

# A Non-Coercive Leasing Debt Enforcement Model: Reconceptualizing Compliance through Blockchain-Based Systems

Original Article

**Nanin Koeswidi Astuti**

Faculty of Law, Universitas Kristen Indonesia, Jakarta, Indonesia  
Email: [naninkoeswidi@gmail.com](mailto:naninkoeswidi@gmail.com); [nanin.koeswidi@uki.ac.id](mailto:nanin.koeswidi@uki.ac.id)

**Received : 30 January - 2026**

**Accepted : 28 February - 2026**

**Published online : 02 March - 2026**

## Abstract

Debt collection in motor vehicle financing in Indonesia continues to rely heavily on coercive practices carried out by third-party actors commonly known as *mata elang* (matel). These methods do more than raise questions of civil liability; they frequently spill over into social conflict and serious criminal law risks, as illustrated by recurring incidents of violence resulting in loss of life and broader public harm. Such conditions point to a deeper, systemic failure in the enforcement of credit agreements—one that has evolved through informal mechanisms and operates with fragile legal legitimacy. This study undertakes a normative examination of the structural weaknesses inherent in coercive debt collection practices and advances a non-coercive enforcement model grounded in blockchain technology. Using a normative legal methodology supported by conceptual and analytical approaches, the research explores issues of legitimacy, criminal liability risk, legal certainty, and the role of the state in enforcing credit obligations. The findings suggest that blockchain-based enforcement offers a transparent, automated, and institutionalized contractual framework that replaces physical force and social intimidation with systemic compliance. Rather than sidelining the state, this model strengthens state involvement through regulatory oversight and institutional validation, fostering a more legitimate, proportionate, and rule-of-law-oriented approach to obligation enforcement.

**Keywords:** Blockchain-Based Enforcement, Business Law, Fiduciary Security, Mata Elang, Non-Coercive Debt Collection.

## 1. Introduction

Thursday, 11 December 2025, marked one of the darker moments in the enforcement of motor vehicle credit agreements in Indonesia. On that day, a debt collector lost his life following a violent assault arising from a dispute over a motor vehicle financing obligation (Syarifudin, 2025). The incident occurred in Kalibata, South Jakarta, when a debt collector, commonly referred to in practice as a *mata elang* (“matel”, eagle-eyes), was allegedly attempting to enforce payment through coercive means against a motorcycle deemed to be in arrears. *Mata elang* are individuals or groups operating as field monitors for leasing or financing companies, tasked with identifying and tracking motor vehicles associated with payment disputes or installment defaults in public spaces (Daffa & Wiraguna, 2025). Their activities typically include observing vehicles on the road, verifying registration or financing status, and reporting or facilitating follow-up actions in relation to disputed or non-performing leasing contracts. In practice, *mata elang* often function as informal intermediaries between financing institutions and debtors, operating outside formal judicial or administrative enforcement mechanisms.



During the encounter, the vehicle owner perceived the collection attempt as a unilateral seizure of his property. Feelings of loss, injustice, and escalating emotional distress prompted physical resistance, which ultimately culminated in the brutal assault and death of the debt collector. The tragedy did not end with the loss of a single life. Shortly thereafter, a group of fellow debt collectors, expressing solidarity with their fallen colleague, engaged in retaliatory acts by vandalizing and setting fire to several small vendors' kiosks in the vicinity of the incident. As a consequence, public security deteriorated sharply, and small traders entirely unrelated to the debt dispute became collateral victims of the conflict. This incident illustrates that disputes arising from motor vehicle credit collection extend well beyond the legal relationship between creditor and debtor, evolving into broader social problems that inflict harm on the general public. The violence that emerged cannot be attributed solely to individual misconduct; rather, it reflects a systemic failure in the mechanisms governing the enforcement of credit agreements. The case represents one of many instances in Indonesia where the collection of non-performing loans continues to rely on coercive practices that carry the risk of fatal consequences and social disruption (Farid et al., 2024).

Conceptually, coercive debt collection models expose underlying asymmetries of power and information between creditors and debtors. On the one hand, creditors perceive debtor default as a violation of their contractual rights. On the other hand, debtors frequently interpret collection actions, particularly those conducted abruptly and through physical means, as unlawful expropriation of property. This persistent tension suggests that the legitimacy of credit agreement enforcement has yet to be fully internalized as part of a fair, predictable, and trustworthy legal order. Moreover, debt collection practices that depend on third-party collectors illustrate an *ex post* enforcement paradigm, whereby creditor rights are asserted only after default has occurred. When administrative and judicial channels are perceived as slow or ineffective, some creditors resort to non-state social power as a shortcut to enforcement. In practice, however, this approach amplifies the risks of conflict, criminality, and legal violations on both sides of the debtor–creditor relationship.

Nevertheless, violence in debt collection processes cannot be attributed exclusively to debt collectors. It must also be acknowledged that a segment of debtors in Indonesia tends to trivialize contractual obligations. In certain social contexts, the duty to repay debt is not always perceived as a binding legal obligation, but rather as a negotiable or deferrable commitment (Kean et al., 2025). This phenomenon reflects an erosion of legal legitimacy, particularly among lower-income communities, with respect to formal credit agreements. Accordingly, the problem of motor vehicle leasing collection demands a new approach, one that moves beyond coercion and instead fosters systemic compliance grounded in legal certainty, fairness, and the prevention of social conflict. From this perspective, the present study views coercive debt collection not merely as a matter of deviant individual behavior, but as an indication of structural failure in the compliance architecture of credit enforcement systems. When compliance is pursued solely through coercion after default has occurred, the legal system itself generates spaces for conflict that threaten social order. If left unaddressed, such conditions may contribute to the erosion of moral structures and legal norms within society, where breaches of contractual obligations become normalized and negotiable. In the long term, this environment risks reinforcing a culture of circumvention that complicates broader efforts to combat other forms of legal deviation, including corruption, which has long posed a structural challenge in Indonesia.

Against this backdrop, the study proceeds from the assumption that the resolution of leasing debt collection issues can no longer rely on repressive measures and social violence as primary enforcement mechanisms. What is required is a paradigm capable of cultivating

compliance from the outset, rather than imposing obedience at the final stage when conflict has already materialized. Accordingly, this research advances a conceptual framework that leverages technology as a means of reconstructing legal compliance within creditor, debtor relationships (Bedianashvili & Gabroshvili, 2024). Specifically, it proposes a blockchain-based smart contract model designed to establish *ex ante* compliance, that is, compliance embedded at the moment the agreement is formed, rather than enforced *ex post* following default.

