

The Existence of Smart Contracts in Electronic Agreements: A Civil Juridical Review

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Abstract: *The development of blockchain technology has given birth to smart contracts as a new instrument in electronic agreements that are executed automatically by computer programs based on agreed conditions. The autonomous, transparent, and irreversible characteristics of smart contracts present a challenge to the classical principles of Indonesian civil law, especially Article 1320 of the Civil Code which regulates the conditions for the validity of agreements. The main problem lies in the fulfillment of the elements of free will and agreement, especially when consent is given to a code that is not fully understood by parties without a technological background. Although Law Number 19 of 2016 concerning Electronic Information and Transactions (ITE Law) recognizes electronic documents as legal evidence, there are no explicit provisions governing the validity, legal responsibility, and dispute mechanisms related to smart contracts. This study uses a normative juridical method with a statutory and conceptual approach to examine the existence of smart contracts in the Indonesian legal system. It is necessary to reinterpret and harmonize civil law with technological developments so that smart contracts are not only legally valid, but also fair and provide adequate legal protection. Without regulatory reform, legal certainty and substantive justice in the use of smart contracts have the potential to be neglected.*

Keywords: *Civil Law; Electronic Agreements; Smart Contrac.*

INTRODUCTION

The development of digital technology, especially in the form of blockchain technology, has encouraged the birth of *smart contracts* as a new instrument in the implementation of electronic agreements. *Smart contract* is a computer program that automatically executes the content of the agreement based on the conditions that have been agreed upon by the parties. The autonomous, transparent, and immutable (immutable) characteristics of this technology shift the traditional paradigm in contract law which has been based on the form of written agreements and execution that depend on the will and subjective actions of the parties. This raises fundamental issues regarding the validity, formation of wills, and mechanisms for the implementation of agreements in the perspective of Indonesian civil law which is still rooted in the

principles in the *Burgerlijk Wetboek* (BW), especially Article 1320 of the Civil Code which emphasizes the four conditions for the validity of the agreement.¹

In a juridical context, *smart contracts* pose the challenge of integrating classical principles such as consensualism, freedom of contract, and good faith into a technological framework that is algorithmic and deterministic. When agreements are automatically executed by the system, questions arise about how the principles of free will and lawful consent can be ensured, as well as how legal liability is enforced when there is an execution error stemming from a *bug* or *error* in the code. Some academics, such as Werbach and Cornell (2017), even state that *smart contracts* should be viewed not solely as contracts in the legal sense, but as a *contract enforcement tool* that complements or changes the function of traditional agreements. Therefore, an in-depth critical study is needed to assess the existence and legal position of *smart contracts* in the Indonesian civil law system that has not explicitly accommodated this phenomenon.

The absence of specific arrangements on *smart contracts* in the Indonesian legal system, especially in the civil law framework, creates a normative vacuum that has an impact on legal certainty for the parties involved in electronic agreements.² Law No. 19 of 2016 as an amendment to Law No. 11 of 2008 concerning Electronic Information and Transactions does provide legitimacy to electronic documents and signatures, but it does not explicitly regulate the form of code-based automatic contracts that are the hallmark of *smart contracts*. Article 5 paragraph (1) of the ITE Law states that "electronic information and/or electronic documents and/or their printed results are valid legal evidence," which opens up opportunities for *smart contracts* to be recognized as contractual evidence. However, without a clear juridical definition and concrete legal parameters, courts may have difficulty assessing the validity and binding force of *smart contracts* in civil disputes.

