integrity of the judiciary. In complex cases, AI can help analyze facts objectively and provide recommendations based on consistent legal patterns.

While AI offers many benefits, the application of AI in the judicial process also poses serious challenges. The judicial process is not simply a matter of applying rules to facts, but also involves moral judgment, substantive justice, and empathy for the parties.⁴ A judge is required by Indonesian law to “explore, follow and understand the legal values and sense of justice that live in society”.⁵ These human values and the living sense of justice within society cannot be easily translated into a purely algorithmic system. Judicial adjudication involves not only the mechanical application of statutory provisions, but also the exercise of discretion informed by proportionality, moral reasoning, and sensitivity to social context.

Illustratively, Indonesian criminal justice discourse has long referenced cases involving elderly individuals prosecuted for minor theft motivated by economic hardship, such as the taking of small amounts of food or fruit. Such

³ Zico Junius, ‘AI Hakim: Merevolusi Peradilan Yang Berintegritas, Bermartabat, Dan Meningkatkan Kesejahteraan Hakim’, *Judex Laguens* 2, no. 2 (2024): 141–66, <https://doi.org/10.25216/ikahi.2.2.8.2024.141-166>.

⁴ A. D. (Dory) Reiling, ‘Courts and Artificial Intelligence’, *International Journal for Court Administration* 11, no. 2 (2020): 8, <https://doi.org/10.36745/ijca.343>.

⁵ Law No. 48 of 2009 concerning Judicial Power.

cases underscore the importance of judicial wisdom in assessing mitigating circumstances, weighing culpability against necessity, and ensuring that the outcome reflects substantive rather than merely formal justice. These evaluative and empathetic dimensions of adjudication resist reduction to standardized computational logic and raise fundamental questions about the extent to which algorithmic tools can meaningfully replicate human judicial reasoning.⁶

If AI completely determines decisions based only on standard rules, it risks ignoring aspects of substantive justice and social context. In addition, it raises concern about the issue of transparency and accountability of algorithms. Many AI systems operate like black boxes whose decision-making processes are not easy to understand. This complicates the process of monitoring and correction, for example in the appeal stage, because the affected party cannot examine how AI reaches a recommendation or decision. The trade secrecy of algorithms owned by AI development companies sometimes perpetuates this lack of transparency. The implication is that if there is an error or bias in an AI-assisted decision, it is difficult to determine who is legally responsible.

As a country with a strong civil law tradition, Indonesia is gradually adopting the digitalization of its judiciary. The Supreme Court (MA) has launched a vision of judicial modernization in the 2010-2035 Judicial Reform Blueprint, emphasizing the principles of fast, simple, and low-cost justice. In line with this, various technological innovations have been introduced to improve court services. For example, since 2018, the e-Court system has been introduced for electronic case registration and trials, followed by the e-Litigation feature for remote evidence and witness examination. In 2020, the Indonesian government also issued the 2020–2045 National Artificial Intelligence Strategy as a roadmap for AI development in various sectors. However, the specific application of AI in the judiciary is still in its early stages.

⁶ Imaro Sidqi et al., 'Development of Artificial Intelligence in the Dispute Resolution of Religious Courts', *Jurnal Hukum Islam* 21, no. 1 (2023): 83–112, https://doi.org/10.28918/jhi_v21i1_04; Antonius Sudirman et al., 'The Role of A Judge's Conscience in Deciding Criminal Cases: Practice of Criminal Justice in Indonesia', *Journal of Law and Legal Reform* 6, no. 4 (2025): 2259–92, <https://doi.org/10.15294/jllr.v6i4.34799>.

Despite these developments, Indonesia currently lacks a comprehensive procedural law framework that governs how AI may be used in core judicial functions such as evidentiary assessment and judicial decision-making. Existing discussions in Indonesian scholarship and policy largely focus on technological modernization in general terms, without sufficiently addressing the procedural safeguards, accountability mechanisms, and fair trial standards necessary to mitigate risks when AI tools influence judicial reasoning. This constitutes a significant regulatory and academic gap, particularly given the increasing institutional push toward AI-based judicial reform.

In recent years, pressure to use AI to solve classic judicial problems has increased. Every year, the burden of cases entering the courts continues to increase; 27,512 cases were entered in 2023 (plus 260 cases from the previous year), and increased to 30,763 cases in 2024. This spike in cases has the potential to reduce the quality of decisions because judges are burdened with a high volume of work, while justice seekers are hampered by protracted processes. On the other hand, criticism of disparities in decisions between courts and allegations of judicial corruption have encouraged efforts to increase accountability. For example, since 2021, the Judicial Commission has begun analyzing court decisions digitally to review the consistency of the application of law and ethics by judges. The police have also implemented an AI-based electronic ticketing system (ETLE) to enforce traffic laws automatically without direct interaction between officers and violations.⁷ The success of these initiatives underscores the viability of expanding AI applications in the judicial process.⁸

Between 2023 and 2024, the Supreme Court introduced a number of AI-based programs as part of Indonesia's Smart Court agenda. The Smart Assembly program, for example, is designed to automatically appoint judges

⁷ Fianda Sjojfan Rassat, 'Mobil Tilang Elektronik Polda Metro Dilengkapi Kecerdasan Buatan', Antara News, 28 October 2022, <https://www.antaranews.com/berita/3209273/mobil-tilang-elektronik-polda-metro-dilengkapi-kecerdasan-buatan>.

