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CRIMINAL LAW CHALLENGES AND SOLUTIONS IN ARTIFICIAL INTELLIGENCE-BASED CRIME PREVENTION IN INDONESIA

TANTANGAN DAN SOLUSI HUKUM PIDANA DALAM PENCEGAHAN KEJAHATAN BERBASIS KECERDASAN BUATAN DI INDONESIA

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Abstract

The development of artificial intelligence (AI) technology has serious implications for the criminal justice system in Indonesia. The emergence of new forms of crime such as cyber laundering, deepfakes, and digital data manipulation raises questions about who should be held accountable. This study aims to examine the main challenges in applying criminal law to AI-based entities and offer normative and practical solutions to ensure legal certainty. By using a normative juridical approach and a literature review of Indonesian positive legal regulations and doctrines, this study is expected to contribute to the formation of a ius constituendum that is adaptive to the digital era. The results of the study demonstrate the urgency of reforming national criminal law to accommodate the legal status and responsibilities of AI in the Indonesian justice system.

Keywords : criminal law, artificial intelligence, accountability, digital crime, legal reform.

Abstrak

Perkembangan teknologi kecerdasan buatan (AI) memiliki implikasi serius bagi sistem peradilan pidana di Indonesia. Munculnya bentuk-bentuk kejahatan baru seperti pencucian uang siber, deepfake, dan manipulasi data digital menimbulkan pertanyaan tentang siapa yang harus bertanggung jawab. Studi ini bertujuan untuk mengkaji tantangan utama dalam menerapkan hukum pidana pada entitas berbasis AI dan menawarkan solusi normatif dan praktis untuk memastikan kepastian hukum. Dengan menggunakan pendekatan hukum normatif dan tinjauan pustaka terhadap peraturan dan doktrin hukum positif Indonesia, penelitian ini diharapkan dapat berkontribusi pada pembentukan ius constituendum yang adaptif terhadap era digital. Hasil penelitian menunjukkan urgensi reformasi hukum pidana nasional untuk mengakomodasi status hukum dan tanggung jawab AI dalam sistem peradilan Indonesia.

Kata Kunci : hukum pidana, kecerdasan buatan, akuntabilitas, kejahatan digital, reformasi hukum.

1. INTRODUCTION

Artificial intelligence (AI) technology has brought about major changes in various aspects of human life, from the economic, social, educational, and even law enforcement

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sectors. AI is now not only a tool for automation processes, but has also evolved into an entity capable of making autonomous decisions based on machine learning algorithms and neural networks . This condition has serious implications for the legal system, especially criminal law, which is essentially designed to regulate human behavior as legal subjects. In the context of Indonesian criminal law, this shift presents a new challenge: how to place AI within a legal framework that ensures justice and legal certainty without ignoring the principle of criminal liability .

AI-based crimes now appear in various forms, ranging from misuse of personal data, information manipulation through deepfake technology , to digital money laundering (cyber laundering) using algorithm-based financial systems. As explained by Kusuma et al., the emergence of AI-based Central Bank Digital Currency (CBDC) technology can be misused in cross-border cyber laundering mechanisms . This phenomenon shows that AI is no longer merely a technological instrument, but has become part of a complex and difficult-to-trace criminal structure. In cases like this, the traditional concept of legal subjects, which assumes the perpetrator must be a human or legal entity, is no longer adequate to address the socio-legal realities emerging from artificial intelligence.

Hibatulloh explained that AI has the potential to become a legal subject from a criminological perspective because it can exhibit human-like behavior, including in making decisions that result in legal consequences. This view raises a legal dilemma because Indonesian criminal law still adheres to the principle of culpa personalis , namely that only humans can be held criminally responsible. Neither the Criminal Code nor the new Criminal Code, which was passed in 2023, provides explicit provisions regarding criminal liability for non-human entities. Consequently, when an AI system commits a detrimental act, law enforcement officials are faced with a dilemma: should the developer, the user, or the AI system itself be held accountable?

