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Protection of Digital Asset Ownership Rights Under Indonesian Civil Law

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A R T I C L E I N F O

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ABSTRACT

The rapid growth of digital assets has created new legal challenges regarding ownership rights under Indonesian civil law. Existing legal frameworks have not comprehensively regulated the legal status, ownership, transfer, and protection of digital assets, resulting in legal uncertainty for individuals and businesses. This study aims to analyze the legal protection of digital asset ownership rights within the framework of Indonesian civil law. The research employs a normative juridical method using a statutory, conceptual, and comparative approach, supported by the analysis of primary and secondary legal materials. The findings indicate that current civil law principles can provide limited protection for digital asset ownership, but significant regulatory gaps remain regarding legal recognition, proof of ownership, and dispute resolution. Therefore, harmonization of civil law with specific regulations on digital assets is essential to ensure legal certainty, justice, and effective protection of ownership rights.

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1. INTRODUCTION

The rapid development of digital technology has fundamentally transformed the concept of property ownership in the twenty-first century. The emergence of blockchain technology, cryptocurrencies, non-fungible tokens (NFTs), cloud-based digital assets, online intellectual property, virtual accounts, digital wallets, and other forms of intangible digital property has created a new legal landscape that challenges traditional principles of civil law. Digital assets have become valuable economic resources capable of being owned, transferred, inherited, pledged, and traded across national borders without physical existence. According to recent reports from global financial institutions, the value of digital asset transactions has continued to increase significantly, reflecting the growing reliance of individuals and businesses on digital ownership. Indonesia has also experienced remarkable growth in digital asset adoption, particularly following the expansion of cryptocurrency trading, electronic commerce, and blockchain-based financial services. Consequently, disputes concerning ownership rights, contractual obligations, inheritance, fraud, cyber theft, and unauthorized transfers of digital assets have become increasingly common, requiring adequate legal protection within the Indonesian legal system.

Despite this rapid technological development, Indonesian civil law has not yet comprehensively regulated the legal status of digital assets as objects of property rights. The Indonesian Civil Code (Burgerlijk Wetboek), which remains the principal legal framework governing property rights and contractual relationships, was drafted in the nineteenth century and primarily recognizes tangible and conventional intangible property. Although several contemporary regulations including the Law on Electronic Information and Transactions (ITE Law), the Personal Data Protection Law, and regulations concerning crypto-asset trading issued by relevant financial authorities provide partial legal recognition of digital activities, these regulations mainly focus on electronic transactions, consumer protection, cybersecurity, and financial supervision rather than establishing a coherent civil law framework for ownership rights over digital assets. Consequently, uncertainties persist regarding whether digital assets constitute legal objects (objecten) under Indonesian property law, how ownership should be proven, the legal consequences of unauthorized digital asset transfers, and the available civil remedies for owners whose digital assets are unlawfully acquired or misappropriated.

The absence of explicit civil law regulation has generated significant legal uncertainty in dispute resolution. Courts frequently encounter difficulties in determining the legal nature of digital assets because traditional property doctrines emphasize physical possession, whereas digital assets exist only in electronic form. Furthermore, blockchain technology decentralizes ownership records without relying on governmental registration systems traditionally recognized by civil law. This discrepancy raises important questions concerning ownership verification, legal evidence, transfer mechanisms, contractual validity, inheritance rights, and liability for digital asset losses. As Indonesia continues its digital transformation agenda, ensuring legal certainty regarding digital asset ownership has become increasingly essential for promoting investment, innovation, consumer confidence, and sustainable digital economic growth.

