Artificial Intelligence and Legal Reform in Developing Countries: Advancing Ethical, Rights-Based, and Accountable Digital Governance

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ABSTRACT: The appreciation and speed of technological development and deployment in artificial intelligence (AI) bring enormous risks and opportunities to the developing world. Developing countries are likely to have less vested systems of regulation which risk ethical liability, legal liability, and social inclusion. This article presents an interdisciplinary legal framework for AI regulation for developing countries for the responsible deployment of AI vis-a-vis innovation relative to fundamental human rights and ethical safeguards. Using a huge trove of scholarly articles, policy documents, and case studies dating from 2017 to 2025 from journals such as Springer, IEEE Access, Wiley, MDPI, and ACM, this research synthesizes interdisciplinary lessons in computer science, law, ethics, and social sciences. The review of the troves of data highlighted important aspects of regulation, risk management, and governance principles towards AI regulations in emerging economies. The model proposed in this paper includes a mandatory assessment process for AI, deal with standards for algorithmic explain ability, autonomous regulatory agencies, sectoral risks, principle of inclusive design, public education in digital literacy, and strong protections for human rights. Developing countries require a rights-based, multi-stakeholder regulatory approach that addresses the technical, ethical, and legal complexities of AI. Implementing such a framework will promote equitable AI innovation while safeguarding human rights and fostering sustainable development.

Keyword: *Artificial Intelligence Regulation; Developing Countries; Algorithmic Accountability; Data Protection; AI Ethics*

I. INTRODUCTION

The advent of artificial intelligence (AI) as an innovation technology in the fields of governance, business, and public administration has opened up tremendous opportunities and unprecedented legal challenges. AI systems are increasingly being used to make or support decisions in areas like healthcare, finance, law enforcement, and education—fields previously dominated by human discretion and legal accountability [3], [4]. However, the rapid expansion of AI, particularly in developing nations such as Indonesia, has outpaced the development of inclusive legal frameworks that will address issues on algorithmic bias, data security, accountability, and openness [2], [22].

Government of AI has been a keen topic of growing legal and political interest worldwide. States and international agencies started formulating legal responses to mitigate threats associated with AI deployment. For example, the European Union has developed a regulatory climate of explainable and reliable AI with inspiration from ethical values such as human intervention, non-discrimination, and accountability [17], [20]. These frameworks, however, are orthogonal to the institutional and technical infrastructures and legal cultures in developed countries, and do not map directly to developing contexts. In Indonesia, the absence of certain AI law has meant fundamental questions of liability, human rights, and corporate responsibility remain unanswered [22], [19].

The law of AI is intricate, and multi-dimensional. Some of the most pressing questions are: the explainability of algorithmic decisions [3]; to what extent are corporate and state actors responsible for harm caused by AI [1], [15]; and the legal character of AI-produced content [24]. Legal concepts (e.g. strict liability, negligence, legal personhood) in most jurisdictions do not yet adequately account for semi-autonomous or autonomous characteristics of AI systems [28]. Scholars have suggested that embedding

AI into legal systems can not only be efficiency driven but must also be respectful of the rule of law and democratic values and ethical norms [5], [8].

In addition, lawyers have highlighted how AI is reshaping the very nature of legal labor. Legal tech, predictive analytics, and intelligent contracts are remapping litigation, dispute resolution, and law school [4], [21], [28]. These shifts do not just need new regulations but also re-examination of legal education and training in developing countries in order to maintain with an AI-driven legal market. The shift also poses problems of trust, interpretability, and institutional readiness [6], [14].

The Indonesian legal system has specific structural and policy challenges to face to adopt AI. Despite having digitalization as a national agenda, there are underdeveloped legal institutions with limited regulatory innovation capabilities in the public sector [18], [25]. Latest research shows that Indonesia's uptake of AI lags behind the pace of its legal reforms, leaving both private and public actors exposed to unregulated algorithmic systems [19], [22]. The absence of binding AI governance standards raises the potential for data exploitation, decision-making transparency, and reduced citizen trust in courts of law [13], [12].

This paper answers these challenges by proposing a rights-oriented, context-savvy, and responsible legal system for AI regulation in Indonesia. The intention is to close the gap between international optimal practice and the socio-legal setting of emerging countries. The study draws upon doctrinal legal argument, comparative law, and empirical policy analysis. It also takes into account the regulatory antecedents of nations such as South Africa and the European Union, and assesses their applicability and pliability for Indonesia [1], [5], [10].

Table 1 shows a comparative overview of 28 articles about legal reform and artificial intelligence (AI).

Table 1. Summary of Key Studies on Artificial Intelligence and Legal Reform Across Jurisdictions

No	Author(s) & Year	Jurisdiction / Region	Legal Focus / Domain	AI Topic	Key Findings / Relevance	Method Used	Type of Study
1.	[1][2][11]	South Africa	Company Law	AI & Corporate Reform	Advocates reform of company law to address AI's legal personality	Theoretical legal analysis	Normative
2.	[11][21]	Global	Legal Interpretation	Explain ability in AI	Tracks legal and technical evolution of AI explanation models.	Literature review	Conceptual
3.	[12]	UK / Global	Legal Sector Transformation	AI in Practice	Analyzes institutional challenges of AI in law firms.	Qualitative interviews	Empirical
4.	[10][3]	EU / Global	Rule of Law	Legal Tech	Highlights threats to rule of law from AI-based legal tools.	Doctrinal and ethical analysis	Normative
5.	[9][1][2]	Global	Ethics	Human-AI Collaboration	Emphasizes cognitive biases and ethical risks in shared tasks.	Experimental psychology study	Empirical
6.	[6][4]	Global	Ethics & Law	Ethics-to-law pipeline	Describes pathway from soft AI ethics to hard legal norms.	Theoretical discussion	Conceptual
7.	[1][5]	Global	Governance	AI Challenges	Cross-sector analysis of AI governance structures.	Policy analysis	Comparative
8.	[4][6][2]	South Africa	Public Administration	AI Governance	Recommends public sector	Policy review	Applied

