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The Convergence of Corporate Law and Blockchain Technology in Regulating Decentralized Autonomous Organizations as Future Business Entities in Indonesia

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Abstract: The development of blockchain technology has given rise to the Decentralized Autonomous Organization (DAO), a new business organizational model that operates through smart contracts in a decentralized manner, without a conventional management structure. The existence of DAOs has not been accommodated in the Indonesian corporate legal system, creating a legal vacuum regarding legal subject status, accountability, legal standing, taxation, and dispute resolution. This study aims to analyze the characteristics of DAOs from a corporate law perspective and the urgency of convergence between corporate law and blockchain technology in its regulation in Indonesia. The study employs a normative juridical method with statutory, conceptual, and comparative approaches. The results indicate the need for regulations that recognize and regulate DAOs as digital business entities to achieve legal certainty, legal protection, and a sustainable digital investment climate.

Keywords: Decentralized Autonomous Organization (DAO), blockchain, corporate law, legal certainty, digital business entities.

INTRODUCTION

The rapid development of digital technology during the Industrial Revolution 4.0 and the emergence of Society 5.0 have fundamentally transformed business governance and organizational models worldwide (Society 5.0: A People-Centric Super-Smart Society, Singapore: Springer Nature Singapore Pte Ltd, 2020). One of the most significant developments is the emergence of blockchain technology, which enables decentralized digital transactions through distributed ledger systems, smart contracts, and consensus mechanisms without relying on centralized intermediaries (Tapscott, 2016). Rather than functioning solely as the technological infrastructure of cryptocurrencies, blockchain has evolved into the foundation for new organizational governance models that challenge conventional corporate structures.

Among the organizational models emerging from blockchain technology is the Decentralized Autonomous Organization (DAO), a digital organization governed entirely through smart contracts and token-based voting mechanisms. Unlike conventional business entities, DAOs operate without boards of directors, commissioners, or centralized management. Organizational decisions are executed automatically through blockchain protocols, while assets are collectively managed by token holders through decentralized governance. Consequently, DAOs have become increasingly utilized in decentralized finance (DeFi), venture capital, blockchain gaming, open-source software development, digital investment, and the management of digital assets worth billions of US dollars (Jati, 2024). This development demonstrates that business organizations are no longer necessarily dependent upon physical offices, formal management structures, or territorial jurisdictions.

The emergence of DAOs presents a fundamental challenge to the Indonesian corporate legal system, which continues to recognize business entities primarily through conventional legal concepts. Under Law Number 40 of 2007 concerning Limited Liability Companies, as amended by Law Number 6 of 2023, legal entities are established through notarial deeds, possess legal domicile, and operate through formal corporate organs consisting of shareholders, boards of directors, and boards of commissioners (I. C. Siregar, 2022). Likewise, Indonesian business law governing firms, commanditaire vennootschap (CV), and cooperatives presupposes identifiable legal subjects, centralized management, and formal establishment procedures (Intan, 2025). These legal characteristics are fundamentally incompatible with DAOs, whose governance is based entirely on decentralized blockchain protocols rather than conventional organizational structures.

This incompatibility has resulted in a significant legal vacuum within Indonesian corporate law. Existing legislation, including the Civil Code, the Limited Liability Company Law, the Commercial Code, the Cooperative Law, and the Electronic Information and Transactions Law, recognizes electronic transactions and electronic contracts but does not provide legal recognition for DAOs as business entities (Abdul Aziz, Ike Sumawaty, 2026). Consequently, numerous legal issues remain unresolved, including the legal status of DAOs, legal standing before courts, liability arising from smart contract failures, taxation, investor protection, and jurisdiction over disputes involving organizations without legal domicile (Satya, 2026). Such regulatory uncertainty potentially undermines legal certainty and may hinder the development of Indonesia's digital economy.

Although DAOs have attracted increasing attention in legal scholarship, existing studies predominantly examine blockchain technology, smart contracts, or the legal validity of electronic transactions. Previous research generally focuses on blockchain regulation, the enforceability of smart contracts, or digital asset governance, while limited attention has been given to the legal position of DAOs as autonomous business organizations requiring recognition within corporate law. Consequently, the convergence between corporate law principles and blockchain-based organizational governance remains insufficiently explored, particularly within the Indonesian legal context.