Furthermore, *smart contracts* that work automatically and do not require human action in their implementation, can complicate the assessment of the element of "agreement" as required in Article 1320 of the Civil Code. In the practice of *smart contracts*, agreements are expressed in the form of agreement on source code that may not be fully understood by lawmakers or technologists. This raises juridical questions about the fulfillment of subjective conditions in the form of agreement and competence. Without an adequate understanding of the content of the contract code, the possibility of a defect of will or even an error in the *consensus ad idem* becomes very great. In this situation, Indonesia's positive law has not provided a clear corrective mechanism to bridge the technical characteristics of *smart contracts* with classical civil law principles. Therefore, the urgency of legal reform or at least reinterpretation is important so that legal protection of legal subjects remains guaranteed in the rapidly evolving digital landscape.³

¹ Fajarianto, E. R., Zulfikar, P., & Mulyadi, E. (2022). Tinjauan Yuridis Penggunaan Blockchain-Smart Contract Dalam Transaksi Non-Fungible Token (Nft) Pada Pt. Saga Riung Investama. *Jurnal Pemandhu*, 3(2), 84-97.

² Anovanko, U. B., Wijaya, A., & Nugraha, S. (2025). Implikasi Hukum Perdata terhadap Penggunaan Kecerdasan Buatan (AI) dalam Kontrak Komersial. *Innovative: Journal Of Social Science Research*, 5(2), 3637-3653.

³ Suryono, M. V. A. (2023). Legal reforming of smart contract in supply chain demands process between retailer and consumer. *Jurnal Kajian Pembaruan Hukum*, 3(1), 91-122.

In the context of civil law, changes in the way agreements are made and implemented through smart contracts require a rereading of the fundamental principles of contracts, especially regarding the elements of free will and agreement of the parties. Article 1320 of the Civil Code stipulates that the conditions for the validity of an agreement are the existence of agreement, competence, certain objects, and *causa* that are halal. In a smart contract, the agreement of the parties is expressed not through conventional verbal or written interaction, but through approval on a digital interface or implicit agreement to the program code (code as law).⁴ This risks causing misunderstandings in understanding the substance of the agreement, especially if one of the parties does not have adequate technological literacy. Therefore, the form of free will guaranteed by civil law becomes problematic if it is not accompanied by a thorough understanding of the content of the contract algorithm.

In addition, Article 26A of Law Number 19 of 2016 (ITE Law) opens a gap for the protection of personal information and the security of electronic systems, but does not explicitly regulate the aspect of legal responsibility in the event of a default in the implementation of *smart contracts*. In conventional legal practice, if one party is negligent or does not meet the merits, the other party can file a civil lawsuit based on the principle of default.⁵ However, in a *smart contract*, the system will execute the content of the contract automatically without considering the factual context, such as *force majeure* conditions or bad intentions of one of the parties.⁶ Therefore, it is necessary to develop new juridical instruments that are able to accommodate the principles of prudence, restoration of rights, and substantive justice, without neglecting the speed and efficiency offered by *smart contracts*. The harmonization between the norms of the ITE Law and the principles of engagement in the Civil Code is a strategic step so that the law remains responsive to digital reality without losing the spirit of justice.

Certainty and legal protection in the implementation of *smart contracts* is a crucial issue because this instrument changes the face of agreements from those previously based on personal interaction to code-based digital interactions.⁷ In the Indonesian legal system, Article 1320 of the Civil Code provides a normative foundation regarding the validity of agreements, but does not explicitly reach digital forms that are automated. In this context, the existence of Law Number 19 of 2016 concerning Information and Electronic Transactions can be the initial foundation in bridging this void. Article 1 number 17 and Article 5 of the ITE Law recognize electronic documents as valid evidence, but do not necessarily resolve the issue of the formal and material validity of an agreement if its execution depends on an algorithm that cannot be negotiated or corrected juridically after it occurs.

⁴ Fahlevi, F. S., & Fitriana, Z. M. (2024). KEABSAHAN SMART CONTRACT SEBAGAI SOLUSI PRAKTIK MANIPULASI KONTRAK DI INDONESIA. *Kabillah: Journal of Social Community*, 9(2), 243-255.

⁵ Pratama, A. Y. P. Y., Nurfauzi, W. A., Rosyid, M. A., Muhtar, M. I. M. I., Romantino, H. A., & Mubarak, A. Z. M. Z. (2024). Analisis Putusan Nomor. 48/Pdt. Sederhana/2018/PN-MKS Tentang Wanprestasi Melalui Perantara E-Commerce Demi Terciptanya Kepastian Hukum Terhadap Debitur. *Diponegoro Private Law Review*, 11(1), 22-44.

