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Algorithmic Due Process in the Age of Generative AI: Developing a Human Rights-Centered Transnational Framework for Judicial Accountability and Human Rights Protection

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ABSTRACT

The rapid integration of generative artificial intelligence (AI) into judicial and quasi-judicial decision-making processes has transformed traditional understandings of procedural fairness, accountability, and legal legitimacy. While existing AI governance frameworks increasingly address transparency, risk management, and human oversight, they remain fragmented and insufficient to safeguard due process rights in transnational legal environments. This study examines how contemporary regulatory regimes respond to the procedural and human rights challenges posed by generative AI and evaluates their capacity to ensure judicial accountability across jurisdictions. Employing a comparative socio-legal mixed-methods approach, the study analyzes regulatory instruments and governance frameworks in the European Union, the United States, Canada, and Singapore, complemented by doctrinal legal analysis and comparative policy evaluation. The findings reveal substantial regulatory inconsistencies regarding explainability, contestability, algorithmic auditing, human oversight, and cross-border accountability. Existing frameworks continue to prioritize risk management while providing limited procedural safeguards for individuals affected by AI-assisted adjudicative systems. In response, this article develops a Human Rights-Centered Transnational Algorithmic Due Process Model that integrates explainability, contestability, human oversight, algorithmic auditability, human rights impact assessment, and cross-border accountability into a unified governance architecture. The study contributes to contemporary debates on AI governance by reconceptualizing algorithmic due process as a transnational legal principle capable of strengthening judicial accountability and protecting fundamental rights in the era of generative AI.

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INTRODUCTION

The rapid advancement of artificial intelligence (AI) has fundamentally transformed contemporary legal systems, particularly through the emergence of generative AI capable of producing text, legal reasoning, predictive assessments, and decision-support outputs that increasingly influence judicial and administrative processes. Unlike earlier rule-based systems, generative AI operates through probabilistic models that generate novel content and recommendations, thereby introducing unprecedented challenges to legal certainty, procedural fairness, and institutional accountability. Governments, courts, and regulatory authorities across jurisdictions have begun experimenting with AI-assisted decision-making tools to improve efficiency, reduce case backlogs, and enhance access to justice. However, the growing deployment of these technologies has also generated significant concerns regarding opacity, bias, discrimination, and the erosion of fundamental procedural safeguards. As AI systems assume a greater role in legal decision-making, ensuring that technological innovation remains compatible with constitutional values, human rights norms, and the rule of law has become a pressing global challenge (Citron, 2008; Pasquale, 2015; Floridi, 2023; Cath, 2018; Dignum, 2019; Nemitz, 2018).

The legal implications of generative AI are particularly significant within judicial and quasi-judicial environments where decisions directly affect individual rights, obligations, and access to remedies. Courts and public institutions increasingly rely on algorithmic tools for case management, sentencing recommendations, legal research, risk assessments, and dispute resolution support. While such

applications promise greater efficiency, they simultaneously raise concerns about whether affected individuals can understand, challenge, or contest AI-assisted decisions. Traditional procedural guarantees developed under due process doctrines were designed for human decision-makers whose reasoning could be scrutinized through established legal mechanisms. Generative AI systems challenge these assumptions because their outputs are often produced through complex computational processes that resist meaningful explanation and external verification. Consequently, the integration of AI into adjudicative processes requires a reconsideration of how procedural justice, accountability, and transparency should operate within digitally mediated legal environments (Coglianese & Lehr, 2016; Wachter et al., 2017; Barysė & Sarel, 2024; Hildebrandt, 2015; Zarsky, 2021).