Through self-enforcing contractual mechanisms, installment payment obligations no longer depend primarily on third-party intervention or coercive action, but are executed automatically and systemically by the parties bound by the agreement. In this model, coercion is no longer expressed through physical seizure or social pressure, but through system design that rationally incentivizes debtors to fulfill their contractual obligations. This approach fundamentally shifts the source of enforcement legitimacy from physical force to system-based legitimacy. Blockchain is not positioned as a substitute for law, but as a supporting infrastructure that enables the law to function more effectively, predictably, and fairly. This transformation marks a transition from conflict-oriented debt collection toward a model of embedded compliance, in which rights and obligations are executed through transparent and accountable mechanisms.

On this basis, this study aims to examine how smart contract and blockchain technologies may be utilized to reconstruct debt collection mechanisms in motor vehicle leasing agreements, and to assess the extent to which such an approach aligns with the principles of business law and the Indonesian legal system. Furthermore, this research is expected to provide a conceptual contribution to the development of a new paradigm of law enforcement grounded in system design (compliance by design), while offering a normative model capable of bridging the gap between the effectiveness of contract enforcement and the protection of social order. Accordingly, this study is not only relevant to the development of business law in Indonesia, but also holds broader significance in formulating innovative approaches for developing countries in building legal compliance systems that are more preventive, adaptive, and just in the context of digital transformation.

## 2. Literature Review

This chapter examines the doctrinal foundations governing leasing and the enforcement of credit obligations under Indonesian law. It analyzes the legal character of leasing agreements as instruments of private law, the role of fiduciary security as an accessory right securing performance, and the statutory mechanisms governing its execution. Particular attention is given to the normative tensions that arise when formal fiduciary doctrine is enforced through coercive and informal collection practices.

### 2.1. Legal Characteristics of Leasing Agreements under Indonesian Law

In the Indonesian legal system, leasing agreements (*sewa guna usaha*) are classified as mixed or innominate contracts, as they are not expressly regulated under a single, specific set of provisions within the Indonesian Civil Code (Sari & Suryono, 2021). This innominate character arises because leasing combines elements of lease, financing, and, in certain practices, an option for the transfer of ownership, which cannot be entirely subsumed under any single classical contract type. Structurally, a leasing agreement incorporates elements of lease as defined under Article 1548 of the Indonesian Civil Code, together with capital financing mechanisms, whereby the lessor provides capital goods for use by the lessee in return for periodic payments (Ardiansyah & Prakoso, 2024). Unlike conventional lease

agreements, however, the primary objective of leasing is not merely the use of goods, but the financing of capital goods acquisition through an installment-based payment scheme.

As a civil contract, leasing is governed by the principle of freedom of contract as enshrined in Article 1338 of the Indonesian Civil Code (Jacinda, 2024). Consequently, the terms of leasing agreements are generally embodied in written standard-form contracts that bind the parties with the force of law. In practice, the dominance of contractual clauses by the lessor frequently places the lessee in a weaker bargaining position, notwithstanding the formal validity and binding nature of the agreement. Beyond the Civil Code, the regulation of leasing in Indonesia has also evolved through sectoral regulations, particularly the Decree of the Minister of Finance No. 1169/KMK.01/1991, which provides definitions, classifications, and an operational framework for leasing (Sindoro et al., 2024). This regulatory instrument clarifies that leasing functions primarily as a financing instrument rather than as a conventional lease relationship.

Based on regulatory practice and prevailing norms, leasing in Indonesia is generally divided into two principal forms. First, finance leasing (leasing with an option right), in which the lessor purchases goods from a supplier and delivers them to the lessee for use over a specified period, with the lessee retaining the option to acquire ownership of the goods at the end of the lease term upon payment of a residual value. Second, operating leasing (leasing without an option right), which more closely resembles a conventional lease arrangement, as it does not provide for a transfer of ownership at the conclusion of the lease period.

In the context of legal protection and the mitigation of default risk, leasing agreements are almost invariably linked to fiduciary security arrangements as regulated under Law No. 42 of 1999 on Fiduciary Security (Yudhoyono & Basoeky, 2025). Through this mechanism, the leased object (particularly motor vehicles) is encumbered with fiduciary security to secure the fulfillment of the lessee's obligations. Fiduciary security grants the lessor preferential rights of execution in the event of default; however, such execution must be carried out in accordance with applicable legal procedures and may not be exercised arbitrarily.

## **2.2. Fiduciary Security and Its Enforcement Mechanisms in Leasing Agreements**

In practical terms, leasing agreements, particularly in the form of finance leases, are almost invariably accompanied by the imposition of fiduciary security over the financed object, most notably motor vehicles. The use of fiduciary security functions as a risk-mitigation instrument against default, while simultaneously providing the legal basis for creditors to obtain satisfaction of their claims in the event that debtors fail to perform their contractual obligations (Inaya et al., 2025). Normatively, fiduciary security is governed by Law No. 42 of 1999 on Fiduciary Security. This statute defines fiduciary security as a transfer of ownership rights over an object based on trust, under which the object serving as collateral remains in the possession of the debtor (Fikri & Shabarullah, 2025). Unlike a pledge, fiduciary security enables the debtor to continue using the secured object for economic activities, while the creditor enjoys legal assurance for the repayment of the debt.

The object of fiduciary security encompasses both tangible and intangible movable property, including motor vehicles, electronic equipment, receivables, and certain buildings that cannot be encumbered with mortgage rights. In the context of motor vehicle leasing, fiduciary security has become the preferred form of collateral due to its flexibility and compatibility with use-based financing arrangements. Conceptually, it is important to emphasize that fiduciary security does not transfer physical control of the object to the creditor; rather, it confers a security right that is accessory in nature to the principal agreement. The creditor's right to execute the collateral arises only upon the debtor being

declared in default (*wanprestasi*). It is precisely at this point, however, that significant legal problems frequently emerge in practice (Pranoto & Soemartono, 2023).

Initially, fiduciary security certificates were endowed with executorial force equivalent to a final and binding court judgment. As a consequence, creditors often construed this provision as granting them unilateral authority to determine the occurrence of default and to immediately repossess the secured object. This practice was fundamentally corrected by Constitutional Court Decision No. 18/PUU-XVII/2019. The Court clarified that default cannot be determined unilaterally by the creditor; rather, a finding of breach must be based either on mutual agreement between the parties or on a judicial determination. Accordingly, the executorial power of fiduciary certificates can no longer be exercised automatically where the debtor disputes or refuses to acknowledge the existence of default.