⁶ Dethan, J. A., & Irianto, Y. E. G. (2024). Analisis Keabsahan Smart Contract dalam Perjanjian Bisnis di Indonesia. *UNES Law Review*, 7(1), 462-468.

⁷ Agapiou, A. (2023). Overcoming the legal barriers to the implementation of smart contracts in the construction industry: the emergence of a practice and research agenda. *Buildings*, 13(3), 594.

In addition, the deterministic characteristics of *smart contracts* also have implications for reduced legal protection for parties who suffer losses due to *bugs*, programming errors, or automated execution that do not reflect good faith. In the civil system, the principle of protection of the weak and the principle of *pacta sunt servanda* must theoretically go hand in hand. However, in the practice of *smart contracts*, compliance with the code can actually create injustice if it is not accompanied by corrective mechanisms that allow for free will testing, clause interpretation, and the application of proportionate legal sanctions. Therefore, the recognition of *smart contracts* as a form of legal agreement must be accompanied by additional legal tools that regulate their substantive terms, the legal responsibilities of the parties, and dispute resolution mechanisms. Without it, legal certainty will only apply pseudo-effectively and legal protection for the aggrieved party will be ineffective

METHOD

This research uses a normative juridical method, which is legal research that focuses on the assessment of applicable positive legal norms, both in the form of laws and regulations, doctrines, and legal principles. This method is used to analyze the validity and position of *smart contracts* in the perspective of Indonesian civil law, especially associated with the provisions in Article 1320 of the Civil Code regarding the conditions for the validity of agreements and Law Number 19 of 2016 concerning Electronic Information and Transactions (ITE Law).

The approaches used in this study are the statute approach and the conceptual approach. Normative research aims to examine and understand how the law should apply (*das sollen*), not how the law is practiced in empirical reality (*das sein*), so that the entire analysis process relies on primary and secondary legal materials that are textual and conceptual.⁸

As explained by Peter Mahmud Marzuki, normative legal research is a method that focuses on the study of legal materials as the main object of study, by interpreting and constructing applicable laws to answer certain legal issues.⁹ According to Marzuki, this approach is prescriptive because it aims not only to describe the law, but also to provide normative arguments for the validity of a legal action or act in the legal system adopted.¹⁰ Meanwhile, Soerjono Soekanto and Sri Mamudji stated that normative legal research includes research on legal principles, legal systematics, legal synchronization, legal history, and comparative law.¹¹ The statutory approach is used to examine relevant legal provisions, such as the Civil Code and the ITE Law, while the conceptual approach is used to understand the basic concepts of agreements, free will, and electronic contracts in the context of digital transformation. The data used is in the form of secondary data obtained from literature studies, including laws and regulations, legal literature, scientific journals, and court decisions (if relevant). All data were analyzed qualitatively by examining the

⁸ Novea Elysa Wardhani, Sepriano, and Reni Sinta Yani, *Metodologi Penelitian Bidang Hukum* (Jambi: PT. Sonpedia Publishing Indonesia., 2025).

⁹ Peter Mahmud Marzuki, *Penelitian Hukum* (Jakarta: Kencana Prenada Media Group, 2011).

¹⁰ Mahlil Adriaman et al., *Pengantar Metode Penelitian Ilmu Hukum* (Padang: Yayasan Tri Edukasi Ilmiah, 2024).

¹¹ Rangga Suganda, "Metode Pendekatan Yuridis Dalam Memahami Sistem Penyelesaian Sengketa Ekonomi Syariah," *Jurnal Ilmiah Ekonomi Islam* 8, no. 3 (2022): 2859, <https://doi.org/10.29040/jiei.v8i3.6485>.

coherence and suitability of positive legal norms to the reality of the use of *smart contracts* in the practice of electronic agreements.