Existing scholarship has made substantial contributions to understanding the relationship between algorithmic governance and legal accountability. One stream of literature focuses on algorithmic transparency and explainability, emphasizing the limitations of opaque decision-making systems and the difficulties of establishing meaningful oversight over automated processes (Ananny & Crawford, 2018; Edwards & Veale, 2018; Kaminski, 2021; Coglianese & Lehr, 2019). A second body of scholarship examines algorithmic accountability and procedural safeguards, arguing that transparency alone is insufficient to guarantee fairness and that institutional mechanisms for auditing, contestation, and oversight are equally necessary (Kroll et al., 2017; Pasquale, 2020; Koene et al., 2019; Veale et al., 2018; Lodge & Mennicken, 2021). A third stream investigates the emerging regulatory architecture governing AI, including the European Union AI Act, OECD AI principles, UNESCO's Recommendation on the Ethics of Artificial Intelligence, and other international governance initiatives that seek to balance innovation with rights protection (Veale & Borgesius, 2021; UNESCO, 2021; OECD, 2024; Jobin et al., 2019; Butcher & Beridze, 2019; Cihon, 2019; Gstrein et al., 2024; Ebers, 2025). Although these studies provide important insights, they generally address AI governance through separate analytical lenses, focusing either on accountability, ethics, transparency, or regulation without adequately integrating these dimensions into a comprehensive due process framework.

Despite the growing sophistication of AI governance scholarship, three significant research gaps remain. First, much of the existing literature focuses on predictive algorithms and automated decision-making systems rather than generative AI models whose outputs are dynamic, adaptive, and often difficult to trace. Second, contemporary regulatory frameworks remain fragmented across jurisdictions, producing divergent standards regarding explainability, contestability, human oversight, and accountability. Third, existing studies rarely conceptualize algorithmic due process as a transnational legal principle capable of protecting human rights across multiple regulatory systems. Consequently, current scholarship lacks a coherent framework that systematically connects judicial accountability, procedural justice, and human rights protection within the context of generative AI-assisted adjudication. This article addresses these gaps by arguing that algorithmic due process should be reconceptualized as a human rights-centered transnational legal principle that extends beyond transparency requirements and incorporates broader procedural safeguards necessary for the governance of generative AI.

This article develops a Human Rights-Centered Transnational Algorithmic Due Process Model (HR-TADP Model) that integrates six interdependent dimensions: explainability, contestability, human oversight, algorithmic auditability, human rights impact assessment, and cross-border accountability. Drawing upon technological due process theory, algorithmic accountability scholarship, and algorithmic regulation theory, the study advances a novel analytical framework for evaluating whether emerging AI governance regimes provide adequate procedural protections within judicial and quasi-judicial contexts. Unlike existing approaches that focus primarily on compliance obligations or technical transparency measures, the proposed framework places fundamental rights and procedural justice at the center of AI governance. In doing so, the article contributes to ongoing debates concerning the future relationship between law, technology, and democratic governance while offering a normative foundation for evaluating AI-assisted decision-making across legal systems.

Accordingly, this study seeks to answer three interrelated research questions: How do contemporary AI governance frameworks address algorithmic due process within judicial and quasi-judicial decision-making? What regulatory and institutional gaps remain in protecting fundamental rights against the risks posed by generative AI systems? and How can a transnational framework strengthen judicial accountability and human rights protection across jurisdictions? To answer these questions, the article employs a

comparative socio-legal analysis of AI governance frameworks in the European Union, the United States, Canada, and Singapore. Through this comparative approach, the study aims to contribute both theoretically and practically to the development of a coherent legal architecture capable of governing generative AI while preserving the foundational principles of due process, accountability, and human rights protection.

RESEARCH METHOD

This study employs a qualitative mixed-methods socio-legal research design that combines comparative legal analysis, doctrinal legal research, and qualitative policy evaluation to examine the emerging relationship between algorithmic due process, judicial accountability, and human rights protection in the age of generative artificial intelligence (AI). The research was conducted between January and May 2026 and focuses on four jurisdictions representing distinct models of AI governance: the European Union, the United States, Canada, and Singapore. These jurisdictions were selected through purposive case selection because they reflect different regulatory philosophies and institutional approaches toward AI governance (Calo, 2017; Dignum, 2019). The European Union represents a comprehensive risk-based regulatory model through the AI Act, the United States illustrates a decentralized and sector-specific governance approach, Canada provides a rights-oriented regulatory framework emphasizing responsible AI and human rights protections, while Singapore represents a governance model grounded in soft-law instruments and adaptive regulatory innovation. This comparative design enables a systematic assessment of how different legal systems address procedural fairness, accountability, transparency, and human rights concerns arising from the deployment of generative AI within judicial and quasi-judicial decision-making environments.

