

LEGAL REVIEW OF THE IMPLEMENTATION OF ELECTRONIC CONTRACTS AND PROTECTION OF PARTIES IN DIGITAL TRANSACTIONS IN INDONESIA

Adi Putra Manggala, Kurnia Wijaya, Didit Darmawan, Terubus, M. Syaiful Anwar

Universitas Sunan Giri Surabaya

correspondence: dr.diditdarmawan@gmail.com

Abstract - This study analyzes the legal framework governing electronic contracts in Indonesia, with a focus on the effectiveness of their implementation, juridical challenges, and the legal protection afforded to parties involved in digital transactions. Digital transformation has fundamentally shifted the paradigm of agreements, transitioning from conventional, paper-based contracts to electronic contracts that are entirely online and transcend geographical boundaries. Indonesia has accommodated this transformation through various legal instruments, including the Law on Information and Electronic Transactions (UU ITE), the Government Regulation on the Implementation of Electronic Systems and Transactions (PP PSTE), the Consumer Protection Law (UUPK), and the Personal Data Protection Law (UU PDP). This research adopts a normative legal method and a case approach to examine the application and dissect issues surrounding validity, evidence, consumer protection, personal data, and jurisdiction. The findings indicate that, despite the existence of an adequate legal foundation, significant obstacles persist at the practical level, such as low digital legal literacy, insufficient consumer protection, challenges in digital evidence, and the need for regulatory harmonization. This study recommends strengthening regulations, enhancing legal education, and fostering multi-stakeholder synergy in order to establish an electronic contract ecosystem in Indonesia that is effective, secure, and just.

Keywords: electronic contracts, contract law, digital evidence, consumer protection, personal data protection, jurisdiction.

INTRODUCTION

The advancement of information and communication technology has revolutionized various facets of global society, including the legal system in Indonesia. Digital transformation has introduced new instruments in contractual practices, most notably through the mechanism of electronic contracts. As a product of contemporary progress, electronic contracts are fundamentally designed to meet the needs of modern business transactions, which prioritize efficiency, speed, and ease of cross-border activity (Muslih & Supeno, 2022). The use of electronic contracts is no longer limited to large-scale enterprises, but has also permeated daily consumer transactions through e-commerce platforms, digital financial services, and even international partnerships (Wiraguna & Santiago, 2022). Nevertheless, these changes have given rise to new legal complexities that demand certainty, protection, and fairness for all parties involved in digital transactions (Negara & Darmawan, 2023).

Indonesia's contractual system has traditionally relied on a strong foundation in the Civil Code (Kitab Undang-Undang Hukum Perdata/KUH Perdata). However, the physical nature of conventional agreements is increasingly misaligned with the dynamics of the digital economy, which is inherently online and unrestricted by time and space (Iswara, 2021). National legal policy must adaptively accommodate digital contract models to ensure the legal consequences and rights of all parties remain protected. The enactment of Law Number 11 of 2008 on Information and Electronic Transactions (UU ITE), along with its amendments, and Government Regulation Number 71 of 2019 concerning the Operation of Electronic Systems and Transactions (PP PSTE), represent crucial efforts by the state to formalize and legitimize electronic contracts as valid legal instruments and evidence.

The formal recognition of electronic contracts carries significant juridical implications. The criteria for valid agreements as set forth in Article 1320 of the Civil Code—comprising consensus, capacity, a clear object, and lawful cause—remain the principal reference. However, in practice, establishing the existence and validity of electronic contracts presents challenges not encountered with traditional written agreements. Issues such as proving electronic signatures, digital identity authentication, the risk of unauthorized data alteration, and protection of consumer rights have become fundamental concerns, necessitating technical regulation and enhancement of national legal capacity (Al Fawwaz, 2022).

Data security and integrity are also paramount, especially given the increasingly sophisticated nature of cybercrime. The protection of personal data belonging to contracting parties is critical to sustaining trust and system integrity (Kholis et al., 2023). Specific regulations, such as Law Number 27 of 2022 on Personal Data Protection (UU PDP), have been enacted to provide a robust legal basis concerning data rights, confidentiality obligations, and sanctions for violations. These initiatives mark the state's effort to harmonize the needs of efficient electronic transactions with the protection of privacy rights in digital agreements (Suvorov, 2022).

