

Legal Review of the Validity of the Use of Smart Contracts in Business Transactions in Indonesia and Its Regulation in Various Countries

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Legal Review of the Validity of the Use of Smart Contracts in Business Transactions in Indonesia and Its Regulation in Various Countries

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ABSTRACT. The increasingly massive use of the internet is now affecting the economic world which is characterized by the birth of E-Commerce. E-Commerce mechanism that does not brings together sellers and buyers directly, this raises a variety of problems on the subjective and objective terms of the sale and purchase agreement. Smart Contracts are actually different from conventional contracts written on paper. They are also different from electronic contracts. A clause in the agreement, which takes the form of programming code, requires blockchain as a distributed storage technology, which sets them apart. In addition, Smart Contracts serve to execute contracts automatically. Therefore, the article aims to analyze the advantages of Smart Contracts compared to conventional contracts and how the validity of using smart contracts in Indonesian law, and why business transactions in Indonesia should start using smart contracts. The result obtained is that the use of Smart Contracts are completely automated and rely on software logic, making them transparent and visible to all parties involved. The use of Smart Contract in buying and selling transactions is considered very important considering the advantages in terms of security, verification, changes in the contents of the agreement, and evidentiary power. As for Indonesian law, the use of Smart Contracts is permissible as long as it does not violate the validity of the agreement as stated in the Civil Code. The use of Smart Contracts offer several advantages over traditional contracts, including transparency, autonomy, speed, accuracy, security, and savings.

KEYWORDS. Smart Contracts, Agreement, Blockchain, Business Transaction

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Muhammad Ilman Abidin*

Introduction

The economic world is influenced by technological advances in line with the rapid globalization. Today's business models and economic actors are changing from traditional practices to highly dynamic digital concepts. This is supported by the results of a survey conducted by the Indonesian Internet Service Providers Association (APJII). The results show that internet user penetration in Indonesia in 2019 and 2020 reached 73.7% of the population total of 266,911,900 million people, an increase of 64.8% from the 2018 figure.² This current condition generates new internet-based business opportunities called e-commerce. To date, e-commerce transactions

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² Kementerian Komunikasi dan Informatika. "Dirjen PPI: Survei Penetrasi Pengguna Internet di Indonesia Bagian Penting dari Transformasi Digital". *Online News KOMINFO*, November 19 (2020). Retrieved from <https://www.kominfo.go.id/content/detail/30653/dirjen-ppi-survei-penetrasi-pengguna-internet-di-indonesia-bagian-penting-dari-transformasi-digital/0/berita_satker>

have experienced a huge increase, both in developed countries and in developing countries, especially Indonesia.³

To fulfill the needs of their lives, people always enter into legal relationships with others, such as conducting sale and purchase transactions, which are a type of agreement or contract. Electronic commerce, represented by electronic contracts, emerged as a result of the emergence of the internet. An electronic contract is an agreement made between two parties electronically or through an internet network or electronic system.

A study by Marcelo Corrales et al. found that Smart Contracts are actually different from conventional contracts written on paper. They are also different from electronic contracts. A clause in the agreement, which takes the form of programming code, requires blockchain as a distributed storage technology, which sets them apart. In addition, Smart Contracts serve to execute contracts automatically.⁴ (Corrales Marcello et. al. 2019). With this system, buying and selling transactions can take place without the seller and buyer meeting in person. Transactors in this case rely on trust in each other.⁵



FIGURE 1. Process Flow of Smart Contract⁶

Before they were intentionally referred to as "smart contracts," they already existed. They are not human creations; they are the product of human behavior. This indicates that contractual parties were compelled to reduce expenses without consciously following scholarly counsel. Nick Szabo, a lawyer and engineer, originally discussed smart contracts in 1997.⁷ Smart contracts, according to Szabo, are legal stipulations that are intentionally incorporated into hardware and software to make breaking them more costly.

³ Bagus Hanindyo Mantri. "Perlindungan Hukum Terhadap Konsumen dalam Transaksi E-Commerce", *Law Reform* 3, no. 1 (2016): 1-21.

⁴ Marcelo Corrales, Mark Fenwick, and Helena Haapio, eds. *Legal Tech, Smart Contracts and Blockchain*. (Singapore: Springer, 2019).

⁵ Corrales, et.al.

⁶ S. M. Rahim, et al. "Artificial Intelligence, Smart Contract and Islamic Finance." *Asian Social Science* 14, no. 2 (2018): 145.