The study relies exclusively on qualitative legal and policy data derived from both primary and secondary sources. Primary sources include international legal instruments, national legislation, regulatory frameworks, policy guidelines, judicial reports, government publications, and institutional documents relating to AI governance. Key materials examined include the European Union AI Act, the Council of Europe Framework Convention on Artificial Intelligence and Human Rights, the OECD Framework for the Classification of AI Systems, UNESCO's Recommendation on the Ethics of Artificial Intelligence, the Canadian Artificial Intelligence and Data governance framework, and Singapore's Model AI Governance Framework. Secondary sources consist of peer-reviewed journal articles, scholarly books, research reports, and academic commentaries published between 2020 and 2026, with particular emphasis on literature addressing algorithmic accountability, technological due process, explainability, AI governance, judicial ethics, and human rights law (Mantelero, 2022; Floridi et al., 2020). Data collection was conducted through systematic document analysis, whereby legal texts and governance instruments were identified, categorized, and reviewed according to their relevance to procedural safeguards in AI-assisted decision-making processes.

Data were analyzed using a three-stage analytical framework. First, doctrinal analysis was employed to identify and interpret legal norms, procedural guarantees, and accountability mechanisms embedded within the selected regulatory instruments. Second, comparative legal analysis was conducted to evaluate similarities, divergences, strengths, and regulatory gaps across the four jurisdictions. Third, thematic socio-legal analysis was applied to synthesize findings into broader patterns concerning algorithmic due process and human rights protection. The analysis was guided by three complementary theoretical frameworks: Technological Due Process Theory (Citron, 2008), which emphasizes procedural safeguards in technology-mediated decision-making; Algorithmic Accountability Theory (Kroll et al., 2017; Pasquale, 2020), which focuses on oversight, auditability, and institutional responsibility; and Algorithmic Regulation Theory (Yeung, 2021; Yeung & Lodge, 2019), which examines how algorithmic systems reshape governance structures and regulatory practices. Through triangulation across these theoretical perspectives and comparative legal findings, the study develops a Human Rights-Centered Transnational Algorithmic Due Process Model (HR-TADP Model) designed to evaluate and strengthen procedural safeguards for generative AI-assisted judicial decision-making across jurisdictions. This analytical strategy enhances the validity, reliability, and theoretical robustness of the study while ensuring that the proposed framework is grounded in both contemporary legal developments and broader socio-legal debates concerning AI governance.

RESULTS AND DISCUSSION

Reconstructing Due Process in the Generative AI Era

The emergence of generative artificial intelligence has fundamentally altered the institutional context in which procedural fairness and legal accountability operate. Traditional due process doctrines were developed on the assumption that legal decisions are made by identifiable human actors whose reasoning can be reviewed, challenged, and corrected through established procedural mechanisms. Judicial accountability has historically depended upon transparency of reasoning, evidentiary evaluation, and the possibility of appellate review. However, generative AI systems challenge these assumptions because they produce outputs through probabilistic computational processes that are often inaccessible to affected individuals, legal practitioners, and even system developers.

The concept of technological due process introduced by Citron (2008) remains highly relevant in understanding this transformation. Citron argued that technology-mediated decision-making requires procedural safeguards equivalent to those traditionally associated with administrative and judicial decision-making. While this argument originally emerged in the context of automated administrative systems, the rapid diffusion of generative AI significantly expands its relevance. Unlike earlier algorithmic systems that relied primarily on predefined rules and structured datasets, generative AI systems generate novel responses, legal analyses, and recommendations based on complex machine-learning architectures. Consequently, procedural safeguards designed for conventional automated systems may no longer be sufficient to address emerging risks associated with AI-assisted adjudication.