Another pressing challenge pertains to contractual fairness and consumer protection, particularly regarding the use of standard clauses in electronic contracts. Common digital practices include the unilateral imposition of contract terms by business actors, which may diminish consumers' bargaining power (standard agreements). Law Number 8 of 1999 on Consumer Protection mandates that business actors refrain from including unilaterally detrimental standard clauses, and requires the provision of transparent information to users. Nonetheless, weak verification mechanisms in the digital sphere have often led to new problems, such as difficulties in asserting rights, identifying the real user, or accessing effective complaint remediation mechanisms (Sulistiyowati et al., 2020).

Regarding evidence, the Indonesian legal system recognizes electronic documents and digital data as valid means of proof (UU ITE Articles 5 and 6). However, judicial practice frequently encounters problems in verifying the authenticity of digital documents, recognizing electronic signature algorithms, and ensuring the efficacy of contemporary security systems. Judicial officers must master digital forensics to objectively assess the validity of electronic evidence, in line with Supreme Court Circular Number 3 of 2022. Additionally, business actors and the public as users of electronic contracts generally exhibit a low level of digital legal literacy, making them susceptible to disadvantageous agreements (Wibowo et al., 2021).

Jurisdictional issues and dispute resolution in cross-border electronic contracts further underscore the need for regulatory harmonization and the establishment of effective dispute resolution forums (Iswara, 2021). Options such as online dispute resolution (ODR), arbitration, or digital litigation panels must be unequivocally incorporated into electronic contracts to prevent legal uncertainty. Digital agreements also require legal clarity regarding the enforcement of court decisions across jurisdictions and the recognition or execution of digital evidence in other countries. These realities demonstrate the importance of government and policymakers in strengthening choice of law provisions in all forms of digital contracts (Bawono, 2020).

Technological innovations in contracts, such as smart contracts and blockchain, offer the potential for automation, transparency, and efficiency, yet simultaneously present significant challenges for the current legal system. The absence of specific regulations concerning smart contracts in Indonesian law results in legal ambiguities and inadequate protection for parties in the event of disputes or force majeure. This highlights the urgency for proactive regulatory initiatives to integrate new technological innovations into a responsive and adaptive national legal framework, ensuring that electronic contracts remain legitimate, accountable, and equitable instruments (Saktiawan et al., 2021).

A comprehensive review of the practical challenges of electronic contract implementation requires a multidisciplinary approach, addressing not only normative legal aspects but also legal education, technological infrastructure development, and the involvement of all stakeholders (regulators, businesses, society, and the judiciary). The development of progressive regulation, adaptive evidence systems, and sustainable protection of consumer and business rights must be synergistically aligned with the construction of a healthy and trustworthy national digital ecosystem.

This study aims to analyze the legal framework for electronic contracts in Indonesia through normative and empirical juridical approaches, to identify current implementation barriers, as well as to formulate solutions and regulatory reform recommendations in order to establish legal certainty, justice, and optimal protection for all parties involved in digital transactions in the modern information technology era.

RESEARCH METHODS

The research method employed in this study is the normative legal research method (library research), which centers on literature review and document analysis. This research prioritizes the examination of relevant statutes and regulations, court decisions, legal doctrines espoused by jurists, as well as literature pertaining to electronic contracts in Indonesia. The normative legal approach is utilized to analyze the compatibility, juridical strength, and effectiveness of the prevailing regulations, particularly Law Number 11 of 2008 concerning Information and Electronic Transactions (UU ITE), Government Regulation Number 71 of 2019 on the Operation of Electronic Systems and Transactions (PP PST), Law Number 8 of 1999 on Consumer Protection, and Law Number 27 of 2022 on Personal Data Protection.

In addition, this study also adopts conceptual and case approaches to identify the evolution of legal interpretation with respect to electronic contracts in Indonesia. Case studies of court judgments relating to electronic contract disputes are employed as contextual analyses of the application of contract law principles in the digital domain. Through these approaches, this research examines practical issues that arise in implementation and offers solutions to the challenges faced in the enforcement of electronic contracts.

Data collection techniques are conducted through documentary review of primary and secondary legal sources, encompassing statutes and regulations, jurisprudence, books, scholarly journals, and other official documents. The data obtained are analyzed qualitatively, with emphasis on logical, systematic, and critical legal argumentation to generate objective conclusions and comprehensive recommendations as contributions to the development of electronic contract law in Indonesia.

