



## Artificial Intelligence and Criminal Liability: New Challenges for Indonesian Criminal Law

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### ABSTRACT

The rapid advancement of Artificial Intelligence (AI) has significantly transformed various aspects of human life, including the field of criminal law. AI technology is no longer limited to functioning as a supporting tool; it is increasingly capable of operating in a semi-autonomous or fully autonomous manner through machine learning systems. This development raises new legal challenges, particularly concerning criminal liability when AI systems are involved in actions that constitute criminal offenses. The primary issue lies in determining the appropriate legal subject to be held accountable, given that the Indonesian criminal law system remains predominantly centered on human actors (natural persons). This study aims to examine the challenges of criminal liability arising from the use of AI in Indonesia and to explore relevant legal concepts that may address these emerging issues. The research employs a normative juridical method, utilizing both statutory and conceptual approaches. The legal materials analyzed include legislation, scholarly publications, and prior studies related to AI and criminal law. The findings indicate that AI has not yet been recognized as a legal subject within the Indonesian legal framework, and therefore cannot be held criminally liable. As a result, liability is still attributed to human actors, including developers, users, and corporations that deploy AI technologies. Nevertheless, the increasing autonomy of AI systems calls for a re-evaluation and adaptation of existing criminal law doctrines to ensure legal certainty, fairness, and adequate protection for society in the digital era.

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### INTRODUCTION

The rapid advancement of digital technology over the past few decades has led to transformative innovations that have fundamentally reshaped human life. One of the most influential developments is Artificial Intelligence (AI), a technology designed to simulate human cognitive abilities, including learning, reasoning, and decision-making processes. Today, AI is not only utilized in industrial and economic sectors but has also penetrated strategic fields such as healthcare, transportation, cybersecurity, and even judicial systems. This widespread integration indicates that AI has become an inseparable component of contemporary society (Setiawan & Wijayanto, 2025).

In practice, AI operates through sophisticated algorithms and machine learning systems that enable it to process vast amounts of data and generate decisions autonomously. While this capability enhances efficiency and productivity, it simultaneously introduces significant risks. One major concern is the potential for unlawful acts involving AI, whether directly or indirectly. Examples include the use of AI in generating deepfake content, manipulating data, conducting automated cyberattacks, and producing decisions that may harm certain individuals or groups (Cantika et al., 2024).

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The issue becomes increasingly complex as AI evolves from a mere assistive tool into a semi-autonomous or fully autonomous system. In such circumstances, AI can make decisions without direct human intervention. This raises a fundamental question in criminal law: who should be held accountable when AI performs actions that fulfill the elements of a criminal offense? Should liability be attributed to the user, the developer, or other parties involved in the operational lifecycle of the AI system? These questions are particularly relevant given that Indonesian criminal law is still grounded in classical principles that recognize humans as the primary subjects of criminal responsibility (Haris & Tantimin, 2022).

From a doctrinal perspective, criminal liability is closely linked to the principle of fault (*schuld*). This principle asserts that a person may only be punished if there is fault in the form of intent (*dolus*) or negligence (*culpa*). Additionally, criminal law requires the presence of criminal capacity, meaning the ability of an individual to understand and control their actions. These foundational concepts become problematic when applied to non-human entities such as AI, which lack consciousness, free will, and moral judgment. Consequently, applying the fault principle to AI remains highly challenging (Aldin et al., 2026).

In Indonesia, regulations concerning AI remain fragmented and have not yet been comprehensively integrated into the national legal system. Existing legal frameworks, such as the Law on Electronic Information and Transactions (ITE Law), primarily regulate electronic systems in general terms without specifically addressing AI-related issues. This situation creates a legal vacuum in determining criminal liability for actions involving AI. As a result, there is a risk of legal uncertainty and difficulties in law enforcement when dealing with cases related to AI technologies (Yunita & Hadi, 2026).