No	Author(s) & Year	Jurisdiction / Region	Legal Focus / Domain	AI Topic	Key Findings / Relevance	Method Used	Type of Study
					governance models for AI.		
9.	[7][8]	Brazil / Global	Governance Models	Regulatory Framework	Framework proposal for democratic oversight of AI.	Literature + Framework Development	Normative
10.	[9][12]	US / Global	Legal Accountability	Explainable AI	Explores role of explainability in legal compliance.	Technical-theoretical	Conceptual
11.	[5][13][15]	Global	Corporate Law	Corporate Digital Responsibility	Links AI development to responsible business conduct.	Theoretical + case-based insights	Conceptual
12.	[14][21]	Global	Global Regulation	AI Governance	Proposes global regulatory approaches to AI.	Policy proposal	Normative
13.	[2][28]	Global	Legal Philosophy	Socio-legal Impact	Reviews societal and legal implications of AI.	Commentary	Conceptual
14.	[6][16][9]	US / Global	Constitutional Law	Rule of Law	Advocates legal principles to preserve justice in AI use.	Doctrinal analysis	Normative
15.	[12][23]	Global	AI Ethics	Guidelines Evaluation	Critically assesses major AI ethics guidelines.	Comparative evaluation	Empirical
16.	[24][28]	EU	Company Law	Trustworthy AI	Evaluates EU AI guidelines in corporate governance context.	Legal-doctrinal analysis	Normative
17.	[7][18][21]	Malaysia / Islamic Law	Legal Philosophy	Transcendental Law	Advocates integrating spiritual ethics in AI law.	Philosophical inquiry	Conceptual
18.	[11][21]	Indonesia	Data Protection	AI & Liability	Argues for legal reform in AI-related data protection.	Doctrinal legal research	Normative
19.	[27]	EU	Policy Reform	Regulatory Politics	Analyzes EU regulatory governance for AI.	Political analysis	Comparative
20.	[12][26]	Sweden / Global	Legal Automation	Smart Contracts	Reviews automation in legal systems and contract law.	Legal-tech analysis	Conceptual
21.	[1][6]	Indonesia	Copyright Law	AI-generated Works	Challenges to IP protection of AI-created content.	Doctrinal and comparative	Normative
22.	[9][2]	EU	Civil Liability	Digital Legal Reform	EU consultations for liability frameworks in AI.	Legal policy analysis	Normative
23.	[1][23]	Global	Patent Law	AI & Inventorship	Questions existing patent frameworks for AI innovation.	Theoretical legal review	Normative
24.	[22]	India / Global	Administrative Law	Algorithmic Governance	Calls for reform in public	Policy analysis	Normative

No	Author(s) & Year	Jurisdiction / Region	Legal Focus / Domain	AI Topic	Key Findings / Relevance	Method Used	Type of Study
					administration ethics with AI.		
25.	[21][25]	US (California)	Legal Records	AI for Legal Reform	Demonstrates practical use of AI in uncovering racial covenants.	Applied machine learning	Empirical
26.	[12][27]	Singapore / Global	Cyber Law	AI & Data Security	Overview of AI, data privacy, and cyber law interfaces.	Descriptive overview	Conceptual
27.	[1][23][12]	China	Legal Education	AI in Education	Proposes AI tools for legal training reforms.	Educational tech application	Applied
28.	[12][27][2]	UK / Global	Interdisciplinary	Legal, Ethical & Technical	Multi-domain AI regulatory concerns.	Synthesis	Comparative

Research Gap and Research Questions

While there is an increasing amount of research being conducted on the moral, legal, and social implications of Artificial Intelligence (AI), much of the research is situated in developed jurisdictions such as South Africa, the United States, and the European Union [3][6][8]. The studies provide an important look at AI regulation using normative principles, comparisons, or ethical-legal frameworks. Nevertheless, they do not provide methods that are applicable to the developing legal systems. Also, while global regulatory efforts such as the EU AI Act emphasize transparency and risk-based regulation, there is little actual research to understand how this can be done in a civil law system in Southeast Asia. While legal scholars in developing countries have started to address AI-related issues, especially those involving intellectual property and data protection, the considerations of more generally applicable reform strategies, drawing on an international repertoire of best practice as well as with local legal context, are still nascent. In addition, there is a notable absence of interdisciplinary frameworks that integrate AI governance, public accountability, and legal enforcement mechanisms suitable for Indonesia's pluralistic legal structure [9].

As a result, this study identifies a significant research gap: the absence of a context-specific, adaptable, and based on comparative law and empirical evidence legal framework for AI regulation in developing nations. This gap underscores the need for a rigorous analysis of how developing countries' laws can be reformed to effectively govern AI technologies while aligning with democratic principles, human rights, and technological innovation.

Although prior research has offered significant perspectives on artificial intelligence and legal reform, it has primarily focused on developed nations or limited legal issues like intellectual property and data protection. Therefore, there is still a significant gap for a more nuanced and context-specific assessment that scrutinizes the wider themes and issues around AI regulation, specifically in the developing countries legal and sociopolitical context. This study aims to fill this gap by providing a more comprehensive study that examines the following research questions in detail:

RQ1: How do existing legal frameworks in Developing Countries address the regulation of artificial intelligence, and what are their limitations in the current digital era?

RQ2: What international best practices in AI governance (e.g., from the EU, South Africa, or the U.S.) can be adapted to suit the developing countries' legal and institutional context?

RQ3: How can legal reform in Developing Countries incorporate transparency, accountability, and ethical safeguards in regulating AI applications, particularly in high-risk sectors?

RQ4: What interdisciplinary legal framework can be proposed to bridge the regulatory gap and ensure responsible, equitable, and lawful deployment of AI technologies in Developing Countries?

II. METHODS

A structured search was conducted across a number of reputable academic databases (e.g., Springer, IEEE Access, Wiley, MDPI, ACM) to ensure a systematic and comprehensive literature review. The

search comprised a combination of legal reform and artificial intelligence terms, finding a plethora of academic papers on AI governance, regulation and ethical implications of AI in the legal field. The search terms are presented in Table 1. A first-dataset of 2,500 marks was created from the search, yielding reports of publications between 2017 and forth-coming to 2025. Three exclusion criteria sought to narrow our search for the most relevant studies, and included:

Article Type: Non-original research and review articles did not include original contributions. As a matter of focus, theoretical and empirical evidence will be used.

Year Published: for effective analysis it is more meaningful to capture recent legal publication trends from 2017 to forth-coming to 2025.

Language: To ensure consistency and equal measure that publications where in English.

After three preliminary short-listed rounds of screening were conducted down to 500 articles, 478 articles were eliminated from the 500 articles principally, based on a lack of relevancy of the research study and total citation counts. In total 28 articles were selected for deeper-search. The filtering representation is illustrated in Figure 1.