This dilemma is further complicated by the emergence of new forms of crime such as AI-assisted fraud , algorithmic discrimination , and automated hacking . Within the context of Indonesian positive law, there are no laws and regulations that comprehensively regulate the mechanism of criminal liability for the use or misuse of artificial intelligence. Mufti et al. emphasize the urgency of establishing legislation regarding AI-based technology to avoid a legal vacuum that could potentially weaken the national legal system. Without clear regulations, Indonesia risks becoming vulnerable to the misuse of AI in criminal activities, particularly in the realms of cyber and digital finance.

Another issue that arises is the inability of law enforcement officials to interpret digital evidence generated or manipulated by AI. Ramadhan and Sugama highlight the use of deepfake technology in elections, which can threaten democratic integrity and public trust. These crimes are difficult to prove due to the involvement of AI in generating digital evidence that appears authentic but is actually fake. In the criminal justice system, proof is a crucial element in determining court decisions. Therefore, the challenges faced are not only conceptual regarding

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legal subjects, but also the technical aspects of proving, enforcing, and imposing criminal penalties on perpetrators involving AI.

Furthermore, it is important to note that the Indonesian criminal law system is still based on the paradigm of retributive justice , namely justice that responds to wrongdoing with appropriate punishment. This paradigm becomes less relevant when dealing with technology that lacks moral awareness or malicious intent (mens rea). Criminal liability for AI is difficult to apply because this system operates based on algorithms, not will or intent in the criminal law sense. Ravizki and Yudhantaka in their study explain that AI cannot be included in the category of traditional legal subjects, but still needs to be regulated within the framework of ius constituendum so that there is a legal mechanism capable of ensnaring unlawful acts committed through or by AI.

From the progressive legal perspective put forward by Satjipto Rahardjo, the law must be responsive to social and technological changes. In this regard, the existence of AI demands a paradigm shift in Indonesian criminal law to ensure it remains relevant to the challenges of the times. Qurrahman et al. assert that legal accountability for AI can be adapted to a functional liability approach , where responsibility is assigned to the party controlling or benefiting from the AI system. This approach can serve as the basis for establishing the concept of strict liability in digital criminal law, where fault is not always determined by malicious intent, but by the consequences and control over the system used.

On the other hand, the development of AI also has positive potential in supporting the criminal justice system in Indonesia. Mecca et al. (2025) explain that AI technology can be used to assist law enforcement officers in analyzing crime data, predicting potential violations, and improving the efficiency of the investigation process. However, without a clear legal framework, the use of AI in the legal field can also pose risks of human rights violations, such as algorithmic bias, digital discrimination, and privacy violations. Therefore, a balanced legal policy is needed between aspects of public protection and technological development.

In addition to normative and technical challenges, there are also ethical and philosophical challenges in applying criminal law to AI. If AI is recognized as a legal subject, it begs the question of whether such systems possess the same moral capacity as humans. Conversely, if AI is considered merely a tool, how can the law ensure justice when AI's actions cause harm beyond the control of its users? These issues demonstrate that Indonesian criminal law requires conceptual reform to accommodate the new entities emerging from the digital revolution.

In the context of national policy, the criminal law reform initiated through the new Criminal Code should provide momentum to accommodate technological issues, including artificial intelligence. However, as Nasution et al. noted, the Criminal Code reform is still limited to procedural aspects and does not yet address modern technological issues. Yet, other countries, such as the European Union, have initiated the Artificial Intelligence Act to comprehensively regulate the use and legal responsibilities of AI. The absence of comprehensive regulations in Indonesia could create global legal inequalities and hinder Indonesia's position in facing the industrial revolutions 4.0 and 5.0.

