The Implementation of Artificial Intelligence (AI) in Land Dispute Resolution: Prospects and Challenges in Indonesia

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HIGHLIGHTS

- Indonesia's nickel export ban is legally framed under Article XX(d) GATT 1994
- The ban supports Indonesia's downstream industrialization strategy
- Indonesia better align its national interests with global trade rules to avoid legal and diplomatic conflicts.

ARTICLE INFO

ABSTRACT

This study discusses the application of Artificial Intelligence (AI) in land dispute resolution in Indonesia, focusing on the readiness of legal and technological infrastructure and the role of AI in the land law system. Using normative research methods, this study analyzes laws and regulations, legal doctrines, and related scientific literature to evaluate the extent to which existing regulations and policies support the implementation of AI in land dispute resolution. The results of the study show that although AI has the potential to increase efficiency in legal document analysis, mediation, and verdict prediction, its implementation still faces various challenges, including limited regulations, digital infrastructure, and a lack of experts. More comprehensive regulations, accelerated development of digital infrastructure, and human resource training are important steps to optimize AI in land dispute resolution. In addition, the adjustment of AI to local customary law and culture must be considered so that the implementation of this technology does not ignore the rights of indigenous peoples. Collaboration between the government, academics, legal practitioners, and the technology sector is needed to ensure that AI can be used effectively and fairly in the land dispute resolution system in Indonesia.

A.   INTRODUCTION

The application of Artificial Intelligence (AI) in resolving land disputes in Indonesia is becoming increasingly relevant in light of technological advancements and the growing demand for efficiency within the legal system. AI holds the potential to improve the speed and accuracy of land dispute handling, reduce the workload of legal authorities, and offer faster solutions for the public. However, its implementation faces several challenges, both in terms of legal infrastructure and technological readiness. Hence, it is crucial to assess Indonesia's preparedness in adopting AI for land dispute resolution and to understand the role that this technology could play within the framework of land law.

The readiness of Indonesia's legal and technological infrastructure is a key factor in supporting AI implementation in land dispute resolution. Although the government has initiated various efforts to integrate technology into the legal system—such as the development of e-court systems and the digitalization of legal documents—issues such as limited technological infrastructure and digital literacy continue to pose significant obstacles. Additionally, the regulatory framework regarding AI use within the legal system remains underdeveloped, thus necessitating the establishment of a clear and comprehensive legal structure to govern AI applications in this context.[1]

AI can contribute to land dispute resolution in Indonesia through several applications, including legal document analysis, court decision prediction, and online mediation. It can assist in identifying patterns in previous cases, provide recommendations based on historical data, and facilitate communication between disputing parties. Nevertheless, the adoption of AI also raises concerns regarding accuracy, algorithmic bias, and

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[1] Artha Debora. (2024). Transparansi Kebijakan Akses Keadilan: Meninjau Tujuan dan Tantangan Penerapan E-Court System. Megashift.fisipol.ug.ac.id. https://megashift.fisipol.ugm.ac.id/2024/07/15/transparansi-kebijakan-akses-keadilan-meninjau-tujuan-dan-tantangan-penerapan-e-court-system/ accessed on November 3, 2024.

legal accountability for AI-generated decisions. Therefore, it is essential to ensure that the technologies employed are rigorously tested and closely monitored to uphold fairness and transparency in legal processes.[2]

Beyond technical considerations, legal culture and public acceptance of AI in land dispute resolution play a significant role. Indonesian society exhibits legal pluralism, with customary law (hukum adat) still recognized and practiced in many regions. The integration of AI into the formal legal system must account for this diversity and ensure that the technology can adapt to local contexts. Furthermore, public education and awareness campaigns about the benefits and limitations of AI are necessary to build trust in its use for land dispute resolution.[3]

To optimize the implementation of AI in land dispute resolution in Indonesia, collaboration among government bodies, academia, legal practitioners, and the technology sector is crucial. The development of a comprehensive regulatory framework, enhancement of technological infrastructure, and training for legal personnel and the public are essential steps to ensure an effective and equitable AI implementation. With a holistic and inclusive approach, AI can serve as a powerful tool to improve both efficiency and justice in resolving land disputes in Indonesia.[4]

B. RESEARCH METHOD

This research adopts a normative legal method[5] aimed at analyzing the readiness of legal and technological infrastructures to support the application of Artificial Intelligence (AI) in land dispute resolution in Indonesia. It

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[2] Ratu AI. (2024). AI dalam Bidang Hukum: Analisis dan Otomatisasi Proses Hukum. Ratu.ai. https://ratu.ai/ai-dalam-bidang-hukum/ accessed on November 3, 2024.

