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Ethics of Using Artificial Intelligence Reviewed from Pancasila and Bhinneka Tunggal Ika

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Abstract: The global development of Artificial Intelligence (AI) frequently overlooks local values, potentially marginalizing cultural diversity, as observed in the Indonesian context. This research aims to formulate a contextual AI ethical framework rooted in Pancasila and Bhinneka Tunggal Ika. Employing a philosophical-conceptual approach with hermeneutic analysis, this study operationalizes abstract national values into concrete ethical guidelines. The framework comprises five core principles: (1) Transcendental Responsibility; (2) Human-Based Justice; (3) Digital Sovereignty and Social Cohesion; (4) Deliberative Governance; and (5) Distributive Justice. Furthermore, the principle of Bhinneka Tunggal Ika is integrated to ensure inclusivity and prevent technological cultural homogenization. This framework addresses the vacuum in national norms while offering a corrective perspective on cultural biases within universal AI ethics discourse. The findings serve as a strategic guide for AI governance, design, and auditing that is responsive to Indonesia's pluralistic society and aligned with the Sustainable Development Goals (SDGs).

Keywords: Artificial Intelligence; *Bhinneka Tunggal Ika*; Ethics; Pancasila.

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1. Introduction

The rapidly growing adoption of AI (Artificial Intelligence) around the world has posed a complicated ethical dilemma (Coeckelbergh, 2020). On the one hand, this technology offers significant efficiency, innovation, and economic growth (Brynjolfsson & McAfee, 2014). However, on the other hand, its application without deep consideration can exacerbate social

inequality and undermine the humanitarian order (O'Neil, 2016). Cases of algorithmic bias in the recruitment process, the spread of false information, and online gambling have utilized AI as a tool to be abused, leaving many groups vulnerable to falling victim to fraud (Noble, 2018). This global challenge becomes even more urgent in the context of diverse nation-states, such as Indonesia. AI developed with homogeneous paradigms and datasets from the West risks ignoring, distorting, or even suppressing the diversity of local values, cultures, and needs (Jobin et al., 2019). Therefore, there is an urgent need to formulate a contextual AI ethical framework, which is not only responsive to the universal challenges of technology, but also embedded in the socio-cultural values of the Indonesian nation.

The ethical approach of contextual technology emphasizes that ethical values cannot be separated from the cultural, political, and historical contexts in which the technology is applied (Vallor, 2016). Ethical principles that are too abstract and universal (such as "fairness" or "transparency") require specific interpretation and operationalization according to the context in order to function effectively (Mittelstadt, 2019). Therefore, Pancasila should be understood not only as a state slogan, but as a living philosophy system that contains basic values regarding human relationships with God, others, and the environment (Kaelan, 2014). On the other hand, *Bhinneka Tunggal Ika* is placed as a socio-political principle that affirms unity in diversity, serving as a framework for designing an inclusive and anti-discriminatory system (Magnis-Suseno, 1997).

The ethical discourse of AI at the global level has resulted in many principles and guidelines, such as an emphasis on fairness, accountability, transparency, and privacy (Floridi et al., 2018). In Indonesia, the discourse on AI ethics is beginning to emerge, but it is still fragmented (Andrini, 2025). Some previous studies have addressed digital regulation and governance in general, while others have highlighted technical aspects such as bias in national datasets (Djajatmadja, 2025; Noor & Manantan, 2022; Wadipalapa et al., 2024). Several previous studies have linked technological ethics to Pancasila, but they are often still normative-declarative, in the form of a list of principles without an in-depth analysis of how these values can operationally frame the design, development, and audit of AI systems (Firmansyah et al., 2025; Kim, 2024; Muhaimin, 2025).

Based on previous research, there is a significant research gap, namely the lack of systematic and academic efforts to operationalize the abstract values contained in Pancasila and *Bhinneka Tunggal Ika* into concrete and testable AI ethical principles. In addition, there is a lack of in-depth analysis of how the principle of "unity in diversity" (*Bhinneka*

Tunggal Ika) can serve as a tool for criticism and correction of the cultural biases that exist in many AI systems at the global level. Therefore, the main purpose of this study is to formulate an ethical conceptual framework in the use of AI based on Pancasila and *Bhinneka Tunggal Ika*. This research is expected to fill the normative gap in AI management at the national level and contribute to the pluralism of technological ethical discourse at the world level.

