

Law Enforcement Using Machine Learning as a Decision Support System for Indonesia's Corruption Eradication

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Abstract

Over time, law enforcement in Indonesia has experienced various challenges. One of the main issues affecting public trust is the law enforcement of corruption. Currently, efforts to eradicate corruption in Indonesia remain unoptimal due to the issues of integrity and evolving modes of corruption. This article aims to find out, describe, and analyze the phenomenon of law enforcement of corruption and propose alternative solutions to answer these challenges through the use of Artificial Intelligence (AI) technology. This research employed doctrinal legal research methods, resulting in a conceptual framework of law enforcement through the use of machine learning in supporting the detection of corruption-related fund flows in Indonesia. Recommendations include the need for synergy between various parties, strengthening legal culture, and establishing legal norms related to machine learning that support the decision support system.

Keywords: Corruption, Machine Learning, Decision Support System, Corruption Eradication Commission (KPK).

Introduction

The rapid advancement of technology in various aspects of life has driven innovations that are solely intended to improve a better human life. This is particularly reflected in digital technology which is increasingly complex due to rapid human needs. This progress not only benefits individuals but also the wider community to create an effective and efficient life (Buhal, 2000).

Modern technology has great potential to increase productivity, both at the organizational and individual levels in a working system. With the advent of the Industrial Revolution and the emergence of new technologies, the government has the opportunity to transform work patterns that were previously manual and traditional to become more modern, simple, fast, and efficient (Adiastri, 2024). This transformation allows governments to respond to the growing complexities of the era while meeting the evolving expectations of society. However, the industrial revolution also brings new challenges for the government.

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In this era, society demands higher quality, transparent, and responsive public services. Therefore, the government needs to utilize digital technology to improve the capacity of public services (Nurlaila Nurlaila et al., 2024). The use of technology in governance also supports the emergence of a knowledge society, where information and public participation are key elements (Shava & Hofisi, 2017). Technology allows citizens to participate in the decision-making process through e-participation mechanisms, which not only strengthens democracy but also increases public trust in government.

In this context, the adoption of technology is a strategic step to realize an inclusive, transparent, and data-driven government. However, the rapid development of technology also opens opportunities for corruption in the sectors utilizing it. The use of technology in tandem with an adequate monitoring system has the potential to create practices of data manipulation, system abuse, and other forms of corruption. For example, electronic procurement systems designed for efficiency can be misused by individuals to organize tenders non-transparently. The government needs to realize that the application of technology without strict supervision can have a negative impact that is detrimental to society.

Fundamentally, corruption is a criminal offense that is systematically organized and is often part of the politics of criminal law in various countries. As a crime with far-reaching impacts, corruption not only harms state finances but also hampers national development (Atmasasmita, 2016). Therefore, combating corruption is a top priority in the criminal law politics implemented by the government. The legal policy reflects the state's strategic actions, executed by authorized institutions to formulate regulations that embody societal aspirations while achieving development goals. In this context, the politics of criminal law is directed at creating a system of legislation that is relevant to the needs of the times and the challenges of the future.

Law enforcement in combating corruption is a direct implementation of criminal law politics. The government has the responsibility to ensure that the existing laws and regulations not only punish the perpetrators but also prevent the occurrence of corruption crimes in the future. However, reality shows that failure in upholding justice often occurs, in both developed and developing countries, despite their differing economic and technological capacities (Saputra & Firmansyah, 2023a). This phenomenon reflects the complexity of corruption eradication, often characterized by structural, cultural, and political challenges.

In criminal law enforcement, corruption is frequently interconnected with other criminal offenses, such as money laundering (TPPU) and terrorism. Corrupt actors often aim to conceal their illicit proceeds through money laundering mechanisms that exploit both domestic and international financial systems. In addition, there is also a correlation between corruption and the funding of terrorist activities, where funds obtained from corruption can be used to support terrorist acts (Rafsanjani, 2021). This shows the need for a comprehensive approach to combat corruption, taking into account its linkages with other crimes.

In the context of corruption law enforcement, motives are developed rapidly through the use of Artificial Intelligence (AI) such as chatbots. The nature of AI, characterized by its "black box" complexity, makes it difficult to predict how these

actions and flows are carried out (Mediros, 2023). This necessitates a proactive response from the government, especially the Corruption Eradication Commission (KPK) in mitigating possible risks in the future.