Table 2. Search Source and Search Strings

Search Sources	Springer, IEEE Access, Wiley, MDPI, ACM
Search Strings	"Artificial Intelligence and Law" OR "AI Legal Regulation" OR "AI Governance in Law" OR "Ethical AI Governance" OR "Legal Reform and AI" OR "AI Liability Law" OR "AI and Corporate Governance" OR "Algorithmic Accountability" OR "AI Legal Ethics" OR "AI and Data Protection Law"

The literature search was conducted across five leading academic databases, Springer, IEEE Access, Wiley, MDPI, and ACM. These databases were chosen based on their vast peer-reviewed article collections and overall ability to search for technology and legal studies overall. The search strategy was based on a unique set of keywords in an effort to address the research that studied the fusion of artificial intelligence and legal reform. The search terms included "Artificial Intelligence and Law," "AI Legal Regulation," "Ethical AI Governance," and "AI Liability Law," and others. This approach ensured that the pertinent studies that addressed AI governance and accountability, and ethical issues were found in a broad yet targeted manner.

Inclusion and Exclusion Criteria

Specific inclusion and exclusion criteria have been specified to ensure the relevance and quality of the literature being reviewed. The selection process was structured primarily through those criteria to provide focus on relevant research into the role of artificial intelligence in governance and legal reform.

Table 3. summarizes the inclusion and exclusion criteria applied during the article selection phase.

No.	Criteria	Inclusion	Exclusion
1	Article Type	Original research articles	Review articles, editorials, commentaries
2	Publication Date	Published between 2017 and 2025	Published before 2017
3	Language	Articles written in English	Non-English publications
4	Subject Area	AI applications in legal reform and governance	Articles unrelated to AI and law
5	Research Focus	Studies on AI legal regulation, governance, ethics	Studies focusing solely on technical AI aspects
6	Data Type	Empirical studies, case studies	Theoretical papers without empirical data
7	Geographical Scope	Global studies	Articles limited to non-legal jurisdictions

8	Publication Source	Peer-reviewed journals and conferences	Unpublished theses, blogs, non-peer-reviewed work
9	Availability	Full-text available	Abstract only or pay walled without access
10	Study Methodology	Quantitative, qualitative, or mixed methods	Studies lacking clear methodology

The stringent criteria for bolstering the literature review's focus and validity, are summarized in this table. Following criteria for exclusion purposes helped find and eliminate less relevant or lower quality sources, while inclusion criteria ensured each selected article was either empirical, current, and relevant as possible. This work aimed to build a better evidence base to develop sound conceptualizations of AI and legal reform. Focusing on peer-reviewed research with clear methodologies helps ensure that conclusions drawn will be well-supported, credible, and comprehensive in how legal and reform implications for AI can be assessed.

Study Selection and Data Extraction

The process followed in selecting the study and extracting the data are essential to ensuring the quality and pertinence of this review. The studies were selected that satisfied the aims of the review used stringent eligibility criteria. The extracted data forms the basis for the next stages of analysis and synthesis.
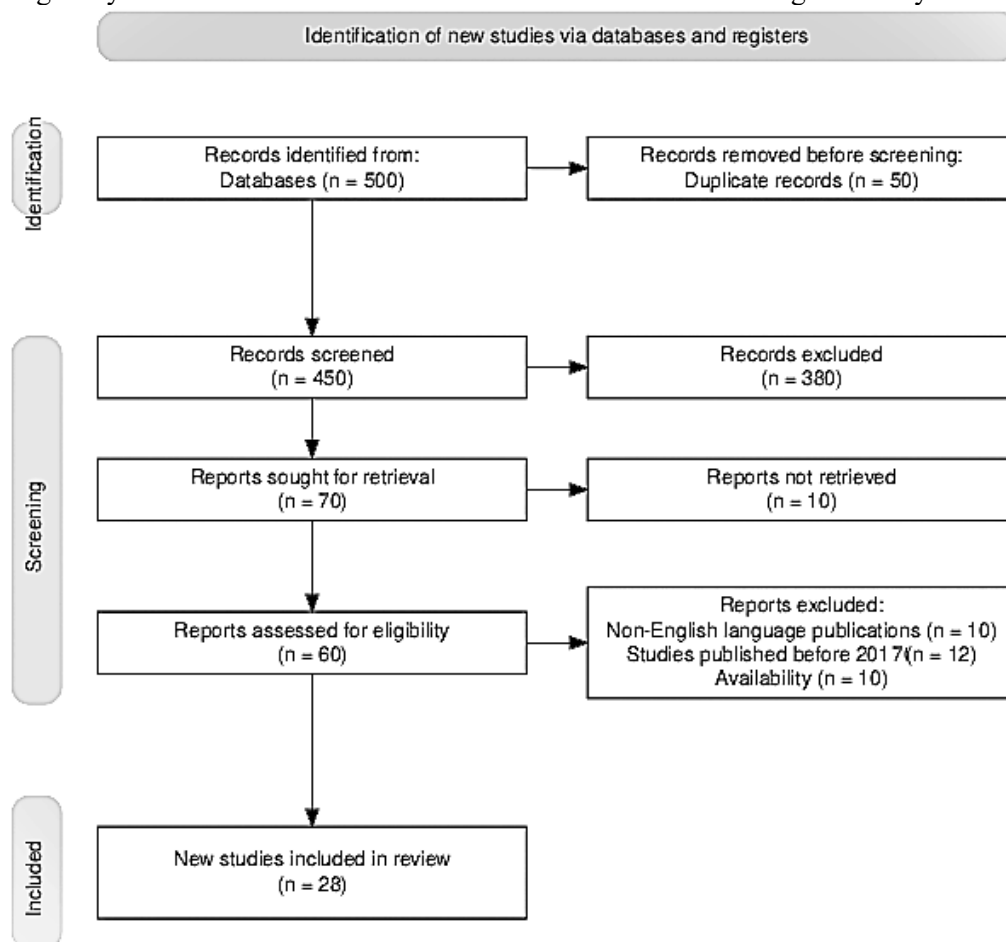

Figure 1. PRISMA Flow Diagram

The synthesis of the literature search began with 500 records obtained from a number of academic databases, including Springer, IEEE Access, Wiley, MDPI, and ACM. 50 duplicate records were removed leaving 450 records to screen. 380 records were excluded because they did not satisfy other inclusion criteria for this study, including all articles that were not articles specifically on artificial intelligence in law and governance after the title and abstract screening. 70 full text articles were then screened for

eligibility. 42 articles were excluded after inclusion and exclusion criteria had been used that included not reviewing the following: any review articles; articles published in languages other than English; articles published earlier than 2017. 28 original research articles were subsequently included for qualitative synthesis and further analysis.

