



# Human Rights Implications of Artificial Intelligence Use in the Indonesian Judicial Process

Adhika Mahindra Satya<sup>1</sup>, Kenneth<sup>2</sup>, Syahban Alvian Hamonangan Harianja<sup>3</sup>, Rivaldo William Krisma Waruwu<sup>4</sup>

<sup>1,2,3,4</sup> Master Program of Law, Faculty of Law, Airlangga University, Surabaya, Indonesia.

**Abstract:** The integration of artificial intelligence into justice systems offers efficiency and access gains, but raises human rights and constitutional concerns. In Indonesia, judicial institutions have begun piloting AI-supported tools for court administration and limited decision support across civil and criminal cases, yet adjudication remains fully human. The absence of a tailored governance framework poses risks to the rule of law, judicial independence, and equality before the law. This study analyses normative weaknesses in Indonesia's regulation of judicial AI and formulates a rights-based governance model. The method used is normative legal research employing statutory and conceptual approaches based on secondary legal materials. The results show that unclear boundaries around AI functions can turn decision-support outputs into de facto determinants of procedural direction, weakening fair-trial guarantees when parties cannot know, challenge, or obtain human review. The findings further indicate that governance must mandate human-in-the-loop control, transparency, and contestability, alongside cybersecurity, operational reliability, audit logging, and bias mitigation. Inclusive access requires hybrid service channels, so digitalisation does not exclude communities in areas with limited infrastructure. The conclusion is that Indonesia should strengthen rights-based governance so that AI improves efficiency without eroding constitutional guarantees and the legitimacy of the rule of law.

**Keywords:** Algorithmic Bias Mitigation; Cybersecurity; Due Process of Law; Human Rights; Judicial Artificial Intelligence.

## 1. Introduction

The use of artificial intelligence in the judicial system marks a fundamental change in the practice of judicial power in Indonesia. Technology initially used to support case administration is now expanding into legal analysis, file management, and trial process support (Bharati, 2024). This development brings hope for increased efficiency and access to justice amid a growing caseload. This reality also raises normative issues, as the judiciary is a constitutional space that determines citizens' rights, obligations, and freedoms. The placement of technology in the judiciary cannot be separated from the values of justice and humanity that underpin national law.

The Indonesian constitutional state places judicial power at the core of law enforcement and justice. Article 24, paragraph (1) of the 1945 Constitution of the Republic of Indonesia states in full: "Judicial power is an independent power to administer justice in order to uphold law and justice." This provision emphasizes that all instruments used in the judicial process must be subject to the principle of judicial independence and may not shift judicial responsibility to other parties, including technological systems. This constitutional guarantee is reinforced by Article 28D paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which states: "Every person shall have the right to recognition, guarantee, protection, and certainty of fair law and equal treatment before the law." This norm establishes procedural justice and equality as the primary constraints on the use of artificial intelligence in the judicial environment.

The meaning of justice in legal philosophy cannot be reduced to statistical calculations detached from social context and human values. John Rawls' theory of

### Correspondence:

Name: Adhika Mahindra Satya

Email: adhi-

ka.mahin.satya-2024@fh.unair.ac.id

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justice as fairness grounds justice on the principles of equal fundamental liberties and protection for the most disadvantaged in the social structure (Afgha Okza Eiranda et al., 2024). The application of artificial intelligence in the judiciary has the potential to create new inequalities if algorithms work based on historical data that contains structural biases. This risk is even greater when the system is closed and does not provide adequate explanations to the parties involved (Borgesano et al., 2025).

The urgency of this research is further reinforced by the increasing use of artificial intelligence, which has the potential to affect the fulfillment of due process of law standards. The right to a fair trial includes the right to be heard, equal opportunity for the parties, and a process free from arbitrariness. Article 27, paragraph (1) of the 1945 Constitution of the Republic of Indonesia states: "All citizens shall be equal before the law and government and shall be required to uphold the law and government without exception." This provision requires that judicial technology not result in differential treatment without a valid basis. In this context, the theory of legal protection put forward by Philipus M. Hadjon is relevant because it emphasizes preventive legal protection through regulation and supervision from the outset, as well as repressive legal protection through mechanisms of objection, review, and correction of decisions in the event of a violation of the rights of the parties (Fahmi et al., 2025).