Under the current legal framework, the execution of fiduciary security may proceed through two principal mechanisms. First, voluntary execution (*parate executie*), which applies when the debtor acknowledges the default and voluntarily surrenders the secured object to the creditor (Rumawi et al., 2022). In such circumstances, the creditor is entitled to sell the collateral through a public auction or by private sale, provided that such sale is agreed upon by the parties and conducted in a transparent manner, including prior written notice and public announcement. Second, execution through judicial proceedings, which becomes necessary when the debtor refuses to surrender the collateral or denies the occurrence of default. In such cases, the creditor is required to file an application for execution before the District Court. This process is governed by civil procedural law and involves stages ranging from the issuance of an execution order to the conduct of an auction by an authorized official. In other words, the coercive power of the state may only be invoked after judicial legitimacy has been obtained.

Although the law grants preferential rights to fiduciary creditors, such rights do not constitute legal justification for physical coercion or unilateral repossession outside the prescribed legal procedures. Assistance from law enforcement authorities may only be rendered in the context of enforcing a court decision or a lawful execution, not as an instrument of private debt collection. Within fiduciary relationships, debtors are likewise subject to legal obligations, including the prohibition against re-encumbering the same object without the creditor's consent and the duty to preserve and surrender the collateral when execution is lawfully conducted. Following the Constitutional Court's decision, the creditor–debtor relationship has been more clearly rebalanced, as debtor protection has been strengthened through stricter limitations on the unilateral determination of default and on execution mechanisms (Pranoto & Soemartono, 2023).

It can thus be understood that fiduciary security in leasing practice embodies a structural paradox. On the one hand, it is designed as an instrument of legal certainty and financing efficiency; on the other, it frequently becomes a source of conflict when its enforcement relies predominantly on ex post coercion rather than on compliance mechanisms embedded ex ante within the contractual framework. This tension opens normative space for the development of more preventive, systemic, and compliance-oriented models of contractual enforcement.

### **2.3. The Problematics of Coercive Debt Collection in the Execution of Fiduciary Security**

Despite significant normative corrections to the fiduciary security framework—particularly following Constitutional Court Decision No. 18/PUU-XVII/2019—debt collection practices in leasing agreements continue to be frequently characterized by coercive methods. The forcible repossession of vehicles, psychological intimidation, and the involvement of non-judicial third parties in execution processes reveal a substantial gap between the normative

legal design and its practical implementation. In practice, coercive collection is often justified on the grounds of efficiency and business certainty. Creditors tend to view rapid execution as a means of minimizing non-performing loan risks and safeguarding the stability of their financing portfolios. However, this approach obscures the boundary between the enforcement of private law rights and the exercise of private power, a conflation that fundamentally contradicts the principles of a rule-of-law state.

The core problem lies in the manner in which default (*wanprestasi*) is conceptualized and operationalized. In many leasing agreements, default is defined unilaterally through standard-form clauses, whereby payment delays are automatically treated as sufficient justification for execution. From a legal standpoint, however, the determination of default (particularly where it is contested) cannot be detached from adjudicative mechanisms or mutual agreement between the parties. When creditors nonetheless impose execution without recourse to such processes, fiduciary security shifts from an instrument of legal protection into a mechanism of pressure. Coercive debt collection further reflects a tendency toward the privatization of legal coercion. Within modern legal systems, the use of force or physical compulsion is a monopoly of the state and may only be exercised through lawful and accountable procedures (Bottoms & Tankebe, 2012). Yet in leasing practices, this function is frequently carried out by non-state actors, such as debt collectors, in the absence of adequate judicial oversight. As a result, the creditor, debtor relationship no longer operates within an equal civil-law framework, but rather devolves into an asymmetrical relationship of domination.

From a sociological perspective of law, coercive debt collection generates not only individual harm to debtors but also systemic consequences for legal legitimacy itself. When law is perceived as a justificatory tool for unilateral coercion, compliance no longer emerges from normative acceptance but from fear (Stark & Sanchez-Adams, 2022). Such a compliance model is inherently fragile and tends to encourage opportunistic behavior, both by debtors seeking to evade obligations and by creditors driven to exceed legal boundaries in pursuit of collection efficiency. Moreover, coercive collection practices expose a paradox inherent in the fiduciary system. On the one hand, fiduciary security is designed as a flexible and efficient financing mechanism that allows debtors to retain possession and use of the secured object. On the other hand, upon the occurrence of default, this very flexibility becomes a source of conflict, as it is not balanced by compliance mechanisms internalized from the outset of the contractual relationship. In other words, fiduciary security relies excessively on ex post coercion, while ex ante preventive measures remain largely neglected.

Although the Constitutional Court's decision has narrowed the scope for unilateral execution, this judicial correction has not fully addressed the root of the problem. As long as contractual design and collection systems remain grounded in a repressive logic (namely, compelling compliance only after a breach has occurred) the potential for conflict persists. Coercive debt collection, therefore, should not be understood merely as a procedural violation, but as an indication of a deeper failure in the compliance architecture of leasing agreements. It is within this context that the need arises for a more fundamental reconstruction of leasing enforcement mechanisms. Rather than positioning execution as the primary response to default, the legal system must develop approaches capable of fostering compliance from the contract-design stage. A shift from conflict-based collection toward embedded compliance constitutes a necessary condition for reducing reliance on coercive practices and for restoring legal legitimacy within creditor-debtor relation.

### 3. Methods

This study adopts a normative legal research methodology, focusing on the examination of written legal norms as authoritative standards for regulating and resolving legal issues. Normative legal research conceptualizes law as a system of norms comprising legal principles, rules, and statutory regulations, which are analyzed through legal interpretation and legal construction in order to address the legal issues under examination. In the context of this research, namely, blockchain-based fiduciary mechanisms as non-coercive debt collection instruments, the normative legal method is employed to assess the compatibility between developments in digital financing practices and the prevailing positive legal framework.

The analysis focuses on the legal regulation of leasing agreements, fiduciary security interests, and the principles of legal protection afforded to debtors in debt collection practices. This research is qualitative and normative in nature, emphasizing a systematic analysis of relevant legal norms. The data utilized consist of secondary legal materials, including primary legal materials in the form of statutes and court decisions; secondary legal materials comprising legal doctrines and scholarly opinions; and tertiary legal materials such as legal dictionaries and encyclopedias. These materials are analyzed to identify their normative meaning, regulatory consistency, as well as potential legal gaps or disharmonies related to the object of the study. The ultimate objective is to formulate legal arguments and prescriptive recommendations in the form of normative constructions or ideal regulatory models.