Furthermore, the advancement of AI introduces new challenges in criminal evidence. Many AI systems operate as “black boxes,” meaning that their decision-making processes are not easily interpretable or transparent. This lack of transparency complicates efforts by law enforcement authorities to establish a causal relationship between the AI’s actions and the resulting harm. In criminal law, proof is a critical element in determining guilt and liability. Therefore, the opacity of AI systems may weaken the effectiveness of law enforcement in addressing technology-based crimes (Wijanarko et al., 2026).

At the global level, the issue of legal accountability for AI has attracted considerable attention. Several countries and international organizations have begun developing legal frameworks and policy guidelines governing AI, particularly in terms of accountability and liability. For instance, the European Union has introduced a risk-based regulatory approach through the Artificial Intelligence Act, which categorizes AI applications according to their level of risk. This approach illustrates that AI cannot be regulated in the same manner as conventional technologies and instead requires a more flexible and adaptive legal framework.

However, such approaches have not been fully adopted within the Indonesian legal system. As a developing country with significant potential in digital technology, Indonesia faces both opportunities and substantial risks in the implementation of AI. Therefore, it is crucial to reassess fundamental concepts within criminal law to ensure their relevance in addressing technological advancements. Reformulating criminal law becomes essential to maintain its ability to provide legal protection and certainty in a rapidly evolving digital environment.

Within academic discourse, there is an ongoing debate regarding the possibility of recognizing AI as a legal subject. Some scholars argue that highly autonomous AI systems should be granted the status of an “electronic person,” enabling them to bear legal responsibility independently. However, this perspective remains controversial, as it challenges the fundamental legal requirement of consciousness and intent as the basis of liability. Consequently, most legal systems, including Indonesia, continue to classify AI as a legal object rather than a subject (Syahirah & Prasetyo, 2025).

In practice, criminal liability related to AI is still predominantly attributed to human actors involved in its development and use. These include developers, operators, users, and corporations that utilize AI technologies. This approach is based on the assumption that humans retain control, whether directly or indirectly, over AI systems. Nevertheless, as AI becomes increasingly autonomous, this assumption becomes more difficult to sustain.

Therefore, new approaches in criminal law are necessary to address these emerging challenges. One possible approach is the application of strict liability in specific cases involving AI, where liability does not depend on proving fault. Additionally, a risk-based approach may be employed to allocate responsibility according to the level of risk posed by the AI system. Such approaches shift the focus of criminal law from solely individual fault to broader considerations of technological risk management (Putri et al., 2024).

Based on the foregoing discussion, it can be concluded that the development of AI has significant implications for criminal law, particularly in the area of criminal liability. The challenges that arise are not only technical but also conceptual, as they question the foundational principles of criminal law itself. Accordingly, this study is essential to examine how Indonesian criminal law can adapt to the advancement of AI and to formulate a more relevant and responsive framework of criminal liability in the digital era.

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**RESEARCH METHOD**

This study employs a normative legal research approach, which focuses on examining existing legal norms as well as legal concepts developed within scholarly literature. This method is considered appropriate because the issue under investigation relates to the absence of specific legal norms and the gap between the rapid development of Artificial Intelligence (AI) and the current criminal law framework. Normative legal research emphasizes the analysis of written legal materials, enabling a comprehensive examination of criminal liability principles in the context of emerging technologies (Soekanto, 2007).

The research applies two primary approaches, namely the statute approach and the conceptual approach. The statute approach involves reviewing relevant legal instruments governing criminal law and information technology, including the Indonesian Criminal Code (KUHP) and the Law on Electronic Information and Transactions (ITE Law). Meanwhile, the conceptual approach is used to explore and analyze fundamental doctrines in criminal law, such as the principle of fault (*schuld*), criminal liability, and the notion of legal subjects. These concepts are then critically connected to the emergence of AI as a contemporary legal phenomenon.