RESULTS AND DISCUSSIONS

The Transformation of Contract Law in the Digital Era

Advancements in digital technology have brought wide-ranging and significant impacts on paradigm shifts within the national legal system, particularly in the field of contract law. The digital era has generated new demands for regulatory adaptation to ensure legal certainty, protection of rights, and fairness for parties engaging in electronic transactions. One manifestation of this transformation is the emergence of electronic contracts as a primary instrument in digital business activities. According to Indonesian contract law, electronic contracts are not merely technical innovations, but also require comprehensive legal regulation to ensure a level of legal protection comparable to conventional contracts. Various industrial sectors such as e-commerce, fintech, and digital financial services have extensively implemented electronic contracts, making their presence an inevitable phenomenon (Wiraguna & Santiago, 2022). Consequently, the proliferation of electronic contracts urges legislators and legal practitioners to continuously revise regulations so that the legal validity of electronic contracts is assured, including the protection of parties transacting across regions and national jurisdictions.

The regulation of electronic contracts in Indonesia currently refers primarily to Law Number 11 of 2008 on Information and Electronic Transactions (UU ITE), as amended by Law Number 19 of 2016. Normatively, these regulations affirm that electronic contracts are recognized as a form of agreement that possesses legal force so long as the requirements outlined in Article 1320 of the Indonesian Civil Code (Kitab Undang-Undang Hukum Perdata/KUH Perdata) are fulfilled. The general requirements for an agreement include the existence of mutual consent of the parties free from coercion, the legal capacity of the contracting parties, a clear and specific object of the contract, and a lawful purpose that complies with law, morality, and public order (Darmawan, 2022). Thus, these regulations serve as the legitimacy base for electronic contracts to have binding power and to serve as grounds for legal action in litigation processes should disputes arise. The principal challenge for contract law is to ensure that the procedures for evidencing and executing electronic contracts are equivalent to those applicable to conventional physical contracts (Iswara, 2021).

The technical aspects of the implementation of electronic contracts are regulated in Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PP PSTE), which emphasizes system security, authentication, and the protection of personal data in electronic transactions. This regulation serves as a strategic legal framework to ensure that digital documents or information can meet the standards required to be considered valid evidence in court (Faridi et al., 2023). One of the fundamental aspects of electronic contract implementation is the use of electronic signatures, both certified and uncertified. Certified electronic signatures constitute digital authentication verified by an Electronic Certification Provider (Penyelenggara Sertifikasi Elektronik/PSrE) through Public Key Infrastructure (PKI) mechanisms, whereas uncertified electronic signatures are still acknowledged, provided they meet certain regulatory requirements even without third-party verification. Thus, the utilization of electronic signatures in digital contracts plays a central role in ensuring the integrity, authentication, and non-repudiation of electronic documents, which are legally recognized as admissible evidence (Sulistiyowati et al., 2020).

The presence of electronic signatures has a substantial impact on the legitimacy and evidentiary strength of electronic contracts within the formal legal domain (Wibowo et al., 2021). From the perspective of evidentiary law, digital data and documents signed electronically possess juridical force equivalent to conventional written documents, as stipulated in Article 5 of UU ITE. The regulations further affirm that electronic documents that satisfy security, data integrity, and proper authentication system requirements may be accepted as evidence in legal proceedings. This provides a solid legal foundation for parties opting to use electronic contracts in digital business transactions, especially for cross-regional transactions where physical proof can be difficult to produce.

Despite the existing regulations, the implementation of electronic contracts in Indonesia faces several challenges. One main issue is consumer protection regarding standard clauses that often benefit business actors over consumers. Many digital contracts include unilateral provisions imposed by service providers, leaving consumers with little opportunity to negotiate. This phenomenon can lead to an imbalance in bargaining positions and violations of the principle of fairness in contractual agreements. According to civil law, agreements containing unilateral clauses that disadvantage one party may be declared null and void for violating the lawful purpose of the contract and the principle of consumer protection (Sulaiman et al., 2023).

The aspect of evidence in resolving electronic contract disputes has become a significant concern in the development of national contract law. Traditional evidentiary systems tend to rely on physical written documents as primary proof. In the digital era, evidentiary processes have become more complex, involving digital data, electronic traces, and cybersecurity systems that require specific technical expertise for operationalization (Bawono, 2020). Therefore, the national legal system must adapt its evidentiary mechanisms to provide legal certainty and equivalent protection for all parties, including the necessity of strengthening the technical capacity of law enforcement personnel in information technology.

One of the latest innovations in the field of electronic contracts is the adoption of blockchain technology and smart contracts. Blockchain-based smart contracts offer solutions for the automatic, secure, and transparent execution of

agreements without the need for third-party intermediaries. This technology uses programming code to automatically execute contract provisions when conditions are met, thereby reducing the risks of manipulation and fraud. However, the immutable and automatic nature of smart contracts introduces new juridical challenges, such as difficulties in amending contracts or effectively resolving disputes should they arise (Iswara, 2021).