The legal issues in this study relate to the limits of artificial intelligence's authority in the judicial process and governance designs that guarantee substantive protection of human rights. The use of technology as an administrative and analytical tool must be clearly distinguished from the judicial function of determining a person's legal rights and obligations. The principle of human involvement in decision-making is essential to maintaining judges' independence and the accountability of their decisions. The rule-of-law perspective, as put forward by A.V. Dicey, demands that every form of power be subject to the law and open to scrutiny. Other challenges inseparable from this issue include system security, mitigating algorithmic bias, and ensuring inclusive access to justice for vulnerable groups and communities in areas with limited infrastructure.

The theory of progressive law, as proposed by Satjipto Rahardjo, views law as an institution that favors humanity and substantive justice rather than procedural certainty alone. Law is understood as a living process that is responsive to social change, including technological developments (Andriawan, 2022). This view aligns with the theory of law as a tool of social engineering proposed by Roscoe Pound, which views law as a means to direct planned social change and balance various interests in society (Munir, 2023). Both theories emphasize that artificial intelligence in the judiciary must be under the control of law and human values, not the other way around.

Research conducted by Francesco Borgesano, Annarita De Maio, Pasquale Laghi, and Roberto Musmanno, titled "Artificial Intelligence and Justice: A Systematic Literature Review and Future Research Perspectives on Justice 5.0," focuses on a systematic study of the use of artificial intelligence in the judicial system. with findings that this technology has the potential to improve the efficiency and consistency of judicial processes, but still faces issues of algorithmic bias and transparency limitations that require strengthened human oversight (Borgesano et al., 2025). Research by Wanqiang Wu and Xifen Lin entitled "Access to Technology, Access to Justice: China's Artificial Intelligence Application in Criminal Proceedings" examines the application of artificial intelligence in criminal justice in China, which has been proven to increase the efficiency of case handling, but has implications for the narrowing of procedural participation of defendants and challenges to the accountability of law enforcement officials (Wu & Lin, 2025). Meanwhile, John Zeleznikow's research, entitled "The Benefits and Dangers of Using Machine Learning to Support Making Legal Predictions" highlights the benefits of machine learning as a tool for legal predictions across legal systems while revealing the risks of data bias, the limitations of the ability to explain prediction results, and ethical and governance issues that require active human involvement in legal decision-making (Zeleznikow, 2023).

However, existing studies have not sufficiently examined how the use of artificial intelligence in judicial processes complies with constitutional due process guarantees, nor have they articulated a rights-based governance framework grounded in constitutional law, particularly within the Indonesian legal system. Previous studies have generally discussed the use of artificial intelligence in the judiciary from the aspects of efficiency, consistency, and the risks of bias and transparency limitations, but have not explicitly placed it within the framework of the state's constitutional obligations and the protection of human rights. The novelty of this research lies in its normative legal analysis that examines the application of artificial intelligence in the Indonesian judiciary based on the due process of law standards guaranteed by the 1945 Constitution of the Republic of Indonesia, particularly in relation to fair trials, equality before the law, and the independence of the judiciary. In addition, this study proposes a human rights-based governance framework for artificial intelligence-based adjudication, emphasizing the limits of technological authority, human involvement in decision-making, and bias mitigation and system security. Thus, artificial intelligence is positioned not merely as a technical innovation, but as a constitutional issue that demands state legal accountability.

This research contributes to legal scholarship by advancing a constitutional and human rights-based framework for governing the use of artificial intelligence in the Indonesian judicial process. While existing studies primarily focus on efficiency, consistency, or technical feasibility, this study enriches conceptual discourse by repositioning artificial intelligence as a constitutional issue that directly engages due process of law, judicial independence, and equality before the law. At the level of legal policy, this research formulates a normative governance model that clarifies the limits of technological authority, affirms meaningful human involvement in judicial decision-making, and integrates transparency, contestability, cybersecurity, and bias mitigation as mandatory legal safeguards. Through this approach, artificial intelligence is not treated merely as a tool of judicial modernization, but as a subject of constitutional accountability within the administration of justice.

This study aims to: 1) analyze the fulfillment of human rights standards on due process of law in the implementation of artificial intelligence based justice in Indonesia, particularly in relation to the guarantees of a fair trial, equality before the law, and the independence of the judiciary; and 2) formulate a human rights based governance Design for artificial intelligence based courts so that the system used is secure, reliable, and inclusive. The first objective is to assess the extent to which the use of artificial intelligence continues to place judges as the final decision-makers and does not reduce the rights of the parties in the judicial process. The second objective focuses on formulating a governance framework that affirms the limits of technological authority, human involvement in decision-making, system transparency, bias mitigation, and the strengthening of digital judicial security. This orientation is intended to ensure that the modernization of the judiciary through artificial intelligence strengthens the protection of human rights and the legitimacy of the rule of law in Indonesia.