⁷ Nick Szabo, "Formalizing and Securing Relationships on Public Networks." *First Monday* 2, no. 9 (1997). <https://firstmonday.org/ojs/index.php/fm/article/download/548/469>

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Vending machines and tools for reclaiming auto collateral are two examples he gives. Szabo believed that smart contracts would cause a fundamental shift away from paper and toward digital institutions, such as computer- and database-backed banking, by lowering the costs of self-enforcement, arbitration, and mediation. However, Szabo acknowledged the value of the "*long history*" of paper, so this change would not happen overnight.

However, financial organizations had been utilizing computer code to streamline processes like option contracts and bookkeeping long before Szabo. The introduction of Bitcoin and the spread of blockchain technology marked the genuine debut of smart contracts. The Bitcoin protocol, which was initially put forth in 2008, was a successful experiment in the widespread use of decentralized ledgers, which serve as a crucial foundation for smart contracts. A fresh debate about utilizing technology to enforce agreements between individuals without turning to third parties was sparked by the growth of decentralized ledgers. The crucial code needed to create smart contracts has been gathered by new businesses and protocols. This software is independent of the Bitcoin ecosystem. These new businesses are creating an environment to test out different smart contract implementations. Numerous articles have been written on it, primarily from a technical or financial angle.

Many industries and sectors can use technology built on blockchain and distributed ledger technology to realize its many applications. Sectors include banking, finance, health, network connectivity, public sector, security, and authentication systems are heavily involved in the deployment of such technologies. The essential foundation of this possible DLT breakthrough is smart contracts.⁸

The legal relationship that occurs in the sale and purchase activity creates an obligation for the parties so that the agreement that has been made can be implemented as regulated in Articles 1457-1540 of the Civil Code. However, until now, the Civil Code has not accommodated the valid requirements of electronic agreements so that the regulatory basis refers to the provisions of Article 1320 of the Civil Code. This means that every E-Commerce transaction activity that fulfills the elements of the article a quo can bind the parties. To fill the legal vacuum, Law Number 11 of 2008 on

⁸ Firas Al Khalil, et al. "A Solution for the Problems of Translation and Transparency in Smart Contracts." Government Risk and Compliance Technology Centre. Report, available at <<http://www.grctc.com/wp-content/uploads/2017/06/GRCTC-Smart-Contracts-White-Paper-2017>>.

Electronic Information and Transactions as amended by Law Number 19 of 2016 on Amendments to Law 11 of 2008 on Electronic Information and Transactions (hereinafter referred to as ITE Law) was established. In addition, the element of agreement in electronic transactions is also accommodated in Article 48 paragraph (3) of Government Regulation (PP) Number 82 of 2012 concerning the Implementation of Electronic Systems and Transactions which was later revoked by PP Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions.

The concept of a smart contract represents a significant advancement in the utilization of blockchain technology, following the emergence of cryptocurrencies. It can be defined as a computer program that functions as an electronic agreement within a blockchain database system. The primary objective of smart contracts is to establish protocols for the automated execution of agreement clauses between involved parties.⁹ Blockchain is a technological innovation utilized as a decentralized and immutable ledger for storing and managing digital information.

As per Bank Indonesia Regulation No. 19/12/PBI/2017, which pertains to the Implementation of Financial Technology, the utilization of blockchain technology is deemed lawful and represents a manifestation of financial technology implementation within the payment system.¹⁰ Its primary purpose is to facilitate authorization, clearing, final settlement, and payment settlement processes. The concept of smart contracts represents a novel advancement in the realm of electronic contracts, which bear resemblance to conventional agreements. However, what sets smart contracts apart is their inherent capability for self-execution, facilitated by the utilization of blockchain technology.¹¹ The process of automated execution involves the utilization of computer code to convert legal language into

⁹ Indah Parmitasari, "Eksistensi Smart Contract Menurut Hukum Kontrak di Indonesia." *Prosiding Seminar Nasional Hasil Penelitian dan Pengabdian Masyarakat* (2022): 93-101.

¹⁰ See Bank Indonesia Regulation No. 19/12/PBI/2017. See also Diana Fitriana, and Dwi Seno Wijanarko. "Legal Urgence for Registration and Establishment of Legal Fintech Companies Based on Information Technology Authority Regulation Number 77/Pojk. 01/2016 Concerning Money-Base Loan Services and Bank Indonesia Regulation Number 19/12/Pbi/2017 Concerning." *Journal of Law, Politic and Humanities* 3, no. 1 (2022): 214-226.

¹¹ Teresa Enades Hari Setia, and Ajib Susanto. "Smart Contract Blockchain pada E-Voting." *Jurnal Informatika Upgris* 5, no. 2 (2019): 188-191.

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executable programs. The process of automatic execution facilitates the utilization of standardized contracts or agreements in smart contracts.