The urgency of this study is reinforced by developments in several jurisdictions that have begun recognizing DAOs through dedicated legal frameworks. Wyoming (United States) has introduced the DAO Limited Liability Company, the Marshall Islands enacted the Decentralized Autonomous Organization Act, while Switzerland and Liechtenstein have accommodated blockchain-based organizations through technology-neutral regulatory approaches (Iswanda F. Satibi, Maureen A. Leksmana, 2025). In contrast, Indonesia has yet to establish any comprehensive legal framework governing the legal status, governance, accountability, taxation, and dispute resolution mechanisms applicable to DAOs. This regulatory gap demonstrates the growing divergence between technological innovation and the development of Indonesian corporate law.

Accordingly, the originality of this study lies not merely in discussing blockchain technology or smart contracts, but in proposing the convergence of corporate law and blockchain technology as a normative framework for recognizing and regulating Decentralized Autonomous Organizations as future business entities in Indonesia. This study therefore aims to analyze the characteristics of DAOs from a corporate law perspective and formulate the urgency of developing a legal framework capable of accommodating blockchain-based organizations while ensuring legal certainty, accountability, investor protection, and sustainable digital economic development.

METHOD

This study employs a normative juridical research method because the primary issue concerns the adequacy of existing legal norms in regulating Decentralized Autonomous Organizations (DAOs) within the Indonesian corporate legal system, particularly regarding legal status, governance, accountability, and legal certainty, making normative legal analysis more appropriate than empirical inquiry. The research adopts a statutory approach to examine relevant legislation, including the 1945 Constitution of the Republic of Indonesia, the Civil Code, the Commercial Code, Law Number 40 of 2007 concerning Limited Liability Companies as amended by Law Number 6 of 2023, Law Number 1 of 2024 concerning Electronic Information and Transactions, and other related regulations; a conceptual approach to analyze legal doctrines concerning legal entities, corporate governance, blockchain technology, smart contracts, and DAOs; and a comparative approach to evaluate regulatory models adopted in jurisdictions that have recognized blockchain-based organizations, particularly Wyoming (United States), the Marshall Islands, Switzerland, and Liechtenstein, with the objective of identifying legal principles and regulatory best practices that may be adapted to the Indonesian legal system rather than directly transplanting foreign law. The research utilizes primary legal materials consisting of legislation and other legal instruments, secondary legal materials comprising books, scientific journals, and previous legal studies, and tertiary legal materials including legal dictionaries and encyclopedias, all collected through library research. The legal analysis was conducted by identifying and examining applicable legal norms, evaluating their adequacy in accommodating DAOs as business entities, comparing them with foreign regulatory approaches, and synthesizing the findings to formulate normative legal arguments regarding the convergence of corporate law and blockchain technology. The analysis employs statutory interpretation, systematic interpretation, and comparative legal interpretation to examine the meaning, coherence, and compatibility of relevant legal norms, while qualitative descriptive-analytical techniques are applied to formulate recommendations for the future regulation of DAOs within the Indonesian legal system.

RESULTS AND DISCUSSION

Characteristics of Decentralized Autonomous Organizations as a Blockchain-Based Business Organization Model from a Corporate Law Perspective

A Decentralized Autonomous Organization (DAO) is a form of digital organization that emerged as a consequence of the development of blockchain technology and presents a new paradigm in business organizational governance. Unlike conventional organizations that rely on hierarchical structures, DAOs are built on a blockchain network that allows every organizational activity to be carried out in a decentralized manner without a single controlling authority. Decisions are made collectively by token holders through a digital voting mechanism (token voting), while decision implementation is automatically conducted using pre-programmed smart contracts. These characteristics make DAOs transparent, immutable, and auditable by all network members. The existence of DAOs is not dependent on the presence of a headquarters, a specific jurisdiction, or a corporate organ as recognized in conventional corporate law. This development demonstrates that business organizations have transformed an institution-based model to a code-based organization, thus presenting new challenges to the concept of a legal entity currently adopted in the Indonesian legal system (Nurcahyanto, 2024).

DAO operations are powered by smart contract technology, which is a collection of program code stored on a blockchain network that automatically executes legal actions when certain predetermined conditions are met. This mechanism reduces the need for intermediaries because all rights and obligations are executed through a digital verification process agreed upon by the network. The use of smart contracts is relevant to the Indonesian legal system, particularly the provisions of Article 1 number 2 of Law Number 11 of 2008 concerning Electronic Information and Transactions, as most recently amended by Law Number 1 of 2024, which defines electronic transactions as legal acts carried out using computers, computer networks, and/or other electronic media. The recognition of electronic information and electronic documents as valid legal evidence is also affirmed in Article 5 paragraphs (1), (2), and (3) of the Electronic Information and Transactions Law. In addition, Article 11 regulates the validity of electronic signatures, while Article 18 recognizes the binding force of electronic contracts for the parties. However, these provisions are limited to recognizing electronic transaction media and mechanisms and do not provide legal recognition of DAOs as organizations with independent legal status under the national legal system (Fernando, 2024).