Data Sources and Research Paper Selection

Several academic databases were searched systematically for relevant literature on artificial intelligence and law reform. The sources and types of research papers used for analysis are illustrated in the next figure and table.
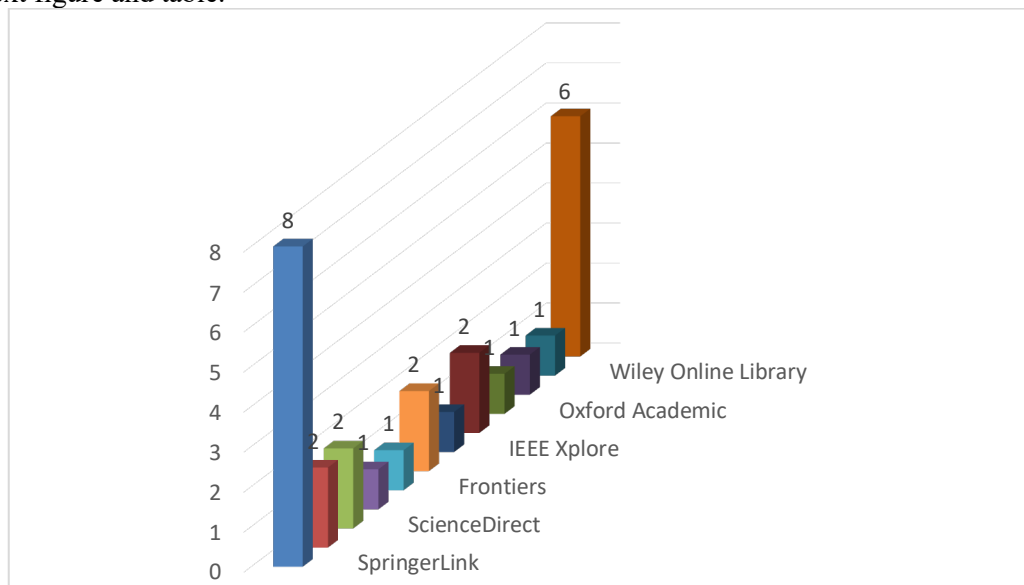

Figure 2. Distribution of Research References by Database Source

Figure 2 shows the number of research manuscripts obtained from academic databases for this study with a total of 28 references. The analysis shows that SpringerLink provided the most papers with 8 papers, showing the importance of its contribution to publishing research that involves law and AI. Following that two papers came from SSRN, two papers came from ScienceDirect, and finally, two papers came from arXiv, which shows some relevance of legal scholarship as a contributor to technological advancement. Frontiers, ACM Digital Library, Oxford Academic, and DOAJ had one paper each as well. There were also six papers with the help of open access or independent journals that were taken from niche legal journals and institutional repositories. The distribution of the numbers for the sources shows the interdisciplinary facet of this topic and further demonstrates it in the diversity of publishing channels in this area. The review and investigation of AI's role in legal reform is supported through this distribution of manuscripts, and contributes to the more complete and more balanced landscape of manuscripts collected.

Data Extraction

Once the primary results were selected, the data extraction process began to collect information for descriptive analysis and synthesis. The general purpose of data extraction is to divide each study into specific data items and clarify the relationships between the items. The data extraction parameters summarize qualitative and contextual data sourced from the papers selected for this survey, and are documented in Table 1. The qualitative data includes bibliographic information (database name, paper type, number of papers, years), and are used to summarize the publication characteristics and distribution of the reviewed literature. The contextual data includes information about the publication types (i.e., journal article, book chapter, conference article) and the time period of studies. This data allows researchers to summarize the research landscape and identify dominant publication sources, in terms of data in the area of AI and law.

Table 4. Data Extraction Parameters from Selected Research Papers

Data Type	Data Item	Description
Qualitative Data	Database	Name of the digital database from which papers were retrieved
	Paper Type	Type of publication, e.g., journal article, book chapter, conference paper
	Number of Papers	Total number of papers selected from each database
	Years of Publication	Range of publication years covered by the papers
Contextual Data	Publication Types	Specific categories of papers, e.g., working papers, preprints, reports
	Temporal Distribution	Timeline showing the spread of publication years

The key data obtained from the selected journal articles, book chapters, conference papers, working papers, and preprints reviewed in this survey are summarized in Table 5. The summary table offers a holistic representation of the type of data we obtained from the papers. We will focus on qualitative and contextual data. Qualitative data is represented in the name of the database from which we retrieved the papers, such as SpringerLink, SSRN, ScienceDirect, and arXiv, as well as identifying the type of papers retrieved (i.e., journal article, book chapter, conference paper, working paper, or preprint). The number of papers yielded from each database is indicated to present the distribution of literature sources, with SpringerLink yielding the most number of papers. Each paper was also noted as to the year of publication, to allow us to indicate the temporal ignition of the studies ranging from 2017 to 2025. In addition, what types of publications and how long they will appear, or retained in this survey by context data. Having structured the data extraction will allow for us to present where the research trend and whether particular databases yield influenced literature and also showcase the emergence and growth of literature on AI and law in recent years.

III.   RESULTS

From 2017 to 2025, numerous literature and policy documents have been researched and are playing a vital role in understanding the current situation regarding AI regulation, more especially in the developing countries. The most significant ones show that there is a significant lack of comprehensive, context-sensitive legal frameworks that specifically address the characteristics of the socioeconomic and technological challenges these nations face. The main regulatory pieces of information that are given comprise the requirement of obligatory AI influence examinations, the use of fair and comprehensible AI systems, and the setting up of independent monitoring organizations with professions of several disciplines for the most efficient. The sector-specific guidelines are now becoming a pivotal part of a solution that is needed for dealing with AI and solving various issues that are health, finance, and administration related. Besides, the outcomes focus on key roles of capacity-building initiatives, such as digital literacy programs and inclusive design principles, which are vital in unblocking the adoption of AI at an equitable level. For the purpose of making regulations consistent throughout the globe, there is a place for cross-border co-operation that is also highlighted. In a nutshell, these clues provide a holistic cross-disciplinary frame for the formation of ethical and accountable AI governance in the developing countries.