To date, there are no specific rules regarding the explicit use of smart contracts, as well as limitations on the use of smart contracts themselves, whether they can be used in every transaction, or can only be used in transactions related to cryptocurrencies. So, based on this background, the author will raise the first problem, how the advantages and disadvantages of using smart contracts compared to conventional contracts in business transactions, and how the validity of using smart contracts in terms of Indonesian law.

Method

The methodology for the paper, *Legal Review of the Validity of the Use of Smart Contracts in Business Transactions in Indonesia and Its Regulation in Various Countries*, involves a multi-faceted approach to comprehensively explore and analyze the legal landscape surrounding smart contracts. To begin, the research will commence with an extensive literature review. This phase will involve a thorough examination of legal literature pertaining to smart contracts, with a specific focus on their definition, features, and legal implications. The review will extend globally, exploring existing research on the application of smart contracts in business transactions and considering case studies to glean insights into real-world applications and challenges.

The primary research method employed in this study is normative juridical research. Through this approach, the researcher will delve into primary legal sources such as statutes, regulations, and judicial decisions relevant to smart contracts in Indonesia. The goal is to assess the legal recognition and validity of smart contracts within the Indonesian legal framework.

A crucial aspect of the methodology is the comparative analysis of international regulations. This involves scrutinizing legal frameworks from various countries to discern commonalities and differences in the treatment of smart contracts. The examination will encompass aspects such as contract formation, enforceability, and liability, providing a comprehensive understanding of the global regulatory landscape.

Furthermore, a descriptive analysis will be conducted to elucidate the nature of smart contracts, emphasizing their technological features, benefits,

and potential challenges. Special attention will be given to the legal and regulatory challenges specific to the Indonesian business landscape.

To supplement these methods, interviews with legal professionals, policymakers, and experts in Indonesia may be conducted to gain practical insights into challenges and perspectives regarding smart contracts. Additionally, surveys or questionnaires could be employed to gather data from businesses and legal practitioners, offering a broader perspective on experiences with smart contracts.

An essential component of the research involves the analysis of relevant case law. This examination will provide valuable insights into how courts have interpreted and applied legal principles to smart contracts in the context of business transactions.

In addition, the research methodology encompasses a comprehensive and multi-dimensional approach, combining literature review, normative juridical research, comparative analysis, descriptive analysis, interviews, surveys, and case law analysis. Through this methodological framework, the study aims to provide a holistic understanding of the validity and regulation of smart contracts in business transactions, offering insights that are both theoretically sound and practically relevant for legal practitioners, policymakers, and businesses in Indonesia.

Smart Contract Regulation in Various Countries

The creation and application of DLT and Smart Contracts in the commercial sphere forces us to reevaluate our methods of conducting such business transactions as well as our conception of business relationships. The deployment of smart contracts is surrounded by many challenges. For instance, what exactly is a smart contract, what are its legal implications, how might it interact with existing legal contracts, and ultimately, whether smart contracts will someday take the place of the current, widely accepted legal contracts. We must first have a fundamental knowledge of what a legal contract and a smart contract are in order to respond to these questions. A legal contract is what: A contract is an agreement that results in enforceable or legally recognized obligations.¹² The fact that contractual duties are founded on the consent of the contracting parties sets them apart from other legal obligations. A smart contract, on the other hand, is described as: An

¹² Hugh Collins, *The Law of Contract*. (Cambridge: Cambridge University Press, 2003).

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automatable and enforceable contract is known as a smart contract. computer-automatable, yet some processes might need human input and management. enforceable either through the tamper-proof execution of computer code or through the legal enforcement of rights and obligations.¹³

In American civil science, a very intriguing viewpoint on the benefits of a smart contract is presented. It resolves the serious issue of trust. The contractors in particular treat one another with a significant deal of mistrust, which slows down the turnover of civil servants. A computer program is more trustworthy in the modern world, which is why blockchain technology and the smart contract it supports are so appealing. The smart contract has three key benefits, according to K. J. Fandl. The first is the system's general accessibility, which enables anyone to control it and specifically serves to thwart corruption and fraud. The second is the existence of a single ledger for all system transactions, which enables one to rely on the legitimacy of the accompanying payments or other operations. The third is automatic performance, which ensures the enforcement's security. In the latter scenario, we're referring to a circumstance in which, for instance, a late delivery of products will automatically result in the counterparty who didn't receive the items on time receiving compensation for losses. In this situation, the loss compensation will be handled immediately without the need to go before a judge or arbitrator.¹⁴

There are a sizable number of specialized international platforms through which the application of pertinent technologies is carried out in the developed foreign legal systems, which have considerable experience using blockchain technology and smart contracts. Ethereum has the highest popularity. In his assessment of the platform's potential, N.P. Sheppard points out that Ethereum is positioned as a blockchain application platform on which smart contracts run in accordance with the program, so preventing fraud, third-party intervention, or other illegal activity.¹⁵

Domestic civil law is quite interested in how smart contracts work in other legal systems. For instance, N. B. Krysenkova proposes that legal acts governing electronic transactions may have served as the foundation for other

¹³ Peter U. Clark, et al. "Consequences of Twenty-first-century Policy for Multi-millennial Climate and Sea-level Change." *Nature Climate Change* 6, no. 4 (2016): 360-369.