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Based on the above description, it can be concluded that the handling of AI-based crimes in Indonesia faces various challenges: (1) the absence of legal norms regarding the status and responsibilities of AI; (2) the limited capacity of law enforcement officers in interpreting digital evidence; (3) the absence of a legal mechanism that regulates the ethical and accountable use of AI; and (4) weak coordination between agencies in supervising intelligent technology. Therefore, this study seeks to offer a criminal law solution that is responsive to technological developments, through the concept of the Artificial Intelligence Criminal Liability Framework, which can be a basis for the formation of future criminal law in Indonesia.

2. RESEARCH METHOD

This research employs a normative juridical approach (legal research) with a focus on applicable positive legal norms and relevant legal doctrines regarding the issue of criminal liability for the use of artificial intelligence (AI) technology in Indonesia (Amelia et al., 2023). The normative juridical approach was chosen because the main problem of this research lies in the inconsistency between technological developments and the existing legal framework, particularly in determining legal subjects, criminal liability, and the regulation of material and formal criminal law regarding AI-based crimes.

This normative juridical approach emphasizes the study of primary, secondary, and tertiary legal materials. The research focuses on analyzing ius constitutum (current positive law) and ius constituendum (aspired-to-be future law), particularly in the context of national criminal law reform and the formation of new regulations regarding artificial intelligence-based technology. Therefore, this research is not only descriptive but also prescriptive, providing normative solutions for the formation of new laws that are responsive to the dynamics of digital technology.

In addition to a normative legal approach, this research also uses a conceptual approach to understand the position of AI as a legal entity with the potential to act autonomously. This approach is important because legal issues related to AI have not been comprehensively regulated in the national legal system. Through this conceptual approach, the author examines various legal theories, such as the theory of criminal responsibility, the theory of progressive legal systems (Satjipto Rahardjo), and digital criminology theories relevant to the phenomenon of technology-based crime.

a. Data Types and Sources

The data sources used in this research include primary , secondary and tertiary legal materials .

1) Primary legal materials include relevant national legislation, such as the 2023 Criminal Code (KUHP) , Law Number 11 of 2008 concerning Electronic Information and Transactions (UU ITE) and its amendments, as well as draft laws related to personal data protection and artificial intelligence. Furthermore, primary legal materials also include court decisions related to cybercrime and the use of digital technology in criminal contexts.

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2) Secondary legal materials include research findings, scientific journals, law books, and expert writings discussing the relationship between criminal law and artificial intelligence technology. Among the journals used as primary sources are works by Hibatulloh (2025), Ravizki & Yudhantaka (2022), Qurrahman et al. (2024), Mufti et al. (2024), and Fatahillah (2024), which examine aspects of criminal liability and the urgency of establishing new laws related to AI.
3) Tertiary legal materials include legal dictionaries, legal encyclopedias, and official online sources such as the websites of the Ministry of Law and Human Rights, the Supreme Court, and the OECD AI Policy Observatory, which provide supporting information on terminology and the global context of AI development.

b. Data Analysis Techniques

Data were analyzed using qualitative analysis methods with descriptive-analytical and prescriptive-normative models . The descriptive analysis was conducted to describe the current state of positive law regarding AI-based crimes in Indonesia, including identifying gaps in norms and overlapping regulations. The prescriptive analysis was conducted to provide recommendations for the development of criminal law that is more responsive to technological change.

The analysis process is carried out through the following stages:

1) Inventory of legal norms – identifying all criminal law norms relevant to the regulation of technology-based crimes.
2) Legal interpretation – using grammatical, systematic and teleological interpretation methods to understand the scope of existing legal regulations.
3) Comparative analysis (comparative approach) – comparing the Indonesian legal system with countries that have regulated legal liability for AI, such as the European Union and the United States.
4) Synthesis and normative recommendations – drafting a new legal model (AI Criminal Liability Framework) as a solution to the criminal law challenges arising from the development of AI.