The absence of specific regulations governing smart contracts and blockchain-based innovations in Indonesia highlights the need for further development of the national legal system. Flexible and responsive legal policies toward technological change must be developed promptly to accommodate market needs while protecting the rights and interests of all parties. The government, academia, and the legal community are required to offer normative recommendations that can serve as the foundation for future regulations and to strengthen a legal climate that proactively supports digital innovation.

Efforts to improve legal literacy regarding electronic contracts are also essential to ensure effective legal protection for both business actors and consumers. Intensive public outreach on drafting, executing, and mitigating risks in electronic contracts can increase understanding and compliance with the prevailing legal norms. Cross-sectoral cooperation mechanisms need to be reinforced so that regulations in the field of electronic contracts can be implemented optimally and equitably across all digital business sectors (Maulani et al., 2023).

The adaptation of contract law regulations in the digital era is a key element in creating a secure, fair, and trustworthy electronic transaction environment. Adequate legal protection for all parties, regulatory innovation in technology, and continuous legal education are integral foundations for the development of a modern electronic contract legal system in alignment with the principles of justice and legal certainty at the national level.

Legal Basis and Juridical Review of Electronic Contracts in Indonesia

Electronic contracts in Indonesia derive strong legitimacy from various prevailing statutory regulations, most notably Law Number 11 of 2008 concerning Information and Electronic Transactions (UU ITE), as amended by Law Number 19 of 2016. Article 1, point 17 of UU ITE stipulates that an electronic contract is an agreement between parties executed through an electronic system. This provision underscores the importance of explicit legal recognition of the validity of digital transactions and agreements under positive law. The validity of electronic contracts is further regulated in Article 18, paragraph (1), which asserts that an electronic contract is valid if it fulfills the requirements of a valid agreement, as delineated in Article 1320 of the Indonesian Civil Code (Kitab Undang-Undang Hukum Perdata/KUH Perdata). Accordingly, an electronic contract is recognized as a legally binding agreement, provided it satisfies the elements of mutual consent, legal capacity, a clear object, and a lawful cause. This normative arrangement positions electronic contracts on par with conventional contracts and guarantees legal certainty when both forms serve as the basis for legal relationships in business activities or private transactions in Indonesia (Siregar et al., 2022).

Beyond UU ITE, the technical aspects and legal protection for electronic transactions are regulated in Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PP PSTE), which further emphasizes the importance of electronic system security, personal data protection, and the validity of electronic signatures. Article 52 of PP PSTE stipulates that electronic system operators are required to ensure the security of the electronic systems they manage so that electronic data remains protected from any unauthorized access, use, or alteration. From a juridical perspective, this means that electronic system operators are deemed legal subjects who may be held civilly and criminally liable in the event of a breach of data protection or confidentiality of electronic contract documents (Sulaiman et al., 2023). PP PSTE also regulates the use of electronic signatures in Articles 59–61, distinguishing between certified electronic signatures (recognized and supervised by state institutions such as Electronic Certification Providers/PSrE) and uncertified electronic signatures. This differentiation provides legal certainty for the processes of authentication and the integrity of digital documents in civil legal relationships and evidentiary proceedings in court.

A juridical review of the validity of electronic contracts in Indonesia is firmly rooted in longstanding principles of contract law, particularly the requirement of a lawful cause (Sulistiyowati et al., 2020). Substantively, electronic contracts must involve a specific object or performance and be based on a purpose that does not contravene law, morality, or public order, as stipulated in Article 1337 of the Civil Code. Formally, electronic contracts no longer require physical documentation, as their validity can be established through digital records, electronic signatures, or digital authentication, all of which are specifically governed by UU ITE and PP PSTE. Article 5, paragraph (1) of UU ITE affirms that electronic documents are recognized as legitimate legal evidence, on par with written evidence as referred to in Indonesia's civil procedure law. This constitutes a significant innovation in the resolution of disputes in court and offers maximum legal protection to parties using digital contract models (Iswara, 2021).