¹⁴ Kevin J. Fandl, "Can Smart Contracts Enhance Firm Efficiency in Emerging Markets?." *Northwestern Journal of International Law & Business* 40, no. 3 (2020): 335-364.

¹⁵ Nicholas Paul Sheppard, "Can smart contracts learn from digital rights management?." *IEEE Technology and Society Magazine* 39, no. 1 (2020): 69-75.

jurisdictions' regulation of smart contracts. Let's not forget that there are proponents and detractors of this strategy.¹⁶ De Graaf T. J., a Dutch scientist, claims that it is highly difficult to apply e-commerce regulations to transactions involving smart contracts because of the trust issue as well as other technological considerations. It should also be noted that the majority of foreign scientists start by assuming that electronic documents are equivalent to hard copies.¹⁷ Therefore, the Information Technology Act approved in India makes provision for such standards; smart contract fulfillment of civil responsibilities in India is based specifically on these standards. The analysis of foreign civil science doctrine indicates unequivocally that legal fixing of a smart contract can only occur once the national legislature has made the fundamental decision regarding the viability or impossibility of equating smart contracts with conventional civil law contracts. It is not required to pass additional laws for smart contracts if the legislator bases their decision on the fundamental legality of such an equation; rather, the existing legal standards must be modified to take into account the technological aspects of smart contracts. However, if the legislator, on the other hand, favors the adoption of new legal standards expressly devoted to smart contracts, then a novelization that matches is required.

So, one of the main queries is: What is the essential distinction between smart contracts and conventional civil contracts that are written and signed? For instance, the following approach to answering the question can be found in Spanish civil science: the legal repercussions; the process for putting the agreed-upon criteria into.¹⁸ The German doctrine takes a more cautious stance, holding that even for transactions structured on the smart contract model, the law of contracts applies.¹⁹ The similar strategy is used in other nations as well. For instance, Malaysia's Law of 1950 governs smart contracts among other things.²⁰ The opposing stance may also be found in

¹⁶ N. B. Krysenkova, "Smart Contracts in a Foreign Legal space." *International Public Private Law* 5 (2019): 28-30.

¹⁷ T. J. De Graaf, "From old to new: From internet to smart contracts and from people to smart contracts." *Computer law & security review* 35, no. 5 (2019): 105322.

¹⁸ Esther Salmerón-Manzano, and Francisco Manzano-Agugliaro. "The role of smart contracts in sustainability: Worldwide research trends." *Sustainability* 11, no. 11 (2019): 3049.

¹⁹ Jens Frankenreiter, "The Limits of Smart Contracts." *JITE* 175 (2019): 149-162.

²⁰ Nor Razinah Binti Mohd Zain, et al. "Smart contract in blockchain: An exploration of legal framework in Malaysia." *Intellectual Discourse* 27, No. 2 (2019): 595-617.

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the specialized international literature: it is not as important to consider whether a country's legal system is appropriate for a smart contract's requirements.²¹ The fact that smart contracts can serve a variety of purposes contributes to the fact that it is erroneous to equate smart contracts as known technically and as having a legal aspect.

A smart contract does not always "provide service" for civil responsibilities in the area of computer engineering since the application of blockchain technology and smart contracts goes well beyond the law of obligations. Therefore, smart contracts are important for various aspects of public life, such as banking, healthcare, the payment of music royalties, etc., in addition to the registration of contractual relationships.²² By addressing the question of its general nature, the position of the smart contract in the pandect system of Russian civil law is manifestly predetermined. Doctrinal notions of the smart contract are expressed in the scientific literature through the general concept of agreement in some cases.

A.I. Savelyev, for instance, suggests that a smart contract be understood as *"an agreement that exists in the form of a program code implemented on the blockchain platform"*.²³ A.A. Volos offers a very similar point of view on this matter, describing a smart contract as a *"programmed contract"*.²⁴ It is crucial to stress that there are alternative viewpoints on the topic in the scientific literature.