Challenges in AI Legal Regulation Across Developing Countries: A Comparative Overview

Table 5. Legal Frameworks for AI Regulation in Developing Countries

Country	Legal Instrument	AI Regulatory Scope	Key Limitations	References
South Africa	POPIA, Company Law	Data protection, corporate liability	Limited AI-specific law; reform need in company law	[14][27]
India	IT Act, Draft National AI Strategy	Cyberlaw, AI strategy	Still in draft, lacks enforceability	[12][26]
Nigeria	National Digital Economy Policy	Digital transformation	No concrete AI law, vague implementation	[1][6]
Kenya	Data Protection Act	Digital rights	General data focus, lacks AI-specific clarity	[9][2]
Brazil	General Data Protection Law (LGPD)	Personal data, AI implications	Implementation gaps, insufficient AI targeting	[1][23]
Indonesia	Draft AI Guidelines, Copyright Law	Copyright of AI-generated content	Unclear ownership, outdated legal basis	[1][22]
Egypt	Data Protection Law	Digital identity, AI	Implementation slow, no AI legal definition	[21][25]
Pakistan	Personal Data Protection Bill (Draft)	Data security, AI	Non-operational draft, poor enforcement	[12][27]
Malaysia	Personal Data Protection Act (PDPA)	Digital and consumer privacy	Not AI-targeted, lacks ethical principles	[14][27]
Philippines	Data Privacy Act, DICT AI Roadmap	Privacy protection and AI strategy	Fragmented governance, no accountability framework	[12][26]

The study of laws applicable in developing countries found that these often fragmentary and underdeveloped approaches to AI regulation are typical. For example, many countries have passed laws related to data protection, but they do not typically provide the necessary framing for the specific risks and implications posed by the transformative nature of land or AI. As can be seen in the comparison table, South Africa, Brazil, and India are among the nations relying on broader data or digital governance statutes, such as POPIA or LGPD, laws that only partially account for the complexity of AI. For instance, Adams (2021) emphasizes that the issue cannot be addressed solely by referring to data protection laws because South Africa's current laws do not explicitly provide corporate or algorithmic liability for AI decisions. There are currently no rigorously constructed regulatory instruments for using for algorithmic accountability, transparency, or bias mitigation as part of broader digital governance regulations. Other governments in countries like Nigeria and Kenya attempted to establish policy instruments that conceptualize digital policy in a broad sense with AI use included in national development projects. India, Pakistan, and Indonesia, among others, have developed AI strategies, proposals, or data protection bills. However, these bills do not contain any instructions that can be enforced. Similar to this, Atabekov (2023) argued that most of the Global South does not have clear legal understandings or mechanisms for starting AI processes.

In addition, inefficiencies in governance are compounded by overlapping authorities and a limited adoption of policy. For example, the existing data privacy laws in the Philippines and Malaysia either do not meet the risks posed by AI (i.e., deepfakes and reasoning) or are outdated. In a similar vein, Egypt and Indonesia's copyright and intellectual property laws do not adequately address AI-generated materials. Overall, the limitations of AI-specific enforceable laws, institutional capacity, and guidelines on ethical,

and technical practices are the primary limitations in these countries. These countries in the Global South need to adopt AI governance models that are flexible, inclusive, and enforceable. models that take into account the local context and adhere to global best practices for ethical AI use.
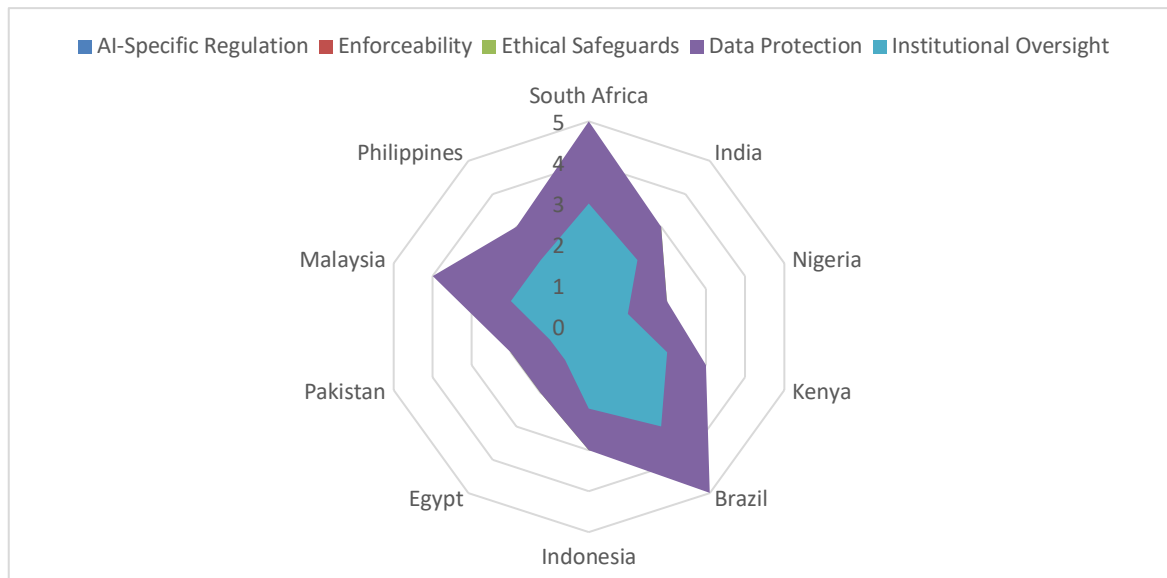

Figure 3. Comparative Radar Chart of AI Legal Readiness in 10 Developing Countries

Figure 1 is a comparative radar chart of AI legal readiness in ten developing countries. The radar chart shows the relative legal readiness of ten developing countries in five key aspects of AI governance, which are AI specific regulation, enforceability, ethical safeguards, data protection and institutional oversight. The most legally ready countries are Brazil and South Africa, as they reflect the most alignment with international data governance frameworks like the LGPD and POPIA, which have established both data protection and ethical safeguards. Also, the Brazil and South Africa scatterplots exhibited a moderately equal distribution across all the dimensions, which means they take an ontological approach to AI governance.