[3] Mochammad Tanzil Multazam. (2023). Digitalization of the Legal System: Opportunities and Challenges for Indonesia. Rechtsidee 11 (3). https://rechtsidee.umsida.ac.id/index.php/rechtsidee/article/view/1014/836

[4] Denico Doly. (2023). Pemanfaatan Artificial Intelligence dalam Penegakan Hukum di Indonesia. Info Singkat 15 (19). https://berkas.dpr.go.id/pusaka/files/info_singkat/Info%20Singkat-XV-19-I-P3DI-Oktober-2023-208.pdf

[5] H. Zainuddin Ali. (2017). Metode Penelitian Hukum. Jakarta: Sinar Grafika.

employs a statutory approach by examining relevant regulations, including Law No. 5 of 1960 on Basic Agrarian Principles, implementing government regulations, and policies governing the use of technology in the legal system. A conceptual approach is also applied to explore how AI can enhance the efficiency and accuracy of dispute resolution through legal data analysis, digital mediation, and automated processes. Additionally, a historical approach is used to trace the evolution of land dispute regulations and their responsiveness to technological developments. Through this combination of methods, the study provides a comprehensive assessment of the legal and technological preparedness for AI integration and formulates strategic recommendations to optimize its implementation in Indonesia's land dispute resolution system.

C.   RESULTS AND DISCUSSION

Readiness of Legal and Technological Infrastructure in Indonesia to Support the Implementation of AI in Land Dispute Resolution

The implementation of Artificial Intelligence (AI) in land dispute resolution in Indonesia requires adequate legal and technological infrastructure readiness. The government has initiated the digitalization of land administration by implementing electronic certificates to enhance transparency and reduce document forgery. This measure is expected to accelerate dispute resolution processes and provide legal certainty for property owners.

However, AI adoption in Indonesia's legal system faces various challenges, including technological infrastructure limitations and limited internet accessibility in certain regions. A significant obstacle is also the shortage of skilled human resources proficient in AI technology. Addressing these issues necessitates investment in technology infrastructure development and capacity building through training and education.

On the regulatory front, Indonesia currently lacks a comprehensive legal framework governing AI use in land dispute resolution. The development of clear and adaptive regulations is essential to ensure that AI implementation aligns with principles of justice and transparency. Moreover, ethical standards and data security protocols must be established to protect individual rights and prevent technology misuse.[6]

The integration of AI in land dispute resolution also requires adaptation to local legal cultures, including the recognition of customary law still practiced in various regions. A context-sensitive approach will help enhance public acceptance of this technology and ensure that the solutions provided by AI align with local values and norms.[7]

The Role of Artificial Intelligence (AI) in Land Dispute Resolution in Indonesia

The implementation of Artificial Intelligence (AI) in land dispute resolution in Indonesia presents significant potential to enhance the efficiency and effectiveness of legal processes. AI can be employed to rapidly and accurately analyze legal documents, assist in identifying patterns in previous cases, and provide recommendations based on historical data. For instance, the use of AI in legal document analysis has been adopted by the Indonesian law firm UMBRA, which utilizes this technology to process and comprehend legal documents at volumes and speeds beyond human capability.[8]

Moreover, AI plays a significant role in mediating land dispute resolution. With its ability to analyze data and provide recommendations, AI can assist mediators in facilitating communication between disputing parties, thereby making the mediation process more efficient. However,

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[6] Mochammad Tanzil Multazam. *Op. Cit.*

[7] Naufal Riski. (2023). Implementasi Hukum Adat dalam Penyelesaian Sengketa Tanah di Indonesia. Qistina Jurnal Multidisiplin Indonesia 2 (2). https://rayyanjurnal.com/index.php/qistina/article/view/1301

the application of AI in mediation also faces challenges, particularly regarding the understanding of local cultural values and the complex social dynamics in Indonesia. Therefore, the role of human mediators remains crucial to ensure that emotional and cultural aspects are adequately addressed during the dispute resolution process.