For instance, E.A. Gromova concludes that a smart contract *"can be integrated into contract law as one of the ways to fulfil obligations"* stressing on the distinction between institutions like a contract and a smart contract.²⁵ The opinions of L.G. Efimova and O.B. Sizemova diverge on this issue. The position of a smart contract in the Russian civil law pandect system is established by these scientists as they distinguish between two generic ideas of a smart contract (the computer code and a civil contract). They believe that a smart contract should be specifically outlined in the rules of Chapter 27 of

²¹ Roger Brownsword, "Regulatory fitness: Fintech, funny money, and smart contracts." *European Business Organization Law Review* 20 (2019): 5-27.

²² Helen Eenmaa-Dimitrieva, and Maria José Schmidt-Kessen. "Creating markets in no-trust environments: The law and economics of smart contracts." *Computer Law & Security Review* 35, no. 1 (2019): 69-88.

²³ A. I. Savel'ev, "Some legal aspects of the use of smart contracts and blockchain-technologies in Russian law." *Zakon [The law]* 5 (2017).

²⁴ A. A. Volos, "Smart contracts and principles of civil law." *Russian Justice* 12 (2018): 5-7.

²⁵ E. A. Gromova, "Smart contracts in Russia: attempt to determine the legal entity." *Law and the Digital Economy* 2 (2018).

the RF CC, which is devoted to the concepts and conditions of contracts.²⁶ When establishing the general nature of a smart contract, V.K. Shaidullina comes to a different conclusion, stating that "a smart contract is not a type of a contract and is not an independent form, but i s primarily a program code" (V. K. Shaidullina, 2019). V.M. Kamalyan, who has a similar perspective, asserts that "a smart contract is nothing but a program code, an algorithm written in a digital language that reflects the terms of a given contract, and cannot be equated with a contract". (A. V. Zakharkina, 2022)

Therefore, all viewpoints on the legal status of a smart contract and its position within the system of Russian civil law's pandects can be categorized into the following ideas. (1) An electronic contract is known as a smart contract. (2) A smart contract is a tool for guaranteeing the fulfillment of a commitment. a smart contract is a piece of computer code. Since they all represent one or more of a smart contract's characteristics, it is obvious that all theoretical interpretations of its legal status are equally valid. However, the local legislator should adopt a specific stance on this matter by adopting the smart contract institute, which has long been known to foreign legal systems. Foreign civil science adheres to the fundamental notion that a smart contract is a computer code or program code, in contrast to domestic civil science, which is to some extent in a state of "disorder" regarding the definition of the smart contract essence and nature, as well as all the features resulting from its essence and nature (functions, grounds for occurrence and termination, etc.).

The foreign civil law gives attention to somewhat distinct issues for this specific purpose. As a result, J. Goldenfein and A. Leiter discuss the need to "link" transactions that occur after the adoption of smart contracts to civil contracts expressed in plain English on page 141 of their joint book.²⁷ M. Durovic and A. Janssen made an intriguing observation: these researchers claim that the phrase "smart contract" does not correctly capture the essence of this phenomena because a smart contract does not have a predetermined legal content.²⁸ Therefore, neither "contract" nor "smart" should be used to describe it, which compromises the use of the "smart" term in reference to it.

²⁶ L. G. Efimova, and O. B. Sizemova. "The legal nature of a smart contract." *Banking Law* 1 (2019): 21-28.

²⁷ Jake Goldenfein, and Andrea Leiter. "Legal engineering on the blockchain: 'Smart contracts' as legal conduct." *Law and Critique* 29 (2018): 141-149.

²⁸ Mateja Djurovic, and André Janssen. "The formation of blockchain-based smart contracts in the light of contract law." *European Review of Private Law* 26, no. 6 (2018).

The Validity of Smart Contracts in Terms of Indonesian Contract Law

The advancement of technology has had an impact on the evolution of contractual arrangements. Presently, there exists an electronic contract, referred to as an agreement that is formed electronically through the use of an internet network or electronic system, predicated upon a mutual understanding between the involved parties. Electronic contracts are extensively utilized in electronic transactions, particularly within the realm of electronic commerce. The utilization of internet technology has been employed by individuals to enhance their standard of living. The coexistence of computer and internet technology, alongside human ingenuity, has facilitated the establishment of a system that enables individuals to engage in legal transactions without necessitating physical interaction between the involved parties. The advent of technology advancements has given rise to a novel type of contractual agreement known as a smart contract. A smart contract refers to a computer program that functions as an electronic agreement within a blockchain database system. Its primary purpose is to establish a protocol for the execution of agreement clauses between parties, enabling automatic execution on the blockchain.²⁹ The regulated terms pertain to payment, delivery, warranty, and force majeure. The smart contract is comprised of a sequence of data codes within the blockchain network, without a tangible manifestation akin to a traditional agreement.