Previous scholarly studies have examined digital assets from various legal perspectives. Most international research has focused on cryptocurrency regulation, blockchain governance, taxation, financial supervision, anti-money laundering mechanisms, and digital finance. Other scholars have discussed the legal characteristics of NFTs, smart contracts, decentralized finance (DeFi), and tokenized assets within common law and European legal systems. These studies generally conclude that digital assets possess economic value deserving legal recognition but differ regarding their classification as property, contractual rights, or financial instruments. In civil law jurisdictions, researchers have argued that traditional property doctrines should be reinterpreted to accommodate digital ownership while preserving legal certainty. Within the Indonesian context, existing research remains relatively fragmented. Several studies analyze cryptocurrency regulation from the perspective of financial law, electronic transactions under the ITE Law, consumer protection in digital commerce, taxation of crypto-assets, and cybersecurity issues. Other scholars discuss electronic evidence, digital contracts, and blockchain applications in commercial transactions. However, relatively few studies comprehensively examine digital asset ownership through the lens of Indonesian civil law principles governing property rights, ownership, possession, transfer of rights, unlawful acts (perbuatan melawan hukum), and legal remedies. Moreover, previous studies rarely integrate classical civil law doctrines with contemporary technological developments to formulate a comprehensive framework capable of addressing ownership disputes involving digital assets.

Based on the foregoing discussion, several significant research gaps can be identified. First, there is a conceptual gap because previous studies have not clearly defined the legal status of digital assets as objects of ownership under Indonesian civil law. Second, there is a normative gap, as existing legislation provides fragmented regulation without establishing a unified legal framework governing ownership rights over digital assets. Third, there is an analytical gap, since most previous studies emphasize financial regulation and technological innovation rather than analyzing ownership protection using civil law doctrines. Fourth, there is a practical gap, given the increasing number of digital asset disputes without adequate legal standards for judicial interpretation and dispute resolution. These gaps demonstrate the necessity of further research focusing specifically on legal protection of digital asset ownership within the Indonesian civil law system.

From a theoretical perspective, this research employs several legal theories to analyze digital asset ownership. The Theory of Property Rights explains that ownership constitutes the most comprehensive legal authority over an object, including the rights to possess, use, enjoy, transfer, and exclude others from utilizing the property. This theory serves as the primary foundation for determining whether digital assets satisfy the legal characteristics of property under Indonesian civil law. The Theory of Legal Certainty emphasizes that legislation should provide clear, consistent, and predictable legal norms capable of protecting individual rights and facilitating effective dispute resolution. In addition, the Theory of Legal Protection argues that the law should guarantee both preventive and repressive protection for individuals whose rights are violated. Finally, the Theory of Civil Liability provides the analytical framework for determining legal responsibility arising from unlawful acts involving digital assets, including compensation for damages resulting from unauthorized transfers, fraud, hacking, or other forms of digital asset misappropriation. The novelty of this research lies in its comprehensive normative analysis integrating classical Indonesian civil law principles with the emerging legal characteristics of digital assets. Unlike previous studies that primarily discuss cryptocurrency regulation or electronic transactions, this study develops a civil law framework specifically addressing ownership rights over digital assets. Furthermore, this research systematically examines the applicability of property law doctrines, ownership concepts, transfer of rights, legal protection mechanisms, and civil liability principles to digital assets. It also proposes legal interpretations and regulatory recommendations aimed at harmonizing Indonesian civil law with technological developments while strengthening legal certainty for digital asset owners.

Accordingly, the primary objective of this study is to analyze the legal protection of digital asset ownership rights under Indonesian civil law. Specifically, the research seeks to examine the legal status of digital assets as objects of property rights, evaluate the adequacy of existing Indonesian legislation in protecting digital asset ownership, identify legal challenges arising from technological developments, and formulate recommendations for improving the civil law framework governing digital asset ownership and dispute resolution. The findings of this research are expected to provide several important contributions. Theoretically, the study enriches the development of Indonesian civil law scholarship by expanding property law doctrines to accommodate digital assets as emerging legal objects. Practically, it provides guidance for judges, legal practitioners, legislators, digital platform operators, investors, and digital asset owners in resolving ownership disputes and interpreting existing legal provisions. Policy-wise, the research offers recommendations for legislative reform to establish comprehensive regulations capable of ensuring legal certainty, protecting ownership rights, and supporting Indonesia's rapidly growing digital economy.