## **2. Materials and Methods**

This study uses a normative legal research method with a legislative approach and a conceptual approach. The legislative approach is used to analyze the positive legal framework that regulates the administration of judicial power, the protection of human rights, and the use of technology in the judicial system, which is sourced from the 1945 Constitution of the Republic of Indonesia, Law Number 48 of 2009 concerning Judicial Power, Law Number 11 of 2008 concerning Electronic Information and Transactions as amended by Law Number 19 of 2016 and Law Number 1 of 2024, and Law Number 27 of 2022 concerning Personal Data Protection. A conceptual approach was used to examine the theoretical basis for the fulfillment of human rights and the principle of the rule of law in artificial intelligence based justice using A.V. Dicey's theory of the rule of law, John Rawls' theory of justice as fairness, Philipus M. Hadjon's theory of legal protection,

Satjipto Rahardjo's theory of progressive law, and Roscoe Pound's theory of law as a tool for social engineering.

In this normative legal research, the object of analysis is the use of artificial intelligence in the judicial process. In contrast, the unit of analysis consists of constitutional principles of due process of law, equality before the law, and judicial independence. The determination of the object and unit of analysis in this research is based on the constitutional nature of judicial power and its direct implications for the protection of fundamental rights. Artificial intelligence in the judicial process is selected as the object of study because adjudication constitutes a constitutional domain in which state authority determines the rights, obligations, and freedoms of citizens. Unlike administrative or commercial applications of artificial intelligence, judicial use inherently engages due process of law, equality before the law, and judicial independence as guaranteed by the 1945 Constitution of the Republic of Indonesia. Accordingly, the Indonesian judiciary serves as a normatively relevant unit of analysis for examining whether the integration of artificial intelligence complies with constitutional obligations, human rights standards, and the rule of law.

The data types in this study include primary and secondary legal materials. Primary legal materials consist of the 1945 Constitution of the Republic of Indonesia and laws and regulations governing judicial power, human rights, electronic systems, and personal data protection. Secondary legal materials include law textbooks, reputable national and international scientific journals, legal expert doctrine, and prior research on artificial intelligence, digital justice, due process of law, and the protection of human rights. Data collection techniques were carried out through literature studies to identify, inventory, and systematize legal materials relevant to the research problem formulation. This research is descriptive-analytical in nature: it systematically describes the normative framework for the use of artificial intelligence in the judiciary, then critically analyzes it to formulate recommendations for artificial intelligence based judicial governance aimed at protecting human rights and strengthening the rule of law.

### 3. Results and Discussion

#### 3.1. *Fulfillment of Human Rights Standards and Due Process of Law in Artificial Intelligence Based Justice in Indonesia*

##### a. Constitutionality of Due Process of Law in Artificial Intelligence Based Justice in Indonesia

The fulfillment of human rights standards in artificial intelligence based adjudication must be placed within the framework of the constitutionally guaranteed due process of law. Adjudication cannot be understood as a mere administrative mechanism because each stage of examination determines the rights, obligations, and freedoms of citizens. The use of artificial intelligence can only be justified if it strengthens the quality of the process, not if it reduces the space for the parties' defense and participation (Nam Trung, 2025). The presence of technology should not, in itself, give rise to new procedural authorities that operate without judicial control. This starting point places the law as the controller of technology, not the other way around.

The principle of fair trial derives its normative basis from the guarantee of fair legal certainty stipulated in Article 28D, paragraph (1), of the 1945 Constitution of the Republic of Indonesia. The parties have the right to be heard, to be given a reasonable opportunity to present arguments and evidence, and to obtain a process free from arbitrariness. The use of artificial intelligence cannot be considered a hidden assessment mechanism, as its hidden nature negates the right to understand the reasons, assess its relevance, and test the system's output. Procedural justice loses its substance if the output of technology influences the direction of the examination without being known and without being effectively challenged by the parties.

A critical risk emerges when decision-support systems gradually function as de facto determinants of procedural direction. Although formally positioned as advisory tools, algorithmic outputs may shape judicial attention, evidentiary focus, and procedural prioritization in ways that are not transparent to the parties. When judges rely structurally on such outputs due to time constraints, perceived objectivity, or institutional pressure for efficiency, artificial intelligence effectively exercises latent procedural power. This phenomenon undermines the constitutional principle that judicial authority must be exercised through conscious, independent, and accountable human reasoning, rather than through unexamined technological mediation.