The legal materials utilized in this study are categorized into primary, secondary, and tertiary sources. Primary legal materials consist of statutory regulations relevant to the research topic. Secondary materials include academic books, national journal articles, and prior studies that discuss Artificial Intelligence and criminal liability. Tertiary materials comprise legal dictionaries, encyclopedias, and other reference sources that support the clarification of legal terminology and concepts used throughout the research.

Data collection is conducted through a library research method, which involves gathering and reviewing various literature relevant to the subject matter. The researcher systematically examines academic sources such as legal journals, textbooks, and official documents related to technology regulation and criminal law. This structured process ensures that the data obtained are both valid and directly relevant to the research problem.

Furthermore, the analysis of legal materials is carried out qualitatively using a descriptive-analytical method. The descriptive aspect aims to systematically present the framework of criminal liability within Indonesian law alongside the development of AI as a novel legal issue. The analytical component, on the other hand, is intended to evaluate the relationship between existing legal norms and the realities of technological advancement, as well as to identify potential legal gaps. The findings of this analysis are then used to construct coherent and well-grounded legal arguments.

Through this methodological framework, the study is expected to provide a comprehensive understanding of the challenges of criminal liability in the use of Artificial Intelligence in Indonesia, while also offering conceptual insights that may contribute to future reforms of criminal law.

**DISCUSSION****The Position of Artificial Intelligence in the Perspective of Indonesian Criminal Law**

Within the Indonesian legal system, Artificial Intelligence (AI) is currently categorized as a legal object rather than a legal subject. This classification carries fundamental implications in criminal law, as only legal subjects can bear criminal responsibility for unlawful acts. In classical criminal law doctrine, legal subjects are primarily limited to natural persons and, in more modern developments, extend to legal entities or corporations. AI, however, has not been recognized as an independent legal subject because it does not fulfill essential criteria such as consciousness, free will, and the capacity to understand the consequences of its actions (Haris & Tantimin, 2022).

From a conceptual standpoint, AI is a human-created system that operates based on algorithms and data, either pre-programmed or acquired through machine learning processes. Therefore, AI does not possess absolute autonomy; instead, it functions within a framework that remains under human control, whether directly or indirectly. In this sense, AI is more appropriately understood as a tool or instrument utilized by humans to achieve specific objectives. Consequently, any action carried out by AI is legally interpreted as an extension of human intent.

This perspective aligns with the view that AI constitutes part of an electronic system or electronic agent whose operation is inherently dependent on human involvement, including designers, developers, and users (Nada et al., 2024). In Indonesian law, the notion of an electronic agent has already been recognized in regulations such as the Law on Electronic Information and Transactions (ITE Law), which essentially positions electronic systems as instruments employed by individuals or legal entities in conducting legal activities. Accordingly, AI does not possess independent legal standing but remains intrinsically linked to the legal subjects behind its operation.

Nevertheless, the rapid advancement of AI technology has sparked academic debate regarding the possibility of altering its legal status in the future. Some scholars argue that highly autonomous AI systems particularly those capable of self-learning and independent decision-making could potentially be considered as new forms of legal subjects, such as an “electronic person.” Despite this, such proposals face significant

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conceptual and philosophical challenges, especially due to the absence of morality, consciousness, and accountability within AI systems.

From the standpoint of Indonesian criminal law, recognizing AI as a legal subject would also introduce substantial complexities. One major issue concerns the application of the principle of fault (*schuld*), which requires the existence of intent (*mens rea*) or negligence as the basis for criminal liability. As a non-human entity, AI lacks the ability to form intent or commit fault in a legal sense, making it difficult to impose direct criminal responsibility upon it. This indicates that the current criminal law framework is not yet equipped to accommodate such possibilities.

In practical law enforcement, the classification of AI as a legal object results in criminal liability being attributed to human actors involved in its use. These actors may include developers who design the AI system, operators who manage its functioning, and users who apply the technology in various activities. Additionally, corporations may also bear responsibility when AI is employed in business operations that cause harm or violate legal provisions.