The challenge becomes particularly significant when generative AI is integrated into judicial and quasi-judicial environments. Recent developments indicate that courts and legal institutions increasingly employ AI-based tools for legal research, document drafting, case prioritization, sentencing support, and predictive analytics. Although these technologies can improve efficiency and reduce administrative burdens, they simultaneously create new forms of procedural opacity. A litigant may receive a decision influenced by an AI-generated recommendation without possessing meaningful knowledge regarding how the recommendation was produced, what data informed the output, or whether embedded biases affected the outcome. Such circumstances undermine fundamental procedural values including transparency, equality before the law, and the right to effective remedies.

Existing governance frameworks continue to rely heavily on transparency as the primary mechanism for addressing algorithmic risks. However, transparency alone is insufficient to guarantee procedural fairness. Ananny and Crawford (2018) demonstrate that transparency does not necessarily produce meaningful accountability because complex technological systems often remain incomprehensible even when information is formally disclosed. Similarly, Wachter et al. (2017) argue that legal demands for explanation may not adequately address structural concerns regarding automated decision-making. These critiques suggest that algorithmic due process cannot be reduced to a simple right to explanation. Instead, it requires a broader institutional architecture capable of ensuring oversight, contestation, auditing, and accountability throughout the lifecycle of AI-assisted decision-making.

The findings of this study indicate that generative AI necessitates a conceptual reconstruction of due process itself. Rather than viewing due process solely as a procedural guarantee governing human decision-makers, contemporary legal systems must recognize algorithmic due process as a multidimensional governance principle applicable to hybrid human-machine decision environments. This reconstruction requires procedural safeguards that extend beyond transparency to include explainability, contestability, human oversight, auditability, and human rights protection. Accordingly, algorithmic due process should be understood not merely as a technological compliance requirement but as a fundamental legal principle essential to preserving legitimacy and trust within digitally mediated justice systems.

Comparative Assessment of Judicial AI Governance Frameworks

Comparative analysis of the European Union, the United States, Canada, and Singapore reveals significant differences in how jurisdictions conceptualize and regulate algorithmic accountability within judicial and quasi-judicial contexts. Although all four jurisdictions recognize the importance of responsible AI governance, their regulatory approaches reflect distinct legal traditions, institutional priorities, and normative assumptions concerning the relationship between technology, law, and human rights.

The European Union currently provides the most comprehensive legal framework through the AI Act. The European model adopts a risk-based regulatory architecture that classifies AI systems according to their potential impact on fundamental rights, safety, and democratic values. High-risk AI systems are subject to extensive obligations including documentation requirements, transparency measures, human oversight mechanisms, and conformity assessments. Importantly, the EU approach explicitly links AI governance to fundamental rights protection, thereby positioning procedural safeguards within a broader constitutional framework. Nevertheless, the findings suggest that the AI Act continues to prioritize risk management and regulatory compliance rather than establishing a fully articulated theory of algorithmic due process. Procedural guarantees remain fragmented across multiple regulatory provisions and do not always provide affected individuals with effective mechanisms for contesting AI-assisted decisions (Cantero Gamito & Marsden, 2024; Ho & Caals, 2024; Söderlund & Larsson, 2024).

The United States adopts a markedly different approach characterized by sector-specific regulation and institutional decentralization. Rather than relying on a comprehensive AI statute, the United States addresses algorithmic accountability through a combination of administrative law principles, anti-discrimination rules, consumer protection measures, and agency-specific guidance. This approach offers flexibility and encourages innovation but often produces regulatory inconsistency across sectors. In judicial contexts, procedural protections depend heavily upon existing constitutional doctrines and institutional practices rather than dedicated AI governance legislation. As a result, accountability mechanisms frequently emerge through litigation and judicial interpretation rather than ex ante regulatory safeguards.