2. Method

This research adopts a qualitative approach with a conceptual-philosophical study design. This design was chosen because the main purpose of the research is not to test an empirical hypothesis, but to build a new theoretical construct or conceptual framework through critical analysis and in-depth interpretation of the text, values, and ideas (Creswell & Poth, 2017). This research aims to provide a strong philosophical foundation for contextual technology ethics, so that a qualitative approach that is exploratory and interpretive is the most appropriate choice (Yuwono et al., 2025). Specifically, this research is included in the category of literature research that focuses on secondary data analysis (Yuwono, 2025). The material object of this research is the ethical discourse of AI (Artificial Intelligence) globally as well as the philosophical values of Pancasila and *Bhinneka Tunggal Ika*. Meanwhile, the formal object is the synthesis and normative construction between the two to produce a contextual ethical framework (Given, 2008).

Data collection was carried out using systematic document and literature study techniques. The data are grouped into three main corpuses: (1) Indonesian philosophy literature, which includes academic works on the philosophy of Pancasila and *Bhinneka Tunggal Ika*; (2) Global AI ethics literature, which includes key AI ethical principles, critical studies of algorithmic bias, as well as discussions of AI ethics in context, and; (3) Literature related to the Indonesian context, consisting of policy reports, social analysis, and previous research that discusses the interaction between technology and Indonesian society. This data collection technique guarantees that the analysis starts from a comprehensive theoretical basis (Patton, 2015).

Data analysis was carried out using hermeneutical-philosophical analysis methods and conceptual analysis. The first stage is hermeneutical interpretation, where the abstract values in each precept of Pancasila and the concept of *Bhinneka Tunggal Ika* are reinterpreted to understand a deeper meaning and its relevance in the digital era (Malpas & Gander, 2017). The second stage is conceptual analysis, which is breaking down

complex concepts (such as "Social Justice" or "Humanity") into operational attributes or principles that can be linked to specific challenges in the AI lifecycle (design, development, implementation, audit, and prompt) (Gadamer, 1975). The third stage is constructive synthesis, in which the results of interpretation and conceptual analysis from Indonesia's philosophical corpus are critically integrated with the global AI ethical discourse (Ricoeur, 2016). This process follows an abductive logic, which is to find the best explanation or framework that can bridge the gap between the universal principles of technological ethics and Indonesia's specific socio-cultural reality (Timmermans & Tavory, 2012). This synthesis is then formulated into a coherent conceptual framework, which will then be discussed for its implications both theoretically and practically (Hardiman, 2015).

3.1. Ethics-Wash and the Discourse of Artificial Intelligence Ethics

The global discourse on the ethics of AI (Artificial Intelligence) in recent years has been influenced by the increasing number of ethical guidelines and principles from various multilateral organizations, governments, and technology companies (Elmholdt et al., 2025). A systematic analysis of 84 global AI ethics guidelines shows that there is a high consensus on a set of core principles such as the FAT (Fairness, Accountability, and Transparency) paradigm, as well as privacy and non-maleficence (Peddi & Manoharan, 2026). However, the dominance of this principle-based discourse has received sharp criticism. Critics argue that many of these ethical declarations serve as "Ethics-Washing" tools (Correa et al., 2023). Ethics-Washing is a symbolic practice that aims to create an image of responsibility, prevent binding regulations, and delay substantive action, without fundamentally changing problematic technology development or deployment practices (Joseph, 2025). Overly abstract and process-oriented principles, such as "transparency" or "justice", can easily be co-opted by existing market and political forces, thus failing to address the material impacts of AI such as the strengthening of structural inequalities and the erosion of human rights (Mittelstadt, 2019).

The main criticism of the FAT paradigm and the like is its expert and acontextual nature. These universal principles often overlook how concepts such as "justice" or "accountability" should be interpreted and applied in a highly diverse socio-cultural, economic-political, and legal environment (Tohopi et al., 2025). For example, the technical definition of "algorithmic justice" centered on statistical parity is irrelevant or even counter-productive in societies struggling against the legacy of profound historical injustice, where restorative or distributive justice is becoming

more important (Demirchyan, 2025). In other words, the universalist approach risks perpetuating Western epistemological biases by making them global standards, while turning a blind eye to alternative epistemologies and moral frameworks from other cultures, such as the pluralistic culture in Indonesia.