⁸ Mohammed Abubakr Ahmed et al., 'Evaluating E-Court Systems in Regional Governments in Developing Countries Using Technology Acceptance Model', *Information Development*, 12 February 2024, 02666669241229176, <https://doi.org/10.1177/02666669241229176>.

based on competence, experience, and workload.⁹ The goal is to prevent judicial mafia practices in determining the panel and ensure that cases are examined by judges with integrity. In addition, the Early Detection application was developed to detect similar or related cases throughout Indonesia with a decision matching algorithm. Through analysis of the national decision database, this system aims to reduce disparities in sentencing in cases with similar characteristics. These steps demonstrate the commitment of Indonesian judicial institutions to adopt AI to improve consistency and fairness. However, the use of AI in court must align with the applicable procedural law corridor.¹⁰

This article will discuss the use of AI in Indonesian court processes from a procedural law perspective, with an emphasis on two crucial aspects, namely evidence and decision-making. The discussion covers how AI has been and can be applied in the evidentiary stage in court, as well as the role of AI in assisting or influencing decision-making by judges. To provide a solid foundation, the existing and required regulatory framework will also be reviewed, as well as a comparison with policies and practices in the European Union which are more advanced in regulating AI in the judicial field. This research is expected to provide insights into the opportunities and limitations of the use of AI in Indonesian courts. This research also offers future recommendations to ensure that the integration of these technological innovations does not compromise the principles of a fair trial.

This study uses a normative legal research method with a conceptual and comparative approach. Normative legal research focuses on the analysis of authoritative legal materials such as statutes and regulations, judicial decisions, and scholarly doctrines to examine how AI may be integrated within procedural law frameworks in court processes. In this study, the primary legal materials were selected based on their direct relevance to judicial digitalization and

⁹ *Op.Cit.* Titis Ayu Wulandari, "Mengenal SMART Majelis, Upaya MA Cegah Judicial Corruption," MARINews, February 9, 2026, <https://marinews.mahkamahagung.go.id/berita/mengenal-smart-majelis-upaya-ma-cegah-judicial-corruption-0Rn>.

¹⁰ Aisha Dawaki Farouk and Mukti Fajar, 'Artificial Intelligence-Based System Tools and Their Impact on the Lawyers' Practice', *Jurnal Penegakan Hukum Dan Keadilan* 5, no. 2 (2024): 2, <https://doi.org/10.18196/jphk.v5i2.18415>.

procedural safeguards in Indonesia, including regulations and policy instruments issued by the Supreme Court, national strategies on AI governance, and available court-related initiatives concerning electronic litigation and decision-support systems. Secondary legal materials, such as academic literature, journal articles, and reports on AI and justice, were also reviewed to contextualize the doctrinal debate surrounding AI-assisted adjudication.

The conceptual approach is employed to clarify key procedural law concepts that are central to the research problem, including the legal meaning of electronic evidence, judicial discretion, transparency, accountability, and fair trial guarantees. This approach involves analyzing how these foundational principles operate within Indonesian procedural law and assessing the extent to which they may be challenged or transformed by algorithmic tools in evidentiary evaluation and judicial decision-making.¹¹

Meanwhile, the comparative approach involves examining Indonesia's emerging practices alongside the regulatory and ethical frameworks developed within the European Union. The EU is selected as a comparative jurisdiction due to its relatively advanced governance structure for AI in the judicial sector. The comparative analysis draws on specific sources, including the EU Artificial Intelligence Act, the Ethics Guidelines for Trustworthy AI, Council of Europe and related policy documents addressing algorithmic accountability and procedural safeguards.¹² These materials are analyzed to identify normative standards and regulatory models that may inform the development of an Indonesian framework.

This study is subject to certain limitations. First, the analysis relies primarily on doctrinal and secondary sources, as empirical data such as direct observation of AI implementation in Indonesian courts falls outside the scope of this research. Second, the comparative focus on the European Union may not fully capture alternative approaches adopted in other jurisdictions, and the

¹¹ Ahmad Ahmad et al., *Buku Ajar Metode Penelitian & Penulisan Hukum* (PT. Sonpedia Publishing Indonesia, 2024).

¹² M. Antinucci, 'EU Ethical Charter on the Use of Artificial Intelligence in Judicial Systems with a Part of the Law Being Established on Blockchain as a Trojan Horse Anti-Counterfeiting in a Global Perspective', *Courier of Kutafin Moscow State Law University*, no. 2 (April 2020): 36–42, <https://doi.org/10.17803/2311-5998.2020.66.2.036-042>.

selection of EU materials may reflect normative assumptions about best practices in AI governance. Nevertheless, the comparative and conceptual framework remains valuable in highlighting regulatory gaps and proposing procedural safeguards for the responsible integration of AI in Indonesian judicial processes.

Use of Artificial Intelligence in Evidence

Evidence is the heart of the trial process because it enables judges to assess the material truth of a case. According to Indonesian procedural law, a court decision must be based on valid evidence that convinces the judge of the truth of the parties' arguments. In criminal procedural law, the principle of free assessment of evidence (*vrije bewijsleer*) applies, meaning that judges are not bound mechanically by predetermined evidentiary weight but retain discretion to evaluate the strength of each piece of evidence in a convergent manner to uncover material truth. In civil procedure, evidentiary rules are oriented more toward establishing formal truth and protecting the rights of the parties.¹³

Along with technological developments, evidence is no longer limited to oral testimony or conventional written documents, but increasingly includes electronic evidence such as emails, digital recordings, CCTV footage, and other forms of electronic data. The Electronic Information and Transactions Law (ITE Law) recognize electronic information and/or electronic documents as valid legal evidence equivalent to written evidence, if requirements of authenticity, integrity, and lawful acquisition are satisfied.¹⁴

It is within this evolving evidentiary landscape that AI begins to play a role. However, the use of AI in evidentiary processes raises not only technical questions but also fundamental procedural law concerns: whether AI-generated outputs can be accommodated within Indonesian rules of admissibility, judicial discretion, and due process guarantees. This is where AI comes into play in the

¹³ I. Gusti Bagus Sandhi et al., 'Utilization of Artificial Intelligence (AI) Technology in the Judicial System', *Journal of Law Science* 7, no. 2 (2025): 2, <https://doi.org/10.35335/jls.v7i2.6109>.