As a consequence, any action performed by AI is legally regarded as a representation or extension of the human actors behind it. In other words, AI is not treated as an independent perpetrator of criminal acts but rather as a means through which humans carry out certain actions. Therefore, when a criminal offense involves AI, the primary focus of legal analysis and enforcement remains on identifying the human parties who exercise control, whether in the stages of development, operation, or utilization of the technology.

However, this approach is not without its limitations. As AI systems become more complex and increasingly autonomous, the connection between AI-driven actions and human control becomes more difficult to trace. In some instances, AI may generate outcomes that are not entirely predictable even for its developers or users. This situation creates challenges in determining criminal liability, particularly in cases where clear elements of intent or negligence on the part of human actors cannot be easily established.

### **Challenges to the Principle of Fault (*Schuld*) in AI-Based Criminal Offenses**

One of the core principles in criminal law is the doctrine of fault, commonly expressed in the maxim *geen straf zonder schuld* (no punishment without fault). This principle establishes that criminal liability can only be imposed when an individual is proven to have acted with fault, either in the form of intent (*dolus*) or negligence (*culpa*). It also requires the presence of criminal responsibility capacity (*toerekeningsvatbaarheid*), meaning the ability of an individual to comprehend and control their actions (Angel, 2025). Consequently, criminal law is fundamentally oriented toward the moral and psychological dimensions of human behavior.

However, significant challenges arise with the development of Artificial Intelligence (AI), particularly systems based on self-learning algorithms that enable autonomous decision-making without direct human intervention. Modern AI systems are capable of processing vast datasets, identifying patterns, and producing outcomes that may not be entirely foreseeable even to their creators. In such circumstances, it becomes increasingly difficult to identify elements of fault in the traditional legal sense, as there is no clear *mens rea* that can be directly attributed to AI as an actor (Rudi Margono, 2026).

The absence of *mens rea* in AI gives rise to serious conceptual issues. Classical criminal law does not assess wrongdoing solely based on the consequences of an act but also considers the internal state of mind of the perpetrator. AI, as a non-human entity, lacks consciousness, intention, and moral awareness, and therefore cannot distinguish between right and wrong in a normative sense. As a result, when AI causes harm or even fulfills the elements of a criminal offense, conventional approaches to fault become difficult to apply.

Furthermore, the complexity of AI systems complicates the identification of causal links between actions and human fault. In relatively simple systems, the connection between human control and the resulting actions remains traceable. However, in autonomous and adaptive AI systems, decisions are often generated through dynamic learning processes that evolve over time. This makes human involvement less direct and more diffuse, thereby complicating efforts to establish intent or negligence on the part of specific individuals.

These conditions demonstrate that traditional notions of fault in criminal law are not fully equipped to address the complexities introduced by AI technologies. The reliance on subjective elements such as intention and awareness becomes a significant obstacle in addressing actions generated by autonomous systems. Therefore, there is a need to reinterpret the principle of fault in order to maintain its relevance in the face of technological advancement.

One alternative approach that has gained attention is the concept of risk-based liability. This framework focuses on the level of risk generated by a particular activity or technology rather than solely on the subjective fault of the actor. In the context of AI, responsibility may be assigned to parties involved in the development, operation, or use of the system based on their ability to anticipate and mitigate potential risks (Ayu et al., 2026).

In addition, the doctrine of strict liability may also be considered in certain cases involving AI. Under this approach, individuals or legal entities can be held criminally responsible without the need to prove fault, as long as their actions result in prohibited consequences. This model is often regarded as more suitable

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for addressing high-risk technologies, including AI, where the potential impact on society can be extensive and harmful.

Nevertheless, the application of these alternative approaches must be carefully balanced to ensure consistency with fundamental principles of criminal law, particularly justice and proportionality. Any reformulation of the concept of fault should not undermine the protection of individual rights, but rather aim to achieve an appropriate balance between legal certainty, fairness, and social utility.