In response to these limitations, there has been a wave of academic discussion emphasizing the ethics of AI and the AI movement to protect individual privacy. This flow of thought argues that meaningful ethics must be embedded and emerge from a specific local context (Vallor, 2016). The movement advocates for "localizing" AI ethics by seriously considering material conditions, power structures, community values, and local history (Tollon, 2024). For example, the exploration of the African concept of the Ubuntu Philosophy, a philosophy that emphasizes interdependence and shared humanity ("I can exist because we exist"), is used as a basis for framing the relationship between humans and machines in a more relational and communitarian way, as opposed to the individualism that underlies many Western AI systems (Coeckelbergh, 2022). The AI discourse so as not to violate individual privacy seeks to decolonize technology by reaffirming data sovereignty, protecting traditional knowledge, and designing systems that meet the priorities and ways of knowing indigenous peoples (Lewis et al., 2018).

3.2. The Philosophical Foundations of Artificial Intelligence Ethics in the Five Principles of Pancasila

A philosophical analysis of Pancasila in the context of technological progress shows that the precepts not only function as abstract moral guidelines, but can also be interpreted as relevant technological philosophy. Pancasila provides an integralist framework of thinking that sees technology as a tool to achieve higher national goals, not as goals in themselves. This approach is in line with the thinking of Aditya Permana and Ardian Prasetyo (2025) who emphasize that the development of science and technology in Indonesia must focus on overall human empowerment and environmental conservation, in accordance with the fundamental values of the nation. Therefore, Pancasila as a philosophy of technology provides a strong normative basis to direct the development of AI (Artificial Intelligence) to remain within the limits of humanity universally. The application of Pancasila values in AI ethical principles is summarized in table as follows.

Table 1. Operationalization of Pancasila Values in the Ethical Principles of Artificial Intelligence

The Principles of Pancasila	AI (Artificial Intelligence) Ethical Principles	Implications
Ketuhanan Yang Maha Esa (Belief in the one and only God)	Transcendental Responsibility	AI must be developed with an awareness of the limitations of human beings as God's created beings, so that AI should not be used to degrade human morality.
Kemanusian yang Adil dan Beradab (Just and Civilized Humanity)	Human-Centered Justice	The AI used must respect human dignity and rights so that AI can be used as a means of protection for individuals from exploitation and deskilling in the current era.
Persatuan Indonesia (The Unity of Indonesia)	Digital Sovereignty & Social Cohesion	AI must be a tool to unite the nation and protect sovereignty, so that it can become national data protection as a strategic asset.
Kerakyatan yang Dipimpin oleh Hikmat kebijaksanaan dalam Permusyawaratan/Perwakilan (Democratic Life Led by Wisdom Thoughts in Deliberations Amongst Representatives of the People)	Deliberative Governance	AI governance must be participatory and inclusive so that it is transparent in public algorithmic decision-making so that it can prevent the concentration of technology oligarchs or certain parties.
Keadilan Sosial bagi Seluruh Rakyat Indonesia (Social Justice for All the People of Indonesia)	Distributive Equity	The benefits of AI technology must be enjoyed equally so that there is equal

		access to infrastructure and digital literacy as well as social security for workers affected by AI technology.

Source: Personal Documentation, 2026

The first precept resulted in the principle of Transcendental Responsibility, which gives a spiritual and ecological dimension to AI ethics. This principle, as explained by Franz Magnis-Suseno (1988), reminds us that technological progress must be accompanied by humility and the recognition that man is not the supreme creator. In the context of AI, this means rejecting the development of AI towards Artificial General Intelligence (AGI) placed above the human position, as well as the obligation to reduce the carbon footprint of data centers that cause damage to the air environment and the training of large models (Tomlinson et al., 2024).

The second precept is at the core of the humanistic approach, which gives birth to the principle of Human-Centered Justice. This principle requires that AI design and implementation always consider human dignity and substantive justice, beyond mere procedural or statistical justice (Speckhardt, 2021). This is in line with the criticism of ethics-washing, where the principle of justice is often only a discourse (Mittelstadt, 2019). In its implementation, this principle requires a strict Algorithmic Impact Assessment (AIA) as well as a complaint mechanism for victims of algorithmic errors, so that individual privacy can be guaranteed (Monteiro, 2025).