The principle of equality before the law demands equal treatment for everyone at all stages of the judicial process, including access to and the impact of technology (Acemoglu & Wolitzky, 2021). Artificial intelligence has the potential to perpetuate invisible discrimination when models reproduce historical biases or use proxy variables that correlate with socioeconomic status, region, or specific vulnerabilities. Therefore, the issue of equality does not end with intent, but centers on the consequences for the parties' positions in the judicial process.

The independence of judicial power is a key pillar in assessing the limits of artificial intelligence use in the judiciary, as stipulated in Article 24 paragraph (1) of the 1945 Constitution of the Republic of Indonesia. This norm emphasizes that decisions must be made on the basis of judges' free and independent considerations, so that artificial intelligence should not replace judges' independent judgment and become merely a ratification of the system's recommendations. The risk of eroding independence arises not only through direct intervention but also through procedural dependence when system outputs are treated as the primary reference without critical examination. Law No. 48 of 2009 on Judicial Authority reinforces this principle by requiring judges to maintain judicial independence and reject interference in judicial matters, including interference mediated by technological Design.

Human rights compatibility test parameters can be formulated as minimum indicators for assessing any artificial intelligence features that enter the judicial process. The openness of the system's use to the parties needs to be ensured so that the right to know and the right to refute can be exercised equally. The opportunity to respond to system outputs must be guaranteed so that the principle of equality of arms does not become a mere formality (Ramos, 2023). The prevention of discrimination requires bias control and impact assessment on different groups, including verification of the data and assumptions used. Adequate explanations of system outputs are needed so that judges and parties can assess the general logic underlying the recommendations, while ensuring that the final decision remains with the judge. Recording the system's use is also necessary so that any technological influence on the process can be tested procedurally in the event of a dispute (Widłak, 2025a).

The integration of fair trial guarantees, equality before the law, and judicial independence shows that the legitimacy of artificial intelligence based adjudication is entirely determined by its compliance with due process of law. Technology can only be accepted if it strengthens the protection of the parties' rights, prevents discrimination based on data and Design, and maintains the judge as the ultimate authority for deliberation and judgment (Xu, 2022b). Human rights compatibility test parameters serve as a minimum threshold so that every technological innovation can still be tested, challenged, and accounted for within the legal framework. Failure to meet these indicators will make artificial intelligence a new source of procedural injustice that contradicts the constitutional mandate. This orientation ensures that judicial modernization goes hand in hand with the strengthening of human rights and the independence of judicial power.

b. Limits of Artificial Intelligence Authority and Procedural Accountability Guarantees in Artificial Intelligence Based Justice

Fulfilling human rights standards in artificial intelligence based adjudication requires strict and measurable limitations on the authority of technology. Artificial intelligence cannot be treated as a neutral actor that is free to determine the direction of the adjudication process, because each stage of the trial is directly related to the constitutional rights of the parties (Sidqi, Nisa, & Daini, 2023). The principle of due process of law requires human control over every decision that affects the determination of legal rights and obligations. Therefore, the distinction between the authority of artificial intelligence as a tool and that of humans as decision-makers is a non-negotiable normative requirement in modern justice.

Fulfilling human rights standards in artificial intelligence-based justice requires strict limitations on the authority of technology to ensure due process of law. The judicial process is not merely an administrative procedure, but a constitutional space that determines the rights, obligations, and freedoms of citizens, as stipulated in Article 24, paragraph (1), of the 1945 Constitution of the Republic of Indonesia. Restrictions on the authority of artificial intelligence need to be established by clearly distinguishing between decision-support and decision-making functions. Artificial intelligence can be used for administrative and technical functions, such as case file management, jurisprudence searches, or file summarization, as long as it does not enter the realm of evidence assessment and verdict determination. Authority that touches on legal reasoning, the weighing of facts, and the determination of case outcomes must remain with judges, who are the holders of constitutional mandates, as stipulated in Article 28D paragraph (1) of the 1945 Constitution of the Republic of Indonesia.

The accountability for the use of artificial intelligence in the judiciary is also directly related to the regulation of electronic systems, because the technology used in the judicial process remains within the system operator's area of responsibility. Law Number 11 of 2008 concerning Electronic Information and Transactions, as amended by Law Number 19 of 2016 and most recently by Law Number 1 of 2024, Article 15 paragraph (1) states: "Every Electronic System Operator must operate the Electronic System reliably and securely and be responsible for the proper operation of the Electronic System." Article 15, paragraph (2) states: "The Electronic System Operator is responsible for the operation of its Electronic System." This provision emphasizes that artificial intelligence systems cannot be positioned as neutral parties without accountability, because the obligations of reliability, security, and responsibility remain attached to the institutions that operate them.