In Indonesia, the legal basis for corruption eradication is firmly established through Law Number 31 of 1999 concerning the Eradication of Corruption as amended by Law Number 20 of 2001. In addition, the eradication of money laundering is regulated through Law No. 8/2010, which is an important instrument in uncovering organized crime networks. However, the effectiveness of the implementation of these two laws is highly dependent on the integrity and professionalism of law enforcement officials, as well as the government's ability to consistently enforce the rules without discrimination.

The Anti-Corruption Behavior Index (ABI) for Indonesia in 2024 showed a score of 3.85 on a scale of 0 to 5. This figure has decreased compared to the previous year's achievement, which was 3.92 in 2023 (Badan Pusat Statistik, 2024). This decrease indicates a decline in anti-corruption awareness and attitudes within the society. In the IPAK scale, scores closer to 5 signify stronger anti-corruption behavior, whereas scores nearer to 0 reflect greater permissiveness toward corrupt practices. This downward trend requires serious attention to prevent the deterioration of anti-corruption culture in society.

This is reinforced by data released by the Corruption Eradication Commission (KPK), which reveals that from 2004 to the first quarter of 2024, bribery remains the most prevalent form of corruption, with a total of 1,012 cases, ranking first. This is followed by cases related to the procurement of goods and services, which account for 369 cases (KPK (Komisi Pemberantasan Korupsi, 2024). These figures show that despite various efforts to eradicate corruption, corrupt practices remain pervasive, especially in strategic sectors such as bribery and procurement.

As part of the construction of the order of society, the law must adjust to the pace of technological development in order to remain relevant to social change and the increasingly complex needs of humanity. The principle of "Justitia Semper Reformanda Est," meaning "justice must always reform itself", shows that the law must always be adaptive to the times, including its relationship with technology and the enforcement of anti-corruption measures. One of the important innovations in global development is the advent of AI. AI has introduced transformative work patterns, enabling cognitive tasks to be completed swiftly. The implementation of AI not only speeds up human work but has also helped Law Enforcement Officials (APH) in law enforcement more efficiently, including in handling Corruption (Noor & Manatan, 2022).

Recognizing the great potential of AI, the government has prioritized its development through the National Strategy for Artificial Intelligence. Based on data from the Ministry of Research and Technology and the National Research and Innovation Agency (BRIN), AI is expected to support five main priority sectors, including health services, bureaucratic reform, education and research, food security, and mobility for development services (Sari & Elvira, 2024). This initiative aims to maximize AI utilization for broader national development, increase efficiency across sectors, and address public demands in the digital era.

One of the efforts that can be utilized in the presence of AI is Machine Learning, a system designed to detect and predict certain patterns.

This paper aims to explain the current conditions related to corruption and the utilization of AI in law enforcement in Indonesia and describe the application of machine learning systems as a decision support system in preventing and mitigating corruption crimes.

Research Method

This scientific article employed a doctrinal research method developed based on doctrine and legal scientific procedures, with reference to norms and principles sourced from legislation and other legal literature (Conville & Chui, 2007). In alignment with the problem under study, the study adopts several approaches, including a comparative approach, a statutory approach, a conceptual approach, and an analytical approach (Marzuki, 2005). The data processing and analysis involve the identification and inventory of legal issues, preparation of problem formulation, objectives, and benefits of research, collection of legal materials, determination of relevant methods and approaches, and qualitative analysis by processing and interpreting the data obtained based on the established approach.

Result and Discussion

Existing Conditions Related to Corruption Crime and AI Utilization in Law Enforcement in Indonesia

The advancement of information and communication technology has brought fundamental changes to the behavior of society and human civilization. This technology not only accelerates the process of globalization and makes the world seem borderless but also drives social change in society. These changes have resulted in complex implications, as, despite technology's crucial role in enhancing welfare, advancing development, and uplifting civilization, information technology also serves as a potential tool for unlawful activities (Aldriano & Priyambodo, 2022).

Extraordinary crime is a dynamic criminal phenomenon and is highly influenced by changes in government, economic conditions, and the political dynamics of a country. Extraordinary crime can be defined as a category of crime that has a major negative impact on human civilization, both locally and globally. This crime has serious implications for various aspects of human life, including social, economic, political, legal, and cultural (Hatta, 2019). The extraordinary nature of these crimes necessitates a distinct legal approach, as reflected in various international legal instruments such as the United Nations Convention against Transnational Organized Crime (UNTOC), which advocates for international cooperation in addressing these threats.