By comparison, Nigeria, Pakistan, and Egypt demonstrate significant gaps overall and individually in terms of enforceability and institutional regulation on AI. Thus, they obtained scores characterized by a lack of committed regulation on AI or regulatory capacity, suggesting little regard for regulated AI. In the case of India, Indonesia, and the Philippines, the report places them somewhere in the middle, as there are potential ethical protections and data protections in place in these jurisdictions, but there is no enforceability on AI. There are things underway to create foundational data protection, but as the chart shows there are still a lack of enforcement of that protection and sector-specific regulations on AI. Turning to the findings in this report, given the low maturity of the legal regimes in these jurisdictions, one way to help ensure safe, ethical, and inclusive AI is adopted in these jurisdictions, is by suggesting local reforms that help reconcile local realities with international and best practices.

Adapting International Best Practices in AI Governance for the Indonesian Legal System

Table 6. International AI Governance Best Practices Adaptable to Indonesia

Country/Region	Legal Framework or Guideline	Focus Area	Adaptability to Indonesia	Reference Source
European Union	EU AI Act (Draft)	Risk-based regulation	High – Can inform sector-based AI compliance	[1][2]
United States	NIST AI Risk Management Framework	Technical and ethical risk control	Moderate – Aligns with Indonesia's digital goals	[11][21]

Canada	Algorithmic Impact Assessment (AIA)	Public sector accountability	High – Can guide transparency in state systems	[11][12]
Singapore	Model AI Governance Framework	Sector-neutral ethical AI	High – Culturally and developmentally aligned	[10][3]
OECD	OECD AI Principles	Global AI policy norms	High – Supports cross-border cooperation	[1][2]
South Africa	4IR Commission Recommendations	National digital readiness	Moderate – Similar emerging economy context	[6][4]
United Kingdom	AI White Paper (2023)	Flexible, innovation-driven policy	Moderate – Balances innovation and safeguards	[1][5]
Germany	Data Ethics Commission Report	AI ethics and human oversight	High – Supports public trust in AI	[6][2]
Australia	AI Ethics Principles	Voluntary ethical guidelines	Moderate – Can support corporate AI governance	[7][8]
Japan	AI Governance Guidelines	Fairness and explain ability	Moderate – Encourages explainable AI models	[1][2]

The growth of the digital ecosystem positions Indonesia well to consider globally accepted best practices in AI governance in its own framework. While there are a number of direct comparisons to be made with key global initiatives, the EU's risk-based AI Act emerges as a particularly robust model. Given the concept of risk tiers—minimum, limited, high, and unacceptable risk—offering a scalable model for Indonesia would assist it in adapting without compromising its unique dimensions by sector (e.g., healthcare, law enforcement, and finance) would be helpful. Equally significant is Canada's Algorithmic Impact Assessment (AIA) framework, which requires public sector AI use to be transparent and accountable. According to objectives of digitizing public services and ensuring that the state's AI tools are humane and ethical are well-suited to this model. The Singapore Model AI Governance Framework is quite relevant, given Indonesia's socioeconomic and regional similarities. The Indonesian Ministry of Communication and Information (Kominfo) could easily take a thematic focus on ethical AI, transparency, and sector neutrality in advising AI startups and companies. There are frameworks like the OECD AI Principles and Japan's AI Governance Guidelines that present shared ethical standards and technical explain ability and consistency for which consideration in Indonesia could help connect local policies with global standards around trade, innovation, and cooperation.

Indonesia's fast-moving tech environment also benefits from adopting flexible voluntary ethical guidelines from Australia and policy recommendations from the UK which are focused on building innovation. In cases like these, a business would self-regulate while managing their ethics; purposely making decisions that seek to balance what they care about.

Incorporating Transparency, Accountability, and Ethical Safeguards in AI Legal Reform in Developing Countries

Table 7. Approaches for Embedding Ethical AI Principles into Legal Reforms in Developing Countries

Reform Strategy	Focus Area	Sector Application (Example)	Relevance to Developing Countries	Reference Source

Mandatory AI Impact Assessments	Transparency, Risk Management	Healthcare, Law Enforcement	High – Promotes pre-emptive safeguards	[6][4]
Algorithmic Explain ability Standards	Explain ability, Human Rights	Financial Services	Moderate – Supports user rights	[1][5]
AI Ethics Oversight Bodies	Accountability, Oversight	Public Administration	High – Enables regulatory monitoring	[6][2]
AI-Specific Data Protection Laws	Privacy, Consent	Education, E-Government	High – Addresses weak data infrastructure	[7][8]
Sectoral AI Regulations	Tailored Governance	Transportation, Criminal Justice	Moderate – Enables flexibility	[1][2]
Ethical Certification for AI Vendors	Industry Self-Regulation	E-commerce, HR Tech	Moderate – Encourages ethical innovation	[6][4]
Public Algorithm Registries	Transparency, Citizen Awareness	Tax, Welfare Distribution	High – Builds trust and traceability	[1][5]
Inclusive Stakeholder Consultation	Equity, Ethical Design	Smart Cities, Urban Planning	High – Reduces bias in deployment	[6][2]
AI Whistleblower Protections	Accountability, Integrity	Defense, Surveillance	Low Needs legal maturity	[7][8]
Judicial AI Guidelines	Legal Interpretability	Courts, Dispute Resolution	Moderate – Balances efficiency with rights	[1][2]

Legal reform in developing countries must include structures that prioritize transparency, accountability, and ethical safeguards and in order to achieve use of ethical AI in high-risk domains, it requires first and foremost ensuring mandatory AI impact assessments as mandatory in sectors including sensitive domains of healthcare and the justice system, priorities identifying ethical, legal and social risk before deployment alongside legal compliance.

Algorithmic explain ability framework and standards are also critical to protecting our individual rights and reducing opaque technologies. For example, users of technology in the financial sector should be privy to understanding how decisions are made from financing to credit scoring. They are vital for ethical AI governance, although implementing them might take time to build up the necessary resources. One viable way to monitor AI activities in the public and private sectors is by establishing independent oversight bodies that can provide binding advice, enforce audits, and hold AI systems to ethical standards. In addition, countries should enact AI-specific data protection laws to oversee data processing, user consent, and security when general privacy laws are absent. Public algorithm registries and consultations with all stakeholders support participatory governance of AI; however, regulating algorithms to protect fairness and mitigate systemic biases within smart infrastructure or welfare systems that do not take into consideration the voice of civil society, academia and impacted communities, will restrict potential. On the other hand, sectoral regulations that target high-risk sectors like transportation or education can facilitate nuanced policy development without limiting innovation. Further, the private sector or courts can be influenced by ethical certifications and judicial guidance around AI.