### **Models of Criminal Liability in the Use of Artificial Intelligence**

In contemporary criminal law practice, the increasing use of Artificial Intelligence (AI) across various human activities has created a pressing need to formulate models of criminal liability that are both relevant and adaptable. Since AI has not yet been recognized as a legal subject, the framework of criminal responsibility continues to be directed toward human actors or legal entities connected to the use of such technology. In this regard, several models of liability can be identified, including user liability, developer liability, and corporate liability (Pane & Permana, 2025).

The first and most commonly applied model is user liability. Under this approach, individuals who utilize AI to engage in unlawful conduct may be held directly responsible. For instance, the use of AI to create and disseminate misinformation, deepfake content, or manipulated digital data that harms others clearly places accountability on the user. In such cases, AI functions merely as a tool, while the intention and purpose originate from the human user. Consequently, the element of fault, particularly in the form of intent (*dolus*), is relatively easier to establish due to the direct link between the user's actions and the resulting harm (Sofian, 2025). This model is consistent with the fundamental principles of criminal law, which emphasize human actors as the primary subjects of liability.

The second model, developer liability, becomes relevant when criminal acts or damages arise from flaws in the design, programming, or testing of AI systems. In this context, developers may be held accountable if they are proven to have acted negligently in ensuring that the system is safe and does not pose foreseeable risks. Such negligence may include failure to anticipate potential misuse, inadequate system safeguards, or the absence of effective control mechanisms over AI behavior. Therefore, developer liability is grounded in the concept of *culpa* (negligence), where fault arises from a lack of due care in the development process.

Nevertheless, establishing liability under this model is often challenging, particularly in the case of complex AI systems that rely on autonomous learning mechanisms. In many situations, the outcomes produced by AI are not entirely predictable, even for their creators. This makes it difficult to clearly define the boundaries of developer responsibility. Accordingly, there is a need to establish clear standards of care in AI development, which can serve as benchmarks for determining whether negligence has occurred.

The third model, corporate liability, has gained increasing significance alongside the widespread adoption of AI in business and industrial sectors. In this framework, corporations as legal entities may be held accountable for actions carried out through AI systems they deploy. Such liability may be based on doctrines such as vicarious liability where responsibility is attributed for the acts of others within an employment relationship or strict liability, which does not require proof of fault (Rahayu et al., 2026).

The application of corporate liability is particularly important in situations where AI is used on a large scale and has the potential to produce widespread impact, such as in finance, transportation, or digital services. In these contexts, corporations are deemed to exercise control over the AI systems they utilize and are therefore responsible for ensuring their safety and legal compliance. As a result, corporations cannot evade liability by claiming that harmful actions were solely performed by autonomous systems.

Beyond these three models, recent legal developments have introduced the concept of collective or ecosystem-based liability. This approach distributes responsibility proportionally among multiple actors involved in the lifecycle of AI, including designers, developers, distributors, and end users. Such a framework is considered more realistic in addressing the complexity of AI technologies, which typically involve multiple stakeholders and stages of operation.

### **The Need for Criminal Law Reform in Addressing Artificial Intelligence**

The rapid advancement of Artificial Intelligence (AI) necessitates reforms in criminal law to accommodate the evolving dynamics of modern technology. Indonesian criminal law, which remains largely rooted in classical legal concepts, appears insufficient to fully address the complexities introduced by AI. This is evident in the absence of comprehensive regulations governing the status, use, and criminal liability associated with AI technologies. As a result, a legal vacuum has emerged, potentially leading to uncertainty in law enforcement practices (Rosyadi & Hoesein, 2025).

One of the key areas requiring reform concerns the concept of legal subjects in criminal law. As AI systems become increasingly autonomous, it is necessary to reconsider whether the traditional understanding of legal subjects limited to natural persons and legal entities remains adequate. Although AI cannot currently be recognized as a legal subject due to its lack of consciousness and free will, future technological

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developments may prompt consideration of limited forms of legal recognition for digital entities. Therefore, criminal law must remain adaptive and open to such developments while still preserving its foundational principles.