#### 3.1. Statutory approach

The study employs a statutory approach by examining various regulations governing leasing finance and fiduciary security (Astuti, 2026). From the perspective of civil law structure, leasing agreements combine elements of lease contracts as regulated under Article 1548 of the Indonesian Civil Code with capital financing mechanisms, whereby the lessor provides capital goods for use by the lessee in exchange for periodic payments. This approach is used to assess the consistency and adequacy of existing legal norms in accommodating modern financing practices.

#### 3.2. Conceptual approach

In addition, a conceptual approach is applied to examine the legal concepts and principles underlying non-coercive debt collection mechanisms (Astuti et al., 2021, 2024). Within the civil law framework, leasing agreements are governed by the principle of freedom of contract, as stipulated in Article 1338 of the Indonesian Civil Code. In practice, however, leasing agreements are typically drafted as standard-form contracts dominated by the lessor, potentially resulting in an imbalance of bargaining power for the lessee. This conceptual approach is used to evaluate the extent to which the principles of contractual freedom and contractual fairness are applied in a balanced manner within leasing practices.

The study also examines relevant legal instruments and policy frameworks, including the Decree of the Minister of Finance No. 1169/KMK.01/1991 on Leasing, which provides definitions, classifications, and an operational framework for leasing as a financing instrument. Furthermore, Law No. 42 of 1999 on Fiduciary Security is analyzed as the legal basis for the creation of security interests in leasing finance. From a constitutional protection perspective, the study refers to Constitutional Court Decision No. 18/PUU-XVII/2019, which affirms that default cannot be unilaterally determined by the creditor, and that the execution of fiduciary security must comply with the principle of due process of law. Consistent with its focus on blockchain technology and smart contracts, this research examines the potential integration of credit agreements into digital systems based on smart contracts as mechanisms

for implementing the rights and obligations of the parties (Atmojo & Fuad, 2023). Under this model, the legal relationship between creditor and debtor no longer relies solely on static written documents, but is embedded in technological systems capable of performing verification and obligation execution functions automatically and transparently.

Finally, the study analyzes asset tokenization schemes within the context of fiduciary security by assessing their conformity with the fiduciary legal regime established under Law No. 42 of 1999. In fiduciary security arrangements, legal ownership of the secured object is vested in the creditor, while physical possession remains with the debtor. This legal construction serves as the basis for evaluating the legitimacy of using digital tokens as juridical representations of secured assets, without undermining the fundamental principles of property law or the legal protection of the parties.

## 4. Results and Discussion

### 4.1. Research Results

#### 4.1.1. From Repressive Enforcement to Embedded Compliance

All the issue of coercive debt collection in the execution of fiduciary security demonstrates that the core problem does not lie merely in procedural violations or the deviant conduct of collection actors, but rather in an enforcement paradigm that remains fundamentally repressive. Within this paradigm, compliance is understood as something to be imposed after the occurrence of default (*ex post* enforcement), even at the risk of undermining legal legitimacy itself. Law enforcement is positioned as a reaction to conflict, rather than as a mechanism designed from the outset to prevent conflict from arising. Such a repressive approach has long been subject to critique in legal theory. The classical distinction between repressive law and responsive law illustrates that an overreliance on sanctions and coercion tends to produce compliance that is instrumental and fragile. Compliance generated by fear of sanctions reflects not acceptance of normative validity, but merely a calculation of risk. In the context of leasing, the persistence of coercive collection practices indicates that contractual enforcement remains at a repressive stage, notwithstanding the normative support provided by modern legal instruments such as fiduciary security.

Compliance produced through coercion suffers from inherent structural limitations. It fails to encourage the internalization of legal values and instead widens the distance between law and the subjects it governs. When contractual enforcement is realized through intimidation and social violence, law loses its persuasive force and is reduced to a mere instrument of compulsion. Over time, this condition harms not only debtors but also erodes trust in the financing system and undermines the legitimacy of legal institutions themselves. Beyond issues of legitimacy, repressive enforcement also creates an efficiency paradox. Forced repossession is often perceived as a swift solution to non-performing loans; yet in practice, it increases social costs, intensifies debtor resistance, triggers legal disputes, and weakens the overall stability of the financing system. The efficiency achieved is therefore illusory, as it disregards the long-term costs borne by both the legal system and society at large.

These conditions underscore the need for a paradigmatic shift from coercion-based enforcement toward a model of compliance embedded from the very design of the contract. This approach, referred to in this study as embedded compliance, does not wait for a breach to occur before reacting, but instead seeks to prevent violations through system design that rationally incentivizes the parties to fulfill their contractual obligations. Compliance is no longer produced through threats, but through contractual architectures that render breach

irrational or systemically costly. The concept of embedded compliance aligns with broader developments in design-based regulation (regulation by design), which recognizes that legal behavior is shaped not only by written norms and sanctions, but also by the structural features of the systems within which individuals interact. Within this framework, law is no longer understood merely as a text enforced externally, but as part of an infrastructure that shapes choices, incentives, and conduct. System design thus functions as an effective regulatory instrument.

In creditor, debtor relations, embedded compliance entails shifting the focal point of enforcement from the execution stage to the contract-design stage. Coercive force is not eliminated, but transformed, from physical compulsion into systemic logic. Compliance is generated not through confrontation, but through mechanisms that operate automatically, transparently, and predictably. This approach also creates space for reconciling legal certainty with procedural justice. Rather than expanding official discretion or intensifying sanctions, embedded compliance reduces the potential for conflict by enhancing predictability and transparency in contractual performance. Law enforcement no longer appears as an emergency intervention at the height of conflict, but as a preventive mechanism operating continuously.

Within this context, technology, particularly blockchain-based smart contracts, emerges as a relevant supporting infrastructure for realizing embedded compliance in leasing agreements. Smart contracts are digital protocols designed to automatically execute contractual clauses once predefined conditions are met (Dylan et al., 2025). They are not contracts in the classical juridical sense, but technological mechanisms for implementing legally valid agreements. In leasing arrangements, smart contracts enable the systemic management of payment obligations and their consequences. Payment delays can be anticipated and addressed through mechanisms that are automated, proportionate, and transparent, without reliance on manual collection or social violence.