Canada represents an intermediate model emphasizing responsible AI governance and human rights protection. Canadian regulatory initiatives increasingly recognize the importance of algorithmic impact assessments, transparency obligations, and ethical governance principles. Compared with the United States, Canada places greater emphasis on public accountability and rights-based oversight. However, implementation challenges remain, particularly concerning the operationalization of procedural safeguards within complex AI systems. Existing governance instruments often articulate broad normative principles without specifying detailed procedural mechanisms for contestability, review, and remediation.

Singapore provides a contrasting example of adaptive governance based primarily on soft-law instruments and collaborative regulatory frameworks. Rather than imposing extensive legal obligations, Singapore's governance model emphasizes industry guidance, ethical principles, regulatory experimentation, and stakeholder cooperation. This approach has proven effective in promoting innovation and fostering regulatory flexibility. However, reliance on voluntary compliance may create uncertainty regarding enforcement, accountability, and rights protection in high-stakes judicial environments where procedural safeguards must be legally enforceable rather than merely aspirational. Table 1 summarizes the principal characteristics of the four governance models.

Table 1. Comparative Assessment of Judicial AI Governance Frameworks

Dimension	European Union	United States	Canada	Singapore
Regulatory Logic	Risk-Based	Sectoral	Rights-Based	Adaptive Governance
Legal Binding Force	Strong	Moderate	Moderate	Limited
Human Rights Orientation	High	Moderate	High	Moderate
Explainability Requirements	Strong	Variable	Moderate	Moderate
Contestability Mechanisms	Moderate	Variable	Moderate	Limited
Human Oversight Requirements	Strong	Variable	Moderate	Moderate
Algorithmic Auditing	Strong	Emerging	Emerging	Limited
Cross-Border Governance Capacity	Moderate	Low	Moderate	Low

The comparative findings reveal a common pattern across jurisdictions. Although substantial progress has been made in regulating AI systems, no jurisdiction currently provides a comprehensive framework capable of integrating procedural fairness, judicial accountability, and human rights protection within a unified governance architecture. Existing frameworks remain fragmented and often prioritize technical compliance, innovation management, or risk mitigation rather than establishing a coherent conception of algorithmic due process. This regulatory fragmentation becomes particularly problematic in

transnational contexts where AI systems increasingly operate across multiple jurisdictions with differing legal standards and accountability mechanisms.

Human Rights Risks of Generative AI in Judicial Decision-Making

The comparative analysis reveals that the deployment of generative AI within judicial and quasi-judicial environments creates a distinct category of human rights risks that extend beyond the concerns traditionally associated with automated decision-making systems. Unlike predictive algorithms that primarily classify, rank, or estimate outcomes, generative AI systems produce legal interpretations, recommendations, summaries, and reasoning structures that may directly influence judicial judgment. This shift from predictive automation to generative reasoning introduces new challenges for procedural fairness because affected individuals may encounter decisions shaped by AI-generated outputs whose internal logic remains inaccessible and difficult to verify.

One of the most significant risks concerns procedural opacity. Procedural legitimacy within legal systems depends on the ability of parties to understand how decisions are reached and to challenge reasoning that appears erroneous or unlawful. Generative AI systems often operate through large-scale neural architectures that generate outputs without providing a transparent chain of legal reasoning. Consequently, individuals may be unable to identify whether an AI-generated recommendation relied upon inaccurate information, biased assumptions, incomplete legal authorities, or flawed interpretative methods. Such opacity undermines core due process guarantees and weakens public confidence in legal institutions.

A second concern involves algorithmic discrimination and unequal treatment. Existing scholarship demonstrates that algorithmic systems frequently reproduce social inequalities embedded within training data, institutional practices, and historical decision-making patterns (Eubanks, 2018; Selbst et al., 2019; Binns, 2020; Wachter et al., 2021). Generative AI may amplify these concerns because its outputs are not limited to numerical classifications but may generate substantive legal analyses that indirectly reinforce discriminatory assumptions. The risk is particularly acute in judicial contexts involving immigration, criminal justice, welfare eligibility, and administrative adjudication, where biased outputs can significantly affect access to rights and remedies. From a human rights perspective, such outcomes threaten principles of equality before the law, non-discrimination, and equal protection.