The third precept is understood as the principle of Digital Sovereignty & Social Cohesion. In the context of the data economy, this principle emphasizes the importance of technological independence to maintain the unity of the nation. Dependence on AI platforms and infrastructure from abroad has the potential to give rise to a new form of digital colonialism (Couldry & Mejias, 2019). Therefore, strengthening the national AI ecosystem, standardizing data, and protecting digital public spaces from AI-induced disinformation is a must, so we need to use AI wisely (Alenichev et al., 2025).

The fourth precept is interpreted as the principle of Deliberative Governance, which provides an alternative governance model to technocratic and elitist tendencies (Jungherr & Rauchfleisch, 2025). The principle of deliberation requires more substantial public involvement, not just unconditional consent. This can be realized in the form of citizen

meetings on certain AI issues, or by strengthening the role of people's representative institutions in overseeing the use of AI by the government (Mckinney, 2024).

The fifth precept serves as the basis of the principle of Distributive Equity, which directly addresses the threat posed by AI to inequality. This principle requires proactive and redistributive policies, such as the provision of incentive funds for AI development in the public sector as well as Micro, Small, and Medium Enterprises. Without this principle, the benefits of AI will only be felt by a handful of technology players and capital owners, which is contrary to the principles of social justice (Hedlund & Persson, 2025). Overall, these five principles derived from Pancasila are interconnected and form a consistent framework. The framework is not only reactive (to prevent harm), but also proactive and visionary, with the aim of directing AI to realize the ideals of a just and prosperous society in accordance with the context of the Sustainable Development Goals.

3.3. *Bhinneka Tunggal Ika* as a Transversal Principle and Operational Framework for Inclusive Artificial Intelligence

Bhinneka Tunggal Ika (different but still one) serves as a transversal principle that unifies and tests the application of the previous five principles in the reality of real Indonesian pluralism (Cancro, 2016). In the context of AI (Artificial Intelligence), this concept must be upgraded from just a descriptive slogan to a normative social philosophy that actively shapes the digital space (Ganaie et al., 2022). This means that technology must be explicitly designed to recognize, accommodate, and celebrate diversity, while preventing technology from becoming a tool of homogenization or oppression of dominant culture. This approach is in line with the design justice movement which emphasizes that the design process should be centered on communities marginalized by traditional design (Costanza-Chock, 2020). Based on a philosophical and social analysis of *Bhinneka Tunggal Ika*, this study identifies three main operational dimensions that can be translated into AI design and governance principles, as summarized in the following table.

Table 2. The Operational Dimension of *Bhinneka Tunggal Ika* in Artificial Intelligence Ethics

Dimensions of *Bhinneka Tunggal Ika*	**Ethical Principles of Artificial Intelligence**	**Technical and Policy Implications**
Representation in Data	Inclusivism Datasets	Datasets AI should reflect demographic (ethnic, gender, and geographical) and linguistic diversity, thus requiring ethical and representative data collection and data augmentation techniques for minority groups.
Design and Capabilities	Multicultural & Multilingual Artificial Intelligence	The development of AI models, especially NLP (Natural Language Processing) and Computer Vision, must support regional languages and local cultural contexts so as to encourage the preservation of digital culture.
Social and Governance	Social Harmony Maintenance Algorithm	AI systems must be configured to encourage dialogue, mimic echo chambers, and proactively prevent the spread of misinformation and hate speech.

Source: Personal Documentation, 2026

The concept of *Bhinneka Tunggal Ika* requires the application of the principle of Dataset Inclusivity, so that it can function as a critical correction to the tendency of data colonialism, where global datasets dominated by populations and Western perspectives are used as a reference (Couldry & Mejias, 2019). AI systems trained with biased or unrepresentative data will tend to reproduce and even reinforce existing structural injustices. For example, a facial recognition system that is less accurate for dark-skinned individuals, or a credit algorithm that shows a bias against the economic patterns of local indigenous communities. Therefore, it is important to build a representative and ethical data repository as a condition for achieving algorithmic fairness in accordance with the context of a society oriented towards the Sustainable Development Goals (Fukuda-Parr & Gibbons, 2021).