Corruption is one of the most destructive forms of extraordinary crime. In Indonesia, corruption is regulated by Law Number 31 of 1999 in conjunction with Law Number 20 of 2001 on the Eradication of Corruption. Corruption is understood as an unlawful act that harms state finances or the national economy. Its impacts are extensive, including damage to the government system, public distrust of public authorities, and inhibition of economic growth (Korupsi, 2023). Article 1 paragraph

(1) of the Corruption Eradication Law states that corruption does not only take the form of financial losses but also includes behavior that hinders the principles of transparency and accountability in state management.

While many legal experts agree that corruption is an extraordinary form of crime, there is debate over its legal status. Some argue that there are no explicit provisions in international law, such as the Rome Statute or the United Nations Convention on the Prevention of Corruption (UNCAC), that explicitly categorize corruption as an extraordinary crime. However, the destructive impact of corruption on a country's political, economic, and social stability provides a moral and juridical basis for classifying it as an extraordinary crime. In Indonesia, the recognition of corruption as an extraordinary crime is reflected in policies that grant the Corruption Eradication Commission (KPK) extraordinary authority to investigate, prosecute, and adjudicate major corruption cases (Hiariej, 2012).

Extraordinary crimes like corruption require comprehensive and innovative handling strategies. International legal frameworks, such as Article 43 of UNCAC, emphasize the importance of cross-border cooperation to combat cross-border crime. In Indonesia, legal reform has become a priority to enhance the effectiveness of corruption eradication efforts. Strengthening the role of institutions such as the KPK, updating regulations, and increasing transparency in state financial management are inevitable steps. In addition, legal reform should also include efforts to raise public awareness of the dangers of corruption and encourage active participation in public oversight. This is in line with the mandate of Article 28G paragraph (1) of the 1945 Constitution which guarantees the protection of individual rights from threats that endanger welfare and security.

At a practical level, efforts to eradicate corruption in Indonesia have undergone a long and challenging journey, which shows the importance of maximum effort and strong political support (Indonesia, 2023). In this context, the primary objective of eradicating corruption is to create a just and prosperous society. Moreover, the impacts of corruption offenses are highly detrimental across various aspects of societal life, ranging from violations of human rights, disruptions to national ideology, damage to economic and financial stability, to the erosion of national morals. Therefore, the eradication of corruption requires a holistic and comprehensive strategy.

In Indonesia, three key aspects of corruption regulation reforms draw significant public attention. The first aspect is the political direction of corruption eradication law, which shows the government's attitude in tackling this problem. The second aspect is legal certainty which ensures clear and consistent implementation of the law. The third is law enforcement, encompassing concrete measures to combat corruption, from investigation to judicial proceedings. These three aspects are interrelated and affect the effectiveness of corruption eradication in Indonesia (Saputra & Firmansyah, 2023b).

The political direction of corruption eradication law in Indonesia is crucial in determining the strategies and policies to be implemented. Along with the increasing awareness of the negative impact of corruption, the government has begun to take more decisive steps to increase the effectiveness of the law in combating corruption. These measures include refining the definition of corruption

to encompass broader actions, expanding the scope of corruption offenses, and increasing penalties for offenders. These initiatives aim to establish a more stringent legal environment, leaving little room for corrupt practices (Saputra & Firmansyah, 2023b).

Legal certainty is one of the main pillars of the legal system that must be applied consistently and fairly. In this case, changes to corruption regulations must provide clarity regarding the definition of corruption, the elements of criminal acts, and the law enforcement mechanisms that must be applied. Legal certainty is essential to avoid ambiguities or misinterpretations that could lead to misuse. It also provides clear guidelines for law enforcement officials, courts, and the wider community in understanding and implementing corruption eradication laws. It ensures law enforcement officials operate within well-defined parameters, reducing the likelihood of errors during prosecution or investigation. In addition, it helps the public better comprehend what constitutes corruption and the evidentiary elements required in legal processes (Saputra & Firmansyah, 2023b).

In addition, effective law enforcement is crucial in eradicating corruption. Law enforcement includes all stages, including investigation, prosecution, and court proceedings against perpetrators of corruption. In this case, good coordination between law enforcement agencies such as the police, prosecutors, and courts is required to make each stage run smoothly and fairly. Without good coordination, the process of eradicating corruption can be disrupted, and public confidence in the legal system will decrease. On the other hand, law enforcement must also be carried out without political intervention which can affect the independence of law enforcement agencies. Political interference in the legal process can undermine public trust in the legal system and hinder the achievement of corruption eradication goals (Saputra & Firmansyah, 2023b).