The formal legitimacy of electronic contracts is further reinforced by Law Number 8 of 1999 on Consumer Protection (UUPK), which also plays a vital role in providing legal protection to consumers engaged in electronic transactions. Article 18, paragraph (1) of UUPK prohibits business actors from including standard clauses that place consumers in a demonstrably weak position (unfair contract terms). This is particularly crucial in the practice of electronic

contracting, given that such contracts often take the form of standard agreements with unilateral terms (Maulani et al., 2023). In line with this, Article 48 of PP PSTE obliges electronic system providers to supply accurate, clear, and honest information regarding the terms and conditions of electronic contracts to users. The obligation of transparency and honesty is an integral part of consumer protection and ensures that digital business actors do not misuse their dominant positions (Wibowo et al., 2021).

From an evidentiary perspective, the validity of electronic contracts authenticated by electronic signatures carries legal standing and consequences, as stipulated in Article 11 of UU ITE. This provision is reinforced by Ministry of Communication and Informatics Regulation Number 11 of 2022 on Procedures for Registering Private Sector Electronic System Operators, which provides administrative procedures and legal security guarantees for operators and users of electronic services. Based on this legal framework, identity verification, system authentication, and the legitimacy of digital documents are guaranteed by the state, enabling electronic contracts to be accepted in litigation within the Indonesian judiciary, both in pure civil cases and in criminal cases involving cybercrime (Siregar et al., 2022).

Legal studies also highlight the importance of personal data protection in electronic contracting, as personal data is highly susceptible to misuse in the digital era. Law Number 27 of 2022 concerning Personal Data Protection (UU PDP) provides a firm legal basis for the rights of data subjects, the obligations of data controllers, and administrative or criminal sanctions in the event of violations. The juridical nexus between electronic contracts and personal data protection is realized through mechanisms of consent, obligations to maintain data confidentiality, and the rights of data subjects to access, rectify, or delete personal information contained in electronic contracts (Bawono, 2020). This strengthens the position of consumers and consolidates the trust element in every legally valid and law-based digital transaction.

A recurring legal issue in the implementation of electronic contracts concerns questions of jurisdiction and dispute resolution forums (Karimi & Akbari, 2017). Article 18, paragraph (4) of UU ITE provides that parties to an electronic contract are entitled to determine their choice of law and forum for dispute resolution, including arbitration, mediation, or court proceedings. This regulation provides both flexibility and certainty, especially for cross-border transactions involving the laws of multiple countries. Indonesia has also adopted the provisions of the UNCITRAL Model Law on Electronic Commerce as a guideline for the drafting of international electronic contracts and the recognition of cross-border electronic evidence. In practice, online dispute resolution mechanisms are increasingly relevant and in line with the development of legal technology in Indonesia (Wiraguna & Santiago, 2022).

Innovations such as smart contracts and blockchain, although not yet specifically regulated in Indonesian law, may still be accommodated within the existing legal framework as long as they do not conflict with statutes, propriety, and public order. Article 1338 of the Civil Code stipulates that all legally executed agreements have the force of law for the parties involved. As long as smart contracts meet the contractual elements as provided in the Civil Code and specific legislation such as UU ITE and PP PSTE, smart contract-based agreements continue to possess legal status as admissible evidence. Aspects requiring further development include mechanisms for supervision, proof, and modification of contracts should implementation obstacles or unforeseen legal events (force majeure) arise.

Indonesia's legal framework on electronic contracts provides robust protection and legitimacy for businesses and consumers in digital transactions. Juridical reinforcement—both in terms of substance, administration, and evidentiary practice—must be continuously reviewed and refined to align with ongoing digital technological development, market demands, and the dynamics of the global community (Maulani et al., 2023). A comprehensive understanding of the prevailing regulations will further promote the effective, accountable, and equitable implementation of electronic contracts under Indonesian law.

Juridical Challenges and Prospective Legal Solutions in the Implementation of Electronic Contracts in the Digital Age

The implementation of electronic contracts in Indonesia has developed rapidly as a response to the accelerating progress of information and communication technology (Hidayat, 2015). However, in practice, it still faces fundamental challenges that must be systematically and comprehensively addressed through appropriate legal instruments (Hendrawan, 2022). The State has provided formal recognition of electronic contracts through normative regulations intended to ensure legal certainty, justice, and proportional protection (Situmorang, 2022). Nonetheless, real-world dynamics reveal a gap between legal norms and their practical enforcement. The existence of electronic contracts requires adaptive legal interpretation, as their digital characteristics render them susceptible to problems such as the validity of remote transactions, identity misuse, data manipulation, and hacking (Santoso, 2022). Consequently, legal efficiency in managing digital processes and risk anticipation through responsive technological regulations have become essential in the governance of electronic contracts in Indonesia, as emphasized in various legislative forums and judicial decisions concerning digital evidence (Wiraguna & Santiago, 2022).