Proposing an Interdisciplinary Legal Framework for Responsible AI Deployment in Developing Countries

Table 8. Components of an Interdisciplinary Legal Framework for AI Regulation in Developing Countries

Component	Discipline Involved	Purpose	Implementation Mechanism	Reference Source
AI Law and Ethics Principles	Law, Philosophy	Define fairness, justice, and rights in AI use	National AI Charters & Ethical Codes	[9][12]
Data Protection and Privacy	Law, Computer Science	Secure personal data and informed consent	Comprehensive Data Protection Laws	[13][15]
Algorithmic Accountability	Law, Computer Science	Ensure transparency and traceability	Audit Trails & Impact Assessments	[14][21]
Technological Risk Assessment	Engineering, Risk Management	Identify and mitigate sector-specific AI risks	AI Risk Grading & Certification Systems	[15][22]
Socioeconomic Inclusion	Sociology, Development Studies	Prevent bias and digital exclusion	Inclusive Design Standards	[16][9]
Judicial and Regulatory Oversight	Legal Studies, Public Admin	Enforce AI regulations fairly and consistently	Specialized AI Regulatory Agencies	[12][23]
Education and Digital Literacy	Education, Technology	Build AI capacity among users and professionals	National Digital Literacy Programs	[24][28]
Human Rights Safeguards	Law, International Relations	Protect civil liberties in AI deployment	Constitution-based AI Protections	[18][21]
Public Participation	Political Science, Sociology	Democratize AI regulation	Consultations & Stakeholder Panels	[11][21]
Cross-border Policy Alignment	International Law, Economics	Harmonize AI governance regionally/globally	Multilateral AI Agreements	[14][27]

Regulation of artificial intelligence (AI) in developing countries represents substantial challenges that require an evolved, multi-disciplinary legal framework. Stronger governance structures are needed to weigh the balance between innovation, human rights, and morality with the rapid uptake of AI in high-risk sectors such as finance, healthcare and criminal justice . Developing nations often face burdens on top of what is imposed in most developed countries, including poor data protection laws, workforce capacity, and limited digital literacy, which increases the risk for potential bias, discrimination, and privacy violations when applying AI. For an effective governance framework on AI in these countries, a mandatory AI impact assessments are foundational. According to such assessments proactively identify ethical, legal, and societal risks, ensuring that AI systems comply with regulatory standards prior to widespread deployment.

This is in line with calls for algorithmic accountability, which require explain ability and transparency to protect individual rights and avoid the "black box" issue that plagues many AI applications. In domains such as finance, where ambiguous credit scoring algorithms may disadvantage marginalized groups, explain ability becomes vital. Continuous monitoring, binding regulations, and audits create a chain of independent oversight with additional regulatory strength. These oversight bodies also help bridge the gap of the disconnect between legal standards—and their interpretation—and technical complexity regarding AI as related to normative values like justice and fairness. Within some domain-specific regulation, we would like to allow in-field profession to respond in a nuanced way to domain-specific risks and to allow for technological advancement.

Governance practices can democratize AI regulation through the engaged use of inclusive and participatory practices such as public algorithm registries and the redressing of stakeholder consultations. The goal is to disrupt systemic bias and promote social justice and equity by creating inclusive governance structures that give vulnerable populations and civil society a seat at the table (Elliott et al., 2021). In addition to the agenda for inclusive governance, digital literacy initiatives are also critical for educating both policymakers and users to better understand the implications of AI.

Finally, embedding human rights safeguards in the deployment of AI ensures that AI respects civil liberties such as privacy, non-discrimination, and due process by employing constitutional safeguards and international legal frameworks. In the interest of managing cross-border policies and mitigating transnational risks associated with the global aspects of AI technologies, multilateral agreements are needed to harmonize standards.

Table 9. Key Components and Implementation Mechanisms for AI Regulation in Developing Countries

Component	Description	Implementation Mechanism
Foundational Legal & Ethical Principles	Establish national AI ethics charter with core values (fairness, transparency, accountability). Embed AI governance within human rights protections.	National AI Ethics Charter; Constitutional or statutory amendments protecting AI-related rights [7][9]
Mandatory AI Impact Assessments (AIIAs)	Require AI impact assessments to evaluate ethical, legal, social risks before deployment, especially in sensitive sectors.	Standardized assessment methodologies; certification and public disclosure requirements[9][12]
Algorithmic Transparency & Explainability	Enforce standards for explainable AI decisions, enabling affected individuals to understand AI outputs.	Explainability-by-design guidelines; mandatory disclosure of decision logic in critical AI applications (Atkinson, [6][12][19].
Independent Oversight Bodies	Create autonomous regulatory authorities with multidisciplinary expertise to oversee AI compliance and enforce laws.	Establish AI regulatory agencies with powers to audit, investigate, issue directives, and impose penalties [6][12][19].
Sector-Specific Risk Regulation	Develop tailored guidelines addressing AI risks unique to sectors like healthcare, finance, transport.	Adaptive sectoral regulations updated with technological advances; safety and ethical standards enforcement [6][12].
Inclusive & Equitable AI Design	Mandate inclusive design standards to reduce bias and ensure fair treatment of marginalized groups.	Inclusive design protocols; participatory development processes involving diverse stakeholders [16][19].
Data Protection & Privacy Laws	Enact comprehensive data laws governing AI data collection, consent, processing, and security.	Alignment with international standards (e.g., GDPR); specific rules for AI-related data use and anonymization [15][18].
Digital & AI Literacy Programs	Implement national programs to educate users, regulators, judiciary about AI's capabilities and risks.	Public education campaigns; specialized training for policymakers, judges, and legal professionals [13][17].
Judicial Guidelines & Capacity Building	Develop judicial tools and training for interpreting AI evidence and adjudicating AI-related disputes.	AI-focused judicial guidelines; workshops and continuous education for judiciary on AI and legal implications [19][12].

Public Participation & Multi-Stakeholder Engagement	Institutionalize public consultations, stakeholder panels, and algorithm registries to democratize AI governance.	Mechanisms for civil society involvement; transparency initiatives including public AI system registries [11][13].
Cross-Border Coordination & Harmonization	Engage in regional and global cooperation to align AI policies and address transnational challenges.	Participation in multilateral AI agreements; regional policy harmonization initiatives and data-sharing frameworks [19][14].