Nowadays there are types of electronic contracts that do not require the presence of third parties. These third parties include banks that assist payments, companies that act as intermediaries in transactions between parties, governments, and others. Smart contracts are not like conventional contracts written on paper. Although done electronically, smart contracts differ from electronic contracts in general because they have clauses in the form of code programming, require blockchain as a storage technology, and the nature that allows them to be distributed.³⁰

A smart contract is defined as a computer program in the form of software or software that runs or is stored in a distributed storage technology, in this case the blockchain, and executes contracts automatically based on the

²⁹ Bima Danubrata Adhijoso. "Legalitas Penerapan Smart Contract dalam Asuransi Pertanian di Indonesia." *Jurist-Diction* 2, no. 2 (2019): 395-414.

³⁰ Corrales, et.al Eds. *Legal Tech, Smart Contracts and Blockchain*.

terms and conditions stated in the smart contract. The initial form of a smart contract when it is created consists of lines of code using a programming language or what is commonly called solidity (meta data) which describes the terms and conditions of an agreement or contract so that later it can be executed by the system automatically.

Smart contracts have many advantages over standard contracts. Participants receive identical information simultaneously, reducing contract manipulation. Blockchain technology ensures data immutability, allowing smart contracts to be created without party knowledge. This prevents contract management and execution mistakes. Transparency in contractual agreements builds confidence. This is done by keeping contract data and information accessible to all parties. Duplicating transactions ensures a complete record for stakeholders. Smart contracts eliminate the need for trusted third parties or human interaction, giving parties liberty and freedom. Smart contracts have inherent benefits like lower costs and faster processing. Eliminating intermediaries is another benefit. Contract verification and assurance without third parties reduces expenses. This contract eliminates intermediaries. Eliminating intermediaries reduces economic and time costs. Automated contract execution saves time compared to third-party human contract execution. Automated updates Due to its technological and autonomous nature, the contract automatically changes and updates without middlemen or other processes. Smart contracts offer several benefits, making them a viable prospect for many businesses and individuals.

Smart contracts have gained significant traction in various domains, particularly in the realm of electronic transactions encompassing activities such as the exchange of stocks and cryptocurrencies, as well as the rental of hotel accommodations, among others. Smart contracts refer to contracts that are created and executed in electronic format. According to Article 1313 of the Civil Code, an agreement or contract is a legal action through which one or more individuals voluntarily commit themselves to one or more other individuals and one or more additional languages. According to J. Satrio, agreement is a process in which one or more individuals mutually commit themselves to others, or where both sides reach a consensus.³¹

The regulation of contract law in Indonesia is governed by the regulations outlined in the Third Book of the Civil Code, commonly referred

³¹ J. Satrio. *Hukum Perikatan-perikatan Yang Lahir Dari Perjanjian (Buku II)* (Bandung: Citra Aditya Bakti, 2001).

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to as the Civil Code. The Third Book of the Civil Code is characterized by its open and complementary nature. The term "open" refers to the provision of freedom to legal entities to engage in contractual agreements with other parties, allowing them to determine the parties involved, the timing, the manner of execution, as well as the substance and form of the contract. However, it is important to note that these freedoms are subject to certain limitations, namely, they must not contravene any existing laws and regulations, nor should they violate principles of decency and public order.

It is noteworthy that several rules within the third book of the Civil Code possess a complimentary nature, as they might be superseded by the provisions outlined in a contract, which are established by the involved parties themselves. The parties are legally obligated by the contract if the contract is deemed legitimate. In order to ascertain the validity of a contract, it must satisfy the requirements for a valid contract as outlined in Article 1320 of the Civil Code. These requirements include mutual agreement, legal capacity, definite subject matter, and lawful consideration. Agreement refers to the alignment of intentions of the involved parties in a contractual arrangement, wherein consent is established when one individual genuinely desires the terms and conditions that have been mutually agreed upon.