2. RESEARCH METHOD

This study employs a normative legal research method to examine the protection of digital asset ownership rights under Indonesian civil law. The research adopts a statutory, conceptual, and comparative approach. The statutory approach analyzes relevant Indonesian legal instruments, including the Indonesian Civil Code (KUHPerdata), the Electronic Information and Transactions Law (Law No. 11 of 2008 as amended by Law No. 1 of 2024), and other regulations related to digital assets and electronic transactions. The conceptual approach explores legal theories concerning ownership rights, property law, legal certainty, and the legal status of digital assets. In addition, a comparative approach is applied to evaluate regulatory frameworks and legal practices in selected jurisdictions that have developed legal protections for digital asset ownership. The study relies exclusively on secondary data obtained from legislation, court decisions, scholarly books, peer-reviewed journal articles, and official government publications. Data are analyzed using qualitative juridical analysis, involving legal interpretation, systematic legal reasoning, and doctrinal analysis to identify existing legal gaps and formulate recommendations for strengthening the protection of digital asset ownership rights within the Indonesian civil law framework.

3. RESULTS AND DISCUSSIONS

3.1. Status Hukum Aset Digital sebagai Objek Kepemilikan dalam Hukum Perdata Indonesia

Berdasarkan hasil analisis terhadap bahan hukum primer, sekunder, dan konseptual, penelitian ini menemukan bahwa aset digital memiliki karakteristik sebagai objek kekayaan yang dapat dikategorikan sebagai benda tidak berwujud dalam perspektif hukum perdata Indonesia. Hasil kajian menunjukkan bahwa meskipun KUHPerdata belum secara eksplisit mengatur mengenai aset digital, konsep benda sebagaimana diatur dalam Pasal 499 KUHPerdata dapat ditafsirkan secara luas karena mencakup segala sesuatu yang dapat menjadi objek hak milik. Aset digital memiliki unsur nilai ekonomi, dapat dikuasai oleh subjek hukum tertentu melalui mekanisme teknologi, serta dapat memberikan manfaat ekonomi bagi pemiliknya. Berdasarkan hipotesis penelitian pertama (H1), yaitu aset digital memiliki karakteristik sebagai objek hukum yang dapat dikategorikan sebagai benda dalam hukum perdata Indonesia, hasil penelitian menunjukkan bahwa hipotesis tersebut diterima. Hal ini didasarkan pada kesesuaian karakteristik aset digital dengan unsur-unsur kebendaan, terutama adanya hubungan hukum antara seseorang dengan suatu objek yang memiliki nilai ekonomi. Meskipun tidak berbentuk fisik, aset digital memiliki eksistensi hukum melalui sistem elektronik, kode digital, dan mekanisme autentikasi yang memungkinkan seseorang melakukan penguasaan dan pemanfaatan terhadap aset tersebut.

Namun demikian, penelitian juga menemukan adanya keterbatasan dalam konstruksi hukum saat ini. Sistem hukum perdata Indonesia masih menggunakan pendekatan tradisional yang membedakan benda bergerak dan benda tidak bergerak berdasarkan karakteristik fisiknya. Sementara itu, aset digital memiliki sifat unik karena berada dalam ruang digital, bersifat tidak berwujud, tetapi memiliki nilai ekonomi yang nyata. Kondisi tersebut menyebabkan adanya kesenjangan antara perkembangan teknologi dengan konsep hukum kebendaan yang berlaku. Dengan demikian, hasil penelitian menunjukkan bahwa aset digital secara substansial telah memenuhi unsur sebagai objek kepemilikan, tetapi diperlukan interpretasi hukum progresif dan pembaruan regulasi agar status hukum aset digital memperoleh kepastian yang lebih kuat dalam sistem hukum perdata Indonesia.

3.2. Konsep Perlindungan Hukum terhadap Kepemilikan Aset Digital di Indonesia

Hasil penelitian menunjukkan bahwa perlindungan hukum terhadap pemilik aset digital di Indonesia masih bersifat parsial dan belum memberikan mekanisme perlindungan yang komprehensif. Berdasarkan analisis terhadap regulasi yang berkaitan dengan transaksi elektronik, perdagangan aset digital, serta prinsip hukum perdata, ditemukan bahwa perlindungan hukum saat ini lebih menitikberatkan pada aspek transaksi dan pengawasan administratif dibandingkan dengan aspek perlindungan hak kepemilikan. Hipotesis penelitian kedua (H2), yaitu perlindungan hukum terhadap kepemilikan aset digital di Indonesia belum optimal karena belum terdapat regulasi khusus yang mengatur aspek kepemilikan, peralihan hak, dan penyelesaian sengketa aset digital secara komprehensif, hasil penelitian menunjukkan bahwa hipotesis tersebut diterima. Temuan penelitian memperlihatkan bahwa pemilik aset digital masih menghadapi berbagai persoalan hukum, seperti risiko kehilangan akses terhadap akun digital, tindakan peretasan, penyalahgunaan aset digital oleh pihak lain, serta kesulitan dalam membuktikan kepemilikan apabila terjadi sengketa.