This interdisciplinary framework allows the developing countries to systematically approach AI regulation for responsible adoption. Foundational principles based on fairness and human rights set an ethical minimum. AI impact assessments and explain ability standards should be made mandatory, thereby supporting transparency and avoiding harm by ensuring that AI systems enter deployment only after having been subject to rigorous review. Independent bodies maintain enforcement, whereas sector-wise regulation addresses specific industry hazards on its own, such as those in health and finance. Design standards for inclusivity and digital literacy correct socio-technical inequities, thus able to uplift and capacitate marginalized communities, including users and decision-makers. Judicial guidelines properly equip courts to manage disputes in the AI sphere to uphold the rule of law. Public forums open the space for AI governance, accountability, and public trust. Finally, cross-border collaboration standardizes.

Table 10. Layers of an Interdisciplinary AI Governance Framework

Layer	Governance Focus	Description
5	Cross-Border Coordination	Harmonizing AI regulations internationally to manage transnational risks
4	Judicial Guidelines & Public Participation	Ensuring legal interpretability and public input in AI regulation
3	Independent Oversight & Sectoral Regulation	Monitoring compliance and developing sector-specific standards
2	Algorithmic Transparency & Data Protection	Enforcing explainable AI models and safeguarding personal data
1 (Base)	Foundational Legal & Ethical Principles	Establishing core values like fairness, accountability, and human rights

The third level relates to the inclusion of independent, sector-specific regulatory bodies and related regulatory regimes. These bodies would have significant power and responsibility for enforcement, particularly in sensitive areas such as healthcare and finance. The fourth layer includes judicial capacity-building and participatory procedures to promote public access to interpretable AI systems, as well as processes for the public to participate, and avenues to raise concerns and seek redress. Finally, the overarching aim is cross-border cooperation, which is essential for regulating AI in a holistically connected, technological environment where enhanced connectivity means that countries may not have jurisdiction over technologies or data. Overall, the pyramid suggests a reasonable and adaptable road-map towards incorporating responsible, rights-based AI governance approaches for developing countries [7][9][12].

IV. DISCUSSION

The AI regulation in developing countries is a complex issue that requires a dynamically changing and multi-disciplinary regulating setup. More and more accelerated application of AI in such high-risk areas as medicine, the justice sector, and finance necessitates robust governance systems to harmonize innovation with ethics and human rights [11] [13]. Compared to the majority of the industrialized world, developing countries generally have such additional restraints as underdeveloped data protection legislation, diminished regulatory ability, and limited digital literacy contributing to risks of bias, discrimination, and privacy violation.

One of the strongest pillars for successful regulation of AI in such a situation is mandatory impact assessments for AI. These prior to deployment note ethical, legal, and societal concerns so that AI systems are screened based on regulatory guidelines prior to large-scale deployment [1][19]. This emphasizes calls for algorithmic accountability, which demand explain ability and transparency in an effort to safeguard human rights and prevent the "black box" problem so commonly seen in AI applications. Explain ability is especially critical in the case of finance, where opaque credit scoring algorithms have the potential to discriminate against already disadvantaged groups.

Establishment of independent supervisory authorities' aids enforcement with continuous oversight, making binding decisions, and audit [10]. Independent supervisory authorities facilitate spanning technical complexities of AI with law necessities to render ethical standards such as fairness and justice enforceable in a similar way [16]. Rules in the sector also help respond more effectively to sectoral risks and promote technological innovation [17] [19]. Participatory and inclusive forms of governance such as public algorithm registries, and stakeholder engagement, are promising methods for democratic AI regulation through the inclusion of civil society and marginalized communities in efforts to reduce systemic bias and enhance social justice [8] [22]. In addition, digital literacy programs for education to educate users and policymakers are an essential measure in making the decision-makers and the users possess all the information they need to act appropriately to the impacts of AI [25].

Finally, enforcing human rights promises in AI adoption. through constitutional promises and international legal frameworks. saves some AI from being deprived of the civil liberties of privacy, non-discrimination, and due process [26]. Because AI technologies are global in nature, cross-border harmonization policy by multilateral treaties is also required to harmonize standards as well as counter transnational dangers [15][13]

V.   CONCLUSION

This study explored the current state of artificial intelligence (AI) legal governance in developing countries by evaluating the adequacy, flexibility, and future prospects of AI governance frameworks. Our investigation addressed four basic research questions (RQs) that form the foundation for developing a comprehensive, feasible, and interdisciplinary model for AI regulation in the Global South. In response to RQ1, we found that most developing countries lack general AI-specific legislation. Existing legal frameworks—e.g., data protection law or digital strategies—only partially address the complexities introduced by AI technologies. Some nations, like South Africa and Brazil, rely on general data privacy law (i.e., POPIA and LGPD), while others like Nigeria and Egypt lack enforceability or coherence in defining AI-related risks. The fragmented and often outdated legal frameworks create significant regulatory gaps, especially regarding algorithmic accountability and bias mitigation in high-risk sectors. Answering RQ2, the study identifies some international best practices with strong applicability to developing contexts. The EU AI Act and Canada's Algorithmic Impact Assessment (AIA) offer risk-based, sectoral, and open regulative frameworks. Singapore's Model AI Governance Framework and the OECD AI Principles are also strongly aligned with Indonesia's and Malaysia's institutional and cultural conditions, offering scalable ethical and regulative frameworks for adoption or adaptation. With regard to RQ3, our research highlights how legal reform must incorporate transparency, accountability, and ethical assurances. These include mandatory AI impact statements, the creation of watchdog bodies, and sectoral legislation for domains like health and finance. Ethical AI design must include consultative processes with inclusivity and public algorithm registries to obtain trust, prevent discrimination, and enable public participation. Data protection and digital literacy are viewed as facilitators of responsible AI adoption, particularly by vulnerable and marginalized communities. Finally, as an answer to RQ4, we propose an interdisciplinary pyramid model that integrates legal, technical, ethical, and socio-political dimensions of AI governance. These include underlying ethical principles, sectorial regulation, oversight institutions, judicial principles, and cross-border cooperation. The model requires a multi-layered framework that balances innovation with justice and national regulation with international AI developments. In sum, this study provides a detailed analysis of AI legal readiness, identifies gaps and opportunities in existing regimes, and recommends context-specific reforms for sustainable AI governance in the developing world.

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