For the contract to possess validity, it is imperative that the involved parties reach consensus on specific things outlined inside the agreement or contract. The second need that must be met for a contract to be considered legitimate is legal capacity.³² This pertains to the condition that the individuals involved in the contract are adults who possess the ability to carry out a legal action. According to Article 1330 of the Civil Code, individuals who lack the capacity to engage in legal actions include juveniles, individuals under guardianship, and married women. Nevertheless, it is important to note that presently, women who are married retain their ability to engage in lawful activities as stipulated by Supreme Court Circular Letter No. 3 of 1963 and the Marriage Law. The third essential element for a contract's validity is the presence of specific subject matter, indicating that the contract must possess a mutually agreed-upon object. According to Article 1320 of the Civil Code, there exist specific obligations for debtors and corresponding rights for creditors. An alternative term for specific entities refers to the explicit commitments, specifically encompassing the entitlements and responsibilities of both parties involved. The fourth need for the contract's

³² Sudargo Gautama. *Hukum Perdata Internasional Indonesia* (Bandung: Alumni, 1995).

validity is halal causation, which entails that the agreed-upon object of the contract must not contravene the stipulations of laws and regulations, moral standards, and societal norms as outlined in Article 1337 of the Civil Code.³³

In order for a contract to possess legally binding power, it is imperative that the requisite conditions outlined within the contract are duly met. Failure to satisfy these conditions will result in consequential implications. The first and subsequent essential criteria, specifically consensus and legal capability, are subjective prerequisites of the contractual agreement. Failure to fulfill these elements may result in the nullification of the contractual consequences. The term "*voidable*" denotes that the agreement remains legally enforceable until such time as it is formally presented to the court for annulment. The third and fourth conditions, referred to as specific requirements and permissible causes, are considered objective conditions. Failure to meet these conditions renders the contract null and void. Consequently, the contract is deemed invalid from its inception, leading to the legal standpoint that the contract never existed.³⁴

The making of a contract also pays attention to the principles of contract law, which include:

1. the principle of freedom of contract, the principle that provides freedom for parties to make contracts. This principle is a principle that generally exists in every contract law in all countries.
2. the principle of consensualism, the principle which states that a contract is born due to an agreement.
3. the principle of good faith, the principle which states that the parties in making a contract must be based on honesty and perform the contract rationally and properly.
4. the principle of binding contract or *pacta sunt servanda*, this principle stating that every contract that is made legally then the contract binds the parties like a law.

The principle of freedom of contract is contained in the provisions of Article 1338 paragraph (1) of the Civil Code which states that all agreements entered into legally bind the parties as laws. Every legal subject is free to make agreements, both in form, content and time and manner of implementation. A contract can be made by anyone freely, as long as it fulfils

³³ Ridwan Khairandy. *Pokok-Pokok Hukum Dagang* (Yogyakarta: FH UII Press, 2013).

³⁴ Khairandy.

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the legal requirements of the contract and does not violate the provisions of the Law, decency and public order.

In essence, electronic contracts can be regarded as equivalent to conventional contracts, with the key distinction lying in the manner in which they are formed. Electronic contracts are created through electronic systems, whereas conventional contracts are typically established through direct oral or written means, without involving computer platforms. Similarly, a smart contract refers to an electronic contract that operates through the use of a computer program. The utilization of smart contracts in contemporary societal practices, particularly in the context of Indonesia, offers notable advantages in terms of convenience, specifically in relation to cost and time efficiency. This obviates the need for physical meetings between parties involved in contract formation.

The concept of a smart contract, which represents an electronic form of contractual agreement, is a recent development within the realm of contract law. The development of Indonesia can be attributed to the characteristics presented in the third book. The Civil Code in Indonesia serves as the fundamental framework for contract law, allowing for the emergence of novel contractual forms and types that were not previously addressed in the Code. Furthermore, the principle of freedom of contract serves as a catalyst for the emergence of smart contracts. This is due to the fact that smart contracts embody the autonomy of the involved parties to establish agreements based on their mutual consent, encompassing aspects such as contractual content, form, method, and timing.

Hence, it is evident that the emergence of smart contracts in Indonesia may be attributed to the provisions outlined in the third book of the Civil Code, which promotes openness and complementarity, as well as the principle of freedom of contract. Smart contracts are a type of electronic contracts, which are subject to regulation under Law Number 19 of 2016, also known as the Amendments to Law Number 11 of 2008 on Electronic Information and Transactions (ITE Law). Additionally, the implementation of electronic systems and transactions is governed by Government Regulation Number 71 of 2019 (PP PSTE), while trading through electronic systems is regulated by Government Regulation Number 80 of 2019 (PP PMSE).

Smart contracts offer a convenient means of creating contractual agreements, hence enhancing time efficiency and cost savings. However, there are several aspects that require improvement, namely pertaining to the

protection of personal data belonging to the involved parties. The utilization of an electronic system increases the vulnerability of personal data, making it susceptible to potential breaches. Therefore, it is imperative to proactively address the issue of personal data leakage when employing smart contracts. The use and utilization of smart contracts in Indonesia are permissible, provided that they adhere to the stipulations of applicable laws and regulations, as well as uphold principles of decency and public order.