A crucial challenge in the implementation of electronic contracts is the legitimacy of the electronic document itself (Wibowo et al., 2021). Although electronic documents and digital signatures are recognized as valid evidence (UU ITE Article 5, PP PSTE Articles 52–60), the integrity and originality of documents often become contentious issues in court proceedings. Legal authorities require technical and procedural clarity to ensure that electronic documents genuinely originate from authorized parties and have not been illicitly altered (Sulistiyowati et al., 2020). The application of certified

electronic signature technology is a primary solution to this issue, as stipulated in Government Regulation Number 71 of 2019. Therefore, every digital transaction must be supported by an authentication system verifiable by an authorized authority, namely an Electronic Certification Provider (PSrE) registered with the Ministry of Communication and Informatics.

Another dominant issue is consumer protection, particularly in the practice of standard contract clauses that tend to favor platform-based business operators. This is highly pertinent to the substance of Article 18 of Law Number 8 of 1999 on Consumer Protection, which prohibits the inclusion of unilateral terms that can lead to imbalances in rights and obligations. Numerous cases demonstrate that consumers are faced with non-negotiable terms, resulting in weak bargaining positions and potential losses in the future. The State is obligated to provide protection through the strengthening of transparency principles, legal platform verification, and regulations ensuring mechanisms for compensation or comprehensive remedies should non-performance occur in the execution of electronic contracts (Prematura & Suryani, 2023).

In both civil and criminal evidentiary domains, electronic contracts frequently encounter challenges related to the authentication of digital identities, document authenticity, and involvement of third parties managing electronic systems. Conventional evidence, namely physical documents, is increasingly being replaced in the digital era by electronic data, transaction records, and digital signatures. Within the Indonesian judicial system, judges—as primary actors—must possess adequate understanding of digital forensic principles to assess the validity, integrity, and reliability of electronic data as evidence (Rosadi & Tahira, 2018).

Another frequent issue pertains to jurisdiction and international dispute resolution in cross-border transactions, which generates complexities regarding choice of law and forum selection. Cross-border electronic contracts may face legal disharmony between jurisdictions as each country maintains its own legal regime and contractual principles. Therefore, an explicit agreement regarding the dispute resolution forum, arbitration model, or involvement of international tribunals is imperative (Sulaiman et al., 2023). Indonesia, through UU ITE and the ratification of several international conventions, encourages parties to explicitly articulate choice of law and forum clauses within electronic contracts as a preventive justice measure. Online Dispute Resolution (ODR) mechanisms also represent a progressive approach for resolving electronic contract disputes in a cost-effective, efficient, and technologically adaptive manner (Iswara, 2021).

A further challenge concerns the security of personal data processed within electronic contracts. The role of legal provisions, particularly Law Number 27 of 2022 on Personal Data Protection (UU PDP), is vital in ensuring that every digital entity and individual can safeguard the integrity, confidentiality, and sustainability of data used in digital agreements. Both business actors and electronic system operators are mandated to implement principles of consent, data minimization, and notification obligation in case of data breaches as stipulated in the main provisions of the UU PDP. The State is required to enforce supervision mechanisms, the imposition of administrative or criminal sanctions, and technology usage education to raise public awareness and guarantee the protection of citizens' rights as data subjects in electronic contract practices (Mentari et al., 2023).

Technological innovations such as blockchain, smart contracts, and artificial intelligence have transformed the landscape of electronic contract law, particularly in automating agreement execution, increasing transparency, and controlling the risk of manipulation (Grundmann & Hacker, 2017). While Indonesia currently lacks specific regulations governing smart contracts, the development of regulatory frameworks is urgently needed to ensure legal clarity, juridical consequences, and dispute resolution mechanisms for code-based automated contracts (Irfansyah et al., 2024). Comparative legal studies may serve as references, and the engagement of multiple stakeholders—including regulators, IT experts, and legal practitioners—is essential to produce responsive and innovative policies.

To enhance legal certainty, several solutions can be adopted, including: (1) drafting new regulations or amending existing provisions to accommodate technological advances in electronic contract law; (2) increasing legal literacy among the public and businesses through periodic training, education, or outreach on rights and obligations in the digital domain; (3) strengthening the capacity of law enforcement institutions and courts to manage electronic data evidence; and (4) fostering international collaboration for harmonizing regulations, dispute resolution, and mutual recognition of digital evidence across jurisdictions.