3. RESULT AND DISCUSSION

The results of this study indicate that the current Indonesian criminal law framework is not yet adequately prepared to address crimes involving artificial intelligence (AI) as either an autonomous actor or a sophisticated crime-enabling system. From the perspective of ius constitutum, existing regulations—particularly the Criminal Code (KUHP 2023) and the Law on Electronic Information and Transactions (ITE Law)—still position criminal responsibility strictly within the paradigm of human actors and legal entities. There are no explicit norms that regulate the legal status, accountability model, or attribution of fault for actions performed autonomously by AI systems.

One of the main findings is the normative gap in determining criminal liability when AI systems are involved in unlawful acts such as cyber laundering, deepfake manipulation, and

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algorithm-based fraud. Current criminal law doctrines in Indonesia are grounded in the principle of culpa personalis, which requires intent (mens rea) and consciousness—elements that AI inherently lacks. As a result, law enforcement authorities face significant legal uncertainty when determining whether responsibility should be imposed on developers, operators, users, or corporations benefiting from AI deployment. This condition confirms the argument that traditional liability models are insufficient to respond to AI-driven criminality.

The study further reveals that the absence of a functional accountability framework creates enforcement challenges, particularly in evidentiary processes. Digital evidence generated or altered by AI—such as deepfake videos or automated financial transactions—poses serious difficulties for verification, authentication, and attribution. This finding supports previous scholarly concerns that AI can undermine the integrity of criminal proof, especially when legal actors lack adequate technological literacy and forensic capacity. Consequently, the effectiveness of criminal justice institutions is weakened, potentially leading to impunity for technologically sophisticated crimes.

From a ius constituendum perspective, the findings emphasize the urgency of reforming Indonesian criminal law through a more adaptive and progressive approach. The study identifies the relevance of adopting a functional liability and strict liability model, where criminal responsibility is assigned based on control, benefit, and risk allocation rather than intent alone. Under this model, parties who design, deploy, control, or economically benefit from AI systems can be held accountable for harms resulting from AI operations, regardless of direct intent. This approach aligns with progressive legal theory, which views law as a dynamic instrument that must respond to social and technological change.

The discussion also highlights the importance of comparative insights, particularly from jurisdictions such as the European Union, which has initiated comprehensive AI governance through the Artificial Intelligence Act. Compared to Indonesia, these jurisdictions have begun to integrate ethical principles, risk-based classification, and accountability mechanisms into binding legal frameworks. The absence of similar regulations in Indonesia risks creating regulatory lag and legal vulnerability in the face of transnational digital crime.

Based on these findings, this study proposes the Artificial Intelligence Criminal Liability Framework as a normative solution. This framework integrates (1) functional accountability, (2) strict liability for high-risk AI applications, (3) enhanced digital forensic capacity for law enforcement, and (4) inter-agency coordination in AI supervision. Such a framework would enable Indonesian criminal law to maintain legal certainty, protect public interests, and remain relevant in the era of advanced digital technology.

In sum, the results demonstrate that AI-based crime prevention in Indonesia requires not merely technical adaptation, but a fundamental reorientation of criminal law doctrine toward a responsive, future-oriented legal system.

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4. CONCLUSION

This study shows that the teaching strategies of Indonesian teachers in learning speaking skills at MA Muhammadiyah Palleko have applied various approaches oriented to the development of students' communication skills. Teachers use communicative strategies, discussions, presentations, and questions and answers to create active and participatory learning. These strategies have been proven to support increasing students' speaking boldness, the ability to structure ideas in a structured manner, and their involvement in the learning process.

However, the effectiveness of the teaching strategy is still influenced by several factors, such as uneven levels of student confidence, limited learning media, and suboptimal feedback by teachers. In addition, the learning environment and academic culture of students also play a role in the success of learning speaking skills.

Overall, it can be concluded that the teaching strategies used by teachers have been on the right track in supporting the development of students' speaking skills. Even so, it is necessary to strengthen the use of learning media, student motivation, and provide more intensive practice spaces so that the learning process becomes more effective and able to produce better speaking competence.

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