DISCUSSION

Conceptualization of Smart Contracts in Civil Law and Its Development in Electronic Systems

The conceptualization of smart contracts in civil law reflects the intersection between traditional legal norms and technological innovations that increasingly dominate modern social and economic practices. Smart contracts, or smart contracts, were first proposed by Nick Szabo in 1994 as a digital transaction protocol designed to automatically enforce contractual obligations. In its development, smart contracts are realized through blockchain technology that allows the automatic execution of agreements in the form of digital code without the need for human intervention or institutional intermediaries.¹² In the legal context, smart contracts raise questions about their validity and applicability according to civil law. In the Indonesian legal system that refers to the *Burgerlijk Wetboek* (Civil Code), an agreement is valid if it meets four conditions as stated in Article 1320 of the Civil Code, namely: the agreement of the parties, the ability to make an alliance, certain objects, and *causa* that are *halal*. This provision is the main basis for testing whether a smart contract, although not in the form of a written or oral document as usual, still meets the basic elements of the agreement legally.

The expression of the parties' will in a smart contract is not realized in the form of verbal or written statements, but through actions contained in the code logic, such as the deployment and trigger of contract functions.¹³ In theory, this is still acceptable within the framework of the principle of consensualism, which states that an agreement is sufficiently formed from the actions of the parties as long as it contains mutual intention and consent. Subekti and Gunawan Widjaja, two Indonesian civil law experts, emphasized that the form of the agreement does not have to be formally written, as long as the will of the parties is legally reflected. Therefore, digital input and automatic execution in smart contracts can be interpreted as a new form of manifestation of contractual will. However, the deterministic nature of smart contracts poses a challenge to the principle of *redelijkheid en billijkheid* (propriety and fairness), which is an important principle in Dutch and Indonesian law. In smart contracts, the entire process is governed by code logic without room for flexibility or context judgment by judges, so potential injustices due to system rigidity are very likely to occur.

In the realm of positive Indonesian law, the existence of smart contracts has implicit legitimacy through Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law), especially in Article 18 paragraph (1), which states that "Electronic transactions have legal force, as long as they meet the legal provisions of the agreement." This means that automated systems based on computer code such as smart contracts can still be legally recognized as long as the elements of the agreement, object, and *causa*

¹² Dethan, J. A., & Irianto, Y. E. G. (2024). Analisis Keabsahan Smart Contract dalam Perjanjian Bisnis di Indonesia. *UNES Law Review*, 7(1), 462-468.

¹³ Fahlevi, F. S., & Fitriana, Z. M. (2024). KEABSAHAN SMART CONTRACT SEBAGAI SOLUSI PRAKTIK MANIPULASI KONTRAK DI INDONESIA. *Kabillah: Journal of Social Community*, 9(2), 243-255.

are fulfilled.¹⁴ In fact, Article 5 of the ITE Law recognizes that electronic documents are equivalent to written evidence, providing an additional juridical basis that the digital track record of smart contracts has evidentiary value in the eyes of the law. However, it should be emphasized that the principle of freedom of contract in the Civil Code still limits that an agreement must not be contrary to public order and decency as stated in Article 1337 of the Civil Code. In other words, smart contracts that contain content that is contrary to the law, such as being used for illegal activities or detrimental to the public, can still be declared legally invalid.

A number of legal studies have also highlighted the challenges of integrating smart contracts in the national legal system. The existence of smart contracts demands conceptual adjustments to the definition of agreements, because contracts are no longer just text, but digital logic code.¹⁵ Other studies emphasize that the urgency of codifying digital legal norms is important, given that the speed of technological development exceeds the speed of legal legislation.¹⁶ The progressive legal approach as stated by Satjipto Rahardjo is relevant in this case, that the law should not be rigid and must be adaptive to changing times. Therefore, although smart contracts are not yet explicitly regulated in Indonesian legislation, through a progressive interpretation approach and recognition of digital principles in the ITE Law, smart contracts can be seen as a legitimate form of electronic engagement.