A third risk concerns the dilution of human accountability. Judicial systems derive legitimacy from the principle that identifiable decision-makers remain accountable for legal outcomes. Generative AI complicates this principle by creating multiple layers of responsibility involving judges, court administrators, software developers, technology vendors, and regulatory authorities. When harmful outcomes occur, determining who should bear legal responsibility becomes increasingly difficult. This diffusion of responsibility creates accountability gaps that existing legal frameworks are often ill-equipped to address.

The findings further indicate that generative AI creates cross-border governance challenges. AI systems are frequently developed, trained, deployed, and maintained across multiple jurisdictions. Consequently, procedural safeguards available in one jurisdiction may not apply to individuals affected by AI-generated outputs originating elsewhere. This transnational dimension highlights the inadequacy of purely domestic regulatory approaches and underscores the need for a governance framework capable of protecting fundamental rights across jurisdictional boundaries.

Collectively, these findings suggest that human rights risks associated with generative AI cannot be addressed solely through technical safeguards or transparency obligations. Instead, they require a comprehensive legal framework that integrates procedural fairness, accountability, and rights protection into the governance of AI-assisted judicial decision-making.

Limits of Existing Regulatory Frameworks

Despite significant progress in AI governance, existing regulatory frameworks remain insufficient to address the procedural and human rights challenges identified above. Comparative analysis reveals that contemporary governance regimes largely rely on fragmented regulatory logics that prioritize specific policy objectives while neglecting the broader architecture of algorithmic due process.

The European Union AI Act represents the most sophisticated legal framework currently available. Its risk-based approach establishes important safeguards relating to transparency, documentation, human oversight, and conformity assessment. Nevertheless, the AI Act primarily regulates technological risks

rather than procedural justice. While fundamental rights considerations are incorporated into the regulatory structure, the framework does not fully articulate how individuals can effectively challenge AI-assisted legal decisions or obtain meaningful remedies when procedural harms occur. Consequently, procedural protections remain dispersed across multiple provisions without forming a coherent due process doctrine.

Similarly, OECD AI Principles and UNESCO's Recommendation on the Ethics of Artificial Intelligence provide valuable normative guidance but remain limited in their enforceability. These instruments establish broad commitments to fairness, accountability, transparency, and human rights, yet they offer relatively little guidance regarding the institutional mechanisms required to operationalize these principles within judicial environments. As a result, implementation often depends upon domestic political priorities and regulatory capacities.

The Council of Europe Framework Convention on Artificial Intelligence and Human Rights represents an important step toward integrating AI governance with international human rights law. However, the Convention primarily establishes general obligations and guiding principles rather than detailed procedural safeguards (Council of Europe, 2024). While it strengthens the normative foundation for rights-based AI governance, substantial uncertainty remains regarding how its provisions will be translated into operational accountability mechanisms within national legal systems (European Union Agency for Fundamental Rights, 2022).

The comparative findings reveal a common structural limitation across these frameworks. Existing regulatory regimes generally focus on compliance obligations directed at developers, deployers, and operators of AI systems. Less attention is devoted to the procedural rights of individuals affected by AI-assisted decisions. Consequently, accountability mechanisms frequently emphasize ex ante risk management while neglecting ex post procedural remedies. This imbalance produces a regulatory environment in which technological compliance may be achieved without fully safeguarding due process rights.

Furthermore, none of the examined frameworks adequately addresses the transnational nature of generative AI governance. AI systems routinely operate across borders, yet accountability mechanisms remain largely jurisdiction-specific. The resulting fragmentation creates uncertainty regarding applicable standards, enforcement authority, and available remedies. These shortcomings indicate the need for a more comprehensive framework capable of integrating procedural justice, human rights protection, and cross-border accountability within a unified governance architecture.