Furthermore, the implementation of a credible certification system for electronic system providers and the rigorous enforcement of compliance are essential to ensure that the entire digital ecosystem operates on principles of prudence and integrity. Industry players, regulators, and the public must actively participate in monitoring and reporting any violations of electronic contracts or threats to the rights of parties in digital agreements. Continuous adaptation to technological advancements, legal regulatory adjustments, and the reinforcement of digital human rights protections will nurture a safer, more effective, and competitive electronic contract ecosystem.

The success of Indonesia's digital agreement legal system is largely determined by the synergy between progressive regulatory development, the strengthening of law enforcement, consumer protection, and the adaptability of legal actors to technological change. Legal certainty for electronic contracts can only be realized through consistent supervision, policy updates based on empirical evidence, and balanced protection of the rights and obligations of the parties in every evolving model of digital transaction.

CONCLUSIONS

Electronic contracts have become an essential instrument for conducting transactions in the digital era, both domestically and across borders. The recognition and legitimacy of electronic contracts in Indonesia are reflected in various statutory regulations such as the Information and Electronic Transactions Law (UU ITE), Government Regulation on the Implementation of Electronic Systems and Transactions (PP PST), the Consumer Protection Law (UUPK), and the Personal Data Protection Law (UU PDP), which collectively provide a legal framework and protection for the parties involved. Nonetheless, the practical implementation of electronic contracts continues to face significant challenges, ranging from the validity of documents, proof of electronic signatures, and personal data protection, to issues of jurisdiction and dispute resolution forums. Consumer protection and contractual fairness remain central concerns, particularly with respect to the use of standard clauses that may disadvantage weaker parties in digital transactions. The government has undertaken various measures to strengthen legal instruments, supervise electronic system providers, and educate the public to enhance understanding of their rights and obligations in the context of electronic contracts. In line with technological developments, regulatory adaptation and responsive law enforcement are key to fostering an effective, equitable, and competitive legal ecosystem for electronic contracts.

The following recommendations may be offered: there is a pressing need for more specific and detailed regulations regarding electronic contracts, particularly in relation to smart contracts, digital evidence mechanisms, and personal data protection. Enhancing legal literacy among the public and business actors is also crucial in ensuring that they can exercise their rights and fulfill their obligations optimally, thus avoiding potential losses due to lack of knowledge. Furthermore, synergy among all stakeholders—government, business actors, consumers, and the judiciary—must be continuously reinforced in order to support the establishment of a legal system for electronic contracts that is adaptive and inclusive in response to contemporary developments.