In practice, such automated actions may take the form of temporary restrictions on the economic functionality of the financed asset, including digital immobilization through the remote deactivation of digitally connected vehicle functions, the activation of a kill switch that systemically halts the operation of the asset, or an escrow lock that freezes access to certain funds or economic rights until the contractual obligation is fulfilled. Conceptually, this mechanism may be analogized to payment-compliance-based service termination models in the utilities sector, where access to a service depends on the continuous fulfillment of financial obligations (Maukar et al., 2024). Nevertheless, the implementation of such mechanisms in technology-based leasing contexts requires further legal examination, particularly with regard to their normative legitimacy and the boundaries of legal protection afforded to debtors.

These mechanisms may also be accompanied by automated default notifications that directly affect the debtor's contractual position. Accordingly, execution is no longer positioned as a post-conflict legal event, but rather as an inherent component of the contractual structure itself. However, in order to maintain a balance between systemic efficiency and the protection of debtor rights, mechanisms must exist that allow debtors to contest or correct automated actions, particularly in cases of erroneous default declarations that may effectively lock or restrict their economic rights.

Although self-enforcing in nature, smart contracts do not displace the role of law. Their effectiveness remains contingent upon the validity of the underlying agreement under national law, as well as compliance with the principles of civil law and consumer protection. Smart contracts are not intended to replace fiduciary mechanisms or judicial decisions, but rather to reduce the frequency and intensity of coercive enforcement. Within this framework, smart

contracts represent a concrete manifestation of embedded compliance: compliance that operates from within the contractual system rather than being imposed externally, while still preserving institutional avenues for correction in the event of errors in automated implementation.

#### 4.1.2. Blockchain as a Compliance Infrastructure

The shift from repressive enforcement toward embedded compliance redefines compliance as a product of contractual design rather than a consequence of coercive, post-conflict intervention. This conceptual shift, however, cannot operate in isolation. It requires an infrastructure capable of ensuring that self-enforcing mechanisms function consistently, transparently, and accountably over time. Smart contracts, as layers of automated execution, therefore presuppose the existence of a supporting system that can sustain design-based compliance in a reliable manner. It is at this juncture that blockchain technology acquires normative relevance. Blockchain provides a technical infrastructure through which contractual rules can operate as a compliance system rather than as mere normative promises (Sujoko et al., 2023). By means of distributed, immutable, and verifiable record-keeping, blockchain relocates the basis of trust from personal relationships or centralized authority to system-based trust. In the context of contract enforcement, this shift is significant because it allows compliance to be generated through the consistency of technical architecture rather than through threats or coercive intervention.

As a compliance infrastructure, blockchain enables the integration of contractual rules into a transparent and auditable system. Payment obligations, installment schedules, and the consequences of default no longer depend on unilateral interpretation or manual collection practices, but are executed according to parameters agreed upon *ex ante*. Compliance, accordingly, is no longer determined by the relative bargaining power of the parties, but by a system design that operates automatically and predictably. This approach is consistent with the theory of regulation by design, which recognizes that legal behavior is shaped not only by norms and sanctions, but also by the architecture of the systems within which individuals interact. As articulated by Lessig (1999), “design” or “code” can function as a regulatory instrument as effective as formal law. Blockchain extends this logic by providing a technical architecture capable of implementing legal rules in a consistent manner without constant mediation by law enforcement authorities.

In leasing relationships, blockchain has the potential to create a relatively neutral space of execution between creditors and debtors. Information concerning payments, contractual status, and performance of obligations can be accessed transparently in accordance with authorized permissions. Such transparency enhances legal certainty while reducing factual disputes that frequently trigger conflict in debt collection processes. Where contractual facts are clearly documented and resistant to manipulation, the scope for social escalation is significantly reduced. Moreover, blockchain facilitates a clearer separation between system-based enforcement and enforcement rooted in social violence. The consequences of default are executed through proportional and well-documented automated mechanisms, thereby minimizing the perceived need for physical repossession or confrontational collection practices. Within this framework, law and the courts are not displaced, but repositioned as corrective mechanisms of last resort rather than as the primary instruments of routine enforcement.

Nevertheless, blockchain cannot be regarded as normatively neutral. System design, smart-contract parameters, and data-access governance reflect legal and political choices made by relevant actors. Absent a clear normative framework, automation risks entrenching existing power asymmetries in technical forms that are more opaque and difficult to contest.

This concern has been emphasized by Filippi & Hassan (2016), who cautions that blockchain-based governance must not displace the role of law as a guardian of substantive justice. Accordingly, blockchain is not positioned here as a substitute for law, but as a supporting infrastructure that enables law to function in a more preventive and legitimate manner. By embedding compliance within both contractual design and technical architecture, enforcement no longer begins with conflict and coercion, but with a compliance framework that promotes the fulfillment of obligations in a rational, transparent, and accountable way. It is this approach that opens the path toward reconstructing leasing agreement enforcement from coercive practices to system-based, design-driven compliance.

#### 4.1.3. Smart Contracts for Motor Vehicle Credit Financing

In the practice of motor vehicle financing through leasing arrangements, this study proposes a new conceptual approach, namely the integration of credit agreements into a digital system based on smart contracts. Through this approach, the legal relationship between creditor and debtor no longer relies solely on static written documents, but is instead functionally implemented through a technological system capable of automatically executing and verifying the parties' obligations. In this context, smart contracts are understood not merely as technical instruments, but as institutional mechanisms that translate legal agreements into enforceable digital processes. One of the most essential elements recorded in the open ledger is the installment payment schedule. From a doctrinal perspective, the installment schedule constitutes an integral part of the credit agreement and is directly connected to the validity requirements of a contract as stipulated in Article 1320 of the Indonesian Civil Code (Utomo & Thukuse, 2025). Its binding force is further reinforced by the principle of *pacta sunt servanda* under Article 1338 paragraph (1), which elevates the parties' agreement to the status of law governing them (Bianty & Gunadi, 2025). Accordingly, the installment schedule derives its normative force from the mutual consent embodied in the leasing agreement itself, rather than from unilateral determination or solely from the fiduciary security regime.

Beyond its function as a contractual clause, the installment schedule also plays a critical role within the fiduciary structure of leasing transactions. In fiduciary legal construction, the financing or leasing agreement operates as the principal contract, while the fiduciary agreement is accessory in nature. Within this relationship, the installment schedule serves as the operational benchmark for assessing the occurrence of default (*wanprestasi*), which in turn determines whether fiduciary protection mechanisms may be activated. The implementation of smart contracts enables consequences arising from late payment, such as the imposition of penalties, to be executed automatically based on parameters agreed upon *ex ante*, thereby reducing subjectivity and minimizing the potential for unilateral enforcement by the creditor. The architecture of the smart contract is also designed to align with the legal status of motor vehicle ownership in fiduciary-based leasing schemes. As leasing fundamentally constitutes a form of use-right financing, juridical ownership of the vehicle remains vested in the lessor for the duration of the agreement. Ownership is transferred to the debtor only upon the full fulfillment of the principal obligations. Within a smart contract system, such fulfillment automatically triggers the execution of the ownership transfer clause, which is system-verified and permanently recorded in the ledger, thereby providing legal certainty for both parties.