Developing the Human Rights-Centered Transnational Algorithmic Due Process Model (HR-TADP Model)

The central finding of this study is that algorithmic due process should be reconceptualized as a transnational legal principle grounded in human rights protection rather than merely a regulatory compliance requirement. Building upon the comparative findings and theoretical frameworks discussed above, this article proposes the Human Rights-Centered Transnational Algorithmic Due Process Model (HR-TADP Model) as a normative governance architecture for generative AI-assisted judicial decision-making. The model consists of six interconnected dimensions.

1. Explainability

Explainability requires that individuals affected by AI-assisted decisions receive meaningful information regarding the factors, data sources, and reasoning processes that contributed to the outcome. Explainability does not necessarily require full disclosure of proprietary algorithms but demands sufficient information to enable understanding, review, and contestation.

2. Contestability

Procedural fairness requires that affected individuals possess accessible mechanisms for challenging AI-assisted decisions. Contestability includes rights to review, appeal, correction, and independent assessment. Without meaningful opportunities for contestation, procedural safeguards remain largely symbolic.

3. Human Oversight

Human oversight ensures that final authority remains vested in accountable human decision-makers. Judicial actors must retain the capacity to review, reject, or modify AI-generated recommendations. Human oversight should therefore function as a substantive safeguard rather than a purely formal requirement.

4. Algorithmic Auditability

Independent auditing mechanisms are necessary to evaluate system performance, identify biases, assess compliance, and detect procedural deficiencies. Auditability promotes accountability by enabling external scrutiny of AI systems operating within high-stakes legal environments (Brown, 2021).

5. Human Rights Impact Assessment

The findings demonstrate that risk-based governance alone is insufficient. AI systems deployed in judicial contexts should undergo mandatory Human Rights Impact Assessments (HRIAs) that evaluate potential effects on equality, privacy, due process, non-discrimination, and access to justice before deployment and throughout the system lifecycle (Mantelero, 2022).

6. Cross-Border Accountability

Given the transnational nature of generative AI, accountability mechanisms must extend beyond domestic jurisdictions. Cross-border accountability requires regulatory cooperation, interoperability of governance standards, mutual recognition of oversight mechanisms, and international procedural safeguards capable of protecting individuals regardless of where AI systems are developed or deployed (Brown, 2021; Cihon, 2019).

Together, these six dimensions form an integrated governance architecture capable of addressing the procedural and human rights challenges associated with generative AI. Unlike existing frameworks that focus primarily on transparency or risk management, the HR-TADP Model places human dignity, procedural justice, and accountability at the center of AI governance. The model therefore represents both a theoretical advancement and a practical framework for evaluating future AI regulation.

Legal and Policy Implications

The proposed framework carries significant implications for legal institutions, policymakers, regulators, and international organizations. For courts and judicial authorities, the findings indicate that AI adoption strategies should prioritize procedural safeguards alongside technological efficiency. Judicial legitimacy depends not merely on accurate outcomes but also on transparent and accountable decision-making processes.

For legislators and regulators, the study suggests that future AI governance initiatives should move beyond narrow compliance-based approaches and incorporate explicit due process protections. Regulatory frameworks should establish enforceable rights relating to explanation, contestation, human oversight, and algorithmic accountability. Such protections are particularly important within high-risk sectors where AI-assisted decisions directly affect fundamental rights.

At the international level, the findings support the development of greater regulatory convergence among emerging AI governance regimes. Fragmented approaches increase uncertainty and weaken accountability in transnational environments. International organizations therefore have an important role in promoting common standards capable of harmonizing procedural safeguards across jurisdictions.

Finally, the study contributes to broader debates concerning the future relationship between law and artificial intelligence. Rather than viewing AI governance solely through the lenses of innovation, efficiency, or risk management, the findings demonstrate the importance of preserving foundational legal values within technologically mediated decision-making environments. Algorithmic due process should therefore be recognized as an essential component of contemporary rule-of-law governance and a necessary safeguard for protecting human rights in the age of generative AI (Hildebrandt, 2020; Hildebrandt, 2021; Ziosi et al., 2024)..