A defining characteristic of DAOs is their token-based governance mechanism, whereby voting rights are distributed to members in proportion to their ownership of digital tokens. All policy proposals are submitted to the community, then decided upon through an electronic voting process, the results of which are automatically executed by a smart contract. This system replaces the functions of general meetings of shareholders, boards of directors, and boards of commissioners, as is common in Limited Liability Companies. Organizational assets are managed through a digital treasury, and funds may be accessed or allocated only upon collective approval by DAO members in accordance with predefined governance rules. This governance model reflects the principle of decentralization, as no single individual or group holds absolute control over the organization. From a corporate governance perspective, DAOs adopt a direct participation-based decision-making model, in contrast to the representative governance structure that characterizes conventional corporations. This shift in mechanisms demonstrates that technological advancements have transformed not only the way transactions are conducted but also the way organizations are formed, managed, and held accountable (Albert Fajar Yuga Yusdi Putra, Dwi Fitriana, 2026).

The characteristics of DAO have fundamental differences when compared to the forms of business entities recognized in the Indonesian legal system, namely Limited Liability Companies, Firms, Commanditaire Vennootschap (CV), and Cooperatives. Limited Liability Companies, based on Article 1 number 1 of Law Number 40 of 2007 concerning Limited Liability Companies as amended by Law Number 6 of 2023, are legal entities established based on an agreement with capital divided into shares and having organs in the form of a General Meeting of Shareholders, a board of directors, and a board of commissioners. Article 7 of the Limited Liability Companies Law requires the establishment of a company to be done by a notarial deed in Indonesian and obtain approval from the Minister of Law and Human Rights. Firms and CVs, as regulated in the Commercial Code, are formed through an association of partners who are responsible for business activities, while cooperatives, according to Article 1 number 1 of Law Number 25 of 1992 concerning Cooperatives as amended by Law Number 6 of 2023, are legal entities whose members are individuals or cooperative legal entities based on cooperative principles. All of these business entities have formal establishment, legal domicile, management bodies, and clear accountability mechanisms. In contrast, DAOs lack notarial deeds, have no headquarters, no directors or commissioners, and carry out organizational management functions through algorithms and token governance mechanisms. These differences demonstrate that DAOs fall outside the framework of business entities currently regulated by Indonesian positive law (Hermawan, 2025).

The legal status of DAOs as digital organizations must also be analyzed through the lens of legal entity theory, which has long been developed in legal scholarship. According to Friedrich Carl von Savigny's fiction theory, a legal entity exists only by virtue of recognition granted by the state through legislation. Otto von Gierke's organ theory positions corporate organs as tools that express the will of the legal entity. Brinz's purpose assets theory emphasizes the separation of assets for specific purposes, while the realist theory views legal entities as real social entities in society. Based on these theories, DAOs exhibit distinctive characteristics, as they lack formal state recognition, do not possess conventional corporate organs, and perform organizational functions through automated program code (Willion Lim, Steven Angkasa, 2024). This situation raises fundamental questions about whether algorithms and digital communities can be viewed as representing the will of a legal entity, similar to a corporate body in classical legal theory. This issue becomes even more complex when DAO activity has resulted in legal relationships, asset ownership, investments, and cross-border transactions that have real legal consequences.

An analysis of the legal entity requirements under Indonesian law indicates that DAOs do not yet satisfy the criteria established by the applicable legal framework. Requirements regarding statutory establishment, separation of assets, specific objectives, management bodies, legal domicile, and state recognition have not been fully met by DAOs. Article 1653 of the Civil Code recognizes the existence of legal entities established or recognized by a general authority or authorized to achieve specific purposes, while the Limited Liability Company Law requires ministerial approval as the basis for establishing legal entity status. DAOs lack the establishment or approval mechanisms required by national law and therefore cannot be qualified as legal entities under the Indonesian legal system (P. U. Siregar, 2025). However, the development of digital business practices shows that DAOs have performed economic functions equivalent to those of conventional corporations through investment management, digital assets, financing, and other business activities.