REFERENCES

- Al Fawwaz, H. A. (2022). E-Commerce Transactions Regulation In Indonesia. *International Journal of Social Science and Human Research*. <https://doi.org/10.47191/ijssshr/v5-i2-38>
- Bawono, B. T. (2020). The Validity of Electronic Contracts in Software Applications. <https://doi.org/10.30659/AKTA.V7I1.10556>
- Darmawan, D. (2022). Environmental Accountability through Business Ethics, Responsibility, Morals and Legal Obligations, *Bulletin of Science, Technology and Society*, 1(2), 1-6.
- Faridi, F., D. Darmawan, R. Hardyansah, A. R. Putra, A. S. Wibowo. (2023). Legal Protection for Online-Based Lending Consumers, *International Journal of Service Science, Management, Engineering, and Technology*, 4(2), 34–38.
- Grundmann, S., & Hacker, P. (2017). Digital Technology as a Challenge to European Contract Law. *European Review of Contract Law*. <https://doi.org/10.1515/ERCL-2017-0012>
- Hendrawan, D. (2022). The legality of trading through electronic systems in indonesia. <https://doi.org/10.53555/ephss.v8i1.1901>
- Hidayat, R. (2015). Local Government E-Procurement Practices in Indonesia: Accountability, Efficiency, and Barriers. *Journal of US-China Public Administration*. <https://doi.org/10.17265/1548-6591/2015.02.003>
- Irfansyah, M. F., D. Darmawan, & R. Hardyansah. (2024). Implementation of the Principle of Good Faith in Contract Performance. *Bulletin of Science, Technology and Society*, 3(2), 51-56.
- Iswara, V. D. (2021). Analisis pentingnya implementasi penyelesaian sengketa online di indonesia. <https://doi.org/10.33087/LEGALITAS.V13I1.245>
- Karimi, A., & Akbari, M. (2017). Basic Conditions of Validity of Electronic Contracts in Iran and UNCITRAL Model Law. *Journal of History Culture and Art Research*. <https://doi.org/10.7596/TAKSAD.V6I1.750>
- Kholis, K.N., N. Chamim, J. A. Susanto, D. Darmawan, & M. Mubarak. (2023). Analyzing Electronic Medical Records: A Comprehensive Exploration of Legal Dimensions within the Framework of Health Law, *International Journal of Service Science, Management, Engineering, and Technology*, 4(1), 36–42.
- Lethy, Y.N., F. Issalillah, Y. Vitrianingsih, D. Darmawan, R. K. Khayru. (2023). Legal Protection for Patients Against Negligence of Medical Personnel, *International Journal of Service Science, Management, Engineering, and Technology*, 4(2), 39–43.
- Maulani, A., R. Hardyansah, D. Darmawan, C. N. Mendonca, & A. de Jesus Isaac. (2023). Juridical Analysis of the Validity of Electronic Contracts Made by Artificial Intelligence in Indonesian Law, *Journal of Social Science Studies*, 3(1), 139 – 144.
- Mentari, N., Nugraheni, N., & Annas, M. (2023). Legal Protection of HARA Platform Users on the Service of Electronic Data Interchange. *Jurnal Hukum Novelty*. <https://doi.org/10.26555/novelty.v14i1.a25547>
- Muslih, M. Y., & Supeno, S. (2022). Financial technology: digital legal challenges and Indonesia's economic prospects after Covid-19 outbreak. *Legality*. <https://doi.org/10.22219/ljih.v30i2.22784>
- Negara, D.S. & D. Darmawan. (2023). Digital Empowerment: Ensuring Legal Protections for Online Arisan Engagements. *Bulletin of Science, Technology and Society*, 2(2), 13-19.
- Prematura, A. M., & Suryani, S. (2023). Consumer Protection Against Standard Clauses in Business Transactions Through E-Commerce. *Pena Justisia: Media Komunikasi Dan Kajian Hukum (Edisi Elektronik)*. <https://doi.org/10.31941/pj.v21i2.2709>
- Rosadi, S. D., & Tahira, Z. (2018). Consumer protection in digital economy era : law in indonesia. <https://doi.org/10.20961/YUSTISIA.V0I0.20144>
- Saktiawan, P., R. Hardyansah, D. Darmawan, & A. R. Putra. (2021). Ethical Principles in Indonesian Legal Advocacy: Sustaining Justice in Adversarial Systems Through Professional Integrity, *Journal of Social Science Studies*, 1(2), 239 – 244.
- Santoso, E. (2022). Opportunities and Challenges: E-Commerce in Indonesia from a Legal Perspective. *Jurnal Penelitian Hukum de Jure*. <https://doi.org/10.30641/dejure.2022.v22.395-410>
- Siregar, D., Deli Lase, A. N., Hulu, A., Zandrato, B. J., Yusra, D. R., Mentari, J., Lafau, S., & Dewi, D. K. (2022). The Legitimacy of Electronic Trading Contracts According to the Civil Code. *International Journal Of Community Service*. <https://doi.org/10.55299/ijcs.v1i2.186>
- Situmorang, S. (2022). Syarat Sahnya Suatu Jual-Beli Online Pada Perjanjian/ Kontrak Elektronik Di Indonesia. *Visi Sosial Humaniora*. <https://doi.org/10.51622/vsh.v3i2.1115>

- Sulaiman, M., N. H. Pakpahan, & A. R. Putra. (2023). Analysis of the Validity and Effectiveness of Electronic Contracts in Legal Protection of Digital Transactions in Indonesia, *Journal of Social Science Studies*, 3(1), 41–46.
- Sulistiyowati, H., Wahyuningsih, S. E., & Soponyono, E. (2020). Legal Analysis of Crimes in Contracts Validity in the Digital Era. <https://doi.org/10.25134/UNIFIKASI.V7I1.2701>
- Suvorov, E. D. (2022). Application of the Principles of Contract Law to Contractual Relations complicated by a Digital Element. *Lex Russica*. <https://doi.org/10.17803/1729-5920.2022.182.1.109-121>
- Wibowo, A. S., D. S. Negara, A. P. Marsal, E. B. Da Silva. (2021). Contractual Instruments' Effectiveness in Preventing Business Disputes and Ensuring Business Law Stability, *Journal of Social Science Studies*, 1(2), 209 – 214.
- Wiraguna, S. A., & Santiago, F. (2022). The Implementation of Electronic Contract on Business to Business (B2B) Electronic Transaction. *Interdisciplinary Social Studies*. <https://doi.org/10.55324/iss.v2i1.304>.