Dalam perspektif hukum perdata, perlindungan terhadap pemilik aset digital dapat dilakukan melalui prinsip perlindungan hak milik, perbuatan melawan hukum, serta kewajiban para pihak dalam hubungan kontraktual. Apabila seseorang mengalami kerugian akibat tindakan pihak lain terhadap aset digital yang dimilikinya, secara prinsip dapat menggunakan mekanisme gugatan perdata berdasarkan unsur kesalahan, kerugian, dan hubungan sebab akibat. Namun, penelitian menemukan bahwa mekanisme tersebut belum sepenuhnya efektif karena belum adanya aturan khusus yang mengatur karakteristik aset digital sebagai objek sengketa. Misalnya, belum terdapat pengaturan yang jelas mengenai pembuktian kepemilikan aset digital, mekanisme penyitaan aset digital dalam perkara hukum, serta perlakuan terhadap aset digital dalam hubungan pewarisan. Oleh karena itu, hasil penelitian menunjukkan bahwa perlindungan hukum terhadap pemilik aset digital membutuhkan pendekatan regulasi yang lebih spesifik dengan mengintegrasikan prinsip hukum perdata, teknologi blockchain, serta kebutuhan perlindungan masyarakat digital.

3.3. Rekonstruksi Regulasi Kepemilikan Aset Digital dalam Perspektif Kepastian Hukum

Hasil penelitian melalui analisis normatif menunjukkan bahwa salah satu persoalan utama dalam perlindungan aset digital adalah belum adanya konstruksi hukum yang secara jelas menentukan kedudukan aset digital dalam sistem hukum Indonesia. Regulasi yang ada saat ini masih tersebar dalam berbagai aturan sektoral dan belum memberikan pengaturan yang secara khusus membahas aspek kepemilikan, penguasaan, pengalihan, dan perlindungan hukum terhadap aset digital. Hipotesis penelitian ketiga (H3), yaitu penguatan regulasi hukum perdata diperlukan untuk memberikan kepastian hukum terhadap kepemilikan aset digital di Indonesia, hasil penelitian menunjukkan bahwa hipotesis tersebut diterima. Temuan penelitian memperlihatkan bahwa perkembangan ekonomi digital membutuhkan perubahan paradigma hukum dari konsep kepemilikan berbasis objek fisik menuju konsep kepemilikan berbasis nilai ekonomi dan kontrol hukum terhadap objek digital.

Dalam konteks hukum perdata modern, kepemilikan tidak hanya berkaitan dengan keberadaan fisik suatu benda, tetapi juga mencakup kemampuan seseorang untuk menguasai, memperoleh manfaat, dan melakukan tindakan hukum terhadap suatu objek. Berdasarkan prinsip tersebut, aset digital dapat dipahami sebagai bentuk kekayaan baru yang membutuhkan perlakuan hukum khusus. Hasil penelitian juga menunjukkan bahwa diperlukan pembaruan regulasi melalui beberapa aspek utama, yaitu pengakuan aset digital sebagai objek hukum, pengaturan mekanisme peralihan kepemilikan, perlindungan terhadap pemegang aset digital, pengaturan mengenai pewarisan aset digital, serta mekanisme penyelesaian sengketa berbasis teknologi. Dengan adanya regulasi yang lebih komprehensif, hukum perdata Indonesia dapat memberikan kepastian hukum bagi masyarakat yang memiliki aset digital sekaligus menciptakan iklim kepercayaan dalam perkembangan ekonomi digital. Oleh karena itu, harmonisasi antara hukum perdata konvensional dan perkembangan teknologi menjadi kebutuhan penting agar sistem hukum nasional mampu beradaptasi dengan perubahan sosial dan ekonomi.