The principle of human in the loop is a requirement to ensure that artificial intelligence does not operate autonomously at stages that affect the legal position of the parties (Mosqueira-Rey et al., 2023). Human involvement must be meaningful, namely, understanding the system's functions and limitations, having the authority to accept or reject the system's output, and performing critical checks (Kabata & Thaldar, 2024). Such involvement helps prevent situations in which the system's recommendations are treated as unquestionable truths. This regulation also maintains the independence of the judge's considerations so that the decision does not become a ratification of the technology's output. Real human oversight also serves as a safeguard, ensuring the parties' rights remain protected when the system produces erroneous or biased outputs.

Transparency and the ability to provide explanations are necessary to ensure the right to defend oneself retains its substantive meaning. The parties need to know when artificial intelligence is used, for what purpose, and to what extent it influences the examination process or the decision-making process, so that the right to refute can be exercised rationally. Article 5 of Law Number 27 of 2022 concerning Personal Data Protection reads: "The Subject of Personal Data has the right to obtain information regarding the clarity of identity, legal basis, purpose of request and use of Personal Data, as well as the accountability of the party requesting the Personal Data." This is reinforced by Article 10 paragraph (1), which states: "The Subject of Personal Data has the right to

object to decision-making actions that are based solely on automated processing, including profiling, which has legal consequences or a significant impact on the Subject of Personal Data.” This provision is relevant because automated processes must still allow for objection and human review.

The certainty of limit on authority, human control, and the openness in the use of the system must be understood as a unified Design for the protection of rights that reinforce each other (Widłak, 2025b). Artificial intelligence will benefit the judiciary as long as it is positioned as a supporting instrument that increases efficiency without reducing the scope for defense, obscuring judges’ responsibilities, or closing the opportunity for correction when errors occur (Xu, 2022a). This construction also ensures that the modernization of the judiciary remains within the constitutional corridor, because every innovation that affects the legal status of citizens must be legally accountable (Dalimunthe, 2020). This orientation ensures that digital transformation does not produce new forms of procedural power that are difficult to test, but rather strengthens justice and public trust in the courts.

The formulation of human rights compatibility test parameters constitutes a normative contribution of this study. These parameters serve as *ex ante* and *ex post* legal control mechanisms to assess whether artificial intelligence features are compatible with constitutional guarantees. By operationalizing due process of law, equality before the law, and judicial independence into concrete indicators, such as transparency, contestability, human oversight, and traceability. This framework enables courts to evaluate technological tools not as neutral infrastructure, but as constitutional actors subject to legal accountability. Accordingly, at the level of judicial practice, these results indicate that judges must remain epistemically independent of algorithmic outputs and treat artificial intelligence strictly as an auxiliary tool. Judicial practice should ensure that parties are informed whenever AI is used, given the opportunity to contest its outputs, and able to request meaningful human review, thereby preserving the substance of fair-trial guarantees.

### ***3.2. Artificial Intelligence Based Judicial Governance Based on Human Rights in Indonesia***

#### **a. Cybersecurity and Operational Reliability in Artificial Intelligence Based Judiciary**

The use of artificial intelligence in the judiciary makes system security a prerequisite for institutional legitimacy, as the integrity of the judicial process depends on data integrity, service resilience, and the ability to demonstrate each stage of digital processing (Osa & Remolina, 2024). Technical vulnerabilities that result in case data manipulation, information leaks, or service disruptions cannot be understood as mere administrative failures, but rather as conditions that have the potential to reduce fair legal certainty and access to justice (Ye et al., 2024). The character of the judiciary as a space that determines the legal rights and obligations of the parties demands higher security standards than ordinary public service systems. Due process of law in artificial intelligence based courts emphasizes that modernization should not introduce new forms of vulnerability that threaten the protection of human rights (Teo, 2025).

The normative basis for the obligation of reliability and security in the implementation of electronic systems has been confirmed in Article 15, paragraph (1) and paragraph (2) of Law Number 11 of 2008 concerning Electronic Information and Transactions, as amended by Law Number 19 of 2016, and, most recently, by Law Number 1 of 2024. The cybersecurity design approach requires the internalization of security from the Design of the architecture and development, through testing, to the maintenance of artificial intelligence based judicial systems (Jada & Mayayise, 2024). Government Regulation No. 71 of 2019 concerning the Operation of Electronic Systems and Transactions provides a firm normative basis through Article 24 paragraph (1), which states: “Electronic System Operators are required to have and implement procedures and means for securing Electronic Systems in order to avoid disruption, failure, and loss.” Article 24 paragraph (2) states: “Electronic System Operators are

required to provide a security system that includes procedures and systems for preventing and responding to threats and attacks that cause disruption, failure, and loss." Reading these provisions in a judicial context directs security design towards role based access control, processing environment segmentation, data encryption, periodic vulnerability testing, and incident response protocols as minimum standards inherent to legal obligations.