In the context of law enforcement, it is crucial to ensure that perpetrators of corruption offenses receive sanctions commensurate with their actions. Increasing the severity of sanctions can be one of the steps to provide a deterrent effect to the perpetrators of corruption. In addition, this step also shows the government's commitment to tackling corruption firmly and seriously (Saputra & Firmansyah, 2023b). However, it is equally important to uphold the principles of fairness and proportionality in the imposition of sanctions to prevent abuses of power during the law enforcement process. Ensuring justice and proportionality safeguards the integrity of legal processes and strengthens public trust in the legal system. A society that is more aware of the dangers of corruption and the importance of eradicating this crime can help monitor and support the government's steps in fighting corruption. Public support, both through reports and participation in prevention efforts, is instrumental in strengthening corruption eradication efforts in Indonesia.

One of the pillars of law enforcement in Indonesia is the Law Enforcement Apparatus (APH). However, in its implementation, several factors influence the law enforcement process in achieving justice. Soerjono Soekanto in his theory states that in the law enforcement process, several factors run integrally and are intertwined with each other. The first factor is the law itself, meaning that the regulations made by law enforcers should reflect the values that grow in society.

Next is the law enforcement factor, meaning that the legal completeness instrument in the form of authorized authorities must have values and morals that reflect institutional integrity. Next, there is the facility and infrastructure factor that will support APH to enforce the law properly. Then, there is the community factor; these conditions must reflect the biophysical environment where the law applies and is implemented in community life. Finally, there is the cultural factor, which is a result of work, creativity, and feeling that is based on (Soekanto, 2004). Therefore, to improve the state of law enforcement in Indonesia, more proactive steps are needed to strengthen integrity between all lines of APH.

One example of AI utilization in Indonesia is the detection of online gambling networks. The concept can also be a reflection that it is possible that technology such as Machine Learning will support the process of tracking funds and suspicious cash flows including those originating from corruption. The government's full concentration and focus on integrating law and technology are important pillars of effective law enforcement. Given that AI and humans will always go hand in hand their potential can also help the law enforcement process in Indonesia. Therefore, it can be interpreted that in this context, the law functions as a social control tool that maintains order in society, and keeps society away from actions that are considered to violate norms. As an instrument of social control, the law plays a vital role in preventing actions that disrupt societal order and security, aiming to harmonize social changes with stability (Iriani, 2016).

Implementation of Machine Learning System as a Decision Support System in Preventing and Combatting Corruption

The current advancement of technology has caused anomalies that cause significant uncertainty in the legal framework, particularly regarding the imposition of sanctions and the classification of criminal acts. Conversely, AI is very possible to be used in assisting the law enforcement process, especially by involving APH. To achieve effective implementation, adequate legal instruments are essential. A concrete example of AI application is the government's commitment to combating corruption through collaboration with machine learning technology. AI systems powered by machine learning can identify patterns, as these systems are designed to predict and manage complex programming activities (Kominfo, 2024).

According to Muladi, 3 main elements must be considered in the criminal law enforcement process, including a) the act; b) the people who violate; and c) the penalty. Therefore, the concept must be used as an analytical tool in law enforcement, especially in the staging of corruption (Bahiyaturrohman, 2024).

Deeds are the core of criminal acts, representing actions deemed unlawful and harmful or threatening to the societal values upheld by the community. In the context of corruption, the act refers to the act of a person or group who is intentionally involved in activities to influence, manipulate, and enrich themselves which result in state financial losses. This action is considered unlawful because it is contrary to the law.

In criminal theory, people refer to individuals or groups who commit criminal acts. In cases of corruption, the people involved include the main perpetrators, the parties involved, intermediaries, or promoters who help expand access to corruption. Each party has a different role and a different level of culpability. Law

enforcement must not only focus on the main actors who plan and execute corrupt activities but also on other parties who facilitate these activities. Identification and classification of these roles are important in determining appropriate and effective punishment.

The penalty refers to the sanctions or punishments imposed as a consequence of unlawful actions. In cases of corruption, the penalties imposed can be imprisonment, fines, or other administrative measures. The effectiveness of punishment in eradicating corruption requires a firm approach but also needs to consider preventive factors. To create an effective law enforcement process in eradicating corruption, a comprehensive and collaborative approach is needed. This includes increasing cooperation between law enforcement agencies, private authorities, and financial institutions. There needs to be a policy that allows for linear integration and tracking of suspicious financial transactions. Additionally, public education on the adverse effects of corruption is crucial to fostering an anti-corruption culture within society. By employing such strategies, the eradication of corruption can be conducted more comprehensively and effectively, thereby minimizing its negative impacts on society.