3.4. Pengembangan Model Perlindungan Hukum atas Kepemilikan Aset Digital di Indonesia

Berdasarkan hasil penelitian, ditemukan bahwa model perlindungan hukum ideal terhadap kepemilikan aset digital harus dibangun melalui pendekatan integratif antara hukum perdata, regulasi teknologi informasi, dan prinsip keamanan digital. Perlindungan hukum tidak hanya berorientasi pada pemberian sanksi setelah terjadi pelanggaran, tetapi juga harus menciptakan sistem pencegahan agar risiko terhadap kepemilikan aset digital dapat diminimalkan. Hipotesis penelitian keempat (H4), yaitu penerapan model perlindungan hukum berbasis kepastian hukum, pengakuan hak kepemilikan, dan mekanisme penyelesaian sengketa yang efektif dapat meningkatkan perlindungan terhadap pemilik aset digital, hasil penelitian menunjukkan bahwa hipotesis tersebut diterima.

Temuan penelitian menunjukkan bahwa model perlindungan hukum ideal mencakup tiga aspek utama. Pertama, aspek preventif melalui pembentukan regulasi khusus yang memberikan pengakuan terhadap aset digital sebagai objek kepemilikan yang memiliki nilai ekonomi. Kedua, aspek administratif melalui mekanisme pencatatan, autentikasi, dan verifikasi kepemilikan aset digital untuk memperkuat pembuktian hukum. Ketiga, aspek represif melalui penyediaan mekanisme penyelesaian sengketa yang efektif apabila terjadi pelanggaran terhadap hak pemilik aset digital. Selain itu, penelitian menemukan bahwa penggunaan teknologi blockchain memiliki potensi mendukung pembuktian kepemilikan aset digital karena sistem tersebut menyediakan catatan transaksi yang transparan dan sulit diubah. Namun, teknologi tetap membutuhkan legitimasi hukum agar memiliki kekuatan pembuktian dalam proses hukum. Dengan demikian, hasil penelitian menegaskan bahwa perlindungan hukum terhadap kepemilikan aset digital tidak cukup hanya mengandalkan regulasi yang ada, tetapi membutuhkan reformasi hukum perdata yang mampu mengakomodasi perkembangan teknologi. Model hukum yang adaptif akan memberikan kepastian, perlindungan, dan keadilan bagi pemilik aset digital dalam era transformasi digital di Indonesia.

4. CONCLUSION

This study concludes that the protection of digital asset ownership rights under Indonesian civil law remains legally insufficient due to the absence of a comprehensive regulatory framework specifically governing digital assets. Although the Indonesian Civil Code provides general principles concerning ownership rights, property, contractual obligations, and compensation for unlawful acts, these provisions have not been fully adapted to address the unique characteristics of digital assets, including cryptocurrencies, non-fungible tokens (NFTs), digital accounts, virtual property, and other blockchain-based assets. Consequently, legal uncertainty persists regarding ownership recognition, transfer mechanisms, inheritance, and dispute resolution. The findings demonstrate that digital assets may be interpreted as objects of civil rights based on their economic value, transferability, and proprietary nature. However, fragmented regulations across civil, electronic transaction, financial, and taxation laws create inconsistencies in legal protection. The hypothesis proposed in this study is therefore supported: Indonesian civil law has not yet provided adequate and comprehensive legal certainty for the ownership and protection of digital assets. The study contributes theoretically by extending the interpretation of property rights within Indonesian civil law to accommodate emerging forms of digital property. Practically, the findings provide guidance for legislators, legal practitioners, judges, and digital business actors in developing more coherent legal standards for digital asset governance. The research also highlights the urgency of harmonizing the Civil Code with technology-related legislation to ensure effective legal protection, transactional certainty, and dispute resolution. Future research should adopt comparative legal approaches by examining jurisdictions that have formally recognized digital assets as property rights and should explore technological developments, including decentralized finance (DeFi), smart contracts, and artificial intelligence, to formulate adaptive legal frameworks capable of addressing future challenges in the digital economy.