Specific security threats to artificial intelligence require differentiated analysis from conventional electronic systems (Malatji & Tolah, 2025). Case data manipulation can occur through changes to electronic files, intrusion into data exchange channels, or intervention in the document processing chain used for model training and inference (Selçuk et al., 2025). Adversarial attacks allow engineered inputs to cause the system to produce erroneous outputs (Millière, 2025). At the same time, data poisoning can undermine model reliability by contaminating the training data, leading the system to produce deviant recommendations (Verde, Marulli, & Marrone, 2021). These risks become crucial when the system's output influences the mapping of legal issues, the grouping of evidence, or the prioritization of files, thereby shifting the examination's focus. At the same time, undetected cyber interference can undermine that testability at the procedural level of proof.

The system's operational reliability ensures that the parties' rights to access the courts are not interrupted by technological failures. Service resilience includes measurable availability, disaster recovery, service continuity plans, and manual fallback procedures when artificial intelligence systems cannot operate. Delays in case examination due to service disruptions can result in procedural losses that may not be fully recoverable, especially in time-sensitive cases or those involving restrictions on rights. Philipus M. Hadjon's theory of legal protection can serve as an operational framework: preventive protection aims to prevent losses through security and reliability Design. In contrast, repressive protection relies on effective correction mechanisms when system disruptions cause procedural losses (Purnomo, 2025). This rationale places reliability not merely as a technical performance target, but as part of the protection of rights.

The guarantee of confidentiality, integrity, authenticity, accessibility, availability, and traceability of electronic information is a prerequisite for accountability in artificial intelligence based justice (Rai et al., 2020). Article 26 paragraph (1) of Government Regulation Number 71 of 2019 states: "Electronic System Operators are required to maintain the confidentiality, integrity, authenticity, accessibility, availability, and traceability of Electronic Information and/or Electronic Documents in accordance with the provisions of laws and regulations." This obligation is intertwined with the personal data protection regime, particularly given that the case involves sensitive data and information that directly affects the parties' legal positions. Article 35 of Law Number 27 of 2022 concerning Personal Data Protection states: "Personal Data Controllers are required to protect and ensure the security of the Personal Data they process by: 1. developing and implementing technical and operational measures to protect Personal Data from interference with the processing of Personal Data that is contrary to the provisions of laws and regulations; and 2. determining the level of security of Personal Data by taking into account the nature and risks of the Personal Data that must be protected in the processing of Personal Data." Article 39 paragraphs (1) and (2) of Law Number 27 of 2022 concerning Personal Data Protection emphasizes: "Personal Data Controllers are required to prevent Personal Data from being accessed illegally." and "The prevention referred to in paragraph (1) shall be carried out by using a security system for Personal Data that is processed and/or processing Personal Data using an electronic system that is reliable, secure, and responsible." This norm places security as a legal obligation to prevent unauthorized access, not merely as a fulfillment of industry standards.

Audit trails and system activity logs are accountability nodes that bridge the technical dimension with procedural evidence. Adequate records enable verification of

when artificial intelligence was used, the model version used, user identity, the data processed, and the outputs generated, so that due-process-of-law testing has a factual basis that can be accounted for (Bernardo et al., 2024). Article 22, paragraph (1) of Government Regulation Number 71 of 2019 states: "Electronic System Operators are required to provide audit trails for all Electronic System operations." Article 22 paragraph (2) states: "The audit trail as referred to in paragraph (1) shall be used for supervision, law enforcement, dispute resolution, verification, testing, and other examinations." Roscoe Pound's legal framework as a tool of social engineering is relevant to positioning the audit trail obligation as an instrument for guiding judicial modernization (Purwanda et al., 2024). Because, modernization that is not bound by accountability mechanisms risks encouraging uncontrolled social change and reducing public trust .

The establishment of minimum standards of security and reliability in artificial intelligence based justice should be formulated as an operational institutional framework rather than merely a statement of commitment. The Design can include security architecture from the design stage that covers access control, segmentation, encryption, and periodic vulnerability testing, along with service continuity plans, disaster recovery, and manual fallback procedures to ensure access to the judiciary is not interrupted. Adequate governance also needs to ensure an audit trail that records user identity, time, and purpose of use; the data processed; model versions; and system outputs, accompanied by an incident response mechanism that preserves electronic evidence and internal reporting flows. Thus, security, reliability, and traceability are the foundations of the legitimacy of artificial intelligence based justice, as only through these foundations can technology strengthen the integrity of the judiciary without reducing the protection of human rights or the accountability of judicial power.