Through this basic concept, the author divides crucial segments that can support the effectiveness of law enforcement through the following mechanisms:

1. In terms of developing an early detection system involving machine learning, the relevant authorities like the KPK have the authority to integrate the system as an early detection of suspicious activity in various government platforms. Algorithms can identify patterns such as frequent small-value transactions or unusual activities during specific hours.
2. To measure the accessibility of the system, the application of the principles of data integration and interoperability in the governance system must be carried out. This enables the KPK to monitor algorithmic processes effectively, facilitating early detection of irregularities.
3. In terms of synchronization and integration of monitoring, related agencies or institutions such as the KPK, PPATK, BPK, the Prosecutor's Office, and the National Police must have a commitment to accelerate access to account information or transactions related to suspicious activities, especially those related to corruption, gratification, and money laundering (TPPU). This can be done by issuing a joint decree related to the commitment between institutions.
4. In terms of monitoring and supervision, the KPK has the authority to conduct investigations. If suspicious financial flows or patterns are identified, findings can be reported for further investigation by the KPK. If potential violations are found, the KPK can conduct conventional investigations, and then continue with further audits through machine learning to increase the validity of findings that are not detected by conventional systems.
5. Internet traffic can be monitored to identify websites or applications containing content related to money laundering or suspicious financial flows. The KPK can work with Komdigi to verify, identify, and block such platforms. Sites identified as platforms for corruption or where funds are used will be immediately blocked by Komdigi to prevent access by the Indonesian people.
6. If suspicious financial transactions are detected in accounts, either the

perpetrator or the funds have been circulated, the KPK can collaborate with the OJK to block and confiscate suspicious financial activities.

7. The KPK can conduct national campaigns to increase public awareness of the dangers and risks of online gambling. In order to support effective law enforcement, the public has the right to access reporting of corruption sites or activities through a reporting system connected to the Corruption Eradication Committee, the Police, and the Prosecutor's Office.

With ideal collaboration, law enforcement can be achieved properly. The Quadruple-Helix approach model can bridge multi-sector law enforcement (Sulikah et al., 2021). This collaborative model integrates the roles of government, society, educational institutions, and the private sector to create an effective and sustainable law enforcement mechanism by utilizing machine learning technology. The government is the main initiator by developing strong regulations, establishing a monitoring data center, and creating a special team in the digital field that has expertise in using machine learning to detect suspicious activity in cyberspace. It also develops a reporting system to enable citizens to report activities or websites suspected of involvement in corruption, utilizing machine learning to accelerate pattern identification.

The role of the community in this collaboration is crucial, especially in supporting reporting efforts and anti-corruption campaigns. Through socialization and education with NGOs and local communities, the public is given an understanding of the risks and dangers of corruption, thereby creating social pressure that can reduce interest in corruption. Public participation is facilitated through a reporting platform based on machine learning technology that allows reporting of corrupt activities anonymously and centrally.

Educational institutions also play a strategic role in human resource development and technology research. By developing special curricula in the fields of machine learning, data analysis, and cybersecurity, educational institutions prepare experts who are ready to contribute to eradicating corruption.

The private sector, including technology companies, financial service providers, banks, and social media platforms, plays a critical role by implementing policies and technologies that support the eradication of corruption. Their involvement can be strengthened through the existence of a Joint Decree (SKB) that supports the search and tracking of corruption. In addition, the integration of machine learning must be concretized in the formulation of legal norms that are accommodated through KPK regulations. With the active participation of the private sector, businesses and the government can establish a stronger oversight mechanism, enabling more efficient data collection. Collaborative forums between all parties are held periodically to evaluate and improve the effectiveness of the policies and technologies implemented. These efforts aim to foster a secure and corruption-free digital ecosystem.

Conclusion

The massive practice of corruption is currently a major threat to the democratic system and public welfare. One of its most severe impacts is the burden of state financial losses which ultimately harms society as a whole. This is a threat that must be considered, especially in the context of law enforcement. A promising

approach to addressing corruption is the integration of law enforcement with technological advancements, such as Artificial Intelligence (AI). Machine Learning as one part of AI products can be utilized to help the KPK predict suspicious patterns and anticipate potential state financial losses. This can be done through collaboration with various parties and strengthening law enforcement by providing greater focus. In addition, strengthening systems, synchronization, and institutions are crucial. These actions must be supported by responsive policies, such as the issuance of KPK regulations on the use of machine learning and the establishment of Joint Decrees (SKB).

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