In practice, smart contracts have been widely used in the decentralized finance (DeFi) sector, supply chain, digital asset rental, and token trading. This type of contract offers high efficiency, transparency, and technical certainty. However, in order to ensure fair and comprehensive legal protection, harmonization between traditional legal instruments and this new form of digital engagement is needed. Legal reform, both through new regulations and progressive judicial interpretations, is important so that basic principles of civil law such as justice, free will, and legal protection remain the foundation of contractual practices in the digital age.

Table 1. Comparison of Indonesian Positive Law vs. Smart Contract Practice

Legal Aspects/Principles	Indonesian Positive Law (Civil Code & ITE Law)	Praktik Smart Contract (Blockchain)
Valid Terms of Agreement (Article 1320)	1. Agreement 2. Proficiency 3. Specific object 4. Halal causes	Representation of the agreement in the form of a digital code; does not always explicitly indicate causa or written/verbal will.

¹⁴ Vijaini, A., Hasbi, M., Abda, M. S., & Parahdina, S. (2024). LEGITIMASI NIKAH DARING MELALUI TAUKIL BIL KITABAH MENURUT HUKUM ISLAM DAN HUKUM POSITIF. *Mitsaqan Ghalizan*, 4(1), 22-35.

¹⁵ Ferreira, A. (2021). Regulating smart contracts: Legal revolution or simply evolution?. *Telecommunications Policy*, 45(2), 102081.

¹⁶ Cahyono, S. T., Erni, W., & Hidayat, T. (2025). RIKONSTRUKSI HUKUM PIDANA TERHADAP KEJAHATAN SIBER (CYBER CRIME) DALAM SISTEM PERADILAN PIDANA INDONESIA: Rekonstruksi Hukum Pidana terhadap Kejahatan Siber (Cyber Crime) dalam Sistem Peradilan Pidana Indonesia. *DJL| Dame Journal of Law*, 1(1), 1-23.

Legal Aspects/Principles	Indonesian Positive Law (Civil Code & ITE Law)	Praktik Smart Contract (Blockchain)
Form of Agreement	Does not require written form; It can be oral or written. However, it must be legally proven.	In the form of program code that runs automatically; can be publicly verified through blockchain (immutable).
Expression of Will (Consensualism)	It can be done in writing/verbal or action (concluding). It is important to have free will.	The act of uploading and approving a contract is considered an expression of will. There is no explicit written declaration.
Interpretation of the Contents of the Contract	Can be interpreted by the judge if a dispute arises; open to revision based on good faith and the basis of propriety.	Cannot be changed after deployment; inflexible. The content of the contract can only be interpreted according to the logic of the code (code = law).
The Basis of Freedom of Contract	Known and guaranteed, but limited by law, decency, and public order (Article 1337 of the Civil Code).	High freedom to create your own contract code, but does not always contain protection for weak parties or the public.
The Power of Legal Evidence	Written and digital documents are recognized in the ITE Law (Articles 5 & 6); valid evidence if it meets the requirements.	Transaction data is transparent and authentic, but it has not been explicitly regulated for its use as evidence in court.
Dispute Resolution	Resolved through court or arbitration, based on evidence and legal interpretation.	There is no dispute resolution mechanism in the contract itself; must be external (arbitrage/off-chain).
Contract Changes/Modifications	Renegotiable when mutually agreed upon.	Immutable; Changes can only be made by creating a new contract.

Juridical Analysis of the Validity of Smart Contracts Based on Article 1320 of the Civil Code and the ITE Law

To strengthen the juridical analysis of the validity of smart contracts based on Article 1320 of the Civil Code and the ITE Law, a scientific discussion of the law is needed that underlines the transformation of the contract law paradigm in the digital era. A number of contemporary legal literature and thought have discussed the influence of technology on the basic concept of agreements, as well as the legal adaptation of electronic and automated forms of contracts. One relevant approach is will theory, which emphasizes that the essence of a contract is a voluntary agreement between the parties. In the context of smart contracts, the existence of a code as a "code is law" shows that contractual norms are not only contained in legal texts,

but are also represented in self-executing technological instructions.¹⁷ Therefore, while smart contracts do not always include wet signatures or verbal agreements, free will is considered to be reflected through digital actions that explicitly agree to the content of the contract (e.g. with digital signatures or token-based authorization).