Taken together, the foregoing analysis has direct implications for judicial policy-making. These findings imply that judicial policy development must explicitly regulate the scope, limits, and accountability of artificial intelligence in judicial processes. Courts and judicial authorities should adopt binding internal regulations that distinguish decision-support from decision-making functions, mandate human-in-the-loop oversight, require transparency and auditability of AI use, and integrate cybersecurity and bias mitigation as minimum legal standards rather than optional technical features.

#### b. Mitigating Bias and Ensuring Non-discrimination in Artificial Intelligence based Judiciary

The use of artificial intelligence in the judiciary not only tests technical sophistication but also tests the quality of substantive justice produced by the rule of law (Xu, 2022a). System outputs that appear neutral may contain distortions because they are shaped by data, assumptions, and institutional contexts that do not always represent the experiences of all groups in society (Coppi, Moreno, & Kyriazi, 2021). This risk increases when artificial intelligence is used for functions that influence case readings, such as issue mapping, document grouping, evidence prioritization, or procedural step recommendations. Injustice arising from algorithmic bias ultimately reduces public trust in the courts as an impartial institution (Ferrara, 2023). Therefore, a human rights-based judicial framework must make bias mitigation and inclusive access prerequisites for legitimacy, not merely additional features.

Constitutional limits on equality and the prohibition of discrimination provide a firm basis for the application of artificial intelligence in judicial services. Article 28I paragraph (2) of the 1945 Constitution of the Republic of Indonesia states: "Every person shall have the right to be free from discriminatory treatment on any basis whatsoever and shall have the right to protection against such discriminatory treatment." This provision is intertwined with Article 28D paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which states: "Every person shall have the right to recognition, security, protection, and certainty of just laws and equal treatment before the law." These norms

emphasize that artificial intelligence should not result in disparities in access, process, or outcomes that disadvantage certain groups without a valid and testable basis. This line of demarcation establishes non-discrimination as the primary criterion for assessing the suitability of any system used in the judicial environment.

Sources of bias in artificial intelligence generally originate from data quality, model Design, and the context of its use in judicial organizations (Alvarez et al., 2024). Past decision data can carry structural biases arising from institutional practices, including regional representation imbalances, unequal treatment of certain groups, or uncorrected enforcement patterns. Unbalanced representation also arises when certain groups are rarely recorded in the data, causing the system to fail to recognize relevant social conditions (Vargas-Veleda et al., 2025). Variables that appear technical, such as domicile, occupation, or other socioeconomic indicators, can serve as proxies that produce covert discrimination.

The state's obligation to guarantee equal treatment does not always mean uniform treatment, particularly when inequality in access already exists in the social structure. Article 28H paragraph (2) of the 1945 Constitution of the Republic of Indonesia states: "Every person shall have the right to receive special facilities and treatment to obtain the same opportunities and benefits in order to achieve equality and justice." This norm is in line with Law No. 39 of 1999 on Human Rights, specifically Article 5 paragraph (3), which states: "Every person who belongs to a vulnerable group is entitled to receive special treatment and protection in accordance with their specific needs." This framework affirms the legitimacy of affirmative action in digital judicial services, including the provision of alternative channels, assistance, and simplification of procedures so as not to create new barriers for socially and geographically vulnerable groups. Philipus M. Hadjon's theory of legal protection provides an operational conceptual framework: preventive protection to prevent harm from the Design stage, and repressive protection to restore rights when injustice has already occurred.

The challenge of access to justice is prominent in the context of the three T regions and community groups with limited digital literacy, devices, and connectivity. Article 28C paragraph (1) of the 1945 Constitution of the Republic of Indonesia states: "Every person shall have the right to develop himself/herself through the fulfillment of his/her basic needs, shall have the right to education and to benefit from science and technology, arts and culture, in order to improve his/her quality of life and for the welfare of humankind." This provision is intertwined with Article 28F of the 1945 Constitution of the Republic of Indonesia, which states: "Every person shall have the right to communicate and obtain information for the development of his/her personal and social environment, and shall have the right to seek, obtain, possess, store, process, and convey information using all available channels." This guarantee requires that the digitization of the judiciary does not create service gaps that close opportunities for people with limited infrastructure to bring cases to court. Substantive justice demands that access to technology be understood as a variable of justice, not merely an administrative variable.