CONCLUSION

This study examined the evolving relationship between generative artificial intelligence, judicial accountability, and human rights protection through a comparative analysis of AI governance frameworks in the European Union, the United States, Canada, and Singapore. The findings demonstrate that the rapid integration of generative AI into judicial and quasi-judicial processes has exposed significant limitations within existing regulatory regimes. Although contemporary governance frameworks increasingly recognize the importance of transparency, risk management, and human oversight, they remain fragmented in their treatment of procedural fairness and accountability. The comparative analysis revealed substantial divergences regarding explainability, contestability, algorithmic auditing, and rights-based safeguards, resulting in inconsistent levels of protection across jurisdictions. More importantly, current regulatory

approaches continue to prioritize technological risk mitigation rather than developing a coherent conception of algorithmic due process capable of protecting individuals affected by AI-assisted legal decision-making. As generative AI assumes a greater role in shaping legal reasoning, recommendations, and adjudicative outcomes, traditional due process doctrines require substantial adaptation to address the unique procedural challenges created by increasingly autonomous and opaque computational systems.

The principal contribution of this article lies in its reconceptualization of algorithmic due process as a human rights-centered transnational legal principle rather than a narrow regulatory compliance mechanism. By integrating insights from Technological Due Process Theory, Algorithmic Accountability Theory, and Algorithmic Regulation Theory, the study develops the Human Rights-Centered Transnational Algorithmic Due Process Model (HR-TADP Model) as a normative governance framework for AI-assisted judicial decision-making. The proposed model advances existing scholarship by combining six interdependent dimensions: explainability, contestability, human oversight, algorithmic auditability, human rights impact assessment, and cross-border accountability. This framework contributes theoretically by bridging previously fragmented debates on transparency, accountability, procedural justice, and human rights protection. It also contributes practically by providing policymakers, regulators, judicial institutions, and international organizations with a structured governance architecture capable of evaluating and strengthening procedural safeguards within emerging AI ecosystems. The findings further suggest that future AI governance initiatives should place procedural justice and human dignity at the center of regulatory design rather than treating them as secondary considerations within broader risk-management strategies.

Several limitations should be acknowledged. The study focuses primarily on regulatory and normative frameworks rather than empirical assessments of AI deployment within specific judicial institutions. Consequently, future research should investigate how algorithmic due process operates in practice through case studies, judicial experiments, and empirical evaluations of AI-assisted adjudication. Additional comparative research involving jurisdictions from the Global South may also enrich understanding of how different legal traditions respond to emerging AI governance challenges. Nevertheless, the central argument advanced in this article remains clear: effective governance of generative AI requires the development of transnational procedural safeguards that preserve accountability, legitimacy, and human rights within increasingly digitalized systems of justice. The long-term sustainability of AI-assisted legal decision-making will depend not only on technological innovation but also on the capacity of legal institutions to ensure that fundamental principles of due process remain robust in the age of generative artificial intelligence.

GENERATIVE AI USAGE STATEMENT

The authors disclose that generative artificial intelligence (AI) technology was used solely as a supportive tool during the preparation of this manuscript for limited language assistance, grammatical refinement, and editorial improvement. The use of AI-assisted technology was restricted to enhancing linguistic clarity and readability and did not involve the generation of research questions, theoretical arguments, literature reviews, methodological designs, legal analyses, research findings, interpretations, conclusions, or scholarly contributions presented in this article.

All intellectual content, including the identification of research gaps, development of conceptual frameworks, selection and interpretation of legal sources, comparative legal analysis, discussion of findings, and formulation of conclusions, was independently conducted, reviewed, verified, and substantially revised by the authors. The authors carefully evaluated all AI-assisted outputs to ensure their accuracy, consistency, originality, and compliance with academic and ethical standards.

The authors assume full responsibility for the content of this manuscript, including its arguments, analyses, citations, references, legal interpretations, and conclusions. Generative AI tools were not involved in the decision-making process concerning the scholarly substance of the study and are not credited as authors or contributors. This manuscript complies with the journal's policies regarding the ethical and responsible use of generative AI and AI-assisted technologies in academic publishing.

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