#### 4.1.4. What if the Debtor Fails to Perform?

The smart contract approach may be positioned as a compliance-oriented legal infrastructure, as it is capable of bridging contractual legal norms, the logic of fiduciary

security, and automated enforcement mechanisms. Rather than displacing established legal doctrines, the use of smart contracts in fact reinforces their practical implementation in motor vehicle financing by enabling enforcement patterns that are more consistent, transparent, and accountable. Within a smart contract scheme, a debtor's failure to perform the routine obligation to pay installments does not automatically result in the repossession of the vehicle. Instead, smart contracts allow for the gradual restriction of the debtor's economic rights. This is made possible by blockchain technology, in which ownership rights over a motor vehicle can be represented in the form of tokens. As a consequence, the vehicle cannot be regarded as being fully "owned by the debtor" from a legal perspective for as long as the financing obligations have not been fully discharged.

In the context of applying blockchain technology to motor vehicle financing, several relevant institutional schemes may be adopted. First, a digital ownership certificate (token) may be introduced, whereby all administrative aspects of the vehicle, including purchase invoice details, the Vehicle Ownership Book (*Buku Pemilik Kendaraan Bermotor*-BPKB), and the Vehicle Registration Certificate (*Surat Tanda Nomor Kendaraan*-STNK) are represented in the form of a digital token (Samola et al., 2024). The physical administrative documents remain under the control of the leasing company as creditor, with the exception of the STNK, which functionally continues to be held by the debtor for operational use of the vehicle. Normatively, there is currently no statutory provision that explicitly regulates the tokenization of the BPKB or STNK. However, neither is there any legal norm that expressly prohibits the digital representation of administrative data or legal rights attached to motor vehicles. This condition opens space for the application of an open legal system approach, provided that the developed scheme does not contravene positive law and does not negate the legal function of official documents as state-issued legal instruments.

The indirect legal basis for this scheme may be traced to the principle of freedom of contract as stipulated in Article 1338 paragraph (1) of the Indonesian Civil Code. This principle authorizes the parties to agree upon the manner in which ownership rights are represented, administrative documents are controlled, and mechanisms for the transfer and safeguarding of rights over the vehicle are structured. In this context, the digital token is not intended to replace the BPKB or STNK as official documents, but rather to function as a contractual representation of the rights agreed upon by the parties. This tokenization scheme is also consistent with the fiduciary security regime as regulated under Law No. 42 of 1999 on Fiduciary Security. Under fiduciary arrangements, juridical ownership of the secured object rests with the creditor, while physical possession remains with the debtor. Accordingly, what is secured is the right over the vehicle, rather than its mere physical control. Tokenization within this framework may therefore be understood as a digital representation of fiduciary rights, not as the creation of new rights outside the existing legal system.

From the perspective of electronic systems law, the recognition of digital tokens finds normative support in the Law on Electronic Information and Transactions, as amended. Electronic information and electronic documents are recognized as legally valid evidence, provided that certain requirements are met. Consequently, digital tokens may be positioned as supporting electronic documents that function as proof of rights status and as administrative verification tools, without negating the legal standing of physical documents governed by statutory regulations. Second, the ownership token is locked within a smart contract. This locking mechanism ensures that any change in the legal status of rights over the vehicle may occur only in accordance with the terms agreed upon by the parties. The entire process of contract performance is permanently recorded in the blockchain ledger. From a legal standpoint, the smart contract may be positioned as an electronic system that

automatically executes the parties' legal instructions, while the blockchain ledger functions as a permanent and verifiable electronic audit trail.

Third, upon full fulfillment of the debtor's obligations, the ownership token is automatically transferred to the debtor as performance of the agreement, and the debtor becomes entitled to claim the physical ownership documents from the leasing company. With such fulfillment, the contractual relationship between the parties is deemed terminated. Conversely, if the debtor fails to perform the obligations within the agreed timeframe, the default (*wanprestasi*) regime under the Indonesian Civil Code applies. In the event of default, it must be emphasized that what is legally withdrawn is not the vehicle as a physical object, but the rights over the vehicle. The debtor loses legal rights over the motor vehicle in accordance with the contractual clauses and the characteristics of fiduciary security. As a result, although the vehicle may remain factually in the debtor's possession, it is no longer held under lawful control and loses the legality of its use, including for operation on public roads.

In circumstances where the vehicle cannot be physically recovered by the creditor because it has been absconded with or concealed by the debtor, the leasing company may submit an insurance claim for the loss of the fiduciary object. Legally, the vehicle is deemed to be outside the creditor's lawful control as a result of the debtor's conduct, thereby giving rise to legal and economic consequences that may be addressed through insurance mechanisms.

#### 4.2. Discussion

The blockchain-based forced-payment mechanism is reinforced through the integration of on-chain reputation and credit risk assessment. Under this design, the debtor's compliance status no longer remains confined to a bilateral contractual relationship between the debtor and a single leasing institution, but instead evolves into part of an economic reputation trail that can be systemically verified by authorized industry participants. When a debtor enters into default (*wanprestasi*), the event not only triggers the activation of an economic lock-in with respect to the relevant vehicle, but is also permanently recorded in the blockchain ledger as part of the debtor's risk profile. This record is tamper-resistant and cannot be altered or erased unilaterally, thereby closing off opportunities for the concealment of problematic credit histories through the migration between financing institutions or informal restructuring practices. Through this mechanism, default ceases to be a fragmented and opaque occurrence and instead becomes integrated into an inter-institutional record of economic compliance.

A direct consequence of this design is the increased barrier faced by defaulting debtors in accessing new financing. Leasing companies or other financial institutions participating in the permissioned network are able to assess the risk level of prospective debtors objectively prior to approving financing. In certain circumstances, access to credit is not entirely denied, but rather granted subject to risk-based adjustments, such as the imposition of higher interest rates, additional collateral requirements, or more restrictive tenor conditions. Through this mechanism, risk is neither denied nor obscured, but explicitly internalized within the economic structure of financing. This pattern produces a form of compulsion distinct from conventional approaches. What operates is not physical coercion or psychological pressure in the field, but a structured and measurable form of economic coercion. Debtors are confronted with the understanding that default under a single contract does not end as an isolated failure, but generates continuing economic implications. In this context, on-chain reputation (Fakhri et al., 2026) functions as a disciplining mechanism that promotes compliance through rational calculation of long-term economic consequences, rather than through fear of violence or social stigma.