In addition, reforms are needed in the framework of criminal liability. The traditional reliance on the principle of fault (*schuld*) must be reassessed in order to address AI systems that operate without awareness or intent. In this context, alternative approaches such as strict liability and risk-based liability become increasingly relevant. A risk-based approach, for example, enables the allocation of responsibility to parties who control or benefit from AI systems, based on the level of risk generated by the technology. This shifts the focus of criminal law from purely individual fault to broader considerations of technological risk management (Haefani & Mulyanti, 2025).

Moreover, criminal law reform should incorporate preventive regulatory measures. Law should not function solely as a repressive mechanism that punishes wrongdoing after it occurs, but also as a preventive tool aimed at minimizing the likelihood of violations. In the context of AI, this can be achieved through the establishment of system safety standards, mandatory algorithmic audits, transparency requirements, and strict oversight mechanisms for both developers and users. Such preventive measures are essential given that the impact of AI can be extensive and systemic.

Furthermore, there is a need to harmonize criminal law with regulations in the fields of information technology and data protection. As AI operates within a broader digital ecosystem, it cannot be regulated in isolation. Consequently, criminal law reform must be integrated with other legal policies to ensure coherence and mutual reinforcement across regulatory frameworks. This also requires cross-sector collaboration involving government institutions, academic communities, and technology industry stakeholders.

Equally important, criminal law reform must take into account global developments. Many countries have begun to establish legal frameworks for AI, whether through specific regulations or ethical guidelines governing its use. Indonesia can draw valuable insights from these international practices while adapting them to its own socio-cultural context and legal system. A comparative approach is therefore crucial to ensure that Indonesian criminal law remains aligned with global technological progress.

In conclusion, reforming criminal law in response to AI is no longer optional but imperative. Without adequate adaptation, criminal law risks losing its relevance in regulating increasingly complex social phenomena. Strategic efforts are therefore required, including the reformulation of legal concepts, the strengthening of regulatory frameworks, and the enhancement of law enforcement capacity in understanding technological developments.

Ultimately, the primary objective of these reforms is to establish a criminal law system that not only ensures legal certainty and justice but also remains responsive to the challenges posed by Artificial Intelligence in the modern era.

## CONCLUSION

The rapid development of Artificial Intelligence (AI) has introduced significant challenges to the Indonesian criminal law system, particularly in relation to criminal liability. As AI technologies become more advanced and capable of operating autonomously, difficulties arise in applying traditional criminal law concepts that are fundamentally centered on human actors as legal subjects. Under the current legal framework, AI is still classified as a legal object and therefore lacks the capacity to bear direct criminal responsibility.

These challenges become more complex when examined in light of the principle of fault (*schuld*), which requires the presence of intent or negligence as a basis for punishment. As a non-human entity, AI does not possess consciousness or free will, and thus cannot fulfill these essential elements. This condition indicates that the classical concept of fault in criminal law is not fully equipped to address the realities of modern AI-driven technologies.

In practice, criminal liability arising from the use of AI continues to be attributed to human actors, including users, developers, and corporations that employ such technologies. Various models of liability such as user liability, developer liability, and corporate liability demonstrate that the legal system still places humans at the center of accountability. However, the increasing complexity and autonomy of AI systems create significant challenges in identifying the most responsible party, particularly when the causal relationship between actions and actors becomes unclear.

Accordingly, there is a pressing need for criminal law reform that is more adaptive and responsive to technological advancements. Reconstructing the concept of criminal liability, including the adoption of approaches such as risk-based liability and strict liability, is essential to address these emerging issues. In addition, strengthening preventive regulations and ensuring alignment with information technology policies are necessary steps toward building a legal system that can provide certainty, justice, and protection for society in the digital age.

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In conclusion, Indonesian criminal law must continue to evolve in order to remain relevant in responding to the challenges posed by Artificial Intelligence, while still upholding the fundamental principles that underpin justice within the legal system.

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