The concept of *Bhinneka Tunggal Ika* requires the development of AI that is Multicultural and Multilingual. Excessive emphasis on formal Indonesian and English in the development of language technology can risk ignoring the hundreds of regional languages and local knowledge contained in them (Robinet, 2025). This principle encourages a strategic

research agenda in the field of languages with limited resources for local languages, as well as the development of corpuses and models that can understand cultural nuances (Noor & Kanitroj, 2025). In the context of social impact and governance, *Bhinneka Tunggal Ika* is a guide in creating a Social Harmony Maintenance Algorithm. Within a digital space prone to polarization, the algorithmic design of social media platforms, which often prioritize engagement for commercial gain, can inadvertently exacerbate differences and fuel hateful content. This principle requires a value-sensitive design in which algorithms' "success" metrics are not only measured by user engagement, but also by their contribution to social cohesion and the quality of public discourse (Kaloko, 2025). This can translate into algorithmic transparency policies that require platforms to reduce risks to national unity and ensure fair and unbiased content moderation.

As a transversal principle, *Bhinneka Tunggal Ika* binds and tests all principles that emerge from Pancasila. As an illustration, the principle of Social Justice (the fifth precept) must be realized through policies that specifically target marginalized groups (Inclusivity Datasets) (Lee & Lee, 2025). The principle of Indonesian Unity (the third precept) is highly dependent on the ability of AI to function as an intercultural bridge (Multicultural AI) and prevent conflicts (Harmony Maintenance Algorithm) (Fu et al., 2025). Thus, *Bhinneka Tunggal Ika* is not just an attachment, but a corrective lens that ensures that Pancasila's AI ethics are truly manifested in diversity.

3.4. Challenges and Integration of Artificial Intelligence Based on Pancasila and *Bhinneka Tunggal Ika*

Although the AI (Artificial Intelligence) ethical framework based on Pancasila and *Bhinneka Tunggal Ika* provides a contextual normative basis, its implementation faces various significant structural and cultural challenges. The analysis shows that there is an implementation gap between the conceptual readiness and the current condition of Indonesia's digital ecosystem (Fauziddin et al., 2025). If these challenges are not anticipated, there is a risk that this ethical framework will become mere elitist discourse with no real impact on technology development and regulatory practices at the national and global levels (Santoso et al., 2025). The main challenges can be grouped into four interrelated dimensions, as summarized in Table 3 as follows.

Table 3. Challenges in Implementing the Artificial Intelligence Ethical Framework Based on Pancasila and *Bhinneka Tunggal Ika*

Challenge Dimensions	Challenge Description	Root Problems & Potential Impacts
Economics and Politics	Aggressive Commercialization and Dependence on Imported Technology	The logic of the global market that encourages data extraction and attention economy is at odds with the principles of sovereignty and social justice. The reliance on foreign AI platforms and models makes local principles difficult to incorporate.
Social and Cultural	Digital Literacy and Unequal Ethics	The digital literacy gap exacerbates algorithmic injustices. Developers and users may not yet have the critical awareness to assess AI from the perspective of local values, so they tend to adopt imported solutions on a taken for granted basis.
Regulation and Governance	Underdeveloped Legal Framework and Policy Fragmentation	Existing regulations do not specifically regulate algorithmic accountability, bias auditing, and AI governance. Coordination between government agencies is still weak, thus hindering the creation of holistic policies.
Technical-Operational	Limited Capacity and Infrastructure	Limited computing resources, ready-to-use representative datasets, and talent in the field of AI Ethics hinder the application of the principles of inclusivity and data sovereignty in engineering practices.

Source: Personal Documentation, 2026

Challenges in the economic-political dimension arise mainly from the dominance of large global technology companies whose business models often conflict with the values of mutual cooperation and sovereignty. AI technology that is 'imported' as a black box solution may be technically very advanced, but it can ignore the local context and marginalize solutions that come from within the country, thus creating a new form of dependency (Zuboff, 2019). On the socio-cultural side, low literacy of technological ethics at all levels is the main barrier. Developers may only be trained in the technical logic of efficiency, while users are less critical of the social implications of the tools they use, making principles such as

deliberation and social justice difficult to operationalize (Hagendorff, 2020).

In the regulatory realm, despite progress through the Personal Data Protection Law, Indonesia still faces shortcomings in specific regulations that regulate accountability for automated decisions, transparency of public algorithms, and social impact audit obligations (Selbst, 2021). The fragmentation of authority between the Ministry of Information and Digital, the State Cyber and Cryptography Agency, and other technical ministries can also hinder an integrated policy response (Herdhiyanto et al., 2023). From a technical-operational perspective, building a dataset that is representative of Indonesia's diversity requires significant investment and ethical data collection methods. In addition, the development of multilingual AI models for low-resource languages is a real technical challenge (Joshi et al., 2020). To address these challenges and integrate the value framework into the AI ecosystem at the global level, a multidimensional strategic agenda is needed. These recommendations are designed to bridge the gap between norms and practices in the use of AI technology, as described in Table 4 below.