¹⁴ Law No. 1 of 2024 on the Amendment of Law No. 11 of 2008 Concerning Electronic Information and Transactions.

proof stage. AI has been utilized in the proof stage especially in the following areas:

- a. Detection and Automatic Collection. AI-based traffic surveillance cameras, such as the Electronic Traffic Law Enforcement (ETLE) system, detect violations in real time and generate digital evidence (photos or videos) without direct officer interaction. AI works consistently 24 hours a day, reducing the potential for deviations (e.g. on-the-spot negotiations between violators and officers).¹⁵ In principle, such outputs may qualify as electronic evidence under ITE Law. As observed in practice, the implementation of ETLE appears to be more efficient in directly imposing fines as a means of reducing traffic violations.¹⁶ Nevertheless, procedural law requires that evidence not only exist in digital form but also be obtained through lawful procedures and remain open to contestation by the accused. The increasing reliance on automated enforcement therefore raises questions about whether defendants have a meaningful opportunity to challenge the reliability of algorithmic detection mechanisms.

Importantly, while ETLE has been widely implemented in practice, Indonesian courts have not developed a consistent body of jurisprudence explicitly addressing the admissibility standards or probative value of AI-generated evidence. This absence of judicial precedent highlights a regulatory gap: AI evidence is operationally used, yet doctrinal safeguards remain under-articulated.

- b. Digital Forensic Analysis. AI can assist in analyzing large volumes of electronic evidence quickly and accurately. Machine learning algorithms may sift through thousands of documents in corruption or cybercrime cases to detect suspicious transaction patterns or identify relevant communication trails. From the perspective of Indonesian criminal

¹⁵ Nur Putri Hidayah et al., 'Artificial Intelligence and Quality of Composition Verdicts in Indonesia: Lessons from New Zealand', *Journal of Human Rights, Culture and Legal System* 4, no. 1 (2024): 101–20, <https://doi.org/10.53955/jhcls.v4i1.175>.

¹⁶ Dessi Perdani Yuris Puspita Sari and Rani Hendriana, 'Pelaksanaan Sanksi Denda E-Tilang Bagi Pelanggar Lalu Lintas', *Völkgeist: Jurnal Ilmu Hukum Dan Konstitusi* 2, no. 1 (2019): 63–71, <https://doi.org/10.24090/volkgeist.v2i1.1974>.

procedure, however, such AI outputs cannot automatically be treated as independent proof. They must still be supported by expert testimony and are subjected to adversarial examination, since procedural fairness requires that evidentiary conclusions remain explainable and verifiable.¹⁷

- c. **Electronic Evidence Management.** AI-based case file management systems can organize and sort digital files by relevance. Natural language processing tools accelerate discovery and fact-finding by highlighting contracts, emails, or prior decisions that relate to a legal issue. While such applications appear administratively beneficial, procedural law must ensure that efficiency does not undermine equality of arms between the parties, particularly where one party may lack access to comparable technological resources.¹⁸

Although AI can play a role, especially in evidence, its application poses several challenges:

- a. **Reliability and Authenticity.** Evidence processed by AI must be reliable and verifiable. Judges can only accept evidence if the acquisition process is legitimate, and the results of the analysis are scientifically valid. Therefore, AI findings generally require verification by digital forensic experts before being used in court. An example of this is a case where an AI facial recognition system mistakenly identified someone as the perpetrator, resulting in the arrest of an innocent person. This incident shows that manual checking of AI results is necessary to ensure accuracy.
- b. **Algorithmic Bias.** AI decisions are highly dependent on the training data used. If the historical data used is biased, for example, when it tends to target a certain group, AI's recommendations can be biased and disadvantageous to that group. For example, facial recognition algorithms have been known to be less accurate for faces from certain racial groups, potentially leading to misidentification. To prevent this, AI models need

¹⁷ Arief Edward, 'Penerapan AI Pada Teknologi Forensik', BRIN - Penerapan AI pada Teknologi Forensik, Badan Riset dan Inovasi Nasional, 15 August 2023, <https://brin.go.id/news/114328/penerapan-ai-pada-teknologi-forensik>.

¹⁸ Ummi Maskanah, 'Artificial Intelligence in Civil Justice: Comparative Legal Analysis and Practical Frameworks for Indonesia', *Jambura Law Review* 7, no. 1 (2025): 225–42, <https://doi.org/10.33756/jlr.v7i1.27786>.

to be tested and monitored to ensure they are free from bias, and human involvement in the process is crucial to review any AI recommendations.¹⁹

- c. Privacy and Legality. Because AI in evidence often involves the collection of personal data, including communication records, location data, and others, it is mandatory to comply with data protection rules. Law No. 27 of 2022 concerning Personal Data Protection requires that the use of personal data be kept secure and limited according to permission.²⁰ AI technology infrastructure must be secure from leaks or unauthorized access including cross-border threats. In addition, evidence obtained through illegal means (violating legal procedures) remains inadmissible in court; even if generated by AI, such evidence must be excluded to maintain due process.²¹

It should be noted that AI cannot replace the role of judges in assessing the strength of evidence. Assessing the credibility of witnesses, the weight of a statement, or the belief in the guilt or innocence of the accused is a very human and contextual realm. AI may be able to help present data and patterns of evidence objectively, but ultimately judges must conduct a substantive assessment of the evidence to determine if it sufficiently proves the charges based on their conscience and the applicable legal rules.²² However, in practice, AI-generated recommendations may create an implicit constraint: judges may defer to algorithmic conclusions due to perceived objectivity or technical authority, even when such outputs are probabilistic rather than determinative. This creates a tension between judicial independence and algorithmic influence.

¹⁹ Hary Abdul Hakim et al., 'AI in Law: Urgency of the Implementation of Artificial Intelligence on Law Enforcement in Indonesia', *Jurnal Hukum Novelty* 14, no. 1 (2023): 122, <https://doi.org/10.26555/novelty.v14i1.a25943>.