Within this framework, the forced-payment mechanism no longer operates in an episodic and reactive manner, but instead functions continuously. Compliance is not enforced

solely within a particular contractual relationship, but is constructed as reputational capital that influences the debtor's access to the broader financing system. Accordingly, the logic of enforcement shifts from a "post-breach punishment" orientation toward the formation of incentives that promote consistent compliance over time. In addition to on-chain reputation and cross-institutional credit risk assessment, the system is further strengthened by the implementation of escrow arrangements and automatic deduction mechanisms for installment payments. From the outset of the agreement, the debtor consents to the performance of payment obligations through automatic deductions from a designated account. This scheme reduces reliance on manual payments that are prone to delay, while simultaneously narrowing the scope for deliberate non-payment.

In practice, installment payments are processed automatically in accordance with the schedule agreed upon by the parties. Where funds in the designated account are insufficient or the deduction cannot be executed, the system records the failure in real time and immediately activates the relevant consequences, including the automatic imposition of late-payment penalties. Under this design, payment delays no longer constitute ambiguous or administratively deferred events, but are identified and addressed instantaneously. The application of escrow and automatic deduction mechanisms effectively closes the space for debtors to evade obligations silently. There is no longer a "grey period" in which debtors may remain in arrears without clear consequences, delay communication, or exploit inconsistencies between administrative systems. Any form of non-compliance is immediately reflected in the contractual status, the debtor's on-chain reputation, and the activation of pre-designed economic restrictions.

It must be emphasized that this entire mechanism continues to operate within the framework of contractual consent. Automatic deduction and escrow arrangements are not instruments of unilateral coercion, but form part of the contractual design agreed upon by the debtor from the outset. Accordingly, the system does not negate the principle of freedom of contract, but rather concretizes the performance of obligations in an automated, transparent, and verifiable manner. The integration of on-chain reputation, cross-institutional credit risk adjustment, and escrow (Atmojo et al., 2016) and automatic deduction mechanisms underscores the non-coercive character of this forced-payment model. Compliance is not imposed through physical threats or direct intervention, but through an economic architecture that systematically renders non-compliance an increasingly costly and irrational choice. Debtors retain freedom of action, yet each choice carries measurable and transparent economic consequences.

Through this construction, the system complements object-level economic lock-in, namely, the vehicle itself, with reputational and financial lock-in at the level of the legal subject, that is, the debtor. The combination of these mechanisms forms a comprehensive compliance ecosystem that encompasses vehicle use, access to financing, and the formation of long-term economic reputation. At this stage, enforcement of compliance no longer depends on physical intervention or field-level agents, but on system design that consistently links rights, obligations, and consequences within a single, interconnected framework.

## 5. Conclusion

The design of a blockchain-based, non-coercive debt collection mechanism emerges as a response to informal enforcement practices such as the use of third-party field collectors (mata elang), which often rely on intimidation and operate outside clear legal supervision. These practices raise concerns regarding legality, legitimacy, and potential criminal liability

due to their dependence on informal power relations rather than structured legal procedures. In contrast, blockchain-based enforcement executes obligations through contractually agreed smart contract mechanisms that operate automatically, transparently, and under institutional oversight.

Unlike coercive field collection, enforcement within a blockchain system occurs through predetermined restrictions on legal or economic rights triggered by verifiable contractual conditions, thereby eliminating physical confrontation and reducing risks of unlawful seizure or violence. This approach enhances legal certainty by ensuring uniform and traceable enforcement outcomes while reintegrating the role of the state through regulatory supervision, validation mechanisms, and institutional participation. Blockchain therefore functions not as a substitute for state authority, but as a compliance infrastructure connecting private contractual enforcement with public legal oversight. Effective implementation requires an integrated framework encompassing legal recognition of automated enforcement, accountable technical design, institutional coordination among regulators and legal actors, and ethical safeguards ensuring proportionality, fairness, and debtor protection. Through this structured approach, blockchain-based non-coercive debt collection offers a more legitimate, transparent, and rule-of-law, consistent alternative to informal enforcement practices while enabling responsible digital transformation in the enforcement of civil obligations.

### 5.1. Acknowledgments

The author gratefully acknowledges the Faculty of Law, Universitas Kristen Indonesia, for the financial support provided for this research. The author also extends appreciation to the Constitutional Court of the Republic of Indonesia, the Financial Services Authority (*Otoritas Jasa Keuangan-OJK*), and the Commodity Futures Trading Regulatory Agency (*Badan Pengawas Perdagangan Berjangka Komoditi-Bappebti*) for access to regulatory materials and official publications, which served as important secondary legal sources in this study. The author declares that there are no competing interests related to this research.

## 6. References

- Ardiansyah, D., & Prakoso, A. L. (2024). Juridical Analysis of Car Rental Agreements (Study at PT. Persada Solo). *International Conference Restructuring and Transforming Law*, 2(2), 239–246.
- Astuti, N. K. (2026). Reconceptualising Legal Entity Structures for Indonesian Commercial Crowdfunding. *International Journal of Business, Law, and Education*, 7(1), 116–141.
- Astuti, N. K., Suhariningsih, Sukarmi, & Hamidah, S. (2021). MSME Funding with Securities Crowdfunding in Indonesia and the People's Economic System. *The 1st International Conference on Law and Human Rights (ICLHR)*, 88.
- Astuti, N. K., Suhariningsih, Sukarmi, & Hamidah, S. (2024). Exploring The Essence of Indonesian Securities-Based. *International Journal of Law in Changing World*, 3(1), 53–80.
- Atmojo, R. N. P., & Fuad, F. (2023). Upaya Perlindungan Hukum Bagi Para Konsumen Pemegang Aset Kripto di Indonesia. *Jurnal Hukum To-Ra : Hukum Untuk Mengatur Dan Melindungi Masyarakat*, 9(2), 254–276. <https://doi.org/10.55809/tora.v9i2.260>
- Atmojo, R. N. P., Tjhin, V. U., Wandoko, W., Budiastuti, D., Polla, G., Mahesa, R., & Astuti, T. N. K. (2016). Rekening Bersama (RekBer) The Indonesian Escrow Service of Money. *International Journal of Multimedia and Ubiquitous Engineering*, 11(3), 399–410.
- Bedianashvili, G., & Gabroshvili, Z. (2024). Blockchain Technologies for Managing Public Debt. *Ekonomisti*, 1, 37–44.
- Bianty, T., & Gunadi, A. (2025). Legal Force of Binding Sale Purchase Agreement Under Hand