Table 4. Integration Agenda and Strategic Recommendations

Intervention Areas	Concrete Recommendations	Relationship with the Principles of Pancasila and *Bhinneka Tunggal Ika*
Education and Capacity	1. Insert the module "Technology Ethics based on National Values" in the core curriculum of higher education (technical, legal, and social). 2. Funding priority research for AI that addresses local issues (such as local flood early detection, Natural Language Processing for regional languages, and AI for Micro, Small and Medium Enterprises).	1. The first precept means building an awareness of transcendental responsibility in the technology profession 2. Fifth precept and *Bhinneka Tunggal Ika* mean realizing literacy justice and developing inclusive solutions. 3. Third precept means building national technological independence.
Regulation and Governance	1. Designing Government Regulations or Laws that require Algorithmic Impact Assessment (AIA) right to explanation, and	1. The first precept means that regulations must contain explicit prohibitions on AI that

	biased audits for AI systems in the public and critical private sectors. 2. Establish a multi-stakeholder AI ethics body and committee.	undermine the values of obedience and humanity. 2. The fourth precept means realizing participatory and accountable governance through an inclusive body. 3. The second precept means guaranteeing justice and preventing maleficence.
Collaboration and Design	1. Establish a permanent consortium involving technologists, lawyers, sociologists, traditional stakeholders, religious leaders, civil society organizations, and industry players. 2. Apply participatory design and value-sensitive design methods to government AI projects and engage potential users from diverse backgrounds from the start.	1. The first precept means involving religious leaders to provide spiritual-ethical considerations. 2. The fourth precept and *Bhinneka Tunggal Ika* ensure that all voices are heard in the deliberation process in policy and technology. 3. *Bhinneka Tunggal Ika* is committed to ensuring that the final product is relevant for all groups.

Source: Personal Documentation, 2026

AI recommendations in the education and capacity sector aim to build a sustainable foundation. The integration of contextual ethics into engineering and computer science curricula is an important step to instill values-sensitive design from the beginning in aspiring developers (Vallor, 2016). The first precept (Godhead) is integrated by encouraging reflection on the ethical limits and moral responsibilities of the profession before the Creator, as well as overcoming technocratic narratives that are only secular (Campbell, 2025). On the other hand, encouraging AI research for local issues will result in real use cases while strengthening the independence of the technology (Gutiérrez, 2025). In the context of regulation and governance, legal clarity is very important. Regulations should govern not only what is prohibited, but more importantly "how" that responsible development process should be conducted, including independent audit mechanisms and remediation for aggrieved persons.

The establishment of independent and trustworthy AI supervision and development institutions has the potential to be a protector for the application of Pancasila and *Bhinneka Tunggal Ika* values in the digital realm (Kofler et al., 2025). Ultimately, collaboration and participatory design are at the heart of integration. Technologies aimed at pluralistic societies can only be designed effectively if the societies themselves are significantly involved (Simonsen & Robertson, 2013). Multidisciplinary forums and participatory design methods serve as practical tools to implement the spirit of "deliberation" (the fourth precept) and ensure that "unity in diversity" (*Bhinneka Tunggal Ika*) is truly reflected in the algorithms and interfaces used daily by Indonesian people.

3. Conclusion

This research successfully operationalizes the philosophical values of Pancasila and Bhinneka Tunggal Ika into a concrete, contextual AI ethical framework that challenges the dominance of universal-acontextual discourses in global AI governance. By integrating principles such as Transcendental Responsibility and Dataset Inclusivity, the framework provides a robust normative guide for government regulation, inclusive technology development, and ethical capacity building in education. While the study significantly contributes to the pluralism of technological ethics by introducing an Indonesian socio-cultural perspective, its current conceptual nature necessitates further empirical validation. Future research should prioritize the development of quantitative audit tools, participatory co-design with marginalized communities, and sectoral case studies to ensure that AI implementation remains aligned with national ideals and the Sustainable Development Goals.

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