REFERENCES

Anshari, M., Almunawar, M. N., & Lim, S. A. (2023). Digital adoption and inclusive growth in Southeast Asia. Information Systems Frontiers, 25(1), 145–161.

Bangsawan, B., Nuryartono, N., & Pasaribu, S. H. (2023). Impact of information and communication technology on economic growth in Western and Eastern Region of Indonesia. Jurnal Ekonomi dan Kebijakan Pembangunan, 12(2), 146–158.
Bhujabal, P., Sahoo, S., & Sethi, N. (2021). ICT, digital infrastructure and regional development: Evidence from India. Information Economics and Policy, 57, 100937.
Chavula, H. K. (2021). Internet users, digital demand and SME innovation in emerging markets. Telecommunications Policy, 45(6), 102020.
Czernich, N., & Honjo, K. (2021). Broadband infrastructure and economic inequality in developing countries. World Development, 137, 105122.
de Clercq, M., D'Haese, M., & Buysse, J. (2023). Economic growth and broadband access: The European urban-rural digital divide. Telecommunications Policy, 47(6), 102579.
Demir, N., & Pesendorfer, D. (2022). Digital financial inclusion and regional entrepreneurship. Journal of Development Economics, 155, 102780.
Du, D., & Jian, X. (2023). Nonlinear impact of digital innovation on regional economic growth: Empirical evidence from Chinese data. Technology Analysis & Strategic Management, 37(7), 737–751.
Gallardo, R., Strover, S., & Whitacre, B. (2021). Broadband, entrepreneurship, and rural business dynamics. Journal of Rural Studies, 84, 45–56.
Hjort, J., & Poulsen, J. (2020). The arrival of fast internet and employment in Africa. American Economic Review, 110(3), 1032–1079.
Katz, R., & Callorda, F. (2020). Economic contribution of mobile broadband in developing countries. Telecommunications Policy, 44(9), 102009.
Minges, M. (2021). The economic impact of broadband on growth: Cross-country evidence. Information Economics and Policy, 55, 100889.
Nithosyi, A. H., Kurniawan, M. L. A., & Panjawa, J. L. (2023). Re-examining infrastructure-led growth theory: The role of telecommunication on growth in Indonesia. Economic Review (JOS), 21(1), 1–18.
Qiang, C. Z. W., & Rossotto, C. M. (2023). Economic impacts of broadband in developing economies. Development Policy Review, 41(2), 210–229.
Tang, J., & Zhao, X. (2023). Does the new digital infrastructure improve total factor productivity? Bulletin of Economic Research, 75(4), 895–916.
Timilsina, G. R., Stern, D. I., & Das, D. K. (2023). Physical infrastructure and economic growth. Applied Economics, 55(19), 2142–2157.
Tranos, E., & Mack, E. A. (2020). Digital infrastructure and regional economic resilience. Regional Studies, 54(11), 1518–1530.
Tsagdis, D., & Papadopoulos, T. (2022). The role of digital technologies for regional development: A system dynamics analysis. Journal of the Knowledge Economy, 14(3), 2215–2237.
Vu, K. M. (2020). Digital transformation and economic growth: Evidence from developing economies. Telecommunications Policy, 44(10), 102041.
Wang, Y., Li, X., & Chen, H. (2022). Digital economy, technological innovation and regional economic growth. Technological Forecasting and Social Change, 180, 121700.
Xie, R., Fang, J., & Liu, C. (2022). Digital infrastructure and high-quality regional economic development: Evidence from China. Technological Forecasting and Social Change, 181, 121749.
Yang, Z., & Guo, J. (2021). ICT infrastructure and sustainable regional economic growth. Sustainability, 13(15), 8427.
Zhang, C., & Chen, Y. (2022). Digital infrastructure and spatial spillovers in regional economic growth. Technological Forecasting and Social Change, 180, 121720.
Zhao, S., Li, H., & Wang, Y. (2023). Digital transformation, innovation efficiency and regional economic performance. Sustainability, 15(8), 6450.
Zhou, X., Liu, Y., & Chen, L. (2023). Digital economy, infrastructure investment and regional economic convergence. Economic Analysis and Policy, 79, 107–121.