Furthermore, in the framework of Indonesian law, the existence of the ITE Law as a *lex specialis* provides legitimacy for the form of digital contracts and the use of electronic documents. As stated in the literature on cyber law, the ITE Law explicitly recognizes that electronic information and electronic documents have the same legal status as written documents, so the formal validity of smart contracts does not need to be doubted if the electronic procedures meet the principles of authenticity, integrity, and accessibility.¹⁸ This is also in line with the principle of functional equivalence, which is known in international electronic contract law, such as in the UNCITRAL Model Law on Electronic Commerce (1996), which was the inspiration for the ITE Law. This principle states that a digital document can have the same legal force as a written document, as long as it can be accessed and traceable and has a reliable authentication mechanism.

However, from the perspective of substance over form, the law also assesses validity based on the formal form alone, but also on the substance or content of the agreement. An Indonesian civil law expert, Subekti, stated that the conditions for the validity of an agreement in the Civil Code must be interpreted substantively, namely that the agreement is not enough only to be valid in form, but must also be based on a free will and not polluted by defects of will. This means that while smart contracts can be considered formally valid under the ITE Act, their validity can be nullified if it is proven that one of the parties is coerced, fraudulent, or does not fully understand the content of the approved digital contract. This opinion is reinforced by the principle of legal protection against weak parties (e.g. consumers), which is a common principle in modern treaty law. Therefore, the application of smart contracts cannot be separated from the sociological and epistemological context of the parties involved, especially when there is information inequality or asymmetry of technological understanding.

In addition, from the perspective of progressive contract law, there is a view that contracts are no longer solely a tool to bind the parties rigidly, but must also pay attention to relational fairness and flexibility in their implementation. In the context of smart contracts, the nature of automated execution does offer efficiency and legal certainty, but at the same time eliminates the opportunity for renegotiation and remediation in the event of errors or changes in conditions. Therefore, the importance of hybrid contracts is the integration of smart contracts with traditional legal mechanisms that allow human intervention in the event of conflicts, code errors, or non-conformities of legal norms.¹⁹ This idea is particularly relevant in the

¹⁷ Mulyadi, Y., Aziz, H., & Myranika, A. (2024). Perlindungan Hukum Terhadap Nasabah Pinjaman Online dikaitkan dengan Pasal 1320 Kuh Perdata Tentang Keabsahan Perjanjian Kontrak. *Jurnal Pemandhu*, 5(1).

¹⁸ Rachmadani, F. A. S., & Rosadi, S. D. (2021). Tinjauan Yuridis Terhadap Perbuatan Melawan Hukum Pada Smart Contract Ditinjau Dari Hukum Positif Di Indonesia. *Jurnal Sains Sosio Humaniora*, 5(1), 650-664.

¹⁹ Budiyo, A. E. (2023). Analisis Yuridis Penggunaan Smart Contract Dalam Perspektif Asas Kebebasan Berkontrak. *Journal Sains Student Research*, 1(1), 815-827.

context of Indonesia, where the legal system still emphasizes the aspects of free will and moral considerations in treaties.

Thus, scientifically and normatively, it can be concluded that even though smart contracts have formally fulfilled the elements of the validity of the agreement according to Article 1320 of the Civil Code and obtained legal recognition from the ITE Law, their validity and applicability must still be tested within the framework of substantive legal protection, the principle of justice, and a thorough understanding of technology and its functions in the legal community. The establishment of new norms or further regulatory adjustments regarding automated legal agreements is also an urgency going forward to bridge the gap between classical legal norms and the rapidly evolving digital reality.