²⁰ Djamaludin Djamaludin et al., 'Assessing the Impact of Electronic Court Systems on the Efficiency of Judicial Processes in the Era of Digital Transformation', *Volkgeist: Jurnal Ilmu Hukum Dan Konstitusi*, 27 June 2023, 1–18, <https://doi.org/10.24090/volkgeist.v6i1.8082>.

²¹ Jihyun Park and Dodik Setiawan Nur Heriyanto, 'In Favor of an Immigration Data Protection Law in Indonesia and Its Utilization for Contact Tracing', *Prophetic Law Review* 4, no. 1 (2022): 1–21, <https://doi.org/10.20885/PLR.vol4.iss1.art1>.

²² Mohammad Fadel Roihan Ba'abud and Dodik Setiawan Nur Heriyanto, 'Application of the Principles of Extraterritorial Jurisdiction Towards Personal Data Breach Committed Cross-Country Borders', *Uti Possidetis: Journal of International Law* 5, no. 1 (2024): 106–37, <https://doi.org/10.22437/up.v5i1.28300>.

If AI assessments begin to function as a de facto benchmark for evidentiary strength, the judge's discretionary role risks being subtly reduced, and procedural accountability becomes blurred. Therefore, Indonesian procedural law must clarify that AI tools serve only as supportive instruments, not substitutes for judicial evaluation.

Ultimately, AI cannot replace the role of judges in assessing credibility, contextual justice, or the sufficiency of proof. AI may assist in presenting patterns and organizing data, but the substantive determination of guilt, liability, or evidentiary weight must remain within the authority of the human judiciary. Accordingly, the role of AI in the proof stage should be framed as a digital assistant operating under strict procedural safeguards, with final control resting in the judge's discretion in accordance with the principle of free assessment of evidence.

Artificial Intelligence in Court Decision Making

Artificial intelligence-based applications have increasingly been introduced in Indonesia's judicial system as part of broader court digitalization reforms. Among these innovations are the e-Court system,²³ electronic mediation platforms,²⁴ and the Smart Panel (Smart Majelis) application. These systems are designed primarily to enhance administrative efficiency and institutional transparency. For instance, the Smart Panel application assists in the automatic assignment of judicial panels by considering objective parameters such as judges' experience, area of specialization, competence, and workload distribution. By relying on data-driven allocation, the system aims to reduce the risk of manipulation in panel formation and to promote a more balanced distribution of cases within the judiciary.

²³ Muhammad Arif Kurnia Pratama, Neza Genie Abdella, Rifqah Humairah, and Asep Suherman, "Analisis Pengaruh E-Court Terhadap Percepatan Proses Hukum Acara Pidana di Indonesia," *Jurnal Kajian Hukum dan Pendidikan Kewarganegaraan* 2, no. 1 (October–December 2025): 151–159, <https://jurnal.globalscients.com/index.php/jkhp/article/view/763>.

²⁴ Firman Freaddy Busroh et al., 'Business Disputes Settlement Through Electronic Mediation', in *Proceedings of the International Conference on "Changing of Law: Business Law, Local Wisdom and Tourism Industry" (ICCLB 2023)*, vol. 804, ed. Mirsa Umiyati et al., Advances in Social Science, Education and Humanities Research (Atlantis Press SARL, 2023), https://doi.org/10.2991/978-2-38476-180-7_51.

The adoption of technology within judicial institutions has been driven largely by structural challenges, particularly the growing number of incoming cases compared to the relatively limited number of judges. This imbalance has placed significant pressure on courts to process cases efficiently while maintaining the quality and consistency of judicial decisions. In response, the Supreme Court has pursued various technological innovations, such as e-Court, e-Litigation, electronic mediation, and Smart Panel, as tools to support judicial administration and case management.²⁵ These systems are intended to streamline procedural stages, reduce delays, and optimize judicial workload.

Nevertheless, while technology may significantly improve the efficiency and productivity of judicial work, its role must remain supportive rather than determinative. The integration of AI-based tools into court processes does not diminish the constitutional responsibility of judges to independently assess facts, interpret the law, and render reasoned decisions. Technology may assist in organizing data, managing cases, or providing analytical insights, but it cannot substitute for judicial deliberation, legal reasoning, and accountability. Therefore, the use of AI within Indonesia's judiciary should be carefully framed as an instrument of institutional enhancement, one that strengthens administrative performance without encroaching upon the core principles of judicial independence and fair trial guarantees.

The decision-making stage constitutes the culmination of the judicial process, where the judge determines the outcome of a dispute based on facts and law. Under Indonesian law, judicial decisions must satisfy both legality (conformity with statutory law) and legitimacy (acceptability grounded in justice and reasoned explanation). Judges are required to provide clear legal reasoning in their judgments to ensure transparency and enable appellate review. With the introduction of AI, however, it is necessary to distinguish between different forms of algorithmic assistance. Not all AI tools intervene at the same normative level. Conflating them under a single category of "AI decision-making" obscures important legal distinctions.²⁶

In Indonesia, several initiatives using artificial intelligence have been tried to support decision making:

a. Smart Majelis (2024)

²⁵ Dheya Rahmawati, "Hukum di Era Digital: Pelaksanaan E-Court dan E-Litigasi sebagai Bentuk Efisiensi pada Ruang Lingkup Peradilan Perdata," *Jurnal Hukum Lex Generalis* 5, no. 4 (October 31, 2024), <https://doi.org/10.56370/jhlg.v5i4.537>

²⁶ Dheya Rahmawati, "Hukum di Era Digital: Pelaksanaan E-Court dan E-Litigasi sebagai Bentuk Efisiensi pada Ruang Lingkup Peradilan Perdata"