Convergence of Corporate Law and Blockchain Technology in the Regulation of Decentralized Autonomous Organizations as Business Entities in Indonesia

The absence of specific regulations governing Decentralized Autonomous Organizations (DAOs) reflects a legal vacuum within the Indonesian legal system. Existing legislation on business organizations and legal entities recognizes only conventional organizational forms, including Limited Liability Companies (LLCs), Firms, Commanditaire Vennootschappen (CVs), Cooperatives, Foundations, and other entities that have been expressly established under statutory law. Law Number 40 of 2007 concerning Limited Liability Companies, as amended by Law Number 6 of 2023, requires a company to be established by notarial deed, obtain approval from the Minister of Law and Human Rights, maintain formal corporate organs, and have a clearly defined legal domicile. Similarly, the Commercial Code regulates only conventional business partnerships, while the Civil Code contains no provisions recognizing digital organizations that operate autonomously through smart contracts. While Law Number 1 of 2024 concerning the Second Amendment to Law Number 11 of 2008 concerning Electronic Information and Transactions recognizes electronic transactions, electronic documents, electronic contracts, and electronic signatures as valid legal instruments, it does not yet provide a normative basis for the existence of DAOs as legal entities. Consequently, the existence of DAOs, which have in fact conducted cross-border economic activities, lacks certainty regarding their legal status within the Indonesian legal system.

This legal vacuum demonstrates that Indonesian corporate law continues to adopt a rigid legal entity model based on territoriality, formal incorporation, and centralized corporate organs. Such an approach is increasingly incompatible with blockchain-based organizations whose governance is executed through distributed consensus rather than hierarchical management. Consequently, the absence of legal recognition is not merely a regulatory omission but reflects the inability of existing corporate law concepts to accommodate emerging forms of decentralized business organizations. Therefore, legal reform should not simply insert DAOs into the existing categories of business entities but should reconstruct corporate law principles to accommodate decentralized governance while preserving legal certainty, accountability, and regulatory oversight.

This regulatory gap has given rise to various legal implications that impact the legal relationship between DAOs and third parties. The first issue relates to the status of legal entities, as Indonesian positive law does not recognize DAOs as legal entities or business entities. This situation implies that DAOs lack legal standing to act as plaintiffs or defendants in court. In the event of default or unlawful acts in business relationships, it becomes difficult to determine who is responsible because DAOs lack directors, commissioners, or administrators as stipulated in Articles 92 and 108 of the Limited Liability Company Law. Problems also arise when smart contracts experience coding errors or security vulnerabilities, resulting in losses for investors and business partners. While Article 1320 of the Civil Code regulates the requirements for a valid agreement, namely agreement, capacity, a specific object, and a lawful cause, it fails to address the role of algorithms as executors of the parties' wishes in a contractual relationship. This ambiguity demonstrates that technological development has outpaced the development of applicable legal norms.

Taxation and dispute resolution are also issues that lack legal certainty. Law Number 7 of 1983 concerning Income Tax, as amended several times, most recently by Law Number 7 of 2021 concerning the Harmonization of Tax Regulations, stipulates that a corporate taxpayer is an entity that meets certain criteria under Indonesian and foreign law. The lack of a legal domicile, head office, or formal management presents difficulties in determining its status as a corporate taxpayer, taxable object, or place of tax liability. This situation has the potential to reduce the effectiveness of tax collection on digital economic activities with very high transaction values. Similar issues arise in dispute resolution because there are no clear legal provisions determining judicial jurisdiction over digital organizations whose members are dispersed across multiple countries. Determining applicable law, jurisdiction, and enforcement becomes increasingly complex when DAOs operate without a legal domicile that can serve as a basis for determining court competence. This situation illustrates that developing digital organizations requires a modern legal system capable of addressing the specifics of blockchain-based cross-border transactions.

The absence of legal standing has broader implications than procedural limitations before courts. Without legal personality, DAOs cannot independently own assets, enter legally recognized contractual relationships, or bear civil liability. Consequently, legal responsibility may shift ambiguously to token holders, software developers, or protocol contributors, creating uncertainty that contradicts the principles of legal certainty and accountability underlying Indonesian corporate law. Therefore, future regulation should explicitly determine the legal representative of a DAO, either through a registered representative, protocol administrator, or another legally designated governance mechanism capable of representing the organization before judicial and administrative authorities.