According to Article 47 of the E-Commerce Regulation, electronic contracts may be formed through interactions with automated devices, and the enforceability of these contracts cannot be challenged unless there is evidence of malfunctioning in the automated system. Article 37 of the Personal Property Security and Transactions Act (PPSTA) explicitly outlines the essential functionalities that electronic contracts must possess. These include the ability to make corrections, cancel orders, provide confirmation or reconfirmation, opt to proceed or terminate the process, access information in the form of electronic contracts or advertisements, verify transaction status, and review agreements prior to engaging in transactions. The utilization of blockchain technology and smart contracts in the context of e-commerce necessitates adherence to the Indonesian language, as stipulated in Article 55 of the PMSE Regulation. Alternatively, it is imperative that such contracts are presented in a format that enables customers to read, download, and/or save them in the realm of e-commerce.

Conclusion

This study highlighted and concluded that which are of considerable theoretical and practical importance for the reform of the domestic civil legislation in the relevant field, were offered by a survey of the international civil law research that was devoted to smart contracts. In foreign countries, in addition to the term "legal smart contract," the word "smart contract" is also commonly used. This fact alone makes it possible to solve the issue that arises in Russian civil law about the distinction between a computer code and a civil contract. As a consequence of this, the advancement of the blockchain technology contributes to the acceleration of the scientific study linked to the "legal smart contract." The concept of a "digital economy" is becoming increasingly prevalent in contemporary domestic and international jurisprudence.

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Concerns regarding the broad use of software code and the process of bringing it into conformity with the law are of current interest. They are the subject of a significant number of scientific works. However, it is important to note that the spectrum of concerns that are the objects of discussion and are related with smart contracts varies from nation to country. This is something that should be taken into consideration. The subject of the character of the smart contract is practically not discussed in the foreign civil law doctrine: scholars working in other countries unreservedly acknowledge the technological nature of the smart contract. According to the most recent thinking in international relations, a computer code constitutes a "smart contract." Nevertheless, it is particularly important to stress that the development of foreign science originates from the difference of the phrases "smart contract" and "legal smart contract." In spite of the fact that foreign jurisdictions have had a significant amount of time to observe the real-life existence of public relations that are related with the use of smart contracts, the majority of foreign scholars of private law are not willing to legally fix smart contracts with unique legal rules that cover them.

On the other hand, the concept that it is both possible and necessary to modify traditional contract law in order to meet the requirements of smart contracts is being advanced. Its application goes far beyond the performance of civil obligations, so the studies of smart contracts can be found in works on medicine, on organization of educational process in educational establishments, on agriculture and nature use, and so on. The term "smart contract" has a multifunctional meaning in the foreign science: its application goes far beyond the performance of civil obligations. The challenge of translating the natural language of a civil contract into the language of programming is the primary topic of discussion in the foreign doctrine when it comes to the study of smart contracts. This is because the foreign doctrine was developed outside of the United States. Because of this, in particular, it is implied that there is the involvement of a third party in the transaction that involves the usage of a smart contract. A programmer's job is to consider all of the aspects of a future civil contract while using a model that he translates from the natural language into the programming one. This task requires the programmer to translate the model from natural language into programming language.

Smart contracts outperform traditional contracts. Participants receive identical information simultaneously, reducing contract manipulation. Blockchain technology makes data immutable, enabling smart contracts

without party knowledge. Avoiding contract administration and execution errors. Contract transparency fosters trust. By sharing contract data, this is achieved. Duplicating transactions gives stakeholders a comprehensive record. Smart contracts free parties from third parties and human contact. Smart contracts are cheaper and faster. Benefits include eliminating intermediaries. Contract assurance without third parties saves money. This contract eliminates intermediaries. Eliminating intermediaries saves money and time. Automated contract execution saves time. Auto updates The contract updates automatically without middlemen or other processes due to its technological and autonomous character. Many firms and people consider smart contracts because of their benefits.

Conventional treaty law recognizes oral and written agreements. Smart Contracts are unclear. Thus, according to Article 1338 of the Civil Code, the Smart Contract is lawful if it meets the agreement validity requirements in Article 1320. PP PSTE Article 46 paragraph (2) incorporates these requirements. First, mutual consent of the parties; second, legal competence to engage in legally binding actions; third, unambiguous definition of the agreement's subject matter; and finally, halal principles, which include compliance with applicable laws, regulations, and societal standards. In Article 1, paragraph (17) of the ITE Law, electronic contracts are agreements between parties via electronic systems. However, this phrase is vague. Smart Contracts are electronic contracts since they are created electronically.

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