The Smart Majelis program uses algorithmic criteria, competence, experience, workload, to assign judicial panels.²⁷ Unlike sentencing algorithms, this tool does not determine case outcomes but affects the structural composition of adjudication. From a constitutional perspective, the main concern here is judicial independence under Article 24 of the 1945 Constitution and Article 3 of Law No. 48 of 2009 on Judicial Power. If algorithmic allocation reduces discretionary manipulation (e.g. “judge shopping”), it may strengthen institutional integrity. However, the absence of publicly available evaluation reports, audit mechanisms, or independent oversight assessments complicates the assessment of its effectiveness. No official Supreme Court publication has provided empirical data on whether Smart Majelis has measurably reduced panel manipulation or improved case distribution fairness. Without such transparency, the program remains normatively promising but empirically underexamined.

b. Deteksi Dini (2024)

The Deteksi Dini system compares ongoing cases with similar precedents nationwide to reduce sentencing disparities. This tool operates at the level of jurisprudential pattern analysis. At first glance, such systems appear compatible with Indonesian law, since consistency enhances equality before the law. However, Indonesian courts do not operate under a strict doctrine of binding precedent. Judges retain interpretative freedom within statutory boundaries.

c. Sentencing Algorithm

Several information systems have been developed in Indonesia to assist judges in rendering decisions, for example by facilitating references to previous court judgments or using automated calculation systems in

²⁷ Ekinia Karolin Sebayang et al., ‘Potensi Pemanfaatan Teknologi Artificial Intelligence Sebagai Produk Lembaga Peradilan Pidana Di Indonesia’, *Locus Journal of Academic Literature Review* 3, no. 4 (2024): 317–28, <https://doi.org/10.56128/ljoalr.v3i4.311>.

inheritance cases.²⁸ It can provide consistent verdict suggestions according to case data.²⁹

At the international level, the use of AI in decision-making has also come under scrutiny, particularly regarding issues of due process and transparency. The case of *State v. Loomis* (2016) in Wisconsin, United States, is often cited as a legal guideline.³⁰ In this case, the judge used the recidivism risk assessment results of an AI program (the COMPAS algorithm) when sentencing the defendant. Loomis, the defendant, argued that his due process rights were violated because he could not understand how the algorithm determined he was high risk; the algorithm was considered a “black box” that was closed to the defendant. The Wisconsin Supreme Court ultimately ruled that the use of COMPAS did not violate due process as long as the judge retained full discretion, and the algorithm was only one consideration.³¹

The Loomis case underscores the problem of accountability.³² The public and defendants have the right to know the basis for the decision, while algorithms owned by commercial companies are often protected as trade secrets and are therefore not transparent.³³ This creates a dilemma, because on the one hand AI can provide rich historical data-based analysis, but on the other hand court decisions must be able to be rationally explained by judges without relying solely on “we trust the computer.”³⁴ Meanwhile, China’s experience with the application of “robot judges” in internet courts has improved the efficiency of

²⁸ Anna Dina Kalifia, ‘Sistem Pendukung Keputusan Penerima Hak Waris Dengan Rule Based Expert System Menggunakan Forward Chaining’, *Jurnal Ilmu Komputer Dan Bisnis* 13, no. 1 (2022): 193–209, <https://doi.org/10.47927/jikb.v13i1.309>.

²⁹ Syarifah Lisa Andriati et al., ‘Justice on Trial: How Artificial Intelligence Is Reshaping Judicial Decision-Making’, *Journal of Indonesian Legal Studies* 9, no. 2 (2024), <https://doi.org/10.15294/jils.v9i2.13683>.

³⁰ Anang Riyan Ramadanto et al., ‘Judges Vs. Algorithms: The Future of Justice and Ai’s Challenge to Indonesia’s Courts’, *Tadulako Law Review* 9, no. 2 (2024): 2.

³¹ Han-Wei Liu et al., ‘Beyond State V Loomis: Artificial Intelligence, Government Algorithmization and Accountability’, *International Journal of Law and Information Technology* 27, no. 2 (2019): 122–41, <https://doi.org/10.1093/ijlit/eaz001>.

³² Steve P. Calandrillo et al., ‘The Vested Rights Doctrine: How a Shield Against Injustice Became a Sword for Opportunistic Developers’, *Ohio State Law Journal* 77 (March 2016).

³³ Amy J. Schmitz, ‘Expanding Access to Remedies Through E-Court Initiatives’, SSRN Scholarly Paper no. 3374465 (Social Science Research Network, 18 April 2019), <https://papers.ssrn.com/abstract=3374465>.

³⁴ *Op.Cit.*, Liu et al., ‘Beyond State V Loomis: Artificial Intelligence, Government Algorithmization and Accountability’.

resolving thousands of simple cases online, but has drawn criticism of "black box justice" because its algorithmic process is not transparent to scrutiny.³⁵

The European Union, as a pioneer in AI regulation, provides clear guidelines that AI should not be allowed to completely replace judges in deciding disputes. Council of Europe through European Ethical Charter on the Use of AI in Judicial Systems (2018)³⁶ formulated five ethical principles. Among these is the principle of "under user control" which emphasizes that the final binding decision must still be made by a judge, not handed over to AI.³⁷ This charter also emphasizes the principles of transparency (openness of algorithms), impartiality (impartiality), non-discrimination (anti-discrimination), respect of fundamental rights (respect for fundamental rights), and quality and security (assurance of data quality and system security).³⁸

With this ethical framework, the EU discourages practices such as fully autonomous "robot judges." In fact, the draft EU Artificial Intelligence Act classifies AI systems for law enforcement and the judiciary as high risk, requiring strict requirements regarding transparency, risk management, and human oversight. The draft AI Act also explicitly prohibits AI practices that are considered unacceptable risks, such as China's social scoring system for judging. This step shows a precautionary approach: technology may be used to assist, but the fundamental values of the judiciary (the right to a fair trial, the independence of judges, and the rule of law) must not be sacrificed for the sake of automation.³⁹

In Indonesia, several technical and institutional challenges need to be addressed:

a. Regulatory Framework

³⁵ *Op.Cit*, Andriati et al., 'Justice on Trial: How Artificial Intelligence Is Reshaping Judicial Decision-Making'.