Several countries have responded to the development of DAOs by establishing regulations that provide legal recognition for these digital organizations. The State of Wyoming in the United States took the lead by issuing the Wyoming Decentralized Autonomous Organization Supplement, which recognizes DAOs as Limited Liability

Companies (LLCs) provided they meet certain requirements, including the inclusion of DAO status in their incorporation documents and the appointment of a registered agent. The Marshall Islands also passed the Decentralized Autonomous Organization Act, which grants DAOs legal status, allowing them to own assets, enter into contracts, and participate in legal proceedings. Switzerland adopts a technology-neutral regulatory approach by relying on its existing corporate and digital asset legal frameworks, thereby allowing DAOs to operate through established legal forms such as foundations and associations. Liechtenstein developed regulations through the Token and Trusted Technology Service Provider Act (TVTG), which provides legal certainty for the use of blockchain technology in business activities and digital asset management. The experiences of these countries demonstrate that recognizing DAOs does not necessarily require the creation of a new legal entity. Instead, legal recognition can be achieved by harmonizing existing corporate law with developments in digital technology.

The comparative analysis demonstrates that successful DAO regulation does not depend upon creating an entirely new category of legal entity. Instead, these jurisdictions preserve the fundamental principles of corporate law while modifying selected legal requirements to accommodate decentralized governance. This comparative finding indicates that Indonesia may adopt an adaptive regulatory approach by revising existing corporate legislation rather than replacing the current corporate legal framework entirely.

These developments also suggest that corporate law can no longer rely exclusively on the conventional legal entity paradigm, which presupposes the existence of a physical office, formal corporate organs, and a clearly defined legal jurisdiction. The transformation of the digital economy has given rise to organizations capable of effectively conducting business functions through blockchain networks without relying on traditional organizational structures. Harmonization between corporate law and blockchain technology is an urgent need to ensure the national legal system can keep pace with developments in global business models without sacrificing the principles of legal certainty, accountability, and legal protection. This harmonization also aligns with the objectives of legal formation, as reflected in Article 33 paragraph (4) of the 1945 Constitution of the Republic of Indonesia, which affirms that the national economy is organized based on economic democracy with the principles of efficiency with justice, sustainability, independence, and maintaining a balance between progress and national economic unity. The development of DAO regulations is essentially part of the effort to create an economic legal system that is adaptive to technological innovation while providing certainty for business actors operating in the digital ecosystem.

The convergence between corporate law and blockchain technology should be implemented through a comprehensive regulatory framework that specifically determines the legal construction of DAOs within the Indonesian legal system. First, legislation should provide a statutory definition of DAOs as blockchain-based digital business entities possessing limited legal personality after fulfilling registration requirements before the competent authority. Second, the regulatory framework should recognize smart contracts as organizational governance instruments while requiring minimum governance standards, including transparency of governance protocols, voting procedures, treasury management, and cybersecurity obligations. Third, the regulation should determine a legally recognized representative responsible for administrative, civil, and judicial matters without undermining the decentralized governance model. Fourth, provisions concerning taxation should establish clear criteria for determining tax residency, taxable income, and reporting obligations for DAOs operating within Indonesian jurisdiction. Finally, the framework should provide investor protection through mandatory disclosure obligations, governance transparency, risk allocation mechanisms, and dispute resolution procedures capable of addressing cross-border blockchain transactions. Such regulatory reconstruction would enable Indonesia to accommodate technological innovation while maintaining legal certainty, accountability, and effective regulatory supervision.

CONCLUSION

This study demonstrates that Decentralized Autonomous Organizations (DAOs) represent a fundamentally new model of business organization whose decentralized governance structure cannot be adequately accommodated within the existing framework of Indonesian corporate law, which remains grounded in conventional concepts of legal personality, centralized corporate organs, legal domicile, and formal incorporation. Theoretically, this finding contributes to the development of corporate law by demonstrating that the traditional doctrine of legal entities requires reinterpretation in response to blockchain-based organizational governance, thereby supporting the convergence of corporate law and digital technology as a new legal paradigm for regulating emerging business entities. From a practical perspective, the absence of legal recognition for DAOs creates uncertainty concerning legal status, legal standing, accountability, taxation, investor protection, and dispute resolution, which may ultimately impede the growth of Indonesia's digital economy and reduce legal certainty for stakeholders participating in blockchain-based business activities. Accordingly, the policy implication of this study is the need for a comprehensive regulatory framework that not only recognizes DAOs as digital business entities but also establishes clear provisions regarding legal registration, governance through smart contracts, legal representation, liability allocation, taxation, investor protection, and cross-border dispute resolution. Such a regulatory framework would enable Indonesia to accommodate technological innovation while maintaining legal certainty, accountability, and an adaptive corporate legal system capable of supporting sustainable digital economic development.

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