Legal Implications and Regulatory Needs for Smart Contracts in the Indonesian Legal System

The implementation of smart contracts in the Indonesian legal system raises a number of significant legal implications, especially since its form and working mechanism are fundamentally different from conventional agreements. In the context of Indonesian civil law, the validity of an agreement is regulated in Article 1320 of the Civil Code (KUH Percivil), which requires the existence of an agreement, legal prowess, certain objects, and halal causes. One of the main issues that arises is how the principle of consensus can be proven in smart contracts, given that these contracts are executed through computer code that can run automatically without direct involvement from the parties after the contract is executed on the blockchain network.²⁰ Classical approaches such as will theory, which emphasizes the importance of the expression of free will, become less applicable if there is no explicit understanding or agreement of the technical structure of the digital contract. This reinforces the urgency of reinterpreting the elements of the agreement in the civil law framework to accommodate technological developments.

On the other hand, Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law) has provided recognition of electronic information and/or electronic documents as legal evidence. However, this regulation does not expressly regulate the validity of smart contracts written in programming languages, and does not touch on the aspect of legal liability in the event of technical failures, bugs, or losses caused by errors in the system. This ambiguity creates a significant potential legal vacuum and risks harming certain parties who do not have the technical capacity to understand the substance of the digital contracts they are participating in. The issue of legal liability becomes even more complex when it involves third parties such as code developers, blockchain platform providers, or electronic system operators, each of which does not have a legally defined legal position in current Indonesian regulations.

Comparatively, countries such as the United States and some jurisdictions in the European Union have begun to draft legal frameworks that recognize smart contracts as part of a legitimate contractual system. For example, the states of Arizona and Tennessee in the United States have passed regulations recognizing the legal force of blockchain-based signatures and smart contracts. This approach suggests that law does not have to lag behind technology, but can evolve through the reinterpretation of old legal principles and

²⁰ Martinelli, I., Tsabita, N. M., Putri, A. F. E., & Novela, D. (2024). Legalitas dan Efektivitas Penggunaan Teknologi Blockchain Terhadap Smart Contract Pada Perjanjian Bisnis di Masa Depan. *UNES Law Review*, 6(4), 10761-10776.

the issuance of new relevant norms. Lawrence Lessig's thoughts in Code and Other Laws of Cyberspace which states that "code is law" also provides an understanding that in the digital ecosystem, code has normative power similar to positive law, thus requiring supervision and corrective instruments to ensure justice and legal protection.²¹

By considering this normative, doctrinal, and comparative approach, the urgency of regulating smart contracts in the Indonesian legal system is becoming more and more real. The government and related institutions need to develop regulations that not only provide legal certainty, but also protect the interests of the parties involved in digital transactions. This can be done through two paths: first, by establishing laws and regulations that explicitly regulate the definition, validity, and dispute resolution mechanism of smart contracts; and second, by reinterpreting existing civil law principles, so that they can be applied adaptively to forms of digital contracts based on information technology. Without these steps, Indonesia's legal system risks experiencing normative stagnation that is unable to keep up with the dynamics of legal interaction in the era of digital transformation.

CONCLUSIONS

Smart contracts are a new embodiment of agreements that are automatically executed through digital code, born from the development of blockchain technology. In the context of Indonesian civil law, its validity still refers to the legal conditions of the agreement in Article 1320 of the Civil Code, namely agreements, skills, certain objects, and causa that are halal. Although it is not conventionally verbal or written, the expression of intent in a smart contract is acceptable as long as there is an action that reflects the agreement of the parties. The ITE Law strengthens the legitimacy of smart contracts as a form of valid electronic agreements and recognizes electronic documents as legal evidence. However, the automated and deterministic nature of smart contracts makes it difficult to apply the principles of justice, flexibility, and legal protection, especially for those who do not understand the technological aspects. The legal vacuum in terms of liability, dispute mechanisms, and user protection demonstrates the importance of regulatory updates. Therefore, harmonization between classical civil law principles and progressive legal approaches is needed so that smart contracts can be adopted in a fair, legal, and sustainable manner in the Indonesian legal system.

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²¹ Akib, M. R., & Umar, W. (2024). KEPASTIAN HUKUM SMART CONTRACT DALAM PERSPEKTIF HUKUM PERDATA. *Jurnal Hukum Lex Generalis*, 5(10).

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