³⁶ Antinucci, 'EU Ethical Charter on the Use of Artificial Intelligence in Judicial Systems with a Part of the Law Being Established on Blockchain as a Trojan Horse Anti-Counterfeiting in a Global Perspective'.

³⁷ Antinucci, 'EU Ethical Charter on the Use of Artificial Intelligence in Judicial Systems with a Part of the Law Being Established on Blockchain as a Trojan Horse Anti-Counterfeiting in a Global Perspective'.

³⁸ Irina Zlătescu and Petru-Emanuel Zlătescu, 'Implementation of the European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Their Environment', *Law Review*, no. Supliment1 (2019): 237–42.

³⁹ Umair Ahmed, 'Implementing Artificial Intelligence (AI) into the Judicial System in Europe: Challenges and Opportunities', *Pakistan Social Sciences Review* 8, no. I (2024), [https://doi.org/10.35484/pssr.2024\(8-I\)02](https://doi.org/10.35484/pssr.2024(8-I)02).

There are no specific regulations governing the use of AI in the judicial process, resulting in a legal vacuum regarding the status and limitations of AI's role. Law Number 11 of 2008 concerning Electronic Information and Transactions and Law Number 27 of 2022 concerning Personal Data Protection regulate information technology in general, but they do not address the use of AI in law enforcement. Supreme Court regulations or guidelines are needed to ensure accountability for the use of AI, for example, algorithm audit obligations and transparency standards, and to clarify that the ultimate responsibility remains with human judges.

b. Human Resource Readiness

There is a need to increase technological literacy for judges and judicial officials. Users of AI systems must understand how this technology works and its limitations to make optimal use of it. Without adequate training, there is a risk that judges will rely too much on AI without critical verification or conversely refuse to use AI due to lack of trust. Intensive training programs and socialization of the ethics of using AI for judicial officials are urgently needed.⁴⁰

c. Infrastructure and Security

Integrating AI into the judicial system requires investment in reliable hardware, software, and networks. Courts must ensure the availability of servers, bandwidth, and technical support to ensure that AI-based services run without interruption. In addition, technical risks such as system errors, cyber-attacks, or infrastructure damage need to be anticipated with backup systems and emergency protocols. Data security and confidentiality of court information must also be maintained in every digital innovation.

Ultimately, the role of AI in decision-making should be focused on being an information enhancer and analytical tool for judges. AI can present decision statistics, jurisprudence patterns, or simulations of the application of rules to facts quickly and objectively. However, as in the evidentiary stage, the final

⁴⁰ Joice Soraya and Zico Junius Fernando, 'AI Judges and the Future Revolution of the Judicial Profession in Indonesia', *The Indonesian Journal of International Clinical Legal Education* 6, no. 3 (2024): 393–426, <https://doi.org/10.15294/iccle.v6i3.15358>.

decision must remain the product of the judge's independent reasoning. Judges can disagree with AI recommendations if there are considerations of justice that they think are more appropriate. This is important to ensure that the presence of AI does not reduce the meaning of human judgment in the judiciary.

AI does not have the empathy, compassion, or qualitative moral insight that humans possess; therefore, it cannot be held accountable in the same way that law enforcement officers are. As a tool, AI should ideally make judges more productive and informed but not be the sole arbiter. With clear regulatory guidance and the precautionary principle, AI can be integrated into the decision-making process to support effective justice without compromising justice itself.⁴¹

The application of AI in the judiciary offers opportunities to increase the efficiency and accuracy of legal analysis. AI can process large amounts of legal and jurisprudential data quickly and objectively to provide immediate verdict statistics, jurisprudential patterns, and simulations of the application of rules to facts. For example, the concept of predictive justice has generated various applications: risk assessment tools to predict the risk of defendants repeating crimes, sentencing analytics that provide comparative analysis of previous decisions, prediction of case outcomes based on precedents, and automation of legal research to find similar decisions.

AI technology with machine learning and natural language processing techniques can recognize patterns from thousands of legal documents and provide algorithm-based recommendations, even predicting case outcomes with a high degree of precision. With this assistance, judges can more easily access data-based insights, such as verdict trends in similar cases or estimated sentencing ranges, quickly and accurately. This has the potential to increase the consistency of decisions and reduce unexplained disparities between cases. In courts in other countries, the use of AI has been shown to accelerate jurisprudential research and improve case management. Studies have noted that in countries with high caseloads, such as India, Brazil, and Indonesia,⁴²

⁴¹ *Op.Cit.*, Andriati et al., 'Justice on Trial: How Artificial Intelligence Is Reshaping Judicial Decision-Making'.

⁴² Khara Jyoti Khimjibhai and Dr. Sarvari Joshi, *Artificial Intelligence and Judicial Efficiency: Accelerating Trial Processes in Indian Courts*, 15 March 2025, <https://doi.org/10.5281/ZENODO.15583828>.

automation of precedent analysis by AI can help reduce case backlogs and speed up the trial process.⁴³ Thus, the main role of AI should be to enrich information and assist analysis for judges, making it easier for judges to sort relevant information and see patterns objectively, without replacing the judge's authority to make final legal judgments.

Although AI can provide valuable input, the final decision must remain the product of the judge's independent reasoning. The principle of judicial independence emphasizes that judges are free from outside influence in deciding cases. Article 3 paragraph (1) of Law No. 48 of 2009 concerning Judicial Power specifies: "In carrying out their duties and functions, judges and constitutional judges are required to maintain judicial independence."⁴⁴ Meanwhile, paragraph (2) of the same Article prohibits "any interference in judicial affairs by other parties outside the judicial authority". Recommendations produced by AI include "extra-judicial parties" who may not bind the judge's decision. The universal principle of justice states that judges must be free from coercion, directives or recommendations from extrajudicial parties, unless expressly permitted by law. Therefore, suggestions or predictions provided by AI must be viewed solely as additional information.

Judges must critically assess the relevance and weight of the AI input themselves, rather than accepting it at face value. The Code of Ethics and Guidelines for Judges' Conduct (KEPPH) is designed to ensure that decisions are made based on objective assessments without being influenced by external factors and oriented towards substantive justice. If AI is used, the potential for judges to rely on the recommendations of the technology could threaten the independence of their judgment.⁴⁵ Therefore, the finalization of the decision must result from panel deliberation and be authored by the judge to ensure human judgment remains the main determinant. In the practice of evidence,

⁴³ Jeremy Ford, 'Brazil: Courts and Lawyers Embrace AI, Fueling Both Efficiency and More Lawsuits', Business and Human Rights Centre, Business and Human Rights Center, 25 September 2025, <https://www.business-humanrights.org/en/latest-news/brazil-courts-and-lawyers-embrace-ai-fueling-both-efficiency-and-more-lawsuits/>.

⁴⁴ Law No. 48 of 2009 concerning Judicial Power.

⁴⁵ Decision of Chief of Supreme Court and Chief of Judicial Commission No. 047/KMA/SKB/IV/2009 and No. 02/SKB/P.KY/IV/2009 on The Code of Ethics and Guidelines for Judges' Conduct.

judges may not submit their judgments to other tools or parties as the principle of conviction interior requires judges to issue verdicts based on beliefs obtained from facts and valid evidence. Likewise, algorithmic judgment from AI may not replace the judge's judicial reasoning. Judges are the highest authority fully responsible for their decision, even though AI is used as an aid. By maintaining this principle, the presence of AI will not reduce the independence and accountability of judges in the trial.

Despite its superior analytical speed, AI has fundamental limitations: it lacks empathy, compassion, or qualitative moral insight like humans. AI works based on algorithms and historical data, without consciousness or conscience. On the other hand, in making decisions, judges not only apply the law mechanically, but also consider conscience, morality, and the humanitarian impact of their decisions. The Supreme Court of the Republic of Indonesia emphasized that judges cannot be replaced by robots, among other things because judges have three dimensions of justice: legal justice, moral justice, and social justice. AI may be able to accommodate the legal justice aspect formally, for example calculating proper sentences based on rules and precedents, but it cannot replace the human judge, particularly regarding aspects of moral justice and social justice that require the judge's intuition, empathy, and experienced wisdom.

Factors such as compassion for the defendant's circumstances, an understanding of local cultural values, or sensitivity to a community's sense of justice can only be experienced by humans. Research also indicates that AI judges tend to be rigid in following legal patterns, while human judges can be influenced by considerations of conscience and sympathy for the party being tried.⁴⁶ This is in line with the view that "AI cannot feel"; therefore, replacing human judges with AI would eliminate the dimension of empathy in the judiciary.⁴⁷

Considering those aspects, AI cannot be held legally accountable. AI systems do not have a legal personhood that can be blamed or sanctioned for a wrong

⁴⁶ David Lat, 'AI Can Assist Human Judges, but It Can't Replace Them (Yet)', Substack newsletter, *Original Jurisdiction*, 9 May 2025, <https://davidlat.substack.com/p/artificial-intelligence-ai-judges-judging-adjudication>.

⁴⁷ David Lat, "AI Can Assist Human Judges, but It Can't Replace Them (Yet)"

decision. Unlike human judges whose decisions can be monitored, corrected through legal efforts, or tested ethically by the Judicial Commission, a “decision” produced by AI does not have a responsible subject. In the end, if an AI recommendation is erroneous, the judge also retains full responsibility for correcting it. International legal experts have even raised philosophical objections: replacing human judges with algorithms is considered a violation of democratic principles in the judiciary, because AI judges are not reciprocally vulnerable to the process and effects of their own decisions and AI does not feel the consequences of its own decisions and cannot be held reciprocally accountable.⁴⁸ Henderson and Brennan-Marquez argue that this loss of role-reversibility makes justice by machine inconsistent with democratic ideals.⁴⁹

Thus, in terms of moral and legal accountability, AI cannot take over the role of a judge. Responsibility for court decisions must rest with a rational and conscientious human actor. This is essential to maintaining public trust: the public can only accept a just decision if they believe it is rendered by a judge who understands the suffering, motives, and human context of the case, qualities that lie beyond the reach of algorithms.

To leverage AI without compromising fairness, clear regulatory guidelines and a precautionary principle are needed in its integration. To date, Indonesia does not have specific legislation on the use of AI in the judicial process. However, the existing legal framework, such as the Judicial Power Law and the KEPPH, has provided general principles that should be used as a guideline. Judicial authorities need to develop technical guidelines on the scope and manner of AI use by judges. These guidelines could, for example, stipulate that AI recommendations are non-binding and must be stated transparently when taken into consideration, prohibit the use of AI in closed deliberations to prevent hidden “intervention”, and require judges to critically verify AI results before they are used.

⁴⁸ Amin Ebrahimi Afrouzi, ‘Role-Reversible Judgments and Related Democratic Objections to AI Judges’, SSRN Scholarly Paper no. 4900913 (Social Science Research Network, 2 September 2022), <https://doi.org/10.2139/ssrn.4900913>.

⁴⁹ Amin Ebrahimi Afrouzi, “Role-Reversible Judgments and Related Democratic Objections to AI Judges”

In addition, controls on algorithmic bias and transparency of AI should be regulated. Algorithms must be audited for discriminatory bias, while ensuring that data processing is fully explainable. This is important to ensure that the use of AI does not violate the principles of impartial justice and upholds equality before the law. Evidence from other countries shows the urgency of this regulation: France, for example, banned the use of predictive analytics to reveal individual judges' decision patterns through Article 33 of the Justice Reform Act in 2019. The ban aims to maintain the dignity and independence of judges by prohibiting the "profiling" of individual judges' decision tendencies that could suppress their freedom. France's move shows that without clear regulations, AI technology can be misused with negative effects on judicial independence.⁵⁰

From an ethical perspective, the Indonesian judicial community also recognizes the need to adjust the code of ethics in the AI era. Anang R. Ramadi Anto emphasized that "clear rules are needed to ensure that this (AI) technology is used in line with the KEPPH principles."⁵¹ This means that the use of AI is subject to the ethics of the judge's profession and must not erode the integrity or accountability of the judge. The issue of accountability deserves serious attention: judges remain the final arbiter of the decision; therefore, they cannot argue that "it was an AI decision". If AI is wrong, the judge will be held accountable. Therefore, all AI output must be considered as electronic *amicus curiae* or mere intellectual input and not "automatic decisions."⁵² In addition, the precautionary principle should be applied in every AI innovation in the judiciary. Although AI provides opportunities for efficiency, preparation of decisions by judges requires the utmost caution. Ethics, confidentiality of deliberations, and professional responsibility should not be compromised in the

⁵⁰ Muamar Azmar Mahmud Farig, 'Penerapan Dan Kritik Atas Penggunaan Teknologi', Penerapan Dan Kritik Atas Penggunaan Teknologi, 2025, <https://marinews.mahkamahagung.go.id/hukum/penerapan-dan-kritik-atas-penggunaan-teknologi-0fu>.

⁵¹ Muamar Azmar Mahmud Farig, "Penerapan Dan Kritik Atas Penggunaan Teknologi", Penerapan Dan Kritik Atas Penggunaan Teknologi"

⁵² Irene Amadea Rembeth and Mirza Marali, 'Meninjau Ulang Peran Amicus Curiae dalam Sistem Peradilan Pidana di Indonesia', hukumonline.com, 2023, <https://www.hukumonline.com/berita/a/meninjau-ulang-peran-amicus-curiae-dalam-sistem-peradilan-pidana-di-indonesia-lt64e34a5d244d2/>.

pursuit of technological convenience. With these steps, strict regulations, adaptive codes of ethics, and a culture of caution AI can be integrated into the decision-making process in a proportional manner.⁵³

AI should ideally make judges more productive and informed, but not the sole arbiter of decisions. Responsible integration of AI will support more effective justice without sacrificing justice itself. Judges can reap the benefits of technology to speed up administration and analysis, while human values are maintained through the central role of judges as final decision makers. Thus, modern justice can combine artificial intelligence with human wisdom, to achieve decisions that are not only fast and consistent, but also truly fair in accordance with the spirit of Pancasila and the constitution.

The use of AI in evidence and court decision-making is like two sides of the same coin. On the one hand, it offers solutions to old obstacles such as slow case handling and disparity in decisions; but on the other hand, it presents new risks that must be anticipated. The key lies in the balance: exploiting the sophistication of AI to support judicial performance, while ensuring that the values of justice are maintained through human control and an adequate ethical-legal framework. With the right approach, AI can serve as a strategic partner for judges and judicial officials in realizing a modern, efficient, transparent judicial process, provided it adheres to the principle of justice for all.⁵⁴

Conclusion

The integration of AI into Indonesia's judicial system offers tangible institutional benefits, particularly in evidentiary management, case allocation, and jurisprudential analysis. Applications such as ETLE, Smart Majelis, and

⁵³ Sukinta Sukinta, 'Konsep Dan Praktik Pelaksanaan Amicus Curiae Dalam Sistem Peradilan Pidana Indonesia', *Administrative Law and Governance Journal* 4, no. 1 (2021): 89–98, <https://doi.org/10.14710/alj.v4i1.89>.

⁵⁴ Yanwiyatono Yanwiyatono and Herman Bakir, 'Strengthening the Role of Artificial Intelligence Technology in the Role of Court Judges in Indonesia', *Edunity: Social and Educational Studies* 3, no. 6 (2024): 410–18, <https://doi.org/10.57096/edunity.v3i6.249>.

Deteksi Dini demonstrate that AI is no longer theoretical but operational within the court environment. When properly supervised, these systems can improve administrative efficiency, reduce delays, support more consistent case distribution, and enhance access to precedent. In a judiciary that is facing increasing caseloads and structural constraints, AI-based tools represent an important technological response to practical challenges.

Nevertheless, the legal implications of AI depend on the level at which it intervenes in judicial processes. Administrative tools affecting panel assignment raise different constitutional concerns compared to analytical tools that influence precedent consistency or sentencing recommendations. The closer AI moves toward shaping substantive outcomes, the greater the tension with principles of judicial independence, individualized reasoning, and due process under Indonesian law. Comparative experiences, including the reasoning in *State v. Loomis* and the European Union's classification of judicial AI as high-risk, demonstrate that algorithmic assistance is acceptable only when human oversight, transparency, and explainability are preserved. In Indonesia, however, a comprehensive regulatory framework governing AI in judicial decision-making remains absent, and publicly available evaluations of Smart Court initiatives are still limited, leaving important accountability questions unresolved.

Accordingly, AI should be positioned as an augmentative instrument rather than an autonomous adjudicator within Indonesian courts. Algorithmic systems may assist judges in processing information and identifying patterns, but final legal determinations must remain the product of independent human reasoning that is transparent, reviewable, and constitutionally accountable. Future regulatory development should therefore establish clear standards for non-binding AI use, algorithmic auditing, bias mitigation, and procedural contestability. With careful calibration and sustained oversight, artificial intelligence can strengthen judicial performance without undermining the foundational principles of fairness, independence, and the rule of law.

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