- Reviewed From The Principle Of Pacta Sunt Servanda. *DE LEGA LATA: Jurnal Ilmu Hukum*, 10(2), 151–156. <https://doi.org/10.30596/dll.v10i2.24375>
- Bottoms, A., & Tankebe, J. (2012). Beyond Procedural Justice : A Dialogic Approach to Legitimacy in Criminal Justice BEYOND PROCEDURAL JUSTICE : A. *Journal of Criminal Law and Criminology*, 102(1).
- Daffa, A., & Wiraguna, S. A. (2025). Pelanggaran Privasi Nasabah: Analisis Hukum atas Praktik Pembocoran Data oleh Bank kepada Mata Elang. *Jembatan Hukum: Kajian Ilmu Hukum, Sosial Dan Administrasi Negara*, 2(2), 280–291.
- Dylan, J., Kamil, M., & Atmojo, R. N. P. (2025). The Role of AI Chatbots in Enhancing Customer Satisfaction: A Case Study of E-Commerce in Digital Service Transformation. *2025 International Conference on Informatics, Multimedia, Cyber and Information System (ICIMCIS)*. <https://doi.org/10.1109/ICIMCIS68501.2025.11327014>
- Fakhri, M., Romadhon, M., Nurtasya, M. S., & Atmojo, R. N. P. (2026). Sustainable Development in E - Commerce: Assessing the Influence of E - WoM, Structural Assurances, Online Trust, and Reliability on Customer Satisfaction. In S. C. Mukhopadhyay, S. M. N. A. Senanayake, & P. W. C. Prasad (Eds.), *Conference on Innovative Technologies in Intelligent Systems and Industrial Applications* (Vol. 1512, pp. 463–475). Springer, Cham.
- Farid, F., Renggong, R., & Tira, A. (2024). Tindakan Kekerasan Yang Dilakukan Oleh Penagih Utang Dalam Perspektif Kriminologi. *Indonesian Journal of Legality of Law*, 7(1), 33–38. <https://doi.org/10.35965/ijlf.v7i1.5266>
- Fikri, M., & Shabarullah. (2025). Legal Analysis of The Supreme Court Decision Number 2319 K/PID, SUS/2024 Concerning Fiduciary Guarantees in Muamalah Fiqh. *JURISTA: Jurnal Hukum Dan Keadilan*, 9(1), 109–130.
- Filippi, P. De, & Hassan, S. (2016). Blockchain technology as a regulatory technology: From code is law to law is code. *First Monday*, 21(12).
- Inaya, A., Bustami, D. S., & Hasbi, H. (2025). Tinjauan Yuridis Terhadap Perlindungan Hukum Kreditur Pemegang Jaminan Fidusia Dalam Terjadinya Pailit Oleh Debitur. *Legal Dialogica*, 1(1), 249–259.
- Jacinda, A. J. (2024). Default In Leasing Committed by The Lessee and Its Law According To The Civil Law Code. *Jurispro Law Review*, 1(1), 1–8.
- Kean, Y. A. B., Andryani, K., & Saputri, D. O. (2025). Analysis of Lobbying and Negotiation between Debt Collector and Debtor on the Online Loans Kredivo in Yogyakarta. *Asian Journal of Applied Business and Management*, 4(1), 189–200.
- Lessig, L. (1999). *CODE and Other Laws of Cyberspace*. Basic Books.
- Maukar, J. S., Bawole, H. Y. A., & Taroreh, H. (2024). Tinjauan Hukum Tentang Wanprestasi Terhadap PLN Yang Memutus Aliran Listrik Konsumen Yang Menunggak Pembayaran. *Jurnal Fakultas Hukum UNSRAT*, 13(5).
- Pranoto, W. S. A., & Soemartono, G. P. (2023). Legal Certainty of Creditor's Rights in The Fiduciary Agreement. *Unes Law Review*, 6(1), 3054–3068.
- Rumawi, Basuki, U., Towadi, M., & Supianto. (2022). Parate Executie Concept in Fiduciary Based on Ratio Decidendi of Constitutional Court Decision. *Jurnal Konstitusi*, 19(September).
- Samola, J., Tenda, E., Pinontoan, B., & Ketaren, E. (2024). The Implementation of Blockchain System in Verhicle Registration Certificate (BPKB) Data Based on a Website. *Jurnal TIMES Technology Informatics and Computer System*, XIII(2), 275–285.
- Sari, S. T., & Suryono, A. (2021). Tinjauan Hubungan Hukum Perjanjian Leasing Kendaraan Bermotor. *Privat Law*, 9(January-June), 192–201.
- Sindoro, C., Arifin, Z., Ilmi, M., & Sediati, D. S. R. (2024). Analisis Jaminan Fidusia Terhadap Debitur Yang Melakukan Wanprestasi Pasca Putusan Mahkamah Konstitusi Nomor 18/PUU-XVII/2019. *Journal Juridisch*, 2(1), 39–49.

- Stark, A. B., & Sanchez-Adams, C. (2022). *Legal Strategies to Address Coerced Debt Table of contents*.
- Sujoko, D. A., Fahreza, M. F., & Atmojo, R. N. P. (2023). Intention to Use Cryptocurrency Exchanges: Assessing Cryptocurrency Exchange Features. *2023 10th International Conference on ICT for Smart Society (ICISS)*, 10–11. <https://doi.org/10.1109/ICISS59129.2023.10291995>
- Syarifudin, T. (2025, December). Kronologi Pengeroyokan 2 Matel hingga Tewas di Kalibata Picu Pembakaran Kios. *DetikNews*.
- Utomo, H. D., & Thukuse, B. (2025). Electronic Contracts (E-Contracts) and Validity in Indonesian Civil Law: Analysis of Article 1320 of The Civil Code and The ITE Law. *Jembatan Hukum: Kajian Ilmu Hukum, Sosial Dan Administrasi Negara*, 2(4), 82–93.
- Yudhoyono, G. E., & Basoeky, U. (2025). The Existence of Law Number 42 Of 1999 on The Execution of Object on Fiduciary Guarantees on Defaulted Debtors. *Journal Equity of Law and Governance*, 7(1), 89–95.