The hybrid service Design is a normative consequence to ensure equal access to the courts in diverse social and geographical conditions. Online channels can be maintained for efficiency, but offline channels must be provided in the form of court help desks, legal aid posts, assistance with document completion, and manual submission mechanisms that have equivalent legal effect. The integration of hybrid services also needs to include clear information, straightforward procedures, and service standards that accommodate device or network limitations. Satjipto Rahardjo's progressive legal theory positions law as an institution that favors people and substantive justice, so service Design should not sacrifice vulnerable groups for procedural certainty alone (Khalimy et al., 2023). Roscoe Pound's theory of Law as a Tool of Social Engineering affirms the role of law in directing

planned social change, including ensuring that judicial modernization does not exclude certain groups from access to justice.

A simple human rights impact assessment model can serve as a working tool to systematically test for bias and access before and during use of the system (Janssen et al., 2022). The identification stage maps the functions of artificial intelligence, the data used, the affected groups, and the process steps most sensitive to the risk of discrimination and exclusion. The testing stage includes testing for output disparities across groups, evaluating data quality, and verifying variables that could serve as discriminatory proxies. The monitoring stage requires periodic evaluation, recording of anomalies, and corrective action when patterns of injustice are detected.

The construction of bias mitigation, the prohibition of discrimination, and guarantees of inclusive access indicate that artificial intelligence is appropriate for adoption in the judiciary only to the extent that it expands access to justice and strengthens impartiality, rather than adding new forms of exclusion. Non-discrimination parameters derived from the constitution and sectoral laws require courts to develop services that are accessible, understandable, and testable for their impact on vulnerable groups and communities in areas with limited infrastructure. The absence of bias control and the availability of equal service channels will make technology a source of injustice that contradicts the mandate of equality and justice. This orientation ensures that the modernization of the judiciary through artificial intelligence remains within the bounds of human rights and the rule-of-law objectives.

These normative findings also open avenues for further research, particularly empirical studies examining how human-in-the-loop mechanisms, transparency obligations, and bias mitigation measures are implemented in judicial practice, as well as comparative analyses across jurisdictions to assess the contextual adaptability of rights-based judicial AI governance models.

#### **4. Conclusions**

The use of artificial intelligence in the judiciary can only be constitutionally justified if it is placed within the framework of due process of law, which guarantees the complete protection of human rights. Procedural justice in AI based adjudication requires that fair trials, equality before the law, and the independence of the judiciary not be reduced by automated mechanisms that operate covertly or deterministically. The use of technology that influences the examination process without transparency, adequate room for rebuttal, or meaningful human review has the potential to shift judicial considerations to merely ratifying the system's output. Therefore, restrictions on the authority of artificial intelligence, the application of human in the loop, and the transparency in the use of the system are minimum requirements for judges to remain ultimately responsible for deliberations and verdicts, while ensuring that the modernization of the judiciary does not conflict with the constitutional mandate.

Human rights based governance of AI based justice requires integrating system security, operational reliability, bias prevention, the prohibition of discrimination, and expanded access to justice into a single institutional Design. Security embedded from the Design stage and service reliability are necessary to maintain data integrity, process traceability, and the continuity of access to the judiciary, so that technological failures do not become procedural disadvantages for the parties. At the same time, bias mitigation and impact testing are necessary to prevent the reproduction of structural injustice through data and system Design, while hybrid services are needed so that digitization does not create new barriers for communities with limited infrastructure. The construction of such governance confirms that artificial intelligence is only worth adopting if it strengthens impartiality, expands opportunities for litigation, and increases public trust in the courts, so that digital transformation goes hand in hand with the strengthening of the rule of law and the protection of human rights. In this sense, artifi-

cial intelligence in the judiciary is not a symbol of inevitable progress, but a constitutional choice that must remain continuously open to legal scrutiny, correction, and democratic accountability.

From a scholarly perspective, this study contributes to the development of legal science by repositioning artificial intelligence in the judiciary as a constitutional issue grounded in due process of law, rather than merely a matter of technological efficiency or ethical governance. By formulating human rights-compatibility test parameters, this research offers a normative-analytical framework that operationalizes constitutional principles, such as judicial independence, equality before the law, and fair-trial guarantees, into concrete standards for assessing the legitimacy and limits of artificial intelligence in judicial processes. Building on these findings, future research should pursue empirical and comparative analyses of judicial AI governance, particularly by examining the implementation of human-in-the-loop mechanisms, transparency obligations, and bias mitigation measures within courts, as well as interdisciplinary approaches integrating legal analysis with data governance and algorithmic auditing to operationalize constitutional and human rights principles further.

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