On the other hand, the implementation of AI in land dispute resolution also requires a clear legal framework. Currently, Indonesia lacks comprehensive regulations governing the use of AI within the legal system. Regulations concerning accountability and the ethical use of AI are crucial to ensure that this technology is employed responsibly and does not harm any party involved. In-depth studies and multidisciplinary discussions are necessary to formulate appropriate regulations that effectively govern AI as a legal subject in Indonesia.[9]

Beyond legal aspects, the readiness of technological infrastructure is also a critical factor in implementing AI for land dispute resolution. The use of electronic land certificates monitored by AI-based systems can enhance security and reduce the risk of document forgery. However, the implementation of such technology requires adequate digital infrastructure and skilled human resources capable of operating and overseeing these systems. Therefore, investment in infrastructure development and expert training is essential.[10]

Collaboration among the government, academics, legal practitioners, and the technology sector is pivotal to optimizing the role of AI in land dispute resolution in Indonesia. Through such cooperation, the

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[8] Mutia Qori Dewi Masithoh. (2023). AI in Law: How Artificial Intelligence is Transforming the Legal Profession in Indonesia. Justitia Jurnal Hukum 7(2). https://journal.um-surabaya.ac.id/Justitia/article/download/17832/7002/50476/

[9] Fatimah Nada. (2024). Gagasan Pengaturan Artificial Intelligence Sebagai Subjek Hukum Di Indonesia. Prosiding Seminar Hukum Aktual Fakultas Hukum Universitas Islam Indonesia 2 (4). https://journal.uii.ac.id/psha/article/view/35472.

[10] Hashfi Sanjaya. (2024). Urgensi Sertifikat Elektronik dengan Pemantauan Berbasis AI untuk Efisiensi Pendaftaran Tanah dan Mitigasi Mafia Tanah di Indonesia. 2 (1). https://journal.pubmedia.id/index.php/jcl/article/view/3304/

development of regulations, enhancement of infrastructure, and public education can be conducted comprehensively and in a coordinated manner. With a holistic approach, AI can make a significant contribution toward establishing a more efficient, just, and transparent land dispute resolution system in Indonesia.[11]

D. CONCLUSION

The implementation of Artificial Intelligence (AI) in land dispute resolution in Indonesia continues to face challenges related to the readiness of legal and technological infrastructure. Although digitalization efforts, such as electronic land certificates and AI-based systems, have been initiated, regulatory frameworks governing their use remain incomplete. Limitations in digital infrastructure and a shortage of skilled AI professionals further hinder effective implementation. Therefore, it is essential to strengthen clear regulations, accelerate the development of digital infrastructure, and enhance human resource capacity to ensure that AI technology is applied effectively and in accordance with principles of justice and transparency within the land law system.

Meanwhile, AI holds significant potential to assist in land dispute resolution through functions such as legal document analysis, mediation, and judicial decision prediction. However, the development of this technology must consider customary law and local cultural contexts to avoid infringing upon indigenous rights. Consequently, collaboration among government, academia, legal practitioners, and the technology sector is necessary to create an AI system that can adapt to Indonesia's unique legal needs. With a holistic approach, AI can become an innovative solution to improve efficiency and transparency in land dispute resolution in the future.

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[11] Ekinia Karolin. (2024). *Potensi Pemanfaatan Teknologi Artificial Intelligence Sebagai Produk Lembaga Peradilan Pidana di Indonesia.* Locus Journal of Academic Literatul 3 (4). https://jurnal.locusmedia.id/index.